

**THE KINGDOM OF THAILAND
BANGKOK METROPOLITAN ADMINISTRATION**

**Project for Strengthening Institutional Capacity
for the Implementation of
Bangkok Master Plan on Climate Change
2013-2023**

Project Completion Report

December 2022

Japan International Cooperation Agency (JICA)

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1. Introduction

Japan International Cooperation Agency (JICA) has been supporting Bangkok Metropolitan Administration (BMA) effort to tackle the issue of climate change since 2009 through the implementation of the Bangkok Action Plan of Global Warming Mitigation. This cooperation led into the launch of full-scale technical cooperation projects through the “Project on the Bangkok Master Plan on Climate Change 2013-2023”, and then the “Project on Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023”.

This Master Plan covers 5 targeted sectors including environmentally sustainable transport, energy efficiency and renewable energy, waste and wastewater management, green urban planning, and adaptation planning. The project supports the BMA’s effort to strengthen the institutional arrangement.

The BMA established the Sub-division for Climate Change Strategies (CCS), which plays a critical role of coordinating different BMA departments and relevant Royal Authorities, through established bodies of the 5 Task Forces (TF), the Working Group (WG) and the Steering Committee (SC) and Joint Coordinating Committee (JCC).

The BMA took further climate action during this project implementation, taking into account national and global directions namely Nationally Determined Contribution (NDC) framework from 2021 to 2030, Thailand’s interim target to achieve Carbon Neutrality by 2050, the global average temperature target to well below 2 °C under the Paris Agreement, etc.

This report is prepared to review the inputs and achievements of the “Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023” in Thailand (hereinafter, “the Project”) and describe challenges and lessons learned from the Project. Box 1. below shows the basic information of the Project.

Box 1. Basic Information of the Project

Duration of the Project (Planned and Actual)

10 December 2017 – 9 December 2022 (60 months)

Implementing Agency

Department of Environment, Bangkok Metropolitan Administration (BMA)

Overall Goal

Transition of BMA toward low carbon and climate change resilient city is fostered.

Project Purpose

The implementation of Bangkok Master Plan on Climate Change 2013-2023 (Master Plan) is promoted.

2. Overview of the Project

2-1 Background

Government of Thailand has developed several policies and plans, such as “The 11th National Economic and Social Development Plan”, “Thailand Climate Change Master Plan 2015-2050”, and “Nationally Appropriate Mitigation Actions (NAMAs)”. In line with those policies, JICA has been assisting climate change measures in Bangkok to address its high level of Greenhouse Gas (GHG) emissions per capita. The city is also under the impacts of climate change such as flooding and coastal erosion.

“BMA Action Plan on Global Warming Mitigation 2007-2012” (hereinafter: BMA Action Plan) aimed at reducing GHG emission by at least 15 % relative to the business as usual (BAU) scenario by 2012. Since capacity strengthening across the relevant departments within BMA was necessary, JICA implemented the technical cooperation: “Capacity Building on Climate Change Adaptation and Mitigation for Implementation in Bangkok” (2009-2012). Training in Japan was conducted, and Japanese experts were dispatched to strengthen the capacity of BMA staff on climate change mitigation and adaptation. The targets of the BMA Action Plan, including the GHG emission reduction target, were generally achieved.

To develop a comprehensive long-term master plan after the completion of the BMA Action plan, JICA implemented the technical cooperation: “Bangkok Master Plan on Climate Change 2013 – 2023” (2013-2015) in collaboration with Yokohama City.

The BMA Master Plan was formulated and the capacity of BMA staff particularly in planning, implementing, and evaluating climate change policies and actions was enhanced.

To ensure effective implementation and sustainability of the BMA Master Plan, the Project is requested by BMA in order (1) to support institutional arrangements for the smooth implementation, (2) to strengthen capacity for planning and implementation of

prioritized mitigation and adaptation activities, and (3) to develop capacity for monitoring and evaluation to assess the progress of the BMA Master Plan.

2-2 Project Purpose

Project purpose is “The implementation of Bangkok Master Plan on Climate Change 2013-2023 (Master Plan) is promoted.” To achieve this project purpose it has 4 outputs; Output1: Institutional arrangements are improved for the effective and smooth implementation of the Master Plan, Output2: Capacity for planning and implementation of prioritized projects under the Master Plan is strengthened, Output3: Capacity for monitoring and evaluation (M&E) to assess the progress of the Master Plan is strengthened, and Output4: Capacity for setting a new mitigation target and activities, and necessary institutional arrangement for implementation is strengthened. Box 2. below shows the activities under each output to achieve project purpose.

Box 2. Project activities

1-1. Knowledge concerning institutional arrangements on climate change policy is shared through trainings and seminars.

1-2. The gaps concerning climate change mainstreaming and emanating updates of international and national climate policies for the implementation of the Master Plan are identified.

1-3. The institutional framework for the implementation of the Master Plan is enhanced, by identifying the relevant BMA, national and international policy documents, and drafting revisions for existing relevant documents as necessary.

1-4. The modality of work for the implementation of the Master Plan is enhanced.

1-5. Other significant gaps than those relating to the activities 1-3 and 1-4 are addressed, if identified.

1-6. The relevant institutions (the Steering Committee,¹ the Working Group², the Task Forces, and the Secretariat under the Master Plan, as well as the Climate Change Strategy Sub-division) provide necessary supports for the implementation of the Master Plan.

1-7. BMA endorses the projects/activities under the Master Plan and provides them with necessary budgets and KPI³ as many as possible.

2-1. Knowledge concerning planning and implementation of mitigation and adaptation activities is shared through training and seminars (Knowledge sharing may cover all of the five areas under the Master Plan: transport, energy, waste and wastewater, green urban planning, and adaptation)

2-2. Selected priority activities under the Master Plan are planned and implemented (Activities to be supported under this Project will be selected later)

¹ Steering Committee (SC)

² Working Group (WG)

³ Key Performance Indicator (KPI)

2-3. Projects with high GHG emissions reduction potentials, in particular, in the energy and transport sectors, are planned and implemented in accelerated manners in collaboration with relevant royal authorities.

2-4 The lessons to be learned from the implementation of the above selected priority activities are compiled and communicated.

3-1. BMA conducts M&E of the progress of the Master Plan, in particular, for the comprehensive review to be scheduled in 2018 and 2019.

3-2. Methodologies for M&E and MRV for the Master Plan and its activities are studied, and procedures and guidelines for BMA as a local government are developed and demonstrated.

3-3. BMA communicates the result of the above-mentioned comprehensive review with the relevant policy makers and stakeholders.

3-4. Trainings for MRV for mitigation (the project level and the city level for GHG Inventory) are set up and conducted for relevant sectors. The courses include evaluation on trainee's performance, as well as feedback from trainees in the form of their course assessment.

3-5. Knowledge concerning M&E on climate change policy implementation is shared through trainings and seminars.

4-1. BMA develops a new mitigation target for 2030 with a view to a new master plan on climate change.

4-2. Methodologies and procedures for setting a new target and a master plan on climate change are studied and an operational manual for setting a target and a master plan on climate change for a local government is developed.

4-3. Trainings for setting a new mitigation target and developing a master plan are conducted for BMA officials at the executive and working levels.

JICA and BMA agreed to add Output 4, after the completion of the 1st Comprehensive Review, which recommended to set a new climate change mitigation target in 2030, in alignment with the Thailand 's Nationally Determined Contribution (NDC) under the Paris Agreement. In order to the respond to the emerging need, which was deemed as the key actions to strengthen capacity to implement climate action under the Master Plan, JICA and BMA agreed to modify the PDM. The details of the modification of the PDM as been written as 3-5

2-3 Project Implementation Structure

2-3-1 Implementation Structure

The project organization chart is given in 2-4-2. The roles and assignments of relevant organizations are as follows:

- (1) BMA
 - (a) Project Director

Director General, Department of Environment of BMA, will be responsible for overall administration and implementation of the Project.

(b) Project Manager

Deputy Director General, Department of Environment of BMA, will be responsible for the managerial and technical matters of the Project.

(c) Other Personnel

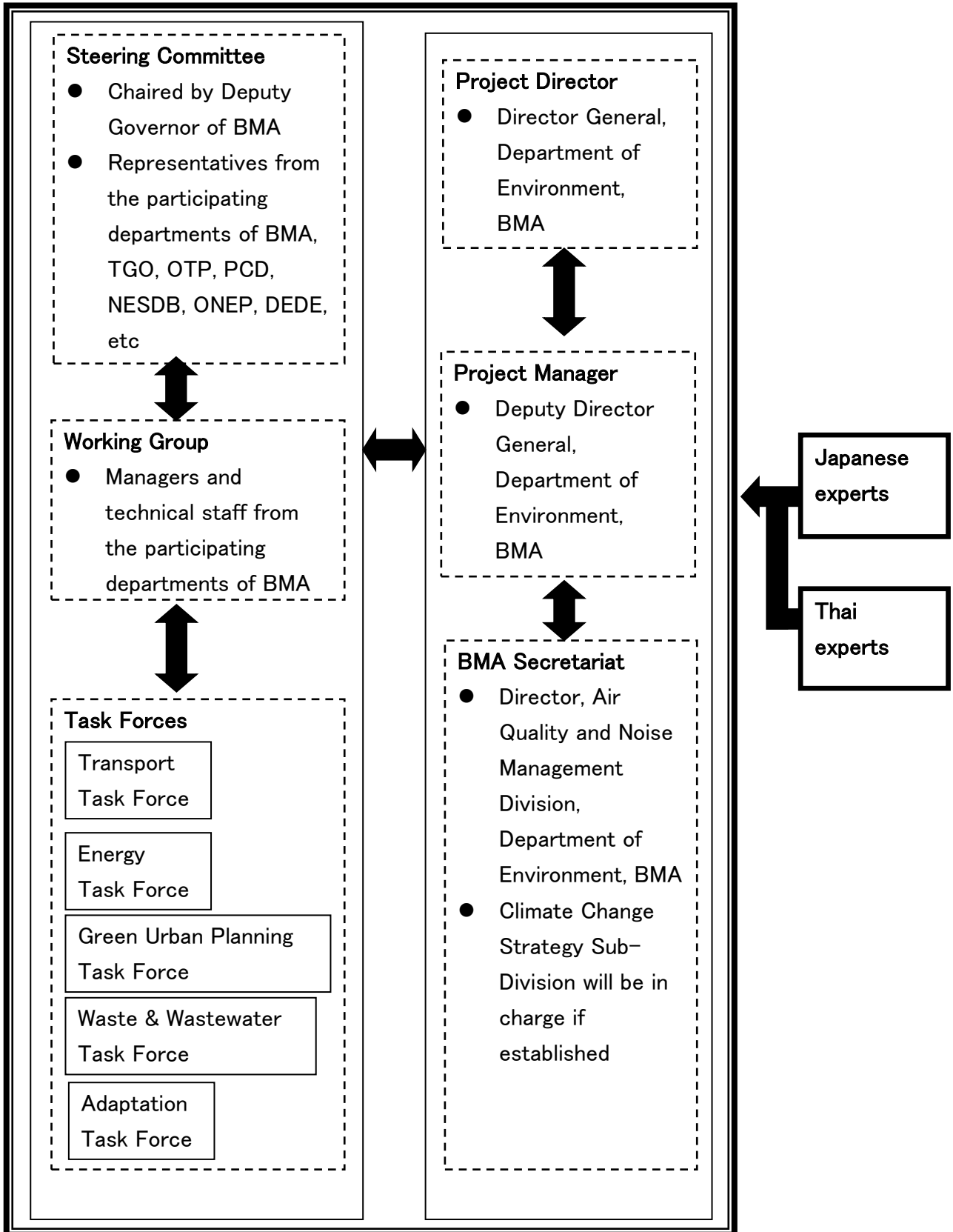
(2) JICA Experts

The JICA experts will give necessary technical guidance, advice and recommendations to BMA on any 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 review the progress, revise the overall plan when necessary, approve an annual work plan, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project.

2-3-2 Project Organizational chart



3. Results of the Project

3-1 Input by the Japan side

In accordance with the laws and regulations in force in Japan, JICA, as the executing agency for technical cooperation by the Government of Japan, will take, at its own expense, the following measures according to the normal procedures of its technical cooperation scheme.

(a) Dispatch of Japanese Experts

Four (4) Long Term Experts have been dispatched from November 2017 till December 2022, while (11) JICA Short Term Expert team has been dispatched since November 2017 till December 2022. (See the Annex I)

The fields of the Experts are as below:

- 1) Project Management and Coordination/Climate Change
- 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

(b) Training (6,756 officials in total)

The Project has conducted the trainings and workshops relevant to the activities of Output 1 to Output 4 in Japan and in Thailand for Thai counterpart personnel connected with this Project (See the Annex I).

(c) Machinery and Equipment

Equipment necessary for enhancing priority activities was provided, office equipment such as PC and printer. Other equipment for implementing the project activities was not necessary, thus not provided.

[Provided machinery and equipment]

- 2 Personal computers
- 1 printer

(d) Surveys

The Project has conducted the surveys deemed necessary for the implementation of the Project. (See the Annex I)

(e) Local Cost

The total amount of Overseas Operation Cost is 13,278,787.92 Thai Baht, equivalent to 32,292,099 Japanese Yen (JICA's monthly exchange rate as of December 2022). The Overseas Operation Cost was disbursed by two long-term experts.

-Agent Service Expense: 8,448,122 Thai Baht

This includes fees for local experts who were contributed to implement studies listed in Annex I, such as "Study of Developing Teaching Guideline and Learning Materials on Environmentally Friendly Transportation for Elementary Students", "Feasibility Study on Repeway Planning in Bangkok Area" and so on.

-Miscellaneous: 3,461,467 Thai Baht

This includes one administrative staff who was mobilized under JICA Project's budget to support the implementation of project activities. This also includes equipment and interpreter for organizing meetings, translating reports and meeting materials, and printing the Master Plan, reports and PR materials.

3-2 Input by the BMA side

BMA has taken the following necessary measures to provide at its own expense:

- (a) Services of BMA's counterpart personnel and administrative personnel (See the Annex I) 108 officials participated in the implementation ;
- (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.

3-3 Achievement of Outputs

3-3-1 Achievement of Output 1

Output 1 "Institutional arrangements are involved for the effective and smooth implementation of the Master Plan" has the following seven activities (Activity 1-1 to Activity 1-7) determined in the Project Design Matrix (PDM ver.1). The three indicators

are set for Output 1 as below. Out of three indicators, two indicators are considered as achieved and one indicator is on-going. (Achievement level: middle – high)

Indicator 1-1. (The assessment reports on the institutional arrangements are prepared by the March 2019.)

Indicator 1-1. has been achieved. (High)

- ✓ The comprehensive review shared recommendations regarding the MP institutional arrangements, and also shared recommendations and issues related to institutional arrangements. The results were shared at workshops and training. Furthermore, in the gap analysis survey, problem analysis/proposals on practical methods were presented.
- ✓ Related activities: Activity 1-1, Activity 1-2., Activity 1-3., Activity 1-5.
- ✓ Deliverables: Comprehensive review 1 and 2, workshop/training implementation report, and gap analysis survey final report.

Indicator 1-2. (Actions for integrating projects into BMA’s regular planning and budgetary cycle are proposed and implemented.)

Indicator 1-2. has been achieved. (High)

- ✓ As an important action of the BMA, the master plan has been integrated into the third revision of the Bangkok 20-year Development Plan has been developed from December 2020 to September 2021, including the other umbrella policies, such as Bangkok 5-year development plan (Phase 3: 2023-2027) and BMA action plan for 2023. All those policies have implication for BMA budget allocation.
- ✓ The local consultant, whom the JICA Project assigned in advance to the gap analysis survey, has been appointed as the main BMA consultant for the third revision of the Bangkok 20-year Development Plan. The JICA long-term expert has made close contact with the local consultant and increased her understanding toward, 1) the current situation of CCS and the Master Plan implementation system; and 2) the situation of the BMA’s policies and plans not having contained climate change countermeasures, in aiming for the positive side effect reflected the Bangkok 20-year Development Plan. The project also provided potential KPIs to be included in the Bangkok 20-year Development Plan (especially the work defined in the Job Description of CCS) to the local consultant, in order to integrate the implementation system of the Master Plan into the Bangkok 20-year Development Plan, which is the core policy of the BMA. Furthermore, we collaborated with CCS and SED to propose potential KPIs of Strategy 2.3 Climate Change Countermeasures and Strategy and 2.4 Energy Conservation/Refueling Countermeasures in the Development Plan,

which is relevant to the Job Description of CCS. As a result, all of the above BMA's important policies and plans included climate change countermeasures and the Master Plan development and implementation system with clear KPIs. In addition, KPIs related to the above strategy 2.4 about implementation and management of renewable energy and energy saving have been newly added, which are also the main work of CCS. Therefore, the implementation of the Master Plan and Master Plan-related priority projects as climate change measures has been successfully integrated into the BMA's policy planning process and budget cycle.

- ✓ Specifically following components were included in KPIs; 2.3.1 Implementation of the Bangkok Master Plan on Climate Change (2.3.1.1 Improvement of knowledge and operation on climate change in Bangkok, 2.3.1.2 Promotion of climate change issues in cooperation with the parties of networks inside and outside Bangkok), 2.3.2 Strengthening the climate change system in Bangkok (2.3.2.1 Developing the capacity of Bangkok's institutional mechanism to effectively promote climate change goals), 2.4 Energy-efficient and environmentally friendly city (2.4.1.2 Bangkok Metropolitan Government) Promote the use of energy-efficient technologies and innovations in vehicles, 2.4.1.4 Improving/installing energy-saving systems or renewable energy sources in buildings in Bangkok) 2.4.2 Increasing the proportion of renewable energy (2.4.2.1 Alternative energy, Promotion of production and use).
- ✓ Related activities: Activity 1-1., Activity 1-4., Activity 1-5., Activity 1-6., Activity 1-7.
- ✓ Deliverables: Comprehensive review 1 and 2, workshop/training implementation report, and gap analysis survey final report.

Indicator 1-3. (Actions to address identified needs and gaps for institutional arrangement emanating from the international and national policy frameworks on climate change are reflected into BMA's policy decisions.)

- ✓ Indicator 1-3. Is on-going. (Middle)
- ✓ Comprehensive review has identified "needs and gaps for institutional arrangement emanating from the international and national policy frameworks on climate change" (e.g., The necessity of updating the targets for 2030 in the Master Plan in responding to the changes in the requirements of the updates of international and national climate policies, while the current MP includes only the target values up to 2020, which were regulated by the national level as NAMA framework toward 2020. The lack of budget allocated to climate change countermeasures, etc.), which were shared among the relevant BMA departments and authorities. Then, the BMA officially announced to respond to the gap as well as include the vision toward 2050.

