

タイ王国  
バンコク都気候変動マスタープラン  
(2013-2023 年)  
実施能力強化プロジェクト  
詳細計画策定調査報告書

平成 28 年 8 月  
(2016 年)

独立行政法人国際協力機構  
地球環境部

環 境
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## 略 語 表

略 語	英 語	日本語
AFD	Agence Française de Développement	フランス開発庁
BAU	Business as Usual	何も対策を講じなかった場合
BMA	Bangkok Metropolitan Administration	バンコク首都圏庁
CDM	Clean Development Mechanism	クリーン開発メカニズム
COP21	Conference of the Parties	気候変動枠組み条約第 21 回締約国会議
C/P	Counterpart	カウンターパート
DEDE	Department of Alternative Energy Development and Efficiency	代替エネルギー・エネルギー効率局
GHG	Greenhouse Gas	温室効果ガス
INDCs	Intended Nationally Determined Contributions	国別目標案
JICA	Japan International Cooperation Agency	独立行政法人国際協力機構
KPI	Key Performance Indicators	重要業績評価指標
M&E	Monitoring and Evaluation	モニタリング・評価
M/M	Minutes of Meeting	協議議事録
MRV	Measurement, Reporting, and Verification	測定・報告・検証
NAMAs	Nationally Appropriate Mitigation Actions	開発途上国による適切な緩和行動
OECD	Organization for Economic Co-operation and Development	経済協力開発機構
ONEP	Office of Natural Resources and Environmental Policy Planning	(天然資源環境省) 天然資源・環境政策計画局
OTP	Office of Transport and Traffic Policy and Planning	(運輸省) 運輸交通政策局
R/D	Record of Discussions	討議議事録
SC	Steering Committee	ステアリングコミッティ
TF	Task Force	タスクフォース
TGO	Thailand Greenhouse Gas Management Organization	タイ国家温室効果ガス管理機構
UNEP	United Nations Environment Programme	国連環境計画
UNFCCC	United Nations Framework Convention on Climate Change	国連気候変動枠組条約
WG	Working Group	ワーキンググループ

## 第1章 要請背景・調査概要

### 1-1 要請背景

タイ王国（以下、「タイ」と記す）は、1994年に国連気候変動枠組条約（United Nations Framework Convention on Climate Change : UNFCCC）、2002年に京都議定書に批准して以来、温室効果ガス（Greenhouse Gas : GHG）排出量削減の国際的責務を負っている。また、2011年には、気候変動の影響とも考えられているバンコク都及びチャオプラヤ河周辺における大規模な洪水が発生し、記録的な経済的・社会的ダメージを受け、気候変動適応策の必要性が強く認識された。なかでも、タイの首都であるバンコク都においては、タイ国内及び東南アジア地域の中での主要都市としての順調な経済発展により、GHG 排出量は増加傾向にある。また、上述の洪水では特に甚大な被害を受け、緩和策・適応策の両面において、気候変動対策が重要な課題となっている。

バンコク首都圏庁（Bangkok Metropolitan Administration : BMA）は、GHG 排出量について、2007～2012年の5年間で、少なくともBAU（何も対策を講じなかった場合：Business as Usual）比で15%削減することを目指し、「バンコク都気候変動対策実行計画（2007-2012年）」（以下、「BMA アクションプラン」と記す）を作成した。BMA アクションプラン作成時点においては、BMA は気候変動対策にかかる十分な知見・経験を有していなかったことから、JICA は技術協力プロジェクト「バンコク都気候変動削減・適応策実施能力向上プロジェクト」（2009年6月～2012年5月）を通じて、本邦研修受入れを中心としたBMA アクションプランの実施支援を行った。同プロジェクトでは気候変動対策に分野横断的・包括的に取り組むBMA の組織能力、及びBMA アクションプラン実施のためのBMA 職員の個々の能力の強化に取り組んだ。その結果、BAU 比15%のGHG 排出量削減も含め、BMA アクションプランに定められた当初計画はおおむね達成された。