- ✓ Moreover, “Actions to address identified needs and gaps for institutional arrangement emanating from the international and national policy frameworks on climate change” were also identified through the gap analysis survey conducted from November 2020 to March 2021.
- ✓ The local consultant, whom the JICA Project assigned in advance to the gap analysis survey, has been appointed as the main BMA consultant for the third revision of the Bangkok 20-year Development Plan. For the KPI of the institutional arrangement for Effectively Promoting Climate Change Goals Institutional level to upgrade CCS a department under the Strategic Evaluation Department or Vice-Minister or Governor, as an indicator of the capacity to be strengthened. Therefore, “Actions to address identified needs and gaps for institutional arrangement emanating from the international and national policy frameworks on climate change” are proposed to BMA’s core policies and plans and it is currently being discussed within BMA.
- ✓ Related activities: Activity 1-1, Activity 1-2., Activity 1-3., Activity 1-4., (Activity 1-5.,) Activity 1-6., Activity 1-7.
- ✓ Deliverables: Comprehensive review1 and 2, workshop/training implementation report, gap analysis survey final report are assumed.

3-3-2 Achievement of Output 2

Output 2 “Capacity for planning and implementation of prioritized projects under the Master Plan is strengthened” has the four activities (Activity 2-1 to Activity 2-4) determined in Record of Discussion (RD) and the Project Design Matrix (PDM). The four indicators are set for Output 2 as below. All of the four indicators are considered as achieved.

Indicator 2-1. Number of priority activities applied with low carbon technologies and/or practices

This indicator 2-1 has been achieved with 125 priority activities completed/on-going. The Project produced a technical report of the following assessments and fulfills the indicator 2-1. (Middle)

- ✓ Priority activities selected in the master plan were implemented in a planned manner despite being severely impacted by COVID-19. Due to various changes in circumstances, some priority activities were delayed or not started.
- ✓ The number of assigned priority activities is considered very high. Therefore, it is not appropriate to evaluate priority activities simply by “number” because the achievement rate will be low. For example, in the transport sector, 60 projects have been selected. The railway project, which has a very large project cost and is highly

important as an urban transportation network, was delayed from the beginning, but the development including the Purple Line and the Red Line has been steadily progressed and started operation. This has greatly contributed to the improvement of traffic conditions in the area.

- ✓ The implementation status of the project described in the MP is shown below table.

Indicator 2-2. The number of researches, projects and activities implemented in collaboration with royal authorities and other partners, which contribute to BMA’s policy goals.

This indicator 2-1 has achieved with 11 assessments/surveys completed. (High)

- ✓ Various research projects were conducted in collaboration with the Royal Authority. Unfortunately, due to the serious impact of COVID-19, the JICA long term expert had to go back to Japan temporary, while JICA Short Term Expert team couldn’t be dispatched for conducting face-to-face training by gathering relevant personnel.

Progress of Stocktaking list in the Master Plan

updated until Sep. 2022

Sector	Total no. of project in the list	Completed/ongoing /annual operation project	% Progress	Budget spent (2013-2022) (million Baht)
Transport	66	27	27/66 = 41%	76,501 (74,000 for MRT)
Energy	65	16	16/65 = 25%	12,935 (8,111 mBaht from TF info. in WG7 PPT)
Waste	20	15	15/20 = 75%	3,103
Wastewater	18	11	11/18 = 61%	3,208 (Previous Stocktaking sheet showed 15,761 mBaht)
GUP	52	35	35/52=67%	3,343 (2,603 mBaht from TF info. in WG7 PPT)
Adaptation	Flood = 51 Coastal erosion = 32 Drought = 23	Flood = 23 Coastal erosion = 2 Drought = no status monitored	Flood = 23/51 = 45% Coastal erosion = 6% Drought = -	No budget spent show in the sheet (5,000 mBaht from TF info. in WG7 PPT)

- ✓ We focused on the energy and transportation sectors, which emits large amounts of GHG.
- ✓ A survey was planned for the West-Water sector, but it was canceled due to the explanation from the BMA that it was outsourced to the private sector and that it would be difficult to obtain the data necessary for the survey.
- ✓ In the 2018 survey, analyzed energy conditions for 16 buildings owned by BMA based on data owned by the Department of Alternative Energy Development and Efficiency (DEDE).

- ✓ In the 2019 survey, the current state of energy consumption and the energy efficiency potential of existing buildings carried out three main activities. (1) Walk-through survey of 10 target buildings (including 4 BMA buildings). 2) Interview survey of 12 BMA office and hospital buildings (all 16 BMA-designated buildings have been surveyed). (3) Two training seminars were held to develop the capacity of BMA staff.
- ✓ The Haze problem, which is also of high political interest, is serious, and countermeasures are urgently needed. One of the main causes of Haze, open burning, is frequently carried out in areas close to the suburbs of Bangkok, but whether to determine the main cause of the damage, there is not enough information at present. In this study, a field burning survey was conducted based on satellite information.
- ✓ In the field of transportation study, examined policies for promoting the use of public transportation and surveyed the conditions of advanced cities in the world.
- ✓ In the 2020 survey was conducted on the reduction of power consumption in Din Daeng, Bangkok City Hall, through behavioral change.
- ✓ In the 2021 survey, conducted a study on the development of energy analysis and assessment templates. Created standard analysis templates for BMA building energy consumption, energy performance analysis, and GHG emission reductions.
- ✓ In order to expand the network between the BMA and the private sector, a project implementation analysis was conducted for 25 private companies that have MOUs with the BMA in relation to Earth Hour.
- ✓ In 2022 conducted three surveys. To promote the use of public transportation as an environmental education related to the transportation field, targeting upper grades of elementary school (4th to 6th grade), implement "Formulation of methods to disseminate and raise awareness," "Develop teaching guidelines and learning materials," and "Verify the quality of teaching guidelines and learning materials" regarding environmentally friendly transportation.
- ✓ A feasibility study of a ropeway in the city was carried out. In Bangkok metropolitan area, many railway lines have been developed, but the development of feeder transportation is not sufficient. In order to improve the convenience of railways and increase the number of railway users, we examined the introduction of cableway transportation that does not use roads as feeder transportation that connects with railway stations.
- ✓ As a result of the survey, we found that many large companies in Thailand are already taking proactive measures against climate change issues. However, it is conceivable that small and medium-sized enterprises lack adequate human

resources and information, and that climate change countermeasures are not progressing. Therefore, it is important to provide a mechanism that enables SMEs to calculate how much energy they consume and emit GHG in their own business. We created a system to support the creation of GHG emission inventories and provided training to SMEs.

Indicator 2-3. Screening tool of climate risk for development planning in BMA comes to be utilized.

This indicator 2-3 has been achieved. (High)

The Screening tool of climate risk for development planning in BMA, prepared by the Adaptation Task Force and summarized in the attached report.

Indicator 2-4. Budget amount, number of staff, utilization of equipment and materials in course of the priority activities implementation.

This indicator is achieved. (High)

- ✓ The budget for each fiscal year for the implementation of priority activities is shown as below (Note: some data is missing, and due to COVID-19 allocated budget had to shift to the COVID-19 related activities of the BMA)

	2018	2019	2020	2021	2022	Total (mBaht)	Remark
Transport	16,201.94	10,066.89			63.68	26,332.51	Some projects (no.10-11, 27) have a lump sum budget. So, I splitted equally by divided by no. of years to estimate an annual budget. <i>Note that in CR2 report shows only total budget spent from 2013-2022</i>
Energy	1641.8	5858.5	1	1	1	7,503.30	
Waste		151	0.893	0.893		152.79	
Wastewater	2.6	2181	45.62	128.896409	804.676384	3,162.79	Projects no.2 have a lump sum budget for 2 years. So, I splitted equally to estimate an annual budget
GUP	592.698	358.666	136.9025	1306.8863	809.2891	3,204.44	Projects no.10,20,23,24 have a lump sum budget. So, I splitted equally by no. of years to estimate an annual budget
Adaptation						5,000.00	No data shown in the stocktaking sheet but 5,000 mBaht estimated by Adaptation TF will be used to report in CR2 report

- ✓ The implementation of priority activities of each sector (energy sector, transportation sector, waste/waste-water sector, green urban sector, and adaptation sector), is supported by task force (TF) members.
- ✓ The DOE's Air Quality and Noise Management Division, Climate Change Strategy Sub-Division, which is the counterpart, has the Head and 4 BMA officers, 4 assistant staff.
- ✓ The list of members of each task force is attached (ANNEX 1).
- ✓ There is no equipment and materials input from the JICA side.

3-3-3 Achievement of Output 3

Indicator 3-1. The result of the first Comprehensive Review of the progress of implementation of the Master Plan is documented as a final report and used as a reference to the second Review at the completion of the Master Plan. (Consistent with Activity 3-1, 3-4 and 3-5)

This indicator is achieved delivery of the final report of the First Comprehensive Review. In addition, the report on the Second Comprehensive Review was completed in 2022. (High)

Indicator 3-2. Number of trainees and number of trainings on MRV (the project level and the city-level for GHG Inventory) and M&E conducted. (Consistent with Activity 3-2, 3-4, 3-5)

Indicator 3-2 was achieved, as in the earlier project period 30 sessions with 55 officials were trained. For this implementation period, 10 sessions were conducted to the almost same BMA officials. (High)

Indicator 3-3. Course assessment reports of the training are produced. (Consistent with Activity 3-4)

Indicator 3-3 was achieved, as the assessment report was made as part of the progress report of the Short-term Expert Team). (High)

3-3-4 Achievement of Output 4

Output 4 “Capacity for setting a new mitigation target and activities, and necessary institutional arrangement for implementation is strengthened” has the three activities (Activity 4-1 to Activity 4-3) determined in the Record of Discussion (RD) and the Project Design Matrix (PDM).

The three indicators are set for Output 4 as below. All of the three indicators are achieved.

Indicator 4-1. A new mitigation target during 2021-2030 with a view to a new master plan on climate change. (Consistent with Activity 4-1)

Indicator 4-1 was achieved, as the mitigation target and adaptation goals were developed and the New MP 2021-2030 has been approved. (High)

Indicator 4-2. A manual for setting mitigation target and developing a master plan. (Consistent with Activity 4-2,4-3)

Indicator 4-2 was achieved, as the manual was completed in the form of reference material for the implementation of the Master Plan. (High)

Indicator 4-3. A number of trainings for setting a new mitigation target and developing a master plan. (Consistent with Activity 4-3)

Indicator 4-3 was achieved, as 15 sessions of the training were conducted in the previous implementation period. (High)

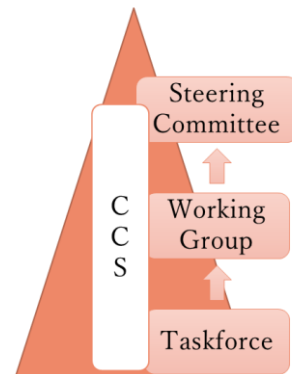
3-3-5 Overarching: Dissemination of the Project Results to Wide Range of Audiences

The JICA Project also has organized and actively participated in several global and domestic conferences and seminars in order to disseminate the lessons and achievements of the JICA Project and collaborate with other important actors in the climate change domain. The list of conferences and seminars is listed in Annex I.

3-4 Achievement of the Project Goal

Project Purpose is “The implementation of Bangkok Master Plan on Climate Change 2013-2023 (Master Plan) is promoted.” Three indicators are set for the Project Purpose. Out of three indicators, three indicators are considered as achieved.

Organize biannual monitoring meeting at each level



Indicator 1. The endorsement mechanism for the inter-department projects for the climate change is established in BMA by the end of the project term.

Indicator 1. is considered as achieved: Taskforce, Working Group, and Steering Committee mechanism is established by the governor’s appointment letter for the implementation and evaluation of the Master Plan. CCS is functioning as a secretariat for the implementation and monitoring and evaluation of the Master Plan.

Especially, Taskforce was organized for every key sector such as Energy, Transport, Waste and Wastewater, Green Urban, and Adaptation; and each Taskforce involved relevant departments. Following is the number of organizations involved in Taskforce. More organizations are involved towards the end of the project by enhancing knowledge. Roles and responsibilities of Taskforce, Working Group, and Steering Committee for the implementation and monitoring evaluation of the Master Plan are clearly defined in the governor’s appointment letter. It is foreseen that this mechanism will slightly be modified after this project is completed, to have only Taskforce and Steering Committee.

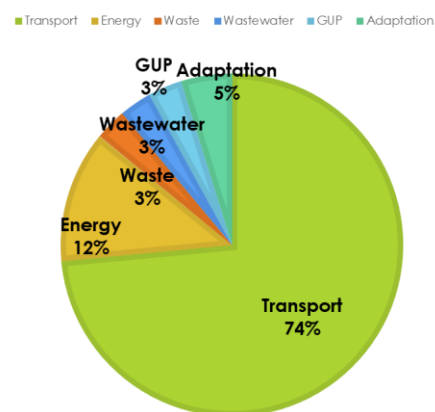
However, inter-department mechanisms will continue for any necessary endorsement for the implementation and evaluation of the Master Plan.

Indicator 2. Resources by respective departments become available for implementation and evaluation of the Master Plan.

Indicator 2. is considered as achieved: Through the monitoring sheet developed by this project, each department can track the progress of project implementation as well as the amount of budget spent for the project implementation. The total recorded budget of 100,000 mBaht was allocated (2013-2022) to the priority projects and the following is the % of the allocation by each sector.

Task force name	No. of TF member in 2018	No. of TF member in 2022
Energy	6	9
Transport	8	7
W&WW	8	8
GU	8	9
Adaptation	8	17
Total No.	38	50

BUDGET EXPENDITURE 2013-2022 BY SECTOR



The task force members are mandated to update the monitoring sheet for monitoring activity progress as well as

the amount spent for the priority activities. The number the task force member has increased from 38 in 2018 to 50 by the end of the project.

In this way, both resources as manpower as well as a budget, are available for the implementation and evaluation of the Master Plan.

Indicator 3. Intra/inter-organizational cooperation and implementation structure is strengthened to implement and evaluate the Master Plan.

Task force name	No. of organizations in 2018	No. of organizations in 2022
Energy	3	5
Transport	4	5
W and WW	5	6
Green urban	4	4
Adaptation	5	10
Total No.	21	30

Indicator 3. is considered as achieved: For Intra-organization, at the beginning of this project, 21 organization was a member of the Taskforce, and it has increased to 30 at the end of this project. In this way, the inter-organizational structure has been

enhanced.

For inter-organization, organizations from royal authorities are involved as a Steering Committee members of the Master Plan of the BMA, and the BMA is a technical sub-committee member of the National Committee on the Climate Change. Furthermore, the role of the BMA is stated in the NDCs (Nationally Determined Contributions) Action plan. This was the recommendation made by the first Comprehensive Review Report, and the action was taken by this project. In this way the National system and BMA system for climate change actions have more interconnected.

3-5 History of PDM Modification

JICA and BMA agreed that the PDM Version 0 attached to the Record of Discussions on the Project, signed on 30 March 2017, was amended on 30 September 2020, after the agreement among the stakeholders at JCC4, organized on 27 March 2019. Amendment and update of PDM was necessary for three main reasons:

- 1) Add Overall Indicator 3 “A new master plan on climate change, including a 2030 target is developed and implemented under the ownership of BMA.” corresponds to the addition of Output 4. As the Overall Goal is a future direction/goal to which the Project’s outcomes also contribute, a new master plan to achieve the new target for 2030 (Output 4) is what is expected and BMA executives have recognized its importance.
- 2) Amend the Indicator for project purpose, since The Master Plan (2013-2023) doesn’t focus on implementation of “inter-departmental projects” and mobilization of “inter-departmental resources”. The amendment is made to reflect the actual and latest situation for the Project to conduct project activities at the proper level.
- 3) Amend some parts, to reflect reality

To make adjustments for the above reasons, the following items were amended and added:

- 1) Indicator for Overall Goal
- 2) Indicator for Project Purpose
- 3) Indicator for Output 1, 2, 3 and 4
- 4) Activities for Output 1, 2, 3 and 4
- 5) Addition of Output 4 and Indicator for Output4

Amended PDM Version 1.0 of 27 March 2019 is attached.

4. Results of Joint Review

4-1. Results of Review based on DAC Evaluation Criteria

4-1-1 Relevance [High]

Relevance of the Project is evaluated high due to its contribution and alignment to climate change related policies of the Government of Thailand and BMA. [High]

4-1-1-1 Relevant to the National Climate Change Policy [High]

Thailand has incorporated climate change into its national economic and social development plans since 2007. Also, as a party to the Paris Agreement, Thailand has pledged its Nationally Determined Contribution (NDC) with a mitigation target of 20-25 percent from the projected business as usual (BAU) level by 2030. The first Comprehensive review, conducted under this project, has identified “needs and gaps for institutional arrangement emanating from the international and national policy frameworks on climate change”. The BMA with the support of this project has enhanced the operation of its master plan to align with the UNFCCC and NDC, and has developed Bangkok Master Plan on Climate Change 2021-2030 to advance its effort in further aligning with Global and National Policy.

4-1-1-2 Relevance to the BMA development plan [High]

When the Bangkok Master Plan of Climate Change 2013-2023 was developed, it didn't have specific KPI in the Bangkok 20year Development plan (2013-2032). During the development of new Bangkok Master Plan of Climate Change 2021-2030, there was a third revision (2023-2027) of the Bangkok 20year Development plan. Taking this momentum, the project collaborated with CCS and SED to propose potential KPIs of Strategy 2.3 Climate Change Countermeasures and Strategy and 2.4 Energy Conservation/Refueling Countermeasures in the Development Plan. As a result, BMA's important plans (such as a five-year development plan as well as an annual action plan) included clear KPIs related to the new Master Plan of Climate Change. In this way, mainstreaming of the climate change policy into the development plan has conducted, and now relevance to the Bangkok development plan became clearer.

4-1-2 Coherence [High]

4-1-2-1 Coherence to another project [High]

From 2022, the Ministry of the Environment's city-to-city cooperation project has started between Yokohama City and Bangkok Metropolitan Administration (BMA), which was an important partner in this project. As a result of this project, a climate

change master plan aiming for 2030 targets and net zero emissions in 2050 has been completed, and it is necessary to move to implementation in the future. Capitalizing on the BMA's private partnership scheme, the city-to-city cooperation scheme will identify and develop specific projects for GHG reduction. In this way, the results of this project are utilized, and efforts toward GHG reduction are progressing. In the future, it is desirable to further layer and scale up the collaboration with the framework of the collaboration agreement between BMA and Yokohama City.

4-1-2-2 Coherence to international framework [High]

As the role of non-state actors becomes more important toward the implementation of the Paris Agreement which is the international framework of the UNFCCC, for setting GHG reduction targets, formulating and implementing policies, and implementing MRV at the city level. This project was an important initiative in line with this international framework. Active use of the Joint Crediting Mechanism (JCM) is effective for mitigation measures at the project level, and it is hoped that projects that will lead to GHG reductions will be achieved in collaboration with the private sector.

4-1-3 Effectiveness [Middle to High]

Effectiveness of the Project is expected to be high because almost all of activities under Outputs 1 to Output 4 are duly completed/achieved or good progress for competition until the end of the Project and these outputs are duly linked to achieving the Project Purpose, as stated in 3-4.

4-1-3-1 Contribution of Outputs to the Achievement of the Project Purpose [High]

The logical sequence between the deliverables produced in Output 1 to Output 4 while the Project Purpose is appropriate, and all of the deliverables under the outputs have significantly contributed to the achievement of the Project Purpose.