他方、多岐にわたる関係機関との調整が困難であったなどの課題が挙げられ、多分野にわたる効率的な気候変動対策を推進していくためには、BMA 内部のセクター間連携に加え、国レベルでの上位政策との整合性やBMA 外の関連機関との連携が必要とされた。BMA アクションプランの実施を通して得られた上記の教訓や前述の洪水被害による適応へのニーズの高まりを踏まえ、BMA はより包括的な気候変動対策長期計画として「バンコク都気候変動対策マスタープラン2013-2023年」（以下、「BMA マスタープラン」と記す）を策定することを計画し、JICA は技術協力プロジェクト「バンコク都気候変動マスタープラン（2013-2023年）作成・実施能力向上プロジェクト」（2013年3月～2015年9月）（以下、「先行フェーズ」と記す）を通じて、BMA マスタープランの策定と、その実施のための人材育成を支援した。同プロジェクトでは、BMA マスタープラン作成のための、BMA 外の関係機関を巻き込んだ実施体制の整備や、国レベルにおける政策との整合性をもった計画の作成が行われ、同マスタープランが完成し、承認された。BMA マスタープランには、2013年から2020年の間でBAU 比13.57%のGHG 排出量削減目標が定められ、運輸交通、エネルギー、廃棄物・排水処理、都市緑化、適応策の5分野において、目標達成に向けた取り組みが示された。また、BMA 職員を含めた同プロジェクトのカウンターパート（Counterpart : C/P）は、データ収集、GHG 排出測定、GHG 排出量削減対策の測定・報告・検証（Measurement, Report and Verification : MRV）手法等、気候変動の基礎的知識・技術を理解するレベルに達し、BMA マスタープラン作成のための能力及び実施に向けた基礎的能力が向上し

た。

BMA マスタープランの本格的実施にあたっては、関係部署や関係機関との調整がより重要になってくることから、BMA はマスタープラン実施の事務局機能を担う「気候変動対策課（Climate Change Strategy Sub-division）（仮称）」を環境局内に新設する予定であり、更なる体制強化の必要性を認識している。また、BMA マスタープランのもとで実施される具体的な取り組みについての計画・実施能力強化が必要であり、それらの取り組みを行うなかで、モニタリング・評価（Monitoring and Evaluation：M&E）や MRV を行う必要性も更に高まっている。そうした背景のもと、本プロジェクトは BMA マスタープランの実施能力強化のためのプロジェクトとしてタイ政府より要請を受けた。

### 1-2 調査の目的

本プロジェクトにかかるタイ側の実施体制等を確認し、現地調査及び資料収集を行い、本プロジェクトの方針及び協力内容を協議・検討する。また、協議結果について協議議事録（Minutes of Meeting：M/M）の署名・交換を通じ、タイ側と合意する。

### 1-3 調査団構成

調査団構成は以下のとおり。

氏名	分野	所属	派遣期間
川西 正人	総括	JICA 国際協力専門員	2016 年 7 月 3 日～7 月 9 日
黒水 公博	環境政策	横浜市 温暖化対策統括本部 副本部長	2016 年 7 月 3～7 月 9 日
古川 真理子	協力企画	JICA 地球環境部環境管理第一チーム	2016 年 6 月 29 日～7 月 9 日
寺尾 豊光	評価分析	水産エンジニアリング株式会社 主査	2016 年 6 月 21 日～7 月 9 日

### 1-4 調査日程

現地調査は 2016 年 6 月 21 日から 7 月 9 日までの期間で実施された。

調査日程の概要は以下のとおり。

日付・曜日		活動
6 月 21 日	火	寺尾団員 バンコク到着
6 月 22 日	水	JICA タイ事務所打合せ BMA 環境局聞き取り調査
6 月 23 日	木	運輸交通政策局（OTP）聞き取り調査 運輸交通タスクフォース（TF）聞き取り調査
6 月 24 日	金	天然資源・環境政策計画局（ONEP）聞き取り エネルギー TF 聞き取り調査
6 月 25 日	土	資料整理

6 月 26 日	日	資料整理
6 月 27 日	月	代替エネルギー・エネルギー効率局（DEDE）聞き取り調査 タイ国家温室効果ガス管理機構（TGO）聞き取り調査
6 月 28 日	火	廃棄物・排水処理 TF 聞き取り調査
6 月 29 日	水	都市緑化 TF 聞き取り調査 適応策 TF 聞き取り調査 古川団員 バンコク到着
6 月 30 日	木	団内協議 資料整理
7 月 1 日	金	BMA 環境局との M/M 協議
7 月 2 日	土	資料整理
7 月 3 日	日	川西団長、黒水団員 バンコク到着 団内協議
7 月 4 日	月	JICA タイ事務所打ち合わせ BMA 環境局との M/M 協議
7 月 5 日	火	パンスー環境教育保護センター視察
7 月 6 日	水	団内協議 M/M 修正、BMA による確認 資料整理
7 月 7 日	木	海岸浸食現場視察 M/M 最終化 JICA タイ事務所報告
7 月 8 日	金	日本大使館報告 寺尾団員 帰国
7 月 9 日	土	官団員 帰国

## 1-5 協議結果概要

### （1）協力概要の合意

先方との協議の結果、第 3 章に後述するとおりの協力概要について合意した。関係者への聞き取り調査及び先方との協議のなかで、タイ側の発案に基づいて追加した活動は以下のとおり。

- ・ 活動 1-5：「活動 1-3 及び活動 1-4 以外に重要な課題が明確化された場合、これに取り組む。」

BMA マスタープラン実施のための制度的取り決めについては、法的枠組みや業務の手続き・工程の改善以外にも、タスクフォース・メンバーの構成の改善等、他にも課題が存在する可能性が確認された。活動 1-2 では BMA マスタープランの実施のための制度的枠組みにかかる課題を明らかにするが、そのうえで活動 1-3 で示される法的枠組



みの改善、活動 1-4 で示される業務の手続き・工程の改善以外に必要な取り組みが明らかになった場合、活動 1-5 において対応することとした。

- ・ 活動 1-7 : 「BMA により、マスタープランの下にある事業または活動が可能な限り多く承認され、必要な予算と重要業績評価指標（Key Performance Indicators : KPI）が付与される。」

BMA マスタープランの着実な実施のためには、各事業に必要な予算・人員が確保される必要があり、そのためには各事業に対して KPI が導入されることが重要であるとの先方の認識が確認された。

マスタープランにより実施を目されている事業は、“Measure” レベルのもので 170 件余ある。これらには、国や BMA の運輸交通事業や都市整備計画事業等の一部であるなど、BMA 関係局の所掌業務の一つとしてもともと存在している事業も含まれている。このような既存の事業を除くほかのものについて、長期・短期の工程に沿って、実施に向け前進させるためには、まずは予算と KPI を備える必要がある。特定の事業が予算と KPI を備えるためには知事の承認が必要であるが、2016 年 7 月現在マスタープランにより新たに提案された事業についての承認は一括であれ個別であれ、まだ得られていない。これが活動 1-7 の実施が必要な理由である。

なお、ここにいう KPI とは事業ごとに定められる評価指標である。指標の内容は、担当部局更には職員レベルの考課指標にも援用されている。タイにおいて、地方自治体だけではなく、広く国レベルの事業に KPI は適用されている。

- ・ 活動 3-4 : 「BMA マスタープランとその活動のための M&E 及び MRV 手法が検討され、手順・ガイドラインが開発され、実証される。」

M&E 及び MRV 手法については、知見の共有や実施支援のみならず、担当者が変わった際にも技術移転した手法が正確に引き継がれ持続的に実施されるように、ガイドラインとして形に残すこととした。

## （2）BMA マスタープラン実施体制

先行フェーズにおいて、BMA マスタープラン作成のためのタスクフォース（Task Force : TF）、ワーキンググループ（Working Group : WG）、ステアリングコミッティ（Steering Committee : SC）等が設置され、国レベルの関連組織との連携や分野横断的な体制が構築された。他方、上記はプラン作成のなかで確立した体制であることから、実施段階においては既存の体制を活かしつつも、必要に応じその見直しを行う必要がある。先行フェーズにおいては、WG は主に部（Division）の長（Director）で構成され、TF は部の実務者レベルの職員で構成されていた。そのため、異なった部の実務レベルの職員で構成される TF 内では、部横断的な意思決定が困難であった。したがって、今後は WG メンバーを TF に組み入れるべき、という意見も一部の C/P から確認された。

また、環境局は大気汚染騒音管理部（Air Quality and Noise Management Division）の下に気候変動対策課を設置する計画である。気候変動対策課が設置された場合、大気汚染騒音管理部は大気汚染・騒音・気候変動管理部（Management of Air Quality, Noise, and Climate Change