4-1-3-2 Causal relation [Middle to High]

Through cooperation with JICA, the CCS has developed its capacity as the secretariat of the climate change master plan, and CCS as an institution has strengthened. The CCS secure the framework of Task Force and Steering Committee as the driving force for the master plan implementation and monitoring, by the ensuring the governor appointment letter. The task force and the steering committee has a good structure of intra/inter-organization involving various departments within BMA and also some organizations from Royal authority.

This development has been recognized within the BMA, and led to the allocation of clear KPIs under the responsibility of CCA which is related to the master plan for the 20 year development plan of Bangkok. This is further lead to the annual action plan and the

allocation of the budget. In this way, this project has highly contributed to the achieving the project purpose “The implementation of Bangkok Master Plan on Climate Change is promoted”.

4-1-4 Efficiency [Middle to High]

Efficiency of the Project is evaluated high since the Project comprehends a variety of activities and outcomes at policy planning and implementation levels, and the Project has responded flexibly to the climate change policy trends of the Government of Thailand, BMA and the changes of international policies and rule such as the adoption of Paris Agreement under close communication between Thai side and JICA.

4-1-4-1 Achievement level of the Outputs [Middle to High]

As stated in the 3-3 Achievement of Outputs and 3-4 Achievement of the Project Goal, it is considered that most of the output indicators will be fulfilled by the end of the Project.

4-1-4-2 Inputs [Middle]

As stated in the 3-1 Inputs by Japan side and 3-2 Inputs by Thai side, in general, Inputs from both JICA and Thailand side have been appropriated in terms of quantity, quality and timing at the most levels. This project was implemented with more than the planned budget, due to the modification of PDM, adding the Output 4. This project also implemented within the planned duration. All inputs allocated to the Project have been fully utilized for implementation of the Project as timely manner.

In addition, this project effectively utilized local consultants and resource persons, enhanced by the Japanese expert team, has facilitated flexible responses to the needs of C/Ps in a cost-effective manner.

4-1-5 Impacts [Middle-High]

As for impact of the Project, it is expected that the Project is on the right track to achieve the overall goal, in facilitating the transition to a low carbon society. Positive impacts are expected, especially regarding policy development and implementation. Synergies were observed among outputs.

4-1-5-1 Impact on the policy [Middle]

Through intensive cooperation and discussion with CCA, SED and local experts, the master plan has been integrated into the third revision of the Bangkok 20-year Development Plan has been developed from December 2020 to September 2021, including the other umbrella policies, such as Bangkok 5-year development plan (Phase 3: 2023-2027) and BMA action plan for 2023. All those policies have implications for

BMA budget. In this way, this project made an impact on the important policy of BMA which has an implication the budget allocation of BMA.

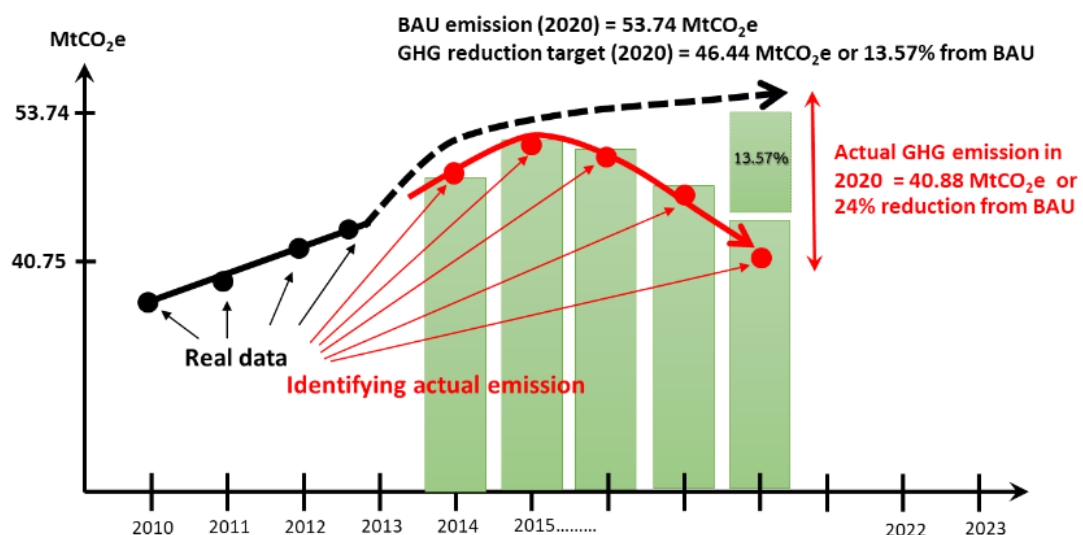
4-1-5-2 Impact on organization structure [High]

Through this project, the BMA established the Sub-division for Climate Change Strategies (CCS) in 2017, which plays a critical role of coordinating different BMA departments and relevant Royal Authorities, through established bodies of the 5 Task Forces (TF), the Working Group (WG) and the Steering Committee (SC) and Joint Coordinating Committee (JCC). The number of the officials increased from 3 to 5 in 2018. In 2021, 4 supporting staffs have joined the CCS team.

Regarding the position of CCS, it is Sub-division for Climate Change Strategy, Air Quality, and Noise Management Division. The project has been discussing with BMA that the position of CCS needs to be higher for effectively coordinating and implementing the master plan. The position of the CCS is still remain as a sub-division, however, the local consultant, whom the JICA Project assigned in advance to the gap analysis survey, proposed the Institutional level of CCS to upgrade as a department under the Strategic Evaluation Department or Vice-Minister or Governor, are proposed and it is currently being discussed within BMA.

4-1-5-3 Impact on mitigation and adaptation [High]

For the mitigation, the second comprehensive review (CR2) developed under this project identified, in 2020 actual emission of GHG is 40.93 MtCO₂e, in comparison with the BAU scenario, BMA has reduced GHG emission by 24% which is higher than the target of 13.57%.

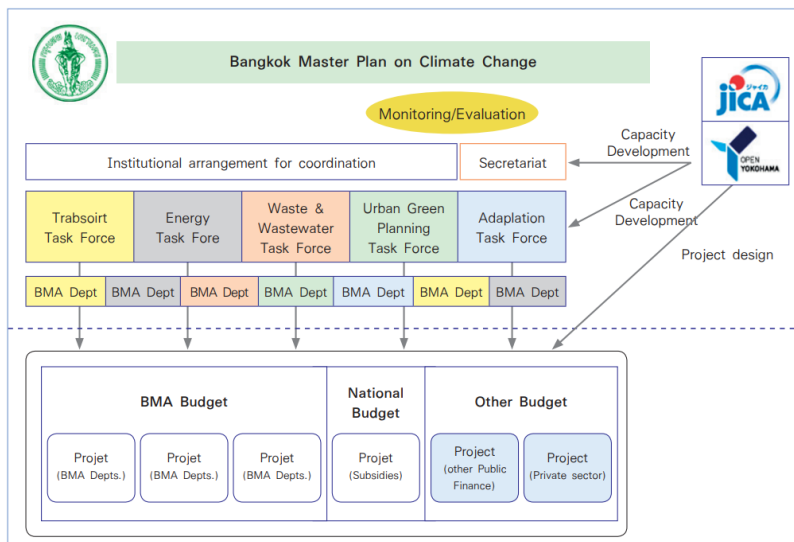


For the adaptation, CR2 identified Bangkok has developed infrastructure and used various measures to increase the management capacity to better prepare against the effect of climate change according to the master plan. BMA has found to have

completed 8 flood projects. It was found that the implementation of the project helps reduce flood risk areas, minimize flooding problems, and shorten the duration of drainage during heavy rain.

Both mitigation and adaptation, positive effects have already been observed.

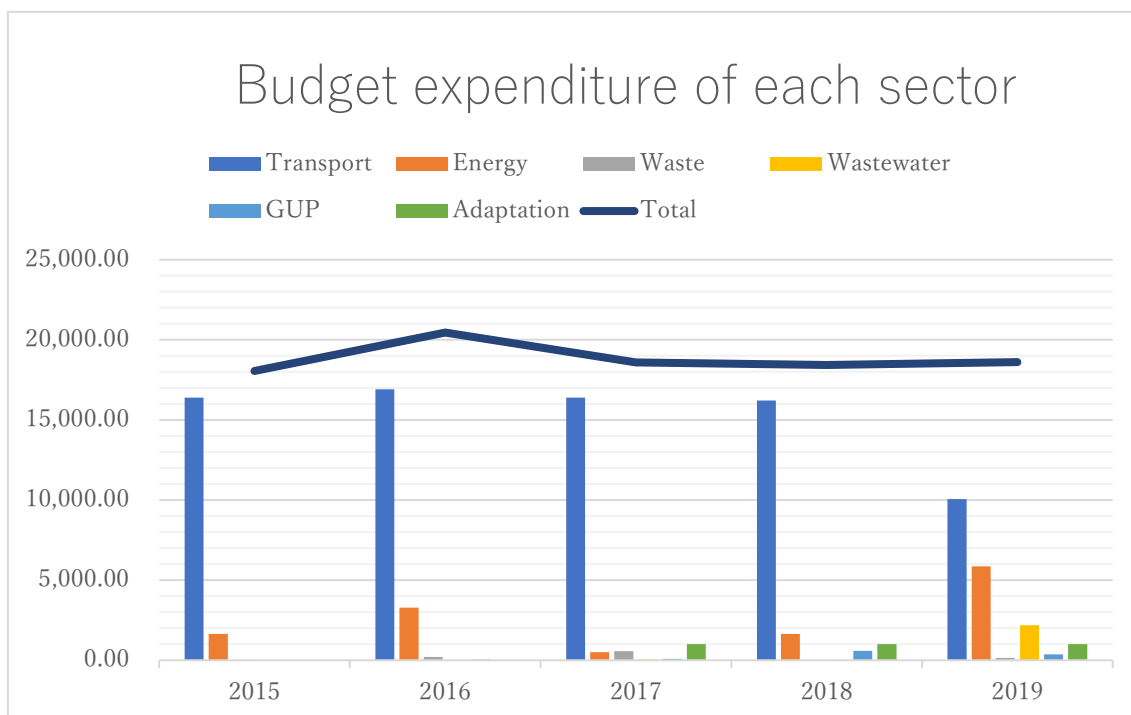
4-1-5-4 Impact on counterpart budget allocation [Middle]



There had been no systematic approach to consider raising projects' priorities at the budget request or to actively enhance the mitigation and adaptation effects at the stage of designing projects. To tackle this challenge, the annual and budget cycle was

clarified, and the alignment of the schedule of activities under the Master Plan was considered by the DOE, supported by the JICA Project. The figure shows the linkage of the TF activities for selecting priority projects and integrating their proposals into BMA departments' planning and budget request process.

As shown in the 3-4 Achievement of the Project Goal, Output 2, The total recorded budget of 100,000mBaht was allocated (2013-2022) to the priority projects. The following graph show the budget expenditure of each sector from 2015 to 2019, some data is missing, however, it is observed great impact on the budget allocation on the priority activities. (Note: The data of 2020, 2021, and 2022 is incomplete due to the shift of the budget to COVID-19 related activity from the priority projects)



4-1-6 Sustainability [Middle to High]

4-1-6-1 Policy aspect [Middle]

The master plan has been integrated into the third revision of the Bangkok 20-year Development Plan, including the other umbrella policies, such as Bangkok 5-year development plan (Phase 3: 2023-2027) and BMA action plan for 2023. These plans will be monitored through KPI, within Bangkok 5-year development plan (Phase 3: 2023-2027) one important indicator is “2.3.1 Implementation of the Bangkok Master Plan on Climate Change” it will be monitored through the success rate of the priority activities. Thus, for the policy aspect, sustainability is ensured.

4-1-6-2 Organization structure aspect [Middle]

After completion of the project, it is foreseen that Taskforce and Steering Committee will continue by the newly issued Governor’s appointment letter for the implementation and monitoring evaluation of the Master Plan. This means inter-department and intra-organization mechanisms will continue for any necessary endorsement for the implementation and evaluation of the Master Plan.

4-1-6-3 Organization capacity and knowledge aspect [High]

Through day-to-day communication with Japanese experts, many trainings and various joint surveys, CCS and taskforce members have significantly improved their capacity and knowledge on climate change policies. Furthermore, through this project, the group of local experts and local consultants has established good communication channels with CCS and Taskforce members. This communication channel is functioning as advisory

board and support and ensure the implementation and monitoring of the master plan in the future.

4-1-6-4 Organization budget aspect [Middle]

The master plan has been integrated into the third revision of the Bangkok 20-year Development Plan, including Bangkok 5-year development plan (Phase 3: 2023-2027) and BMA action plan for 2023. All those policies have implications for BMA budget, therefore after the completion of this project most likely that the budget will be allocated to the priority projects for implementation, and the success rate of the priority project needs to be monitored under the development plan.

4-2. Key Factors Affecting Implementation and Outcomes

The following are key factors to affect on implementation and outcomes to the Project.

Hindrance factor

- Due to the COVID-19 pandemic, the situation of the BMA budget allocation has been changed in a way that the Department of Budget instructed all the departments to return some of their budgets for diversion to the prioritized response measures to COVID-19 related matters. This has made it difficult for the BMA to secure budget to procure local consultants to support the development of the new master plan. The BMA and JICA coordinated that the budget deficit will be covered by JICA, while the BMA continues to take the major responsibility to develop the new master plan, and the JICA experts provided support such as quality control, etc.

Promoting factor

- A new governor of Bangkok Mr. Chadchart came in to the position June 2022, and one of his manifests is climate change issues and net Zero Carbon.
- Relation with the city of Yokohama is an important promoting factor, learning what and how another city is doing.
- Relation with the private sector through the Earth Hour cooperation, is an important step to accelerate climate action in Bangkok
- Ratification of Paris agreement by the government of Thailand and Bangkok as the national capital city requires particular effort in enhancing its operations to be in line with the United Nations Framework Convention on Climate Change. The Bangkok Master Plan on Climate Change 2021-2030 has been updated from the Bangkok Master Plan on Climate Change 2013-2023 in response to the Paris Agreement, where not only national government but also non-state actors, such as cities were strongly encouraged to participate in and strengthen climate action.

4-3. Evaluation on the results of the Project Risk Management

Following are action taken by JICA for risk management.

- Due to the outbreak of COVID-19, in March 2020 JICA HQ decided the temporary withdrawal of the JICA Long term Expert over 60 in the global partner states.

Actions undertaken by Gov. of Thailand are as below.

- According to the raising needs of human resources identified during the previous Project, BMA established the CCS in 2017 and increased the number of officials from 3 to 5 in 2018.

4-4. Lessons Learnt

Through project implementation, several challenges were encountered and addressed. Accumulated lessons learnt from the implementation are as below.

- Ratification of Paris agreement by the government of Thailand
- This project tried to synchronize and The Paris Agreement which is an international framework, the NDC which is a high national policy, and the new master plan of the Bangkok Metropolitan Government, to advance the efforts. This experience replicated for working on other projects. Bangkok's unique way of emphasizing important aspects and strengthening national and international efforts from city government.
- Through the project, we strengthened the role that the city government, in coordinating and stimulating the efforts of stakeholders, especially the efforts of private companies and citizens.
- It is important to have a mechanism to involve the younger generation, and it will be the foundation of climate change initiatives. The experience from this project can be used for other projects.
- This project provided an opportunity to think about what the city government should do by referring to the efforts of Yokohama City and other cities, through cooperating with Yokohama City, and participating in various meetings such as C40, COP, and other international conferences. This process is important to recognize its standpoint.
- The project developed a GHG inventory (a mechanism for easily grasping GHG emissions and energy consumption from business operations from the BMA). This system can be used by other local governments.

5. Additionality of the Project

5-1 Survey on impact assessment of COVID-19 in Bangkok and Proposals on Sustainable Recovery

The project delivered the additional value, which involves innovative nature for capacity strengthening. During the global spread of COVID-19 pandemic, tremendous economic and social impacts were observed. Since such impacts were deemed to be linked directly and indirectly with efforts to address climate change, the Project added actions to take a Survey on impact assessment of COVID-19 in Bangkok and recommendation for a sustainable recovery plan through climate action. This survey has shown quantitative and qualitative evaluation of GHG emissions and emissions reduction measures, in Bangkok, and active roles to be taken by the BMA toward green and sustainable recovery of cities. In particular, the roles to be taken by Bangkok in transport and energy are evident. While similar surveys were conducted in cities in Europe and North America, evaluation on Southeast Asian cities such as Bangkok was unique. The result of the survey became an important input to the later development of the Bangkok Master Plan on Climate Change 2021-2030.

5-2 Policy Dialogue with the City of Yokohama

The project provided extra venue for BMA to engage with the City of Yokohama, as a partner city, which facilitated mutual sharing information on climate action. In particular, at the time of the study visits to Japan (Training), the programme was designed to hold policy dialogues by high-level officials. Since these were coincided with the ongoing global efforts to raise climate ambition, e.g. through the Glasgow Climate Pact agreed at COP26, such an extra venue delivered a positive impact on the BMA's high level awareness and decision making towards strengthening climate action towards 2050.

6. For the Achievement of Overall Goals after the Project Completion

6-1. Prospects to achieve Overall Goal

Project Overall Goal is "Transition of BMA toward low carbon and climate change resilient city is fostered." Three indicators are set for the Overall Goals. Out of three indicators, two indicators are considered as achieved. One indicator (indicator 1) are in good progress (possibly to be achieved in the near future).

Indicator 1. Sufficient budget and staff are allocated by each responsible department in BMA to implement the Master Plan.

Indicator 1. is considered as partly achieved:

Regarding staff allocation for the climate change master plan, as stated in 4-1-4-2 Impact on Organizational Structure, CCS has been established, and the member has increased. Regarding budget allocation as stated in 4-1-4-4 Impact on counterpart budget allocation, the master plan has been integrated in BMA's budget cycle, and it is observed that a substantial budget has been allocated, however, due to COVID-19 pandemic, the budget for some planned activities was shifted to COVID measures. Currently, the new governor has strong leadership to achieve net Zero carbon for BMA. It is foreseen more budget allocation on the master plan and also various initiatives to involve private investment in climate actions.

Indicator 2. Positive effects on adaptation and mitigation are recognized by a review of the Master Plan in 2023.

Indicator 2. is considered as achieved:

As stated 4-1-4-3 Impact on mitigation and adaptation, both mitigation and adaptation, the positive effects have already been observed.

For the mitigation, the second comprehensive review (CR2) developed under this project identified, in 2020 actual emission of GHG is 40.93 MtCO₂e, in comparison with the BAU scenario, BMA has reduced GHG emission by 24% which is higher than the target of 13.57%.

For the adaptation, CR2 identified Bangkok has developed infrastructure and used various measures to increase the management capacity to better prepare against the effect of climate change according to the master plan. BMA has found to have completed 8 flood projects. It was found that the implementation of the project helps reduce flood risk areas, minimize flooding problems, and shorten the duration of drainage during heavy rain.

Indicator 3. A new master plan on climate change, including a 2030 target, is developed and implemented under the ownership of BMA.