Division) (仮称) となる予定であり、同部の組織は次の図のとおり。気候変動対策課は、これまで BMA になかった気候変動対策の専任部署となるもので、BMA マスタープラン実施における事務局機能は同課が担う計画である。職員数は数名程度を予定し、人事部の承認を待ち、2016 年中の設置が見込まれている。新設された場合、BMA マスタープラン実施にかかる全体の進捗把握や調整能力、業務の手続きや工程等、本プロジェクトを通じて事務局としての機能を強化する必要がある。調査時点での気候変動対策課の業務内容は大きく分けて二つあり、「気候変動緩和・適応策」「再生エネルギーと省エネの推進」である。詳細は付属資料 4 のとおり。

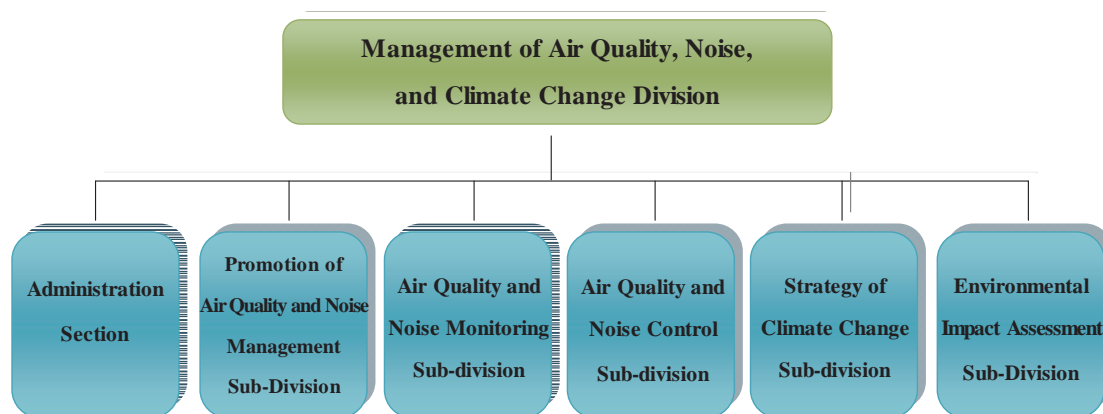


図 Management of Air Quality, Noise, and Climate Change Division 組織図

### (3) 日本側投入と成果ごとの体制

日本側の人的投入としては、コンサルタントや横浜市職員などからの、長期及び短期派遣の専門家による支援を行う。全体のマネジメントを行う総括に加え、BMA マスタープランを構成する 5 分野（運輸交通、エネルギー、廃棄物・排水処理、適応策）の専門家を投入する。成果 1 については、法的枠組みを含めた制度的取り決めにかかる専門性をもつ現地リソースの活用をしながら実施することを想定している。成果 2 については、優先プロジェクト実施に対する横浜市からのインプットが期待される。成果 3 については主にコンサルタントの支援による実施を想定している。また、横浜市や現地リソースなど、関係者が多岐にわたるため、全体の調整を行う専門家の投入も必要である。

なお、横浜市は、先行フェーズにおいて BMA への調査団派遣及び BMA からの研修受入れなどにより、気候変動対策にかかる知見の共有を中心とした協力の実績がある。本プロジェクトにおける横浜市の派遣形態については、長期専門家、短期専門家、調査団派遣等の可能性があるが、横浜市との検討を通じ決定する。

### (4) 優先プロジェクトの選定

付属資料 1. M/M の特記事項として記載のとおり、2014 年に先方より提出された要請書及び本調査の聞き取り調査結果から、支援すべき事業となる優先プロジェクトとして、現時点でのアイデア及びニーズが確認された。また、セクターごとの主な事業の進捗状況については、収集資料として入手した。成果 2 においては、本プロジェクトの協力のもとで、優先プ