Indicator 3. is considered as achieved:

As a party to the Paris Agreement, Thailand has pledged its Nationally Determined Contribution (NDC) with a mitigation target of 20-25 percent from the projected business as usual (BAU) level by 2030. BMA supported by this project has developed the Bangkok Master Plan on Climate Change 2021-2030 to advance its efforts in further aligning with global and national directions. The new master plan has a target to reduce

GHG emissions by at least 19 percent from the projected BAU by 2030, and its pursuit of efforts to achieve net-zero emissions by 2050. The new master plan is developed and endorsed through the mechanism of Taskforce, Working Group and Steering Committee, this means the new master plan is fully owned by BMA. Furthermore, together with the new governor, this project conducted “The Bangkok Climate and Energy Action Conference for Carbon Neutrality”. It is observed strong ownership and leadership of the new Bangkok Master Plan on the Climate Change.

6-2. Plan of Operation and Implementation Structure of the Thai side to achieve Overall Goal

After completion of the project, it is foreseen that Taskforce and Steering Committee will continue by the newly issued Governor’s appointment letter for the implementation and monitoring evaluation of the Master Plan. This means inter-department and inter-organization mechanisms will continue for any necessary endorsement for the implementation and evaluation of the Master Plan.

6-3 Recommendations for the Thai side

- It is recommended that clarify the roles and responsibilities for the implementation and monitoring evaluation of the Master Plan, and its implemented work need to be closely monitored by the task force as well as the steering committee members.
- It is a great achievement for the BMA to create the CCS as a secretariat for the master plan implementation. To further accelerate its implementation, it is recommended the level of the institutional arrangement of the CCS to up-grade and integrated into the SED, to take more strategic and overarching decisions for the benefit of the BMA as a whole.
- It is recommended that the budget should be allocated continuously to CCS for conducting necessary surveys, reviews, and monitoring activities.

6-4 Monitoring plan from the end of the Project to Ex-post Evaluation

- If the structure of the task force and the steering committee presented at the 13th Steering Committee meeting is implemented as planned.
- If the stocktaking is continuously conducted by the task force members with the information of budget allocation.
- If the capacity can be re-produced within BMA, utilizing the tools and manuals developed by this project.
- If the budget is allocated for the next comprehensive review foreseen in 2027.
- If the communication and cooperation with private sector enhanced for scaling up

mitigation and adaptation actions.

7. Annexes

ANNEX 1: Inputs of the Project

1-1 List of Dispatched Experts

1-2 List of Short-term Experts

1-3 List of Counterparts

1-4 List of members of Task force (As of December 2022)

1-5 List of members of JCC

1-6 List of Attendants on Training in Japan

1-7 List of Workshops/seminars/trainings organized in Thailand

1-8 List of Surveys conducted in Thailand

1-9 List of JCC Organized

1-10 List of Overarching Activities and Participation to the international conferences and events

ANNEX 2: List of Deliverables/Products Produced by the Project

ANNEX 3: PDM

ANNEX 1: Inputs of the Project

1-1 List of Dispatched Experts

	Name	Field of expertise	Period
1	Kimihiro Kuromizu	Chief Technical Advisor	17 May 2018 – 9 December 2022
2	Noriko Sakurai	Climate Change/ Deputy Chief Technical Advisor	November 2017 – December 2019
3	Yui Matsuo	City-Level Climate Change Measures and Systems / Project Coordinator	1 February, 2020 – 31 January 2022
4	Kazuki Matsuura	City-Level Climate Change Measures and Systems / Project Coordinator	9 December 2021 – 9 December 2022

1-2 List of Short-term Experts

	Name	Field of expertise	Affiliation
1	Mr. Makoto Kato	Team Leader /Climate Change Measures 1	Overseas Environmental Cooperation Center, Japan
2	Dr. Kazuhito Yamada	Sub-Leader /Climate Change Measures2/ Energy1	Green Pacific Co., Ltd.
3	Dr. Mariko Fujimori	Climate Change Adaptation	Green Pacific Co., Ltd.
4	Dr. Yasuki Shirakawa	Transport	ALMEC Corporation
5	Mr. Masakazu Takahashi	Energy	Osumi Co., Ltd.
6	Mr. Toshizo Maeda	Waste and Wastewater	Institute for Global Environmental Strategies
7	Mr. Satoshi Iemoto	Green Urban Planning	Overseas Environmental Cooperation Center, Japan
8	Mr. Toshihiro Kiso	Coordination / Training Planning	Overseas Environmental Cooperation Center, Japan
9	Ms. Wakana Eriguchi	Coordination / Training Planning	Overseas Environmental Cooperation Center, Japan

1-3 List of Counterparts

	Name	Title	Organization
-	Ms. Wullaya Wattanarat	(Former) Director General, Department of Environment	BMA
-	Mr. Chatree Watanakhajorn	(Former) Director General, Department of Environment	BMA
-	Mr. Wirat Manassanitwong	(Former) Director General of Department of Environment	BMA

1	Mr. Prapas Luengsinapha	Director General of Department of Environment	BMA
2	Ms. Woranuch Suaykakaow	Deputy Director-General of Department of the Environment	BMA
-	Mrs. Termisiri Chongpoonphol	(Former) Director, Air Quality and Noise Management Division, Department of Environment	BMA
3	Act.Sub Lt. Wiruch Tanchanapradit	Director of Air Quality and Noise Management Division	BMA
4	Ms. Sermsook Noppun	Chief of Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, Department of Environment	BMA
5	Ms. Supawan Intoon	Environmentalist, Practitioner level, Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, Department of Environment	BMA
6	Mr. Narongsak Haewprakhon	Environmentalist, Practitioner level, Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, Department of Environment	BMA
7	Mr. Teerati Prateep	Environmentalist, Practitioner level, Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, Department of Environment	BMA
8	Ms. Wannipha Dokbua	Environmentalist, Practitioner level, Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, Department of Environment	BMA

1-4 List of members of Task force (As of December 2022)

	Name	Title / Organization	Role on the Project
1	Mr. Jakrapon Wannagul	Chief of The Rail System Project, Traffic and Transportation Department, BMA	Transport TF
2	Mr. Tharathon Kanjanakorn	Civil Engineer, Professional level, The Rail System Project Office, Traffic and Transportation Department, BMA	Transport TF
3	Mr. Thanawat Wattanajarus	Civil Engineer, Practitioner Level, Traffic and Transportation Department, BMA	Transport TF
4	Mr. Somprasong Tamanewun	Policy and Planning Analyst, Practitioner Level, City Planning, Traffic and Transportation Strategy Sub-division, Infrastructural Strategy Division,	Transport TF

		Strategy and Evaluation Department, BMA	
5	Ms. Kornsinee Sreethanakittawarodom	Computer Technical Officer Traffic and Transportation Department, BMA	Transport TF
6	Ms. Pinpinat Sinkha	Environmental Practitioner Level, Pollution Control 1 Subdivision, Air Quality and Noise Management division, Environment Department	Transport TF
7	Ms. Prapawadee Wachiraput	Statistician, Professional Level, Traffic and Transportation Department, BMA	Transport TF
8	Mr. Norathape Choopool	Chief of Building Engineering Group, Construction Design 1 Sub-division, Construction Design Office, Department of Public Works, BMA.	Energy TF
9	Dr. Manaswee Arayasiri	Sanitary Engineer, Professional level, Building Engineering Group, Construction Design 1 Sub-division, Construction Design Office, Department of Public Works, BMA	Energy TF
10	Mr. Bhurilarb Senpan	Civil Engineer, Professional level, Building Engineering Group, Construction Design 2 Sub-division, Construction Design Office, Department of Public Works, BMA	Energy TF
11	Mr. Seksun Puaginsang	Policy and Planning Analyst, Professional Level, Environmental Strategy Sub-Division, Public Health and Environmental Strategy Division, Strategy and Evaluation Department, BMA	Energy TF
12	Ms. Supawan Intoon	Environmental, Climate Change Strategy Subdivision, Air Quality and Noise Management Division, Department of Environment (DOE), BMA	Energy TF
13	Ms. Orapin Wannaraj	Electrical Engineer, Practitioner Level, On Nut Sewage Treatment Plant	Energy TF
14	Mr. Chaiyaporn Insuphan	Senior Technician, Bangkok Metropolitan Administration General Hospital	Energy TF
15	Mrs. Supatra Sarakthong	General Administration Officer, Professional Level, Secretary	Energy TF

		Department of Medical Service Department	
16	Ms. Pattareeya Suwannasri	Architect, Practitioner Level, Architecture Group, Construction Design 2 Sub-division, Construction Design Office, Department of Public Works, BMA	Energy TF
17	Mr. Pathan Banjongproo	Chief of Project and Sludge Management suboffice, WaterQuality Management Office.Drainage & Sewerage Department, BMA.	Waste and Wastewater TF
18	Ms. Wontana Wuttiyingyong	Chief of Research and Development, Solid Waste, Hazardous Waste and Nightsoil Management Division,	Waste and Wastewater TF
19	Mr. Kasame Thepnoo	Sanitation Technical Officer (Senior Professional Level), Chief of Data System and Tariff sub-office, Water Quality Management Office, Drainage & Sewerage Department, BMA	Waste and Wastewater TF
20	Ms. Nareerat Kongmeesaksirisuk,	Policy and Planning Analyst, Professional Level, Environmental Strategy Sub-Division, Public Health and Environmental Strategy Division, Strategy and Evaluation Department	Waste and Wastewater TF
21	Mr.Pakpoom Suakham	Mechanical Engineer, Professional Level, Solid Waste Disposal Division Department of Environment,BMA	Waste and Wastewater TF
22	Ms. Suchada Bosup	Sanitation Technical Officer, Technical Service Sub-division, Solid Waste and Sewage Management Office, Department of Environment, BMA,	Waste and Wastewater TF
23	MS.Wannipha Dokbua	Environmentalist, Climate Change Strategy Subdivision, Air Quality and Noise Management Division, Department of Environment (DOE), BMA	Waste and Wastewater TF
24	Ms.Nitaree Satrabhan	Environmentalist, Practitioner Level Policy and Planning Division, Department of Environment,BMA	Waste and Wastewater TF
25	Ms. Wankaew Homnan	Sanitation Technical Officer, Research and development subdivision office Department of Environment, BMA	Waste and Wastewater TF
26	Ms. Pajariya Mahakanjana	Director of Public Parks Division 1, Department of Environment. (Team Leader)	Green Urban Planning TF

27	SM2 Chaiyaporn Chomesri	Director of City Data Technological Center, Geographic information Office, Department of City Planning and Urban Development	Green Planning TF	Urban
28	Mr.Chumpon Lerkbangplud	Cartographer, Professional Level City Data Technological Center, Geographic information Office, Department of City Planning and Urban Development	Green Planning TF	Urban
29	Mr. Pirapat Tubbumrung	Policy and Planning Analyst, Practitioner Level, City Planning Traffic and Transportation Strategy Section, Infrastructural Strategy Division, Strategy and Evaluation Department, BMA	Green Planning TF	Urban
30	Ms. Khwanchanok Sakkosit	City Planner, Urban Development Planning Division, City Planning Department, BMA	Green Planning TF	Urban
31	Ms. Pitchaya Jaroentavornpoka	City planner, Department of City Planning and Urban Development	Green Planning TF	Urban
32	Ms. Walailuk Puriyakorn	Agricultural Research Officer Professional Level, Public Parks Office, Environment Department, Bangkok Metropolitan Administration	Green Planning TF	Urban
33	Mr. Narongsak Haewprakhon	Environmentalist, Climate Change Strategy Subdivision, Air Quality and Noise Management Division, Department of Environment (DOE), BMA	Green Planning TF	Urban
34	Ms. Chanida Rodsawat	Agriculture Technical Officer, Professional level, Public Parks Office, Department of Environment, BMA	Green Planning TF	Urban
35	Mr. Visnu Charoen	Director of Drainage System Engineer Development Division, Drainage & Sewerage Department, BMA	Adaptation Planning TF	
36	Mr.Boonyalit Nimnual	Chief of garden and tree, Public Park Division, BMA	Adaptation Planning TF	
37	Mr. Prakasit Phubanthat	Fire and Rescue Officer, Practitioner Level, Fire and Rescue Department, BMA	Adaptation Planning TF	
38	Mr. Nipon Srituang	Public -Work Engineer, Senior Professional level, Drainage & Sewerage Department, BMA	Adaptation Planning TF	

39	Miss. Pornpen Chamroonrat	Director of Strategy and Healthcare System Development Division, Medical Service System Development Office, Medical Service Department, BMA	Adaptation Planning TF
40	Mr.Pavaris Meebangsai	Statistician, professional level, Drainage & Sewerage Department, BMA	Adaptation Planning TF
41	Mr. Pavaris Sakpattanapong	Policy and Planning Analyst, Practitioner Level, Public Works, Drainage and Sewerage Strategy Sub-division, Infrastructural Strategy Division, Strategy and Evaluation Department, BMA	Adaptation Planning TF
42	Mr. Teerati Prateep	Environmentalism, Climate Change Strategy Subdivision, Air Quality and Noise Management Division, Department of Environment (DOE), BMA	Adaptation Planning TF
43	Miss Indhira Khuankhunsathid	Public Health Technical Officer Senior Professional Level, Chief of General Communicable Disease Subdivision, Communicable Disease Control Division, Health Department	Adaptation Planning TF
44	Mrs Wanida Wonglek	Public Health Technical Officer, Senior Professional Level Vector control Section Control Division	Adaptation Planning TF
45	Miss Jantharas Jantharasri	Agricultural Technical Officer, Professional Level, Occupational Promotion Office Social Department	Adaptation Planning TF
46	Miss Boontiwa Saravorn	Agricultural Technical Officer, Professional Level, Occupational Promotion Office Social Department	Adaptation Planning TF
47	Ms.Sukontha Srikaewloh	Chief of Plan Evaluation and Urban Planning Standard Sub-division, City Planning and Urban Development Department	Adaptation Planning TF
48	Mr. Pongpan Thanyajaroen	Tourism Development Officer (Practitioner Level), Tourism Planning Subdivision, Tourism Division, Office of Culture and Tourism, Culture, Sports and Tourism Department, BMA	Adaptation Planning TF

49	Ms. Samitapa Sathiracharoenkul	Tourism Development Officer (Practitioner Level), Tourism Promotion Subdivision, Tourism Division, Office of Culture and Tourism, Culture, Sports and Tourism Department, BMA	Adaptation Planning TF
50	Ms. Supaporn Kittiwarodom	Environmental officer (Professional level), Participation Promotion Sub-division, Policy and Planning Division, Department of Environment, BMA	Adaptation Planning TF
51	Mr. Teerapat Tangpraprutgul	Civil Engineer, Main Drainage System Development Division, Drainage & Sewerage Department, BMA	Adaptation Planning TF

1-5 List of members of JCC (As of December 2022)

	Name	Title / Organization	Role on the Project
1	Pol Lt Gen Sophon Phisutthiwong	Deputy Governor, BMA	JCC/SC co-chair
2	Mr. Takahiro Morita	Chief Representative, JICA Thailand Office	JCC/SC co-chair
3	Mr. Chatree Watanakhajorn	Deputy Permanent Secretary, BMA	JCC/SC vice-chair
4	Mr. Wirat Manassanitwong	Director General of Department of Environment, BMA	JCC/SC member
5	Dr. Phirun Saiyasitpanich	Director, Climate Change Management and Coordination Division, Office of Natural Resources and Environmental Policy and Planning (ONEP)	JCC/SC member (Representative of ONEP 1)
6	Mrs. Katunchalee Thammakul	Director, Policy and Strategy Division, ONEP	JCC/SC member (Representative of ONEP 2)
7	Dr. Kollawat Sakhakara	Environmentalist, Senior Professional level, Climate Change Management and Coordination Division, ONEP	JCC/SC member (Representative of ONEP 3)
8	Mr. Talerngsak Petchsuwan	Director, Air Quality and Noise Management Bureau, Pollution Control Department (PCD)	JCC/SC member (Representative of PCD 1)
9	Ms. Noochjariya Aransri	Environmentalist, Senior Professional level, Air Quality and Noise Management Bureau, PCD	JCC/SC member (Representative of PCD 2)

10	Mr. Ittipol Pawarmart	Environmental, Senior Professional level, Air Quality and Noise Management Bureau, PCD	JCC/SC member (Representative of PCD 3)
11	Mr. Ruangdet Panduang	Director, Energy Research Bureau, Department of Alternative Energy Development and Efficiency (DEDE)	JCC/SC member (Representative of DEDE 1)
12	Mrs. Sukamol Prakobchart	Scientist, Senior Professional level, DEDE	JCC/SC member (Representative of DEDE 2)
13	Ms. Pornpimol Varathorn	Director, Strategy and Plan Division, Department of Environmental Quality Promotion (DEQP)	JCC/SC member (Representative of DEQP 1)
14	Ms. Fairda Malem	Environmental, Senior Professional level, DEQP	JCC/SC member (Representative of DEQP 2)
15	Ms. Bajaree Saganwongse	Environmental, Professional level, DEQP	JCC/SC member (Representative of DEQP 3)
16	Ms. Chatraporn Kaewyont	Dissemination Technical Officer, Senior Professional level, Department of Disaster Prevention and Mitigation (DDPM)	JCC/SC member (Representative of DDPM 1)
17	Ms. Supreeva Phansungwom	Plan and Policy Analyst, Professional level, DDPM	JCC/SC member (Representative of DDPM 2)
18	Mrs. Prasertsuk Chamornmarn	Executive Director, Thailand Greenhouse Gas management Organization (TGO)	JCC/SC member (Representative of TGO 1)
19	Mr. Thawatchai Saengkhamasuk	Director, Strategy Office, TGO	JCC/SC member (Representative of TGO 2)
20	Mr. Saritpong Boriboonsook	Director, Bureau of Safety Planning, Office of Transport and Traffic Policy and Planning (OTP)	JCC/SC member (Representative of OTP 1)
21	Ms. Chutinthorn Mankhong	Chief, Sustainable Transport Promotion Division, Bureau of Safety Planning, OTP	JCC/SC member (Representative of OTP 2)
22	Ms. Wipada Unlamlert	Policy and Planning Analyst, Professional level, Bureau of Safety Planning, OTP	JCC/SC member (Representative of OTP 3)
23	Mr. Wattanawit Gajaseni	Director, Partnership for Development Bureau, Thailand International Cooperation Agency (TICA)	JCC/SC member (Representative of TICA 1)