プロジェクトの選定プロセスの検討を含めた選定段階から、計画または実施にかけて協力し、能力強化を行う。

#### 1－6 団長所感

横浜市のご協力のもと、BMA との間で詳細計画にかかる合意を得た。先行フェーズではマスタープランの策定支援を行ったが、新たなフェーズではその実施促進と、具体的な成果の発現に焦点が移る。この関係から、成果 2（事業実施能力の強化）にかかる活動が重要となるが、支援の対象となる事業については M/M 署名の段階では特定せず、選定プロセス自体を本協力の支援対象とすることとし、右の点につき双方合意した。本協力開始後の対象事業選定にあたっては選定基準にかかる議論も含め、我が国の強みを活かした協力を念頭におきつつ、先方の事情や意向も踏まえた対応が望まれる。

本協力では、長期専門家の派遣を通じ、現地ニーズへの柔軟かつきめ細かな対応を図る一方、成果 1（組織体制の強化）に関する活動では、横浜市による知見の共有やローカル人材の活用、成果 2（事業実施能力の強化）では横浜市の支援、成果 3（モニタリング評価にかかる能力強化）では業務委託を通じた支援など、異なる投入の組み合わせが想定されるが、これらが相互に有機的に関わり合うよう図っていくことが重要である。さらに、本案件と関係するほかの ODA（政府開発援助）及び民間事業との効果的な連携が望まれる。

なお、本案件のプロジェクト・ディレクターで、先行フェーズから一貫して中心的な役割を担ってきた BMA 環境局長のスワンナ氏が、2 年後に定年退職とのことから、その後の新たな体制においても円滑な案件実施を図るため、より一層の組織能力強化が求められる。

## 第2章 プロジェクトの基本方針

### 2-1 タイにおける気候変動政策

タイ政府は UNFCCC を 1994 年に、京都議定書を 2002 年に批准している。第二次国別報告書（Second National Communication : SNC）に含まれる国別 GHG 排出目録（GHG インベントリ）によれば、国家の総排出量のうち、エネルギー産業による化石燃料燃焼を起源とする排出量が 56% を占めており、続いて農業（34%）、工業プロセス（7%）、燃料からの随伴ガス（1%）となっている。UNFCCC 上、非附属書 I 国であるため、同国政府はこれまで京都議定書のクリーン開発メカニズム（Clean Development Mechanism : CDM）を通じて、排出削減に取り組んできた。また、2015 年には開発途上国による適切な緩和行動（Nationally Appropriate Mitigation Actions : NAMAs）が策定され、2015 年 12 月に開催された気候変動枠組条約第 21 回締約国会議（Conference of the Parties : COP 21）において締結されたパリ協定では、タイは 2021 年から 2030 年の間で GHG 排出量を BAU 比で 20 % 削減を目指して取り組みを進めることとしている。

また、タイ政府は第 7 次国家経済社会開発計画（1992 ～ 1996 年度）以降、経済・社会開発と資源・環境保全が調和した「持続可能な開発」を重視しており、第 11 次経済社会開発計画（2012 ～ 2016 年度）では 6 つの開発重点分野の 1 つである「天然資源の管理及び持続可能な環境への戦略」において、低炭素で気候変動にレジリエント（強靱）な社会構築の重要性を記載している。後続の第 12 次経済社会開発計画（2017 ～ 2021 年度）についても、同様の方針が継続される見込みである。気候変動分野の国全体の計画としては、2015 年にタイ「気候変動長期マスタープラン（2012-2050）」が策定された。

また、2007 年にタイ国家温室効果ガス管理機構（Thailand Greenhouse Gas Management Organization : TGO）が設立され、関連機関による気候変動対策が積極的に進められている。政府は省庁横断的な政策対応を目的として、2008 年 1 月に「気候変動対応国家戦略 2008-2011」を策定し、包括的・網羅的なデータ分析に基づく重点課題の抽出と対応のための 6 つの戦略（気候変動の影響に対応しリスクを低減するための能力づくり、GHG 排出量の削減と炭素吸収源の総合的開発の支援、気候変動の理解を促進する開発と研究の支援、気候変動による問題解決のための啓発活動、気候変動業務に関係する個人と組織の能力向上、及び気候変動に関する国際協力）を定めている。

### 2-2 バンコク都における気候変動政策

BMA は 2007 年に 35 の関連機関と協力して地球温暖化問題解決のための宣言を共同採択し、気候変動対策に関して積極的な取り組みを展開してきた。

前述のとおり、BMA アクションプランを作成し、①公共交通機関の開発及び交通システム改善のための対策、②代替燃料使用奨励のための対策、③建物内の電力使用改善のための対策、④廃棄物及び污水处理のための対策、⑤緑化対策の 5 つの分野で対策を立案・実行を進め、その後先行フェーズの協力を受けながら BMA マスタープランを策定した。現在は、BMA マスタープランに沿って、気候変動対策を実行していく段階にある。

### 2-3 他ドナーの協力活動

近年の気候変動分野における BMA 支援の一つとして、フランス開発庁（Agence Française de

Développement : AFD) による「ビル・家屋のエネルギー効率化」のための直接貸付が予定されていた。その後、2009 年 12 月に BMA と AFD の間に気候変動協力にかかる合意書 (Memorandum of Understanding : MOU) が署名されているが、最近の本件の進展情報は確認されていない。世界銀行は気候変動のインパクトと適応にかかるテーマでバンコク首都圏の調査研究を行い、2009 年に最終報告書 “Climate change impact and adaptation study for Bangkok metropolitan region” を作成している。国連環境計画 (United Nations Environment Programme : UNEP) は BMA との共同研究で気候変動評価にかかる調査を行い、“Bangkok Assessment Report on Climate Change 2009” を作成した。OECD は各国の都市に対して一連の調査結果に基づき政策提言を行い、都市緑化対策へのアプローチを与える目的で “Green City Program” を実施中で、その一環としてバンコク都の調査結果報告書 “Green Growth Studies Green Growth in Bangkok, Thailand” を 2015 年に有償出版している。この調査は、バンコク都周辺の五つの県 (province) を含むバンコク首都圏 (Bangkok Metropolitan Region : BMR) を対象としている。なお、バンコク都の面積は 1,600 平方キロであるのに対し、BMR の面積は 7,800 平方キロである。

## 2-4 プロジェクトの基本方針

今次詳細計画策定調査の結果、「バンコク都気候変動マスタープラン 2013-2023 実施能力強化プロジェクト」における協力の基本的な方針は以下のとおりである。

### (1) 実施期間

プロジェクト実施期間は 5 年間とする。

### (2) プロジェクトにおける取り組み事項と取り組みの流れ

本プロジェクトでは、BMA マスタープランの円滑で効果的な実施を促進するために、制度的取り決め、事業の計画・実施能力、及び M&E 能力を強化する (詳細は付属資料 1 の PDM を参照)。それぞれについて、全体を通じた現地でのセミナー・研修開催や本邦研修の実施により、我が国の知見の共有を行う。

それとともに、制度的取り決めについては、まずは関連する法的枠組み、組織的取り決め、業務にかかる手続きや工程等についての現状を把握し、局横断的な取り組みとマスタープランの円滑な実施のための、改善すべき課題を明確にする。法的枠組みについては、ローカルコンサルタントの協力を得て、既存の関連する法的文書についてまとめ、必要な改定や新規の法的文書作成について検討のうえ実施する。業務工程や手続きについては、局横断的な事業の実施手続きを取り決め、それが気候変動対策課の事務局が中心になって実施されるよう能力強化を行う。また、先行フェーズの協力を通じて設置された WG、TF、SC により構成されるマスタープランの実施体制については、前述のとおり、WG メンバーをそれぞれのセクターに従って TF に組み入れるというアイデアを先方より得ているが、既存の体制を活かしつつ、更に改善していく。また、必要な予算の KPI の付与や、その他現状把握の過程で明らかになった課題に対しても、必要に応じて BMA の取り組みを支援する。

事業の計画・実施については、プロジェクトを通じて支援する事業を選定する段階から活動に含める。プロジェクト初期の数か月間で、選定基準・プロセスの検討を行い、実際に選定する。その後、選定した事業の計画・実施を支援する。上記を通じて得られた教訓につい



ては、プロジェクトの後半で広く共有する活動を行う。

M&E についても知見の共有を行うが、特に MRV については研修コースを設置して実施する。また、M&E と MRV の実施支援を行うなかでは、持続的に活用される目的でガイドラインを作成する。2018 年にはマスタープランに定められているとおり、総合レビューを行うためその際の M&E の結果を含めた報告書作成を支援する。プロジェクト終了後の 2023 年の実施予定の最終レビューについては、BMA が独自に実施する必要があるため、それを見据えた適切な技術移転による能力強化を行う。