24	Ms. Chidchanok Malayawong	Development Cooperation Officer, Senior Professional level, TICA	JCC/SC member (Representative of TICA 2)
25	(TBD)	Director General, department of Strategy and Evaluation (SED), BMA	JCC/SC member (Representative of SED/BMA 1)
26	Acting Sub, Lt. Boontum Huiprasert	Deputy Director General, SED, BMA	JCC/SC member (Representative of SED/BMA 2)
27	Ms. Pornapa Methaweewong	Director, Public Health and Environment Strategy Division, SED, BMA	JCC/SC member (Representative of SED/BMA 3)
28	Mr. Nat Srisukontanun	Director General, Department of Public Works (DPW), BMA	JCC/SC member (Representative of DPW/BMA 1)
29	Mr. Manaswee Arayasiri	Sanitary Engineer, Professional level, Construction Design Office, DPW, BMA	JCC/SC member (Representative of DPW/BMA 2)
30	(TBD)	Director General, Department of Traffic and Transportation (DTT), BMA	JCC/SC member (Representative of DTT/BMA 1)
31	Mr. Surart Jaroenchaisakul	Deputy Director General, DTT, BMA	JCC/SC member (Representative of DTT/BMA 2)
32	Mr. Thananchai Mekprasertwanich	Director, Policy and Planning Division, DTT, BMA	JCC/SC member (Representative of DTT/BMA 3)
33	(TBD)	Director General, Department of Drainage and Sewerage (DDS), BMA	JCC/SC member (Representative of DDS/BMA 1)
34	Mr. Somsak Meudomsuk	Director, Water Quality Management Office, DDS, BMA	JCC/SC member (Representative of DDS/BMA 2)
35	Mr. Jessada Chandraprabha	Director, Main Drainage System Development Division, DDS, BMA	JCC/SC member (Representative of DDS/BMA 3)
36	(TBD)	Director General, Department of City Planning, BMA	JCC/SC member (Representative of BMA's Department of City Planning 1)
37	Mrs. Chukhwan Nilsiri	Director, Urban Development Planning Division, Department of City Planning, BMA	JCC/SC member (Representative of BMA's Department of City Planning 2)

38	Mr. Kittikoon Viseshasumana	Chief, Central Area Development Planning Section, Department of City Planning, BMA	JCC/SC member (Representative of BMA's Department of City Planning 3)
39	(TBD)	Director General, Department of Fire and Rescue, BMA	JCC/SC member (Representative of BMA's Department of Fire and Rescue 1)
40	Dr. Prayoon Krongyoth	Deputy Director General, Department of Fire and Rescue, BMA	JCC/SC member (Representative of BMA's Department of Fire and Rescue 2)
41	Pol.Lt.Col. Apichat Vilertpreshatraku I	Director, Technical and Planning Division, Department of Fire and Rescue, BMA	JCC/SC member (Representative of BMA's Department of Fire and Rescue 3)
42	Act.Sub Lt. Wiruch Tanchanapradit	Director, Air Quality and Noise Management Division, Department of Environment (DOE), BMA	JCC/SC member
43	Ms. Sermsook Noppun	Head, Sub-Division of Climate Change Strategy, Air Quality and Noise Management Division, DOE, BMA	JCC/SC member
44	Ms. Supawan Intoon	Environmentalist, Practitioner level, Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, DOE, BMA	JCC/SC member
45	Mr. Narongsak Haewprakhon	Environmentalist, Practitioner level, Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, DOE, BMA	JCC/SC member
46	Mr. Teerati Prateep	Environmentalist, Practitioner level, Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, DOE, BMA	JCC/SC member
47	Ms. Wannipha Dokbua	Environmentalist, Practitioner level, Sub-division of Climate Change Strategy, Air Quality and Noise Management Division, DOE, BMA	JCC/SC member
48	Mr. Kimihiro Kuromizu	Chief Technical Advisor, JICA Long-term Expert	JCC/SC member (Representative of

			JICA Long-term Experts)
49	Mr. Makoto Kato	Team Leader, JICA Short-term Expert Team	JCC/SC member (Representative of JICA Short-term Experts)

1-6 List of Attendants on Training in Japan

Name	Title	Organization
2018 (Duration: 08 May – 17 May)		
Mrs. Wullaya Wattanarat	Director General, Department of Environment	BMA
Mr. Nat Srisukontanun	Director General Public Works Department	BMA
Mr. Thanoochai Hoonniwat	Director General Traffic and Transportation Department	BMA
Ms. Sermsook Noppun	Head of Evaluation Section/Head of Climate Change Strategy Sub-division, Air Quality and Noise Management Division, Department of Environment	BMA
Mr. Chamaphan Masjorn	Secretary of Transport Task Force, Traffic and Transportation Department	BMA
Mr. Norathape Choopool	Team Leader of Energy Task Force, Construction Design Office, Public Works Department	BMA
Mr. Pathan Banjongproo	Team Leader of Solid Waste Management and Wastewater Task Force, Department of Drainage and Sewerage	BMA
Ms. Pajariya Mahakanjana	Team Leader of Green Urban Planning Task Force, Public Parks Office, Department of Environment	BMA
Mr. Visnu Charoen	Team Leader of Adaptation Task Force, Department of Drainage and Sewerage	BMA
Mr. Kittikoon Viseshasumana	Member of Green Urban Planning Task Force, City Planning Department	BMA
2019 (Duration: 23 July – 3 August)		
Mrs. Wiparat Chaiyanukij	Deputy Permanent Secretary	BMA
Mr. Chatree Watanakhajorn	Director General of Department of Environment	BMA
Mr. Seerawsankhan Pathan	Director General of Strategy and Evaluation Department	BMA
Mr. Phanurak Klannurak	Director General of Traffic and Transportation Department	BMA
Mrs. Termsiri Jongpoonphol	Director of Air quality and Noise Management Division, Department of Environment	BMA

Ms. Yanee Kaewprasit	Environmentalist, Professional level, Policy and Planning Division, Department of Environment	BMA
Ms. Prapawadee Wachiraput	Statistician, Professionals Level, Statistic and Research Section, Policy and Planning Division, Department of Traffic and Transportation	BMA
Ms. Pattareeya Suwannasri	Architect, Practitioner Level, Architecture Sub-division, Construction Design Office, Department of Public Works	BMA
Ms. Suchada Bosup	Sanitation Technical Officer, Technical Service Sub-division, Solid Waste and Sewage Management Office, Department of Environment	BMA
Ms. Chanida Rodsawat	Agriculture Technical Officer, Practitioner Level, Technical Section, Public Parks Office, Department of Environment	BMA
Mr. Teerapat Tangpraprutgul	Public Works Engineer, Practitioner Level, Drainage System Development Office, Department of Drainage and Sewerage	BMA
Ms. Wontana Wuttiyingyong	Chief of Technical Service Sub-division, Solid Waste and Sewage Management Office, Department of Environment	BMA
Mr. Chaiyaporn Chomsri	Chief of City Data Section, City Data Technological Center, Geographic information Office, Department of Urban Planning and Development	BMA
Ms. Labhatrada Saohasakul	Sanitation Technical Officer, Professional level, Air Quality and Noise Monitoring Subdivision, Air Quality and Noise Management Division, Department of Environment	BMA
2022 (Duration: 1 September 2022 – 16 September 2022)		
Mr. MANASSANITWONG Wirat	Director General, Department of Environment, Bangkok Metropolitan Administration	BMA
Ms. SUAYKAKAOW Woranuch	Deputy Director General, Department of Environment, Bangkok Metropolitan Administration	BMA
Ms. LAYTHONG Narawun	Secretary for the Department of Environment, Department of Environment / Office of the Secretary for the Department of Environment, Bangkok Metropolitan Administration	BMA
Mr. WANNAGUL Jakrapon	Civil Engineer Senior Professional Level, Traffic and Transportation Department / Transportation System Office, Bangkok Metropolitan Administration	BMA
Mr. ARAYASIRI Manaswee	Sanitary Engineer Professional Level, Department of Public Works / Construction Design Office, Bangkok Metropolitan Administration	BMA

Mr. PUAGINSANG Seksun	Policy and Planning Analyst, Professional Level, Strategy and Evaluation Department / Public Health and Environmental Strategy Division, Bangkok Metropolitan Administration	BMA
Ms. INTOON Supawan	Environmentalist, Practitioner Level, Department of Environment / Air Quality and Noise Management Division, Bangkok Metropolitan Administration	BMA
Mr. THEPNOO Kasame	Chief of Database and Tariff Collection sub office, Department of Drainage and Sewerage / Water Quality Management Office, Bangkok Metropolitan Administration	BMA
Ms. HOMNAN Wankaew	Sanitation Technical Officer, Department of Environment / Solid Waste and Sewage Management Office, Bangkok Metropolitan Administration	BMA
Ms. SAKKOSIT Khwanchanok	City Planner Professional level, City Planning and Urban Development Department / Comprehensive Plan Division, Bangkok Metropolitan Administration	BMA
Ms. PHURIYAKORN Walailuk	Agricultural Research Officer, Professional level, Department of Environment / Public Parks Office, Bangkok Metropolitan Administration	BMA
Mr. PHUBANTHAT Prakasit	Fire and Rescue Officer, Fire and Rescue Department / Disaster Prevention Strategy Office, Bangkok Metropolitan Administration	BMA
Ms. DOKBUA Wannipha	Environmentalist, Practitioner Level, Department of Environment / Air Quality and Noise Management Division, Bangkok Metropolitan Administration	BMA
Mr. HAEWPRAKHON Narongsak	Environmentalist, Practitioner Level, Department of Environment / Air Quality and Noise Management Division, Bangkok Metropolitan Administration	BMA
Ms. WONGTHONG Nutcha	Policy and Planning Analyst, Professional Level, Department of Environment / Policy and Planning Division, Bangkok Metropolitan Administration	BMA

1-7 List of Workshops/seminars/trainings organized in Thailand

The following number of participants attended each year

	FY2017-18	FY2019	FY2020	FY2021	FY2022	Total
Number	420	282	673	743	1260	3378

Date	location	Theme	Number of Participants	Ref.
January 2018 – March 2019 (FY2017 FY2018)				

1/23	Bangkok	The 5 th Steering Committee	45	
2/28	Bangkok	The 1 st Joint Task Force Meeting and the Kick-Off of the TF	55	
3/27	Bangkok	The 1 st Working Group and the 6 th Steering Committee	53	
6/7	Bangkok	The 2 nd Joint Task Force Meeting	56	
9/27	Bangkok	The 3 rd Joint Task Force Meeting	52	
10/10	Bangkok	- The 2 nd Working Group	46	
11/20	Bangkok	- The 7 th Steering Committee	58	
10/10	Bangkok	The 2 nd Working Group Meeting <ul style="list-style-type: none"> - Elaboration of GHG mitigation target in the sector and adaptation goal in 2030 - Preliminary prioritization of mitigation and adaptation projects, programmes and other measures - Ways to further engagement of the JICA Project for the development of the new climate change master plan - Progress of activities under Output 1, 2 and 3 - Schedule of the JICA Project in 2021 and 2022 	55	Including online participants
Total			420	

Date	location	Theme	Number of Participants	Ref.
April 2019 – March 2020 (FY2019)				
08/28	Bangkok	Meeting for TF members on the JCC5/SC9 decisions	45	
10/21	Bangkok	Training Module 1 Toward Developing a New Master Plan on Climate Change and Setting a Target <ul style="list-style-type: none"> - Understanding the 7 Steps toward elaborating mitigation plan/consideration framework for adaptation planning, with more technical details; - Understanding key climate change policies, including Nationally Determined Contributions (NDC) and National Adaptation Plan (NAP); and - Initiating activities regarding “policy review (Step 1) Setting up a Target setting Team Meeting and its members	24	
11/12	Bangkok	The 4 th Working Group	47	

1/17	Bangkok	<p>Training Module 2 Toward Developing a New Master Plan on Climate Change and Setting a Target</p> <p>[Adaptation]</p> <ul style="list-style-type: none"> Understanding the methodologies of risk assessment (hazards, exposure and vulnerability) and ways to prioritize adaptation actions, in alignment with the Thailand National Adaptation Plan (NAP) <p>[Mitigation]</p> <ul style="list-style-type: none"> Understanding how to quantify greenhouse gas (GHG) emissions by respective sectors <p>Understanding of how to make assumptions on GHG emissions in future (such as business as usual and emissions reduction scenarios)</p>	26	
1/24	Bangkok	- Progressing Meeting on Transportation	18	
2/5	Bangkok	- Training Seminar “Towards Sustainability & Environment Friendly Building – Design & Operation Good Practice”	25	
2/17	Bangkok	- Final Reporting meeting of the transport survey	16	
2/8	Bangkok	JCC5/SC9 Meeting	56	
3/4	Bangkok	- Training Seminar “Towards Sustainability & Environment Friendly Building – Design & Operation Good Practice”	25	
Total			282	

Date	location	Theme	Number of Participants	Ref.
April 2020 – March 2021 (FY2020)				
04/17,24	Bangkok	Debriefing Meeting for TF members on the JCC5/SC9 decisions	55	
05/20-21	Bangkok	Training Module 3 (Conducted by the Short-term Expert Team via online)	55	
07/23-24, 08/03	Bangkok	Training Module 4 (Conducted by the Short-term Expert Team via online)	55	
08/17, 20, 21, 25	Bangkok	Finalizing Assignment for Training Module 4 (Conducted by the Short-term Expert Team via online)	65	
09/09, 10, 17	Bangkok	Training Module 5 (Conducted by the Short-term Expert Team via online)	50	

09/2	Bangkok	<p>Joint Meeting for the 6th Task Force</p> <ul style="list-style-type: none"> - Elaboration of GHG mitigation target in the sector and adaptation goal in 2030 - Preliminary prioritization of mitigation and adaptation projects, programmes and other measures - Ways to further engagement of the JICA Project for the development of the new climate change master plan - Progress of activities under Output 1, 2 and 3 - Schedule of the JICA Project in 2021 and 2022 	49	Including online participants
10/26-27	Chiang Mai	<p>Study Visit of Chiang Mai University</p> <ul style="list-style-type: none"> - Visit to Office of Energy Research and Development Institute at Chiang Mai University, energy efficiency facility, renewable energy (solar, biomass, biogas) research projects - Learn the concept of the smart city 	16	
12/15	Bangkok	<p>The 5th Working Group Meeting</p> <ul style="list-style-type: none"> - Elaboration of GHG mitigation target in the sector and adaptation goal in 2030 - Preliminary prioritization of mitigation and adaptation projects, programmes and other measures - Ways to further engagement of the JICA Project for the development of the new climate change master plan - Progress of activities under Output 1, 2 and 3 - Schedule of the JICA Project in 2021 and 2022 	55	Including online participants
12/23	Bangkok	<p>Kick-off Workshop for BMA Energy Efficiency and Behavior Analysis Survey</p>	31	
01/20	Bangkok	<p>Four Party Open Symposium: Knowledge Sharing on Climate Readiness Efforts in Asia</p> <ul style="list-style-type: none"> - Knowledge sharing and discussion on “Challenge to Carbon Neutral City 2050” and “Importance of Partnership with Private Sector toward Zero Carbon” 	66	Including online participants
01/26	Bangkok	<p>Kick-off Workshop for Developing the new Bangkok Master Plan on Climate Change</p> <ul style="list-style-type: none"> - Scope of work, work plan, approach and methodology - Draft future vision for the Master Plan implementation in 2030, with a view to carbon neutrality in 2050 - Draft contents of the new Bangkok Master 	40	

		Plan on Climate Change - An engaging approach for task force teams and local consultants		
02/09	Bangkok	2 nd Workshop for BMA Energy Efficiency and Behavior Analysis Survey	45	Including online participants
02/22	Bangkok	Consultation Workshop for Developing the new Bangkok Master Plan on Climate Change (Visions and measures) - To jointly develop Bangkok's vision of climate change and integrated as a guideline for considering of target setting for GHG reduction and other elements in the new Master Plan. - To strengthen the participatory process and capacity building of the Task force groups and relevant departments.	40	
03/12	Bangkok	Consultation Workshop on Institutional Arrangement for the Master Plan Implementation System in Output 1 - Share the result of the study from the consultant team with the relevant BMA officials - Collect comments from the stakeholders to reflect in the draft final report.	51	Including online participants
Total			673	


Date	location	Theme	Number of Participants	Ref.
April 2020 – March 2021 (FY2021)				
4/27	Bangkok	The 6th Joint Coordination Committee/ The 10th Steering Committee	42	Including online participants
4/30	Bangkok	The 2nd Committee for the Contest of Energy Consumption Reduction Project in the BMA's Departments in Din Daeng	43	Including online participants
5/14	Bangkok	WWF Thai, WWF Japan, BMA, Yokohama city Joint Meeting	20	Including online participants
7/9	Bangkok	Training for CCS on Energy and GHG simple analysis with using calculation tools	8	
8/4	Bangkok	Meeting of Judging Contest Committee Members of Electricity Consumption Reduction Project in Bangkok City Hall, Din Daeng	41	Including online participants
8/11	Bangkok	Training for BMA's 14 designated buildings on Energy Management Summary Report Form and Energy Conservation Technology Introduction	25	Including online participants

8/26	Bangkok	Ceremony for Energy Saving Contest in Electricity Consumption	25	
9/9	Bangkok	Kick-off Meeting for the 2nd Comprehensive Review	59	Including online participants
9/28	Bangkok	The 7 th Joint Task Force Meeting	61	Including online participants
10/18	Bangkok	The Training of Measurement, Report and Verification (MRV) of Mitigation (Session 1)	50	Including online participants
10/29	Bangkok	The 6 th Working Group	34	Including online participants
11/24	Bangkok	The Training of M&E of Adaptation (Session 1)	30	Including online participants
12/12	Bangkok	The New Master Plan Public Hearing (BMA initiative, 232 participants)	-	
12/24	Bangkok	The 7th Joint Coordination Committee/ The 11th Steering Committee	73	Including online participants
1/24	Bangkok	The 2nd Training of MRV: Energy	22	Including online participants
1/25	Bangkok	The 2nd Training of MRV: Adaptation	28	Including online participants
1/25	Bangkok	The 2nd Training of MRV: Green Urban Planning	24	Including online participants
1/26	Bangkok	The 2nd Training of MRV: Waste and Wastewater Management	25	Including online participants
1/26	Bangkok	The 2nd Training of MRV: Transportation	23	Including online participants
2/23	Bangkok	The Monitoring the implementation of the 60+ Earth Hour 2021	54	Including online participants
3/10	Bangkok	Zero Carbon City	11	
3/29	Bangkok	Comprehensive review 2	45	Including online participants
Total			743	

Date	location	Theme	Number of Participants	Ref.
April 2022 – December 2022 (FY2022)				
04/05	Bangkok	Training MRV, M&E (Conducted by the Short-term Expert Team via online)	55	
04/08	Bangkok	Training MRV, M&E (Conducted by the Short-term Expert Team via online)	55	
04/17, 20, 21, 25	Bangkok	Finalizing Assignment for Training Module 4 (Conducted by the Short-term Expert Team via online)	65	
04/19	Bangkok	Joint Meeting for the 8 th Task Force <ul style="list-style-type: none"> - Updating the status of the New Master Plan Preliminary overall results of the 2nd Comprehensive Review - Selection of cases for project-level MRV/M&E, to be utilized as a part of the 2nd Comprehensive Review - Progress of activities under Output 1, 2 and 3 - Schedule of the JICA Project in 2022 	49	Including online participants
04/20, 22	Samut Prakan	Study Visit to Nissan Motor Thailand <ul style="list-style-type: none"> - Visit office of Nissan Electrification Experience - Learn the concept of the Blue Switch - Energy Share demonstration - LEAF Test drive 	60	
05/18	Bangkok	The 7 th Working Group Meeting <ul style="list-style-type: none"> - Updating the status of the New Master Plan Preliminary overall results of the 2nd Comprehensive Review - Selection of cases for project-level MRV/M&E, to be utilized as part of the 2nd Comprehensive Review - Progress of activities under Output 1, 2 and 3 - Schedule of the JICA Project in 2022 	55	Including online participants
06/14	Bangkok	Kick-off Meeting for BMA and Yokohama City-to-City	31	Including online participants
07/05	Bangkok	The 8th Joint Coordinating Committee (JCC)/the 12th Steering Committee <ul style="list-style-type: none"> - Updating the status of the New Master Plan Preliminary overall results of the 2nd Comprehensive Review - Selection of cases for project-level MRV/M&E, to be utilized as part of the 2nd Comprehensive Review - Progress of activities under Output 1, 2 and 3 - Schedule of the JICA Project in 2022 	49	Including online participants