## 2-5 プロジェクトの実施体制

「2-4」の基本方針を踏まえ、プロジェクトを実施するため、図に示す体制を整えることとする。

ただし、先行フェーズで構築された SC、WG、TF により構成されるマスタープラン作成・実施体制については、現状の体制を活かしつつ実施フェーズに適した形に改善する。

### (1) SC

BMA マスタープランの策定にかかる意思決定を行う単位として、BMA 関係部局の局次長、部長などのほか、政府関係機関の部長レベルが参画し、全体的な政策にかかる方針の決定や、マスタープランの承認を行うことが主な機能であった。実施段階においても、方針の決定や実施状況にかかる報告を受けたうえでの意思決定、制度的取り決めの改善において必要な知事レベルへの働きかけなどの役割が期待される。

### (2) WG

BMA マスタープラン策定の際には、5 分野における技術的な検討を横断的にレビューし、全体の整合性を図り、各 TF の作業進捗の管理を行う役割を果たした。WG には、政府関係省庁の実務レベルの職員も参加し、国が関係する緩和・適応策や、MRV のアプローチについてのコメントも集約する場となった。

### (3) TF

5 つの分野ごとに設置され、BMA マスタープラン策定においては、それぞれの分野のなかで実施する施策について、具体的な検討が行われた。各 TF は、BMA 内の 2 つ以上の関連部局から実務レベル担当者が参画し、BAU 排出量や緩和目標の設定、施策の策定、進捗確認や MRV にかかる方法論の整理、アウトリーチ活動の実施などを行ってきた。

### (4) 事務局

BMA マスタープランの事務局は BMA 環境局が担当している。策定段階では、各 TF への連絡調整や、SC、WG での検討議題の設定等の作業を行った。気候変動対策課新設後は同課が事務局を担当予定であり、実施段階では更なる能力強化が必要となる。