7/26	Bangkok	Kick-off meeting for the Transportation Education Study	19	Including online participants
8/10	Bangkok	Kick-off meeting for the Ropeway Feasibility Study	40	Including online participants
8/25	Bangkok	“The Bangkok Climate and Energy Action Conference for Carbon Neutrality” <i>Opening Session by Bangkok governor</i> Session I: Big picture of Energy toward Carbon Neutrality in Thailand and Bangkok Session II: New landscape for climate and energy action in Bangkok	340	Including online participants
9/27	Bangkok	Kick-off committee meeting on Youth short film competition	29	Including online participants
9/30	Bangkok	Progress meeting of the Transportation Education Study	17	Including online participants
9/27	Bangkok	Kick-off committee meeting on Youth short film competition	29	Including online participants
10/12	Bangkok	Progress meeting on Ropeway Feasibility Study	53	Including online participants
10/22	Online	Online workshop for youth short film competition	53	Including online participants
10/26	Bangkok	Joint Meeting for the 9 th Task Force /The 8 th Working Group Meeting - Progress of activities under Output 1, 2 and 3 Schedule of the JICA Project in 2021 and 2022	83	Including online participants
11/8	Bangkok	Final meeting of Ropeway Feasibility Study	80	Including online participants
11/9	Bangkok	Final meeting of the Transportation Education Study	17	Including online participants
11/11	Bangkok	Committee meeting of Youth short film competition	23	Including online participants
11/22	Bangkok	Award Ceremony of Youth short film competition	81	
11/25	Bangkok	The 9th Joint Coordinating Committee (JCC)/the 13th Steering Committee - Elaboration of GHG mitigation target in the sector and adaptation goal in 2030 - Progress of activities under Output 1, 2 and 3 Schedule of the JICA Project	57	Including online participants
Total			1260	

1-8 List of Surveys conducted in Thailand

Reference number	FY2022-01
Assignment Name	Consultancy on technical inputs for“GHG Standard Templates Calculator for SMEs in Bangkok Area”
Duration	xxx 2022 - Nov 2022
Contractor name	BRIGHT MANAGEMENT CONSULTING CO., LTD.
Contract amount	230,050.00 THB
Outline of consignment	To accelerate Net Zero Emissions in Bangkok City, it is necessary to support small and medium-sized enterprises in Bangkok in terms of energy-saving measures, energy management, capacity development, greenhouse gas inventory creation, etc.
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	This project focused on small and medium-sized enterprises, which have high GHG emissions and are considered to have not taken measures.
Consignment contents	<p>(1) To develop the simple analysis standard templates for GHG emission inventory for SMEs in Bangkok Area The standard boundary and GHG protocol as scope 1: Direct emission, scope 2: Indirect emission and scope 3: Other Indirect emissions are also in consideration during the design development of the templates to be a systematic and data summary of GHG emissions.</p>  <p>(2) To understand the situation and enhance the awareness of climate change under normal SMEs’ business practices.</p> <p>(3) To increase the capability of SMEs in terms of energy management knowledge through the collaboration of CCS and BMA’s district office.</p>

Reference number		Assignment Name
	FY2022-01	Consultancy on technical inputs for “GHG Standard Templates Calculator for SMEs in Bangkok Area”
	FY2022-02	The Study of Developing Teaching Guideline and Learning Materials on Environmentally friendly Transportation for Elementary Students (Grades 4-6)
	FY2022-03	Feasible Study on Ropeway Planning in Bangkok Area
	FY2021-01	Consultancy on Private Sector Partnership Promotion for “Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023”
	FY2021-02	Consultancy on providing technical inputs for the Development of a Bangkok Master Plan on Climate Change 2021-2030
	FY2020-03	Consultancy on Private Sector Partnership Promotion for "Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023"
	FY2020-02 (JICA Thai Office)	Survey on Electricity Consumption Reduction Project in Bangkok City Hall Din Daeng, Din Daeng building
	FY2019-01	Study on Public Transportation Promotion Measures: Phase1
	FY2019-02 (JICA Thai Office)	Survey on Effective Energy Conservation Measures of Commercial Buildings in Bangkok
	FY2019-03	Survey of Open Burning around Bangkok using Satellite Images
	FY2018-01	ENERGY ANALYSIS SURVEY OF BMA-OWNED BUILDINGS

Reference number	FY2022-02
Assignment Name	The Study of Developing Teaching Guideline and Learning Materials on Environmentally friendly Transportation for Elementary Students (Grades 4-6)
Duration	07 July 2022 -10 Nov. 2022
Contractor name	Dr. Wachira Science Department, The Institute for the Promotion of Teaching Science and Technology (IPST)
Contract amount	255,625 THB
Outline of consignment	Bangkok will provide environmental knowledge transfer to the youth in order to promote public awareness raising, and point out to the relationship between climate change and environmentally friendly transport with focusing on upper elementary school students (Grades 4-6) (10-12 years old)
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	This project focuses on environmental education for children, who will lead the future.
Consignment contents	<p>(1) To review the context of climate change related to transportation, and education through policies, plans, and relevant documents of BMA to identify gap/need and/or problem on environmental study</p> <p>(2) To formulate the approach of promoting awareness on environmentally-friendly transportation for upper elementary school students (Grades 4-6)</p> <p>(3) To develop the teaching guideline and learning materials on promoting environmentally-friendly transportation for upper elementary school students (Grades 4-6)</p> <p>(4) To verify the quality of the content of the teaching guideline and learning materials on promoting environmentally-friendly transportation for upper elementary school students (Grades 4-6)</p>

Reference number	FY2022-03
Assignment Name	Feasible Study on Ropeway Planning in Bangkok Area
Duration	11 July 2022 -10 Nov. 2022
Contractor name	Dr. Atit Tippichai
Contract amount	255,000 THB
Outline of consignment	Consider the possibility of developing a ropeway as a traffic measure in Bangkok, which is divided into east and west by the Chaoprai River
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	This project focuses on strengthening Bangkok's urban transport network and shifting away from car transport. Bangkok is divided into east and west by the Chao Phraya River, which flows through the center of the city. Although BTS and MRT railways are in operation on both banks, there is not enough traffic across the river. In order to shift from automobile traffic to public transportation centering on railways, transportation connecting railway networks is effective.
Consignment contents	<p>This development aims the following objectives.</p> <p>(1) Conducting survey and summarize introduction cases in other cities and consider the possibility of introducing ropeways.</p> <p>(2) Conducting survey on related laws and necessary procedures and considering the possibility of introducing a ropeway.</p> <p>(3) Conducting survey on 3 Assuming routes, consider the feasibility of developing a ropeway, including the approximate project cost.</p> <div style="text-align: center;"> <p>(3) MRT Phahon Yothin – Mo Chit Bus Terminal – Bang Sue Grand Station</p>  <p>2.70 km with about 5 Stations</p> </div>

Reference number	FY2021-01
Assignment Name	Consultancy on Private Sector Partnership Promotion for "Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023"
Duration	18 Nov 2021 - 28 Feb 2022
Contractor name	BRIGHT MANAGEMENT CONSULTING CO., LTD.
Contract amount	283,282.50 THB
Outline of consignment	Provide consultancy on the monitor and evaluate the results of MOU in FY2021 activities between Earth Hour partner companies & BMA including expand the Network
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	<p>This project focuses on the status of efforts and strengthening of cooperation for companies cooperating with Earth Hour due to the extremely large amount of GHG emissions from the private sector.</p> <p>These companies are also major companies that represent Thailand and are actively promoting measures against climate change. In order to achieve carbon neutrality in Bangkok, continuous cooperative relationships with large-scale private companies are desired.</p>
Consignment contents	<p>➤ To monitor and evaluate the result of FY2021</p> <p>The following survey will be conducted on the 25 companies with which BMA has an MOU.</p> <ol style="list-style-type: none"> 1) Analyze and organize the responses to the questionnaire from companies that BMA already sent from PR Division of DOE to the companies on 15 October 2021. 2) Analyze available companies' websites and their official environmental related reports and briefly analyze and evaluate the activities. 3) Prepare a questionnaire for 25 network agencies based on the instruction given during the first meeting between the consultant and the officers of CCS/DOE/BMA. 4) Individual meetings by online or face-to-face will be held for each of 25 companies. Make necessary preparations and arrangements for the meeting. 5) Prepare a report on simple analysis of the project implemented by the 25 private companies in 4 mitigation sectors. <p>➤ To develop the platform for future collaboration with companies to be used from March 2022</p> <p>➤ To expand the network of BMA with Private sector Visit and discuss with at least two additional companies designated by BMA to expand the network with companies.</p>

Survey on promoting partnerships with private sector

No.	Companies	Climate Change data			Summary of the implemented activities in 2023
		Working group	Policies	Budget	
1	Prutisa Holding Public Co., Ltd	✓	✓	✓	All 4 sectors
2	PTT Public Co., Ltd	✓	✓	✓	Energy, Waste
3	Government Savings Bank	✓	✓	-	Transport, Energy
4	Bangkok Expressway and Metro	✓	✓	✓	Transport, Green urban, Waste
5	The Thai Bankers Association	✓	-	-	Transport, Energy
6	Metropolitan Electricity Authority	✓	-	✓	All 4 sectors
7	Bangkok Corporation Public Co., Ltd	✓	✓	✓	All 4 sectors + Smart meeting
8	Foundation for Environmental Education for Sustainable Development (Thailand)	-	-	-	Waste + environment knowledge
9	The Wacoal Public Co., Ltd	✓	✓	✓	All 4 sectors
10	Central Group	✓	-	✓	Energy, Green urban, Waste
11	The Emporio Place Condominium Juristic Person	✓	✓	✓	All 4 sectors + Water treatment
12	Canon Thailand Group	✓	✓	✓	All 4 sectors
13	Ei-Chai Distribution System Co., Ltd	✓	✓	✓	Energy, Green urban, Waste
14	Metropolitan Waterworks Authority	✓	-	✓	Energy, Green urban, Waste
15	Bangkok Mass Transit System Public Co., Ltd	✓	✓	✓	Transport, Energy, Waste
16	The Stock Exchange of Thailand	✓	✓	✓	All 4 sectors + Carbon credit offset
17	Suan Dusit University	✓	✓	✓	Transport, Energy, Waste
18	CP All Public Co., Ltd	✓	✓	✓	Energy, Green urban, Waste
19	True Cooperation Public Co., Ltd	✓	✓	✓	All 4 sectors
20	Ampol food Processing Co., Ltd	✓	-	✓	Energy, Green urban, Waste
21	Electricity Generating Authority of Thailand*	✓	✓	✓	Transport, Energy, Green urban + Air quality sensor
22	The Mall Group Co., Ltd	✓	✓	✓	All 4 sectors
23	Royal Thai Armed Forces Headquarters	✓	✓	✓	Transport, Energy, Waste
24	King Mongkut's University of Technology Thonburi	✓	✓	✓	Transport, Green urban, Waste
25	Provincial Electricity Authority	✓	✓	✓	All 4 sectors

ตัวอย่างกิจกรรม

13 บริษัท ซีพี ออลล์ จำกัด (มหาชน)

ด้านสิ่งแวดล้อม

โครงการนำสมัคร, โครงการรณรงค์ 1 ใน 4 ประชาสัมพันธ์, โครงการไม่ทิ้งเพียง และโครงการโลก ของ นพ.พรหมชนะนำทีมรณรงค์ทุกสาขา โดยการใช้ระบบเป็นผู้ตรวจค่าไม่ เพื่อลดขยะไม่ทิ้งโครงการต่าง ๆ



ด้านการจัดการของ

โครงการชุมชนสะอาด เก็บขยะตามโครงการโลก ผลิตภัณฑ์จากมีดักขยะในโรงเรียนที่ประกอบด้วย จ.พัทลุง มาใช้เป็นชุมชนงดพลาสติกใน 7-11 ทั้งหมด 13 สาขาในพื้นที่ จ.พัทลุง จ.กระบี่ จ.ภูเก็ต และ จ.สุราษฎร์ธานี โดยเน้นเป็นแหล่งท่องเที่ยว



ตัวอย่างกิจกรรม

19 บริษัท เอก-ชัย ดีสทริบิวชั่น ซิสเทม จำกัด (โลตัส)

ด้านพลังงาน

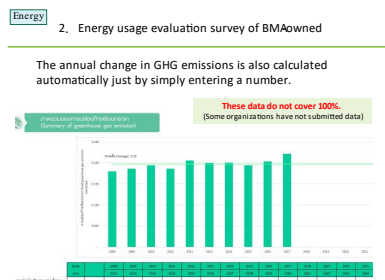
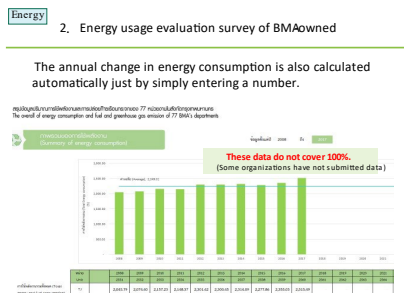
ติดตั้งโซลาร์เซลล์ (Solar PV Rooftop) บนหลังคาใบป่านาร์กัล 47 สาขา และศูนย์กระจายสินค้า 6 แห่ง มีกำลังการผลิตปี รวม 40 เมกะวัตต์

ด้านการจัดการของ

เครื่อง Reverse vending Machine เครื่องรับบริจาคพลาสติกสะอาด เพื่อนำไปรีไซเคิลเป็นอุปกรณ์ที่มีประโยชน์ อาทิ ถุงดำ โดยลูกค้าจะได้รับคะแนนอีก 25 คะแนนต่อขวด โครงการ จ.จล. แคม. ร. ไร่ เครื่องรับขวดพลาสติกเพื่อนำไปรีไซเคิล โดยมีลูกค้าทำการขอตรา ทุท. ทุท. 10 ขวด สามารถแลกเงินไปใช้ได้ 1 ฟอง



Reference number	FY2021-02
Assignment Name	Provide technical inputs for the development of a Bangkok Master Plan on Climate Change 2021-2030
Duration	12 May 2021 - 25 Aug 2021
Contractor name	BRIGHT MANAGEMENT CONSULTING CO., LTD.
Contract amount	287,562 THB
Outline of consignment	Provide the development of energy management report analysis templates and development of simple analysis software tool of energy data collected by CCS of BMA
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	<p>BMA owns buildings subject to the Energy Conservation Act. Thorough energy management of self-owned buildings, which consume a lot of energy, is a fundamental matter.</p> <p>CCS also possesses energy consumption information for 77 departments.</p> <p>Analytical tools are needed to make use of information.</p> <p>Understanding total GHG emissions is essential as a benchmark for progressing reductions.</p>
Consignment contents	<ol style="list-style-type: none"> 1. Analyze and evaluate energy consumption performance and energy savings targets of 7 BMA' designated buildings (3 Office, 3 Hospital, and 1 Academy). 2. Develop the standard analysis template for CCS. 3. Provide training to energy management to heads and staff in the departments that produce energy reports. 4. Develop and provide training to CCS staff to understand and be able to conduct analysis and prepare the report in the next following periods. Create a model using EXCEL or the like so that CCS itself can perform simple analysis.



Energy

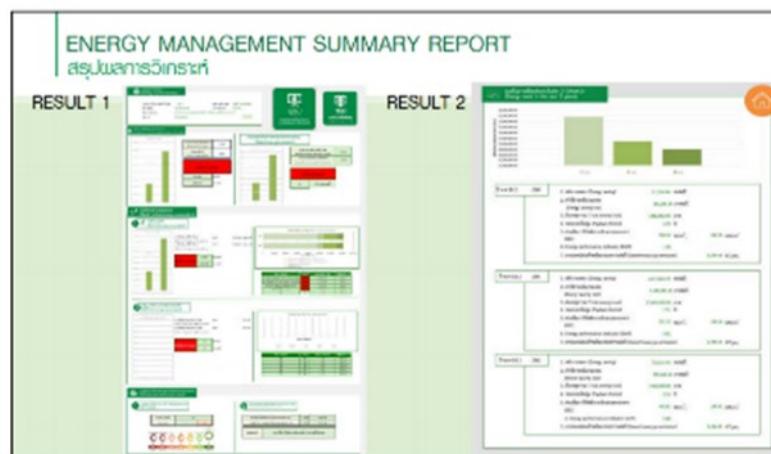
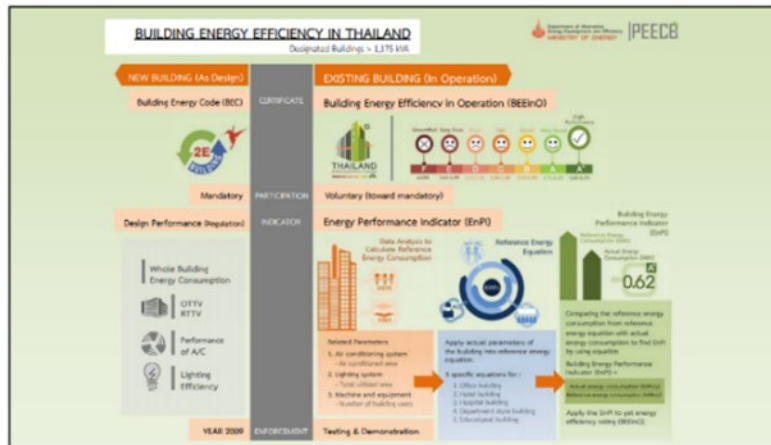
2. Energy usage evaluation survey of BMAowned

It becomes clear that the energy consumption of each ward office is quite different. Furthermore, countermeasures can be taken by analyzing and clarifying the reason.

หน่วยงาน Department		Energy consumption (kWh)	Diesel Fuel (Litres)	Gasohol (Litres)
		Total	Total	Total
สำนักงานพาณิชย์	พาณิชย์	140,424,353.61	4,168,044.00	115,791.00
สำนักงานพาณิชย์	พาณิชย์	41,735,800.00	891,900.00	7,896.00
กองกลาง (ศาลากลางกรุงเทพมหานคร)	กองกลาง (ศาลากลางกรุงเทพมหานคร)	5,543,385.00	6,166.00	7,621.00
สำนักงานเขตราชเทวี	ราชเทวี (เขต)	1,045,487.00	713,537.00	8,292.00
สำนักงานเขตบางบอน	บางบอน (เขต)	382,301.00	548,496.00	15,264.00
สำนักงานเขตสาทร	สาทร (เขต)	676,677.00	1,005,427.00	0.00
สำนักงานเขตบางกอกใหญ่	บางกอกใหญ่ (เขต)	783,638.03	321,094.50	8,734.00

2.73 times

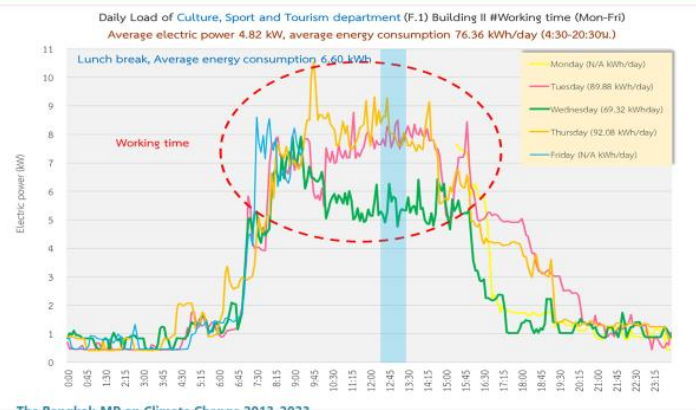
3.13 times



Reference number	FY2020-02
Assignment Name	Survey on Electricity Consumption Reduction Project in Bangkok City Hall Din Daeng, Din Daeng building
Duration	9th.January, 2020
Contractor name	BRIGHT MANAGEMENT CONSULTING CO., LTD.
Contract amount	672,388 THB (JICA Thai Office)
Outline of consignment	Provide and support the energy conservation activities, monitor the progress, analyze and evaluate energy conservation contest activities in Bangkok City Hall Dindaeng, Din Daeng
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	<p>2-2. Projects that contribute to BMA's policy goals</p> <p>Accurately tracking the power consumption and GHG emissions of BMA-owned buildings is a fundamental condition for achieving the target.</p> <p>It is also important for implementing energy-saving activities by educating staff and deepening understanding of JICA's climate change countermeasure projects.</p>
Consignment contents	<p>Project Timeline:</p> <p>Phase I: Contest design & implementation (Dec. 2020- Feb. 2021)</p> <ul style="list-style-type: none"> Survey and measurement energy consumption behavior Survey energy consumption behavior of staffs Launch the contest and propose details of application form Submit application by individual department Contest details presentation ECMs activities done by each department <p>Phase II: Monitoring & Verification of results (March-June 2021)</p> <ul style="list-style-type: none"> Interim Evaluation of the contest /field survey Final evaluation for the winner (Final round scoring) The event of awards ceremony (Organized by BMA) in June Satisfaction evaluation questionnaire in July 2021

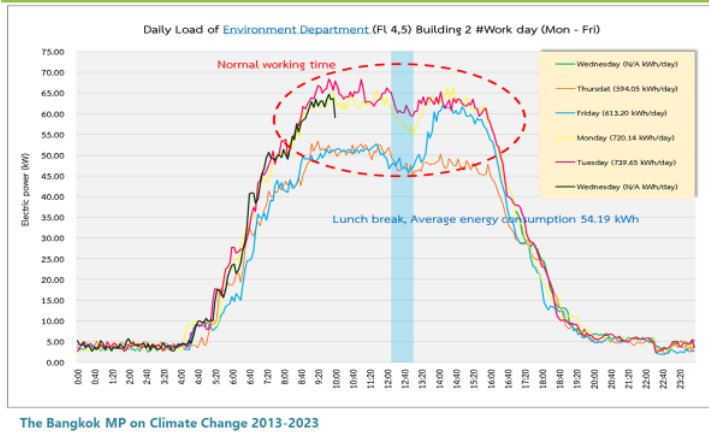
Energy

1. The Survey on Electricity Consumption Reduction Project in Bangkok City Hall Din Daeng, Din Daeng Building



Energy

1. The Survey on Electricity Consumption Reduction Project in Bangkok City Hall Din Daeng, Din Daeng Building



Energy

1. The Survey on Electricity Consumption Reduction Project in Bangkok City Hall Din Daeng Building

Phase II: Monitoring & Verification of results (March-Aug. 2021)

- Evaluation committee was held on August 4th.
- Award ceremony was held on August 26th for organizations that made excellent efforts.



The Bangkok MP on Climate Change 2013-2023

Reference number	FY2019-01
Assignment Name	Study on Public Transportation Promotion Measures: Phase1
Duration	08 Oct. 2019 -03 Feb. 2020
Contractor name	Dr. Jakapong Pongthanasawan
Contract amount	198,000 THB
Outline of consignment	In this study, we examined policies for promoting the use of public transportation and surveyed the conditions of advanced cities in the world.
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	GHG emissions from the transport sector are second only to the energy sector. Railway development is progressing in Bangkok, but it is necessary to promote the use of railways through a transportation policy that prioritizes public transportation. In order to reduce GHG emissions from the transport sector, it is necessary to research and understand other cities' transport policies.
Consignment contents	<p>1 Case study Compile transport-related policies and measures that have been applied in the cities and contributed to the promotion of public transportation.</p> <p>2 Factor analysis Extract effective factors from the collected case studies and analyze on how these factors can be applied to Bangkok and Thailand. The gaps and challenges and feasibility in Bangkok need to be clarified as well.</p> <p>3 Policy and measures proposal Propose policies, systems, and measures that enable BMA and OTP to promote the use of public transportation based on the outcomes of 3.1 and 3.2. Confirm the proposal's alignment with recommendations under M-MAP2 (Master Plan for Rail Mass Transit in Bangkok and Suburbs) conducted by OTP with JICA.</p> <p>4 Meeting facilitation Facilitate at least 3 meetings to share survey progress and select policies and measures to be implemented in collaboration between BMA, OTP, and JICA project. Make sure to invite all key stakeholders such as BMTA, MRTA, Rail Department, SRT, and so on, for the practical and fruitful discussion.</p> <p>5 Project design including pilot surveys for promoting the use of public transportation</p> <p>Case study review</p> <p>1.Singapore Singapore is one of good example in terms of policy and plan on public transport. Since 1995, the Government set up the Land Transport Authority (LTA) to lead improvements of Singapore's land transport system. Singapore aims to be a world-class transport system which provide commuters with highly efficient,</p>

	<p>comfortable and convenient rides in free-flowing traffic. Public transport is a key component of this system and will be the major mode of transport</p> <p>2. Tokyo, Japan The policy and measures to promote public transport in Japan are included in the national agenda to address the global issues such as global warming and sustainable transport, etc.</p> <p>3. Seoul, Korea Seoul has a long history of public transportation development. Seoul public transportation has improved remarkably since 2004 when the city reorganized its entire public transportation system. It is now widely regarded as one of the most enviable public transport services in the world in terms of convenience, safety, punctuality, and economic efficiency. An aggregate total of four billion citizens use the public transportation each year, making it the most widely used means of transportation in Korea.</p> <p>4. Copenhagen, Denmark Copenhagen is plagued by problems of traffic congestion and air pollution, which impact the quality of life for those working, living and commuting in the city. Public buses running on diesel contribute to the problem. Since 2017, Copenhagen's – and Scandinavia's – busiest bus route (20 mio. Passengers a year) has been served by carbon neutral busses running on biogas. In 2019, Copenhagen will get two bus routes with 41 busses running on electricity. Once, all of the city's diesel busses have been replaced with greener (zero emission) alternatives, it will save Copenhagen approx. 17,865 tonnes of CO2 and 38.8 tonnes of NOx a year Cleaner air in the city</p> <p>5. Curitiba, Brazil</p>
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Reference number	FY2019-02
Assignment Name	Survey on Effective Energy Conservation Measures of Commercial Buildings in Bangkok
Duration	Nov 2020 - March 2021
Contractor name	BRIGHT MANAGEMENT CONSULTING CO., LTD.
Contract amount	1,872,500.00 THB (JICA Thai office)
Outline of consignment	This study was conducted by JICA Thailand Office (JICA) on effective energy conservation measures for commercial buildings in Bangkok to reflect policy discussions for implementing BMA's Bangkok Master Plan on Climate Change.
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	In order to achieve reductions in the energy sector, which emits the largest amount of GHG emissions, it is necessary to investigate the energy usage situation in commercial facilities, etc., as well as the buildings owned by BMA, and conduct training.
Consignment contents	<p>The study of current condition of energy consumption and energy conservation potentials of existing buildings are obtained from 3 main activities. ① Walk-through survey of 10 targeted buildings (including 4 BMA's building). ② Interview survey of 12 BMA's building in office and hospital (all 16 BMA's designated building has been investigated). ③ Capacity building for BMA staffs has also been developed and conducted as 2x20 participants training seminars for the topic "Towards Sustainability & Environmental Friendly Building-Design & Operational Good Practice" which including overview of building sustainability and environmental friendly, energy-efficient technology and energy management good practice.</p> <p>In terms of policy implementation, the "Energy Efficiency GAP analysis" is addressed in energy efficiency barriers of "Energy-Efficient Technology" as well as "Energy Management GAP analysis" with recommendations provided for JICA/BMA to challenge all stakeholders in accelerating the implementation of GHG emissions reduction (Energy) in Bangkok area.</p>

Table 1 : Summary of Walk-through Survey Results on 10 Targeted Buildings


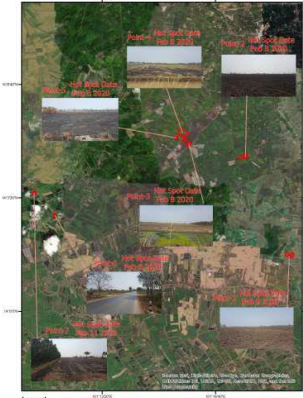
Building name	Type	Size	Existing EnPI	Energy Consumption (GJ/yr)	Total GHG emission (tCO ₂ e/yr)	Potential Reduction (%)
1. Huaikhwang District Office	Office Building (BMA)	GFA 8,833 m ²	1.06	3,569.59	577.18	20.24%
2. Klang Hospital	Hospital Building (BMA)	GFA 77,107 m ² (475 Beds)	1.00	34,308.69	5,097.47	6.16%
3. Laksi District Office	Office Building (BMA)	GFA 11,453 m ²	1.23	2,552.40	412.71	5.32%
4. Taksin Hospital	Hospital Building (BMA)	GFA 57,718 m ² (473 Beds)	0.92	32,740.07	4,821.81	1.48%
5. CP Tower 3 (Phayathai)	Office Building	GFA 23,701 m ²	0.83	10,947.60	1,770.17	15.60%
6. Seriruk Hospital	Hospital Building	GFA 24,000 m ² (164 Beds)	1.02	21,751.20	3,517.05	19.60%
7. Silom Complex	Office Building	GFA 70,722 m ²	1.21	69,969.60	11,313.70	10.85%
8. Mission Hospital	Hospital Building	GFA 17,175 m ² (150 Beds)	1.63	16,196.40	2,618.87	22.34%
9. Ploenchit Tower	Office Building	GFA 49,684 m ²	1.02	25,380.00	4,103.81	13.51%
10. SC Tower	Office Building	GFA 19,464 m ²	0.68	8,679.60	1,403.44	1.82%
Total				226,095.15	35,636.21	10.91%

Table 2 : Summary of Interview Survey results on 12 BMA Buildings

Building name	Type	Size	Existing EnPI	Energy Consumption (GJ/yr)	Total GHG emission (tCO ₂ e/yr)	Potential Reduction (%)
1. Wetchakornvorn Hospital	Hospital Building	GFA 22,971 m ² (107 Beds)	1.03	11,006.75	1,680.09	28.77%
2. Charoenkrung Pracharuk Hospital	Hospital Building	GFA 90,483 m ² (434 Beds)	1.02	38,241.86	5,369.00	15.06%
3. Chatuckak District Office	Office Building	GFA 10,250 m ²	1.30	2,948.40	476.74	13.38%
4. Luang Pho Taweesak Hospital	Hospital Building	GFA 11,039 m ² (120 Beds)	0.75	6,684.70	1,080.88	16.90%
5. BMA City Hall 1	Office Building	GFA 28,597 m ²	1.39	19,262.59	3,114.65	34.92%
6. Bangkholaem District Office	Office Building	GFA 11,354 m ²	0.95	2,347.20	379.53	21.65%
7. Suan Luang Rama IX	Office Building	GFA 1,520m ² (Office Building Only)	0.90	4,681.30	756.94	5.86%
8. Sirindhorn Hospital	Hospital Building	GFA 110,589 m ² (408 Beds)	0.80	21,042	3,402.37	12.49%
9. Thai-Japan Dindaeng Youth Center	Office Building	GFA 23,097 m ²	0.81	5,241.30	847.49	39.93%
10. Vajira Hospital	Hospital Building	GFA 96,597 m ² (875 Beds)	1.15	81,279.28	10,918.12	5.95%
11. Kuakarun Faculty of Nursing, Navamindradhiraj University	Office Building	GFA 48,478 m ²	0.70	5,614.64	907.86	14.27%
12. BMA City Hall 2	Office Building	GFA 49,690 m ²	1.28	25,469.99	4,118.36	13.90%
Total				223,820.01	33,052.03	14.23%

(See also Chapter 2 and Appendix II : Interview Survey Data)



Reference number	FY2019-03
Assignment Name	Survey of Open Burning around Bangkok using Satellite Images
Duration	23 Jan 2020 -21 March 2020
Contractor name	PASCO (Thailand) Co., Ltd.
Contract amount	231,120.00 THB
Outline of consignment	<p>The Haze problem, which is also of high political interest, is serious, and countermeasures are urgently needed.</p> <p>One of the main causes of Haze, open burning, is frequently carried out in areas close to the suburbs of Bangkok, but whether the main cause of the damage, there is not enough information at present.</p>
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	Although the direct relationship with climate change is small, the interest of the BMA is high, so we decided to conduct a survey.
Consignment contents	<ol style="list-style-type: none"> 1. Information gathering survey on open burning Interview several experts on field burning. 2. Identification of the most recent open-burning area. 3. Acquisition of satellite imagery 4. Satellite image analysis and field survey <p>This survey will confirm how the analysis of satellite images and the situation of field burning at the site are captured by satellite images by field inspection and establish a method for grasping the actual condition of field burning by satellite imaging media.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>Open Burning Survey</p> <p>Survey Date : Feb 18 2020 Hot Spot Date : Feb 8-12 2020</p>  </div> </div>

Reference number	FY2018-01
Assignment Name	ENERGY ANALYSIS SURVEY OF BMA-OWNED BUILDINGS
Duration	7 Dec. 2018 - 29 Mar. 2019
Contractor name	Wongkot Wongsapai, Dr. Assistant Professor, Head of Climate Change Engineering and Management in Energy Sector (CCEME) Laboratory, Energy Technology for Environment Research Center, Faculty of Engineering Chiang Mai University
Contract amount	288,000.00 THB
Outline of consignment	This survey aims to support BMA grasps the actual condition of energy use in the buildings owned by BMA as the first step. Then as the second step, it aims to support BMA to learn what is efficient use of energy, examine issues and practical countermeasures, consider the direction of evaluation, secure budget for energy efficiency projects, and mainstreaming energy efficiency for the equipment renewal and renovation of buildings.
Relevance to Output 2 (2-2. Projects that contribute to BMA's policy goals)	This project focuses on understanding the current state of energy use in BMA-owned buildings, examining the efficient use of energy, problems and countermeasures, and mainstreaming energy efficiency.
Consignment contents	<ul style="list-style-type: none"> ➢ Survey energy conditions in specified BMA buildings <p>The Consultant will analyze energy conditions for 16 buildings owned by BMA based on data owned by Department of Alternative Energy Development and Efficiency (DEDE).</p> <ul style="list-style-type: none"> ➢ Institution survey <p>(1) Investigate various factors that contribute to promoting energy conservation and introduction of renewable energy for private buildings, or elements that impede them in Thai and Bangkok.</p> <p>(2) Investigate the systems and elements that contribute to the efficient operation of energy including smart city in private development activities in Thai and Bangkok.</p> <p>(3) Investigate various factors that contribute to promoting energy conservation and the introduction of renewable energy for public buildings, or elements that impede them in Thai and Bangkok.</p> <p>(4) For the above, investigate cases of Asia and Europe, 4 countries and 4 cities, 2 countries and 2 cities.</p>

1-9 List of JCC Organized

Date	Agenda
2018/01/23	<p>JCC1/SC5</p> <ul style="list-style-type: none"> - To officially declare the launch of the Project; - To review and approve the Work Plan of the Project; - To update the current progress of the Master Plan and discuss how to accelerate its implementation; and - To discuss and reach consensus on the short term action plan along with BMA's annual budget cycle for the implementation of Master Plan.

2018/03/27	<p>JCC2/SC6</p> <ul style="list-style-type: none"> - To discuss the appropriateness and feasibility of the priority projects presented by the WG1; - To provide recommendations and policy advices for the effective implementation of the priority projects in line with the relevant national policies and discuss possible collaboration with the Royal Authorities; and - To endorse the priority projects and discuss the prospect to link them with the next round of the budget cycle.
2018/11/21	<p>JCC3/SC7</p> <ul style="list-style-type: none"> - To report: 1) The results and progress of 46 priority projects for fiscal year (FY) 2019 budget amendment; 2) Action Plan for FY 2020; and 3) the progress of the 1st year of the JICA Technical Cooperation Project - To confirm: 1) the progress and initial outcome of the First Comprehensive Review and its Technical Report; and 2) the proposed new TF and WG members
2019/03/27	<p>JCC4/SC8</p> <ul style="list-style-type: none"> - To report: 1) the results on energy consumption analysis conducted jointly between Department of Alternative Energy Development and Energy Conservation (DEDE) and BMA; and 2) progress of setting new targets after 2020 for the current Master Plan - To confirm: 1) the Draft Final Report of the First Comprehensive Review; and 2) the planned activities and schedule for the Project for the 2nd year - To propose amendment of the Record of Discussion (R/D) and Project Design Matrix (PDM) of the Project
2020/02/28	<p>JCC5/SC9</p> <ul style="list-style-type: none"> - To report: 1) the results on collaboration surveys with Royal Authorities, BMA, and JICA; 2) Progress and updates on priority projects under the Master Plan in FY 2019 and 2020 and plan for 2021 - To confirm: 1) the Background- Roadmap for setting a 2030 mitigation target, with a view to development of a new climate change mater plan; 2) the technical consideration of the Business-as-Usual Scenario; 3) Selection of a basic approach across sectors; and 4) Specific sectoral consideration and advices on technical and policy aspects
2021/04/27	<p>JCC6/SC10</p> <ul style="list-style-type: none"> - To report: 1) Development of the New Bangkok Master Plan on Climate Change; 2) progress of activities relevant to Output 1 to Output 4; 3) selection of priority projects under the current Master Plan in FY 2020 and 2021 and plan for 2022; 4) Update the member list of Taskforce and Working Group - To confirm: 1) the mitigation targets in transport, energy, waste/wastewater and green urban planning sectors and adaptation goals for approval; 2) Preliminary prioritization of mitigation and adaptation projects, programmes and other measures
2021/06/16	<p>Official meeting with DG after JCC6</p> <ul style="list-style-type: none"> - To agree on: 1) Transition from the current MP to the new MP; and 2) Development of the Final Comprehensive Review of the current MP at the transition to the new MP
2021/12/24	<p>JCC7/SC11</p> <ul style="list-style-type: none"> - To agree on: 1) Examination and confirmation of a draft of a new climate change master plan; and 2) Preliminary prioritization of mitigation and adaptation projects, programmes and other measures

2022/07/05	JCC8/SC12 <ul style="list-style-type: none"> To agree on: 1) Preliminary overall results of the 2nd Comprehensive Review of the Bangkok Master Plan on Climate Change for the period of 2013-2020; and 2) Selection of cases for project-level MRV/M&E, to be utilized as part of the 2nd Comprehensive Review
2022/11/25	JCC9/SC13 <ul style="list-style-type: none"> To agree on: 1) Overall results of the BMA-JICA project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023; and 2) BMA plan on Implementation and monitoring the master plan

1-10 List of Overarching Activities and Participation to the international conferences and events

Date/location	Theme
18 June 2019, Jakarta, Indonesia	Networking and participation to the ceremony of the Climate Action Planning Southeast Asia with C/P
9-12 October 2019, Copenhagen, Denmark	Networking and participation to C40 World Mayors Summit with C/P
8 November 2019, Bangkok, Thailand	Networking and participation to G20 Climate Sustainability Working Group Adaptation Work Program with C/P
4 - 9 December 2019, Madrid, Spain	Networking and participation as speakers to Side events at Japan Pavilion in UNFCCC COP25 with C/P
15, 16 January 2020, Bangkok, Thailand	Participation as speakers to Thailand-Japan Environmental Solutions Week with C/P
27 March 2021, Bangkok, Thailand	Networking and participation as representative of JICA Project to Earth Hour Thailand with C/P
28 October 2021, Yokohama, Japan	The 10th Asia Smart City Conference: City-to-City Collaboration for Zero Carbon Society (*Online participation from Bangkok, Thailand), participated with C/P (Director General of DOE/BMA)
3 November 2021, Glasgow, UK	Side Event at COP26 Japan Pavilion: Climate action under the Paris Agreement toward a decarbonized and climate resilient society in Southeast Asian Countries -Lessons learned from JICA's Technical Cooperation in Indonesia, Thailand, and Viet Nam-(*Online participation from Bangkok, Thailand) , participated with C/P (Deputy Director General of DOE/BMA)
20 January 2022, Tokyo, Japan	JICA Clean City Initiative Kick-off International Seminar, to disseminate the experiences and achievements of Bangkok, participated with C/P (Deputy Director General of DOE/BMA)
9 March 2022,	The Zero Carbon City International Forum US-Japan – Director of DOE/BMA (*Online participation from Bangkok, Thailand)
19-21 October 2022,	C40 Mayors Summit- (*Online participation from Bangkok, Thailand)
9 November 2022	COP27- Japan Pavilion JICA session “JICA’s Climate Change countermeasures to achieve the Paris Agreement goals” and Thai

		Pavilion “Toward Net Zero Emission in Bangkok” (Governor advisor Mr. Promphrom Vikitsreth participated at Egypt, Sharm El-Sheikh)
24-25 2022	November	Asia Smart City (*Online participation from Bangkok, Thailand)

ANNEX 2: List of Deliverables/Products Produced by the Project

No.	Title of Output	Output
1	Survey on implementation system of the Bangkok Climate Change Master Plan with assessment on the current implementation system of the Master Plan to identify potential and existing gaps and solutions	Output 1
2	Comparative study on institutional structure for implementation of climate change policy	Output 1
3	Report on Energy Analysis of BMA-owned Buildings	Output 2
4	Survey of Open Burning around Bangkok using Satellite Images	Output 2
5	Survey on Effective Energy Conservation Measures of Commercial Buildings in Bangkok	Output 2
6	Study on Public Transportation Promotion Measures	Output 2
7	Survey on Electricity Consumption Reduction Project in Bangkok City Hall Din Daeng, Din Daeng building	Output 2
8	Consultancy on Private Sector Partnership Promotion for “Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023”	Output 2
9	Feasible Study on Ropeway Planning in Bangkok Area	Output 2
10	The Study of Developing Teaching Guideline and Learning Materials on Environmentally friendly Transportation for Elementary Students (Grades 4-6)	Output 2
11	Consultancy on technical inputs for “GHG Standard Templates Calculator for SMEs in Bangkok Area”	Output 2
12	The Screening tool of climate risk for development planning in BMA	
13	Comprehensive review report 1	Output 3
14	Comprehensive review report 2	Output 3
15	Operation Manual for Project Level MRV on Climate Change Mitigation Project	Output 3
16	The Bangkok Master Plan on Climate Change Manual – Tips for implementation	Output 3
17	Survey on impact assessment of COVID-19 in Bangkok and recommendation for a sustainable recovery plan through climate action	Output 4
18	Bangkok Master Plan of Climate Change 2021-2030	Output 4

ANNEX 3: PDM

Project Design Matrix (PDM)

Project Title: Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013 -2023

Target Areas: Area covered by the Bangkok Master Plan on Climate Change 2013-2023

Period of Project: Five (5) years (from the arrival date of the first JICA expert of the Project)

Implementing organization/Direct beneficiaries: Bangkok Metropolitan Administration (BMA)

Version 0 as of 7th July 2016

Narrative summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal: Transition of BMA toward low carbon and climate change resilient city is fostered.	<ol style="list-style-type: none"> Sufficient budget and staff are allocated by each responsible department in BMA to implement the Master Plan. Positive effects on adaptation and mitigation are recognized by a review of the Master Plan in 2023. 	Annual reports and statistics from the BMA departments involved, results of post-project evaluation	
Project Purpose: The implementation of Bangkok Master Plan on Climate Change 2013-2023 (Master Plan) is promoted.	<ol style="list-style-type: none"> The endorsement mechanism for the inter-department projects for the climate change is established in BMA by the end of the project term. Inter-department resources become available for implementation and evaluation of the Master Plan. Intra/inter-organizational cooperation and implementation structure is established to implement and evaluate the Master Plan. 	Working report of the Project, annual report of the BMA departments involved, Results of a series of interviews conducted by the Project	<ul style="list-style-type: none"> The national climate change policies strategies are not drastically changed. Relevant ministries and agencies continue to cooperate with BMA.
Output 1: Institutional arrangements are improved for the effective and smooth implementation of the Master Plan.	<ol style="list-style-type: none"> 1-1. The assessment reports on the institutional arrangements are prepared by the end of the first year of the project term. 1-2. Procedure for implementing inter-department project is documented. 1-3. Institutional and organizational arrangements for implementing inter-department project are documented. 	Results of the studies covered by the project activities, working report of the Project, annual report of the BMA departments involved,	<ul style="list-style-type: none"> Projects and programs for the climate change mitigation and adaptation in Thailand are steadily carried out. Majority of the counterpart personnel trained by the project is retained in their respective position. The implementation structure of the Project (including roles and responsibilities of
Output 2: Capacity for planning and implementation of prioritized projects under the Master Plan is strengthened.	<ol style="list-style-type: none"> 2-1. Number of priority activities applied with low carbon technologies and/or practices 2-2. Screening tool of climate risks for economic development planning in BMA comes to be utilized. 2-3. Budget amount, number of staff, utilization of equipment and materials in course of the priority activities implementation. 	Minutes of JCC and Task Force meeting, records of workshops and seminars held in a course of the Project implementation	

<p>Output 3: Capacity for monitoring and evaluation (M&E) to assess the progress of the Master Plan is strengthened.</p>	<p>3-1. The sufficient number of officers from the participating departments is able to pass through the training courses. 3-2. Number of trainees and number of trainings conducted. 3-3. Course assessment reports of the training are produced. 3-4. Types of NAMA and associated MRV most relevant to the MP are documented. 3-5. The comprehensive review report is issued in 2018.</p>		<p>participating organizations) is sustained.</p>
<p>Activities</p> <p>1-1. Knowledge concerning institutional arrangements on climate change policy is shared through training and seminars. 1-2. The gaps to be addressed concerning institutional arrangements for the implementation of the Master Plan are identified. 1-3. The legal framework for the implementation of the Master Plan is enhanced, such as identification of the relevant legal documents that exist, drafting revision of the existing legal documents as necessary, and drafting new legal documents as necessary. 1-4. The modality of work for the implementation of the Master Plan is enhanced. 1-5. Other significant gaps than those relating to the activities 1-3 and 1-4 are addressed, if identified. 1-6. The relevant institutions (Steering Committee, Working Group, Task Force, and Secretariat under the Master Plan, as well as the Climate Change Strategy Sub-division if established) provide necessary supports for the implementation of the Master Plan. 1-7. BMA endorses the projects/activities under the Master Plan and provides them with necessary budgets and KPI as many as possible.</p>	<p>Inputs</p>		
<p>2-1. Knowledge concerning planning and implementation of mitigation and adaptation activities is shared through training and seminars (Knowledge sharing may cover all of the five areas under the Master Plan: transport, energy, waste and wastewater, green urban planning, and adaptation) 2-2. Selected priority activities under the Master Plan are planned and implemented (Activities to be supported under this Project will be selected later.) 2-3. The lessons to be learned from the implementation of the above-selected priority activities are compiled and communicated.</p>	<p>Japanese side</p> <p><u>Experts</u> Experts in the fields of: (1) Project Management and Coordination / Climate Change (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.</p> <p><u>Training in Japan and/or Other Counties</u></p> <p><u>Machinery and Equipment</u> (1) Equipment necessary for enhancing priority activities (2) Office equipment such as PC and printer</p>	<p>Thailand side</p> <p><u>Counterpart personnel</u> (1) Project Director (2) Project Manager (3) Other Personnel</p> <p><u>Facilities and Equipment</u> (1) Running expenses necessary for the implementation of the Project (2) Suitable office space with necessary equipment for the Experts (3) Local consultants / experts for the implementation of the project</p> <p><u>Budgetary Arrangement</u> Administration and Operational costs</p>	<p style="text-align: center;">Pre-conditions</p> <ul style="list-style-type: none"> • Conditions are satisfied to initiate the Project as indicated in the Record of Discussion.

- 3-1. Training courses for MRV are set up and conducted for relevant sectors. The courses include evaluation on trainee's performance, as well as feedback from trainees in form of their course assessment.
- 3-2. Knowledge concerning M&E on climate change policy implementation is shared through training and seminars.
- 3-3. BMA conducts M&E of the progress of the Master Plan, in particular for the comprehensive review to be scheduled in 2018.
- 3-4. Methodologies for M&E and MRV for the Master Plan and its activities are studied, and procedures and guidelines for BMA as a local government are developed and demonstrated.
- 3-5. BMA communicates the result of the above-mentioned comprehensive review with the relevant stakeholders and the general public.

(3) Other equipment for implementing the project activities, if necessary

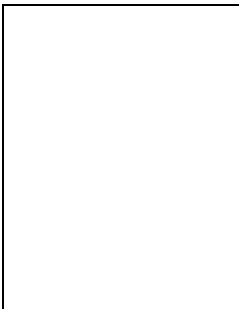


Table 1-1 Project Design Matrix (PDM)

Project Title: Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023

Target Areas: Area covered by the Bangkok Master Plan on Climate Change 2013-2023

Period of Project: Five (5) years (from the arrival date of the first JICA expert of the Project)

Implementing organization/Direct Beneficiaries: Bangkok Metropolitan Administration (BMA)

Version 1.0 as of 27 March 2019

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal: Transition of BMA toward low carbon and climate change resilient city is fostered.</p>	<ol style="list-style-type: none"> 1. Sufficient budget and staff are allocated by each responsible department in BMA to implement the Master Plan. 2. Positive effects on adaptation and mitigation are recognized by a review of the Master Plan in 2023. 3. A new master plan on climate change, including a 2030 target, is developed and implemented under the ownership of BMA. 	<p>Annual reports and statistics from the BMA departments involved, results of post-project evaluation</p>	
<p>Project Purpose: The implementation of Bangkok Master Plan on Climate Change 2013-2023 (Master Plan) is promoted.</p>	<ol style="list-style-type: none"> 1. The endorsement mechanism for the prioritized projects on climate change is established in BMA by the end of the project term. 2. Resources by respective departments become available for implementation and evaluation of the Master Plan. 3. Intra/inter-organizational cooperation and implementation structure is strengthened to implement and evaluate the Master Plan. 	<p>Working report of the Project, annual report of the BMA departments involved, Results of a series of interviews conducted by the Project</p>	<p>-The national climate change policies strategies are not drastically changed. -Relevant ministries and agencies continue to cooperate with BMA</p>
<p>Output 1: Institutional arrangements are improved for the effective and smooth implementation of the Master Plan</p>	<ol style="list-style-type: none"> 1-1. The assessment reports on the institutional arrangements are prepared by the March 2019. 1-2. Actions for integrating projects into BMA's regular planning and budgetary cycle are proposed and implemented. 	<p>Results of the studies covered by the project activities, working report of the Project, annual report of the BMA departments involved,</p>	<p>-Projects and programs for the climate change mitigation and adaptation in Thailand are steadily carried out.</p>

	1-3. Actions to address identified needs and gaps for institutional arrangement emanating from the international and national policy frameworks on climate change are reflected into BMA's policy decisions.	Minutes of the JCC ¹ and Task Force ² meeting, records of workshops and seminars held in a course of the project implementation	-Majority of the counterpart ³ personnel trained by the project is retained in their respective position. -The implementation structure of the Project (including roles and responsibilities of participating organizations) is sustained.
Output 2: Capacity for planning and implementation of prioritized projects under the Master Plan is strengthened.	2-1. Number of priority activities applied with low carbon technologies and/or practices. 2-2. The number of researches, projects and activities implemented in collaboration with royal authorities and other partners, which contribute to BMA's policy goals. 2-3. Screening tool of climate risk for development planning in BMA comes to be utilized. 2-4. Budget amount, number of staff, utilization of equipment and materials in course of the priority activities implementation.		
Output 3: Capacity for monitoring and evaluation (M&E) to assess the progress of the Master Plan is strengthened.	3-1. The result of the first Comprehensive Review of the progress of implementation of the Master Plan is documented as a final report and used as a reference to the second Review at the completion of the Master Plan. 3-2. Number of trainees and number of trainings on MRV (the project level and the city-level for GHG Inventory) and M&E conducted. 3-3. Course assessment reports of the training are produced. 3-4. Types of mitigation and adaptation actions and associated MRV and M&E most relevant to the MP are documented.		

¹ Joint Coordinating Committee (JCC)

² Task Force (TF)

³ Counterpart (C/P)

<p>Output:4 Capacity for setting a new mitigation target and activities, and necessary institutional arrangement for implementation is strengthened.</p>	<p>4-1. A new mitigation target during 2021-2030 with a view to a new master plan on climate change. 4-2. A manual for setting mitigation target and developing a master plan. 4-3. A number of trainings for setting a new mitigation target and developing a master plan.</p>		

Activities	Inputs		
	Japanese side	Thailand side	
<p>1-1. Knowledge concerning institutional arrangements on climate change policy is shared through trainings and seminars.</p> <p>1-2. The gaps concerning climate change mainstreaming and emanating updates of international and national climate policies for the implementation of the Master Plan are identified.</p> <p>1-3. The institutional framework for the implementation of the Master Plan is enhanced, by identifying the relevant BMA, national and international policy documents, and drafting revisions for existing relevant documents as necessary.</p> <p>1-4. The modality of work for the implementation of the Master Plan is enhanced.</p> <p>1-5. Other significant gaps than those relating to the activities 1-3 and 1-4 are addressed, if identified.</p> <p>1-6. The relevant institutions (the Steering Committee,⁴ the Working Group⁵, the Task Forces, and the Secretariat under the Master Plan, as well as the Climate Change Strategy Sub-division) provide necessary supports for the implementation of the Master Plan.</p> <p>1-7. BMA endorses the projects/activities under the Master Plan and provides them with necessary budgets and KPI⁶ as many as possible.</p>	<p><u>Experts</u></p> <p>Experts in the fields of:</p> <p>(1) Project Management and Coordination / Climate Change</p> <p>(2) Environmentally Sustainable Transport</p> <p>(3) Energy Efficiency and Alternative Energy</p> <p>(4) Efficient Solid Waste Management and Wastewater Treatment</p> <p>(5) Green Urban Planning</p> <p>(6) Adaptation Planning</p>	<p><u>Counterpart personnel</u></p> <p>(1) Project Director</p> <p>(2) Project Manager</p> <p>(3) Other Personnel</p> <p><u>Facilities and Equipment</u></p> <p>(1) Running expenses necessary for the implementation of the Project</p> <p>(2) Suitable office space with necessary equipment for the Experts</p>	
<p>2-1. Knowledge concerning planning and implementation of mitigation and adaptation activities is shared through training and seminars (Knowledge sharing may cover all of the five areas under the Master Plan: transport, energy, waste and wastewater, green urban planning, and adaptation)</p>			Pre-conditions

⁴ Steering Committee (SC)

⁵ Working Group (WG)

⁶ Key Performance Indicator (KPI)

<p>2-2. Selected priority activities under the Master Plan are planned and implemented (Activities to be supported under this Project will be selected later)</p> <p>2-3. Projects with high GHG emissions reduction potentials, in particular, in the energy and transport sectors, are planned and implemented in accelerated manners in collaboration with relevant royal authorities.</p> <p>2-4 The lessons to be learned from the implementation of the above selected priority activities are compiled and communicated.</p>	<p>(7) Other experts for implementing the project activities, if necessary</p> <p>The fields and number of experts are subject to change.</p>	<p>(3) Local consultants / experts for the Project</p> <p><u>Budgetary Arrangement</u></p> <p>Administration and Operational costs</p>	<p>-Conditions are satisfied to initiate the Project as indicated in the Record of Discussion⁷.</p>
<p>3-1. BMA conducts M&E of the progress of the Master Plan, in particular, for the comprehensive review to be scheduled in 2018 and 2019.</p> <p>3-2. Methodologies for M&E and MRV for the Master Plan and its activities are studied, and procedures and guidelines for BMA as a local government are developed and demonstrated.</p> <p>3-3. BMA communicates the result of the above-mentioned comprehensive review with the relevant policy makers and stakeholders.</p> <p>3-4. Trainings for MRV for mitigation (the project level and the city level for GHG Inventory) are set up and conducted for relevant sectors. The courses include evaluation on trainee's performance, as well as feedback from trainees in the form of their course assessment.</p> <p>3-5. Knowledge concerning M&E on climate change policy implementation is shared through trainings and seminars.</p>	<p><u>Training in Japan and/or Other Countries</u></p> <p><u>Machinery and Equipment</u></p> <p>(1) Equipment necessary for enhancing priority activities</p>		

⁷ Record of Discussion (R/D)

<p>4-1. BMA develops a new mitigation target for 2030 with a view to a new master plan on climate change.</p> <p>4-2. Methodologies and procedures for setting a new target and a master plan on climate change are studied and an operational manual for setting a target and a master plan on climate change for a local government is developed.</p> <p>4-3. Trainings for setting a new mitigation target and developing a master plan are conducted for BMA officials at the executive and working levels.</p>	<p>(2) Office equipment such as PC and printer</p> <p>(3) Other equipment for implementing the project activities, if necessary</p>		
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