### (5) 日本側投入

日本人専門家（コンサルタントを含む）については、上記（1）～（4）を含めた全体に対

して、技術移転を実施する。また、制度的枠組み等については、ローカルコンサルタントを活用し、連携をとりながら支援を行う。

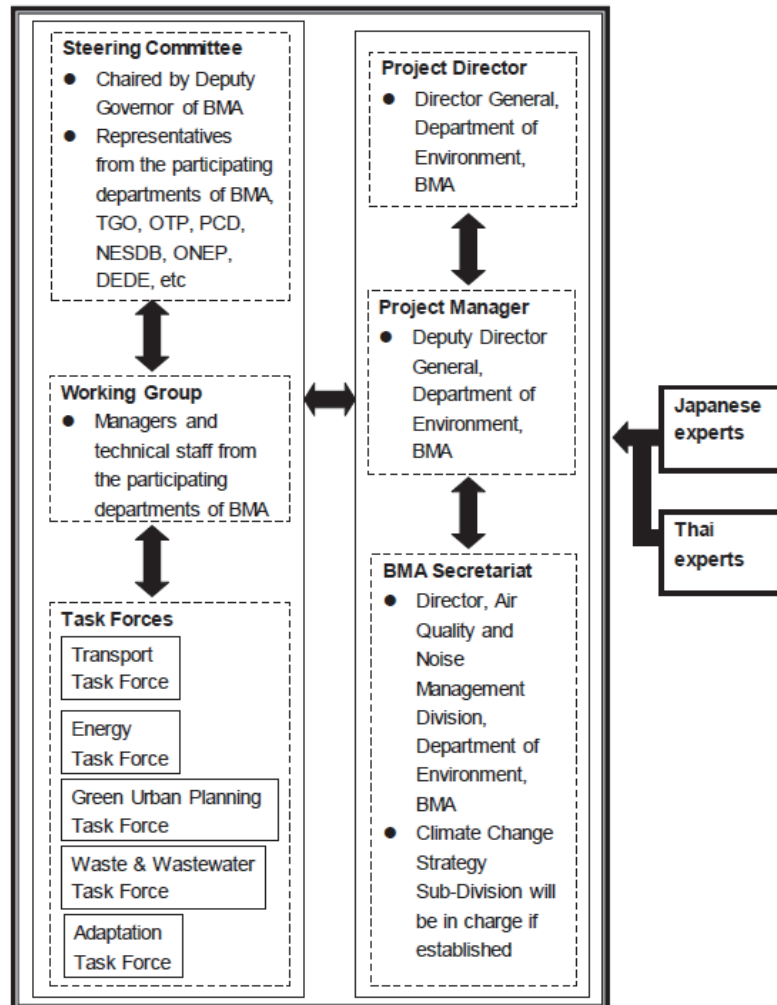


図 プロジェクト実施の体制図

## 第3章 協力概要

### 3-1 プロジェクト目標・指標

プロジェクト目標	バンコク都気候変動マスタープラン 2013-2023 の実施が促進される。
達成指標	<ol style="list-style-type: none"> <li>1. BMA において、気候変動に対する局横断的な事業の承認メカニズムが設けられる。</li> <li>2. マスタープランの実施・評価のために局横断的なリソースが利用可能となる。</li> <li>3. マスタープランの実施・評価のために組織内部／組織間の協力及び実施の体制が設けられる。</li> </ol>

### 3-2 上位目標・指標

上位目標	バンコク都の低炭素で気候変動にレジリエントな都市への移行が促進される。
達成指標	<ol style="list-style-type: none"> <li>1. マスタープラン実施のために BMA の責任各局により十分な予算配賦と人員配置が行われる。</li> <li>2. マスタープランに対する 2023 年時点のレビューにおいて、緩和・適応策の前向きな効果が認められる。</li> </ol>

### 3-3 成果と指標・活動

#### 3-3-1 成果 1

成果 1	バンコク都気候変動マスタープラン 2013-2023 の効果的で円滑な実施のための制度的体制が強化される。
達成指標	<ol style="list-style-type: none"> <li>1-1. プロジェクト第一年次末までに既存の制度的取り決めについての評価報告書が作成される。</li> <li>1-2. 局横断的な事業の実施手続きが文書化される。</li> <li>1-3. 局横断的な事業実施のための制度的及び組織的取り決めが文書化される。</li> </ol>

#### <成果 1 の活動>

- 1-1. 研修やセミナーを通じて、気候変動政策の制度的取り決めに関する知見を共有する。
- 1-2. 制度的取り決めに関して、マスタープランの実施のために取り組むべき課題を明確化する。
- 1-3. 既存の関連する法的文書の明確化や、必要に応じた既存の法的文書の改訂案や新たな法的文書の作成等、マスタープラン実施のための法的枠組みを強化する。
- 1-4. マスタープラン実施のための業務に係る手続きや工程について強化する。
- 1-5. 活動 1-3 及び 1-4 以外に重要な課題が明確化された場合、これに取り組む。
- 1-6. 関連する組織（SC、WG、タスクフォース、事務局、及び Climate Change Strategy Sub-division（設立された場合））が、マスタープランの実施のために必要な支援を提供できるようにする。
- 1-7. BMA により、マスタープランの下にある事業または活動が可能な限り多く承認され、必



要な予算と KPI が付与される。

### 3-3-2 成果 2

成果 2	バンコク都気候変動マスタープラン 2013-2023 のもとにある特定のプロジェクトについての計画・実施能力が強化される。
達成指標	2-1. いくつかの優先プロジェクトにおいて、低炭素な技術や活動が適用される。 2-2. BMA の経済開発の計画作成において、気候変動リスクのスクリーニング手段が導入される。 2-3. 優先プロジェクト実施過程で、十分な予算、人員、備品、機材が配置される。

#### <成果 2 の活動>

- 2-1. 研修やセミナーを通じて、適応・緩和の活動の計画・実施に関する知見の共有を行う（5 分野全体を網羅）。
- 2-2. マスタープランの下で実施される、選定された優先プロジェクトが計画・実施される。（本事業で支援する活動は、事業開始後に選定される。）
- 2-3. 上記の優先プロジェクトの実施により得られた教訓を取りまとめ、広く共有する。

### 3-3-3 成果 3

成果 3	バンコク都気候変動マスタープラン 2013-2023 の進捗のモニタリング及び評価能力が強化される。
達成指標	3-1. 十分な人数の関係各局の職員が研修コースを修了する。 3-2. 研修コースが十分な件数開催される。 3-3. 研修コースの評価報告書が作成される。 3-4. マスタープランと大きく関連する NAMAs の分野及びこれに付随する MRV が文書化される。 3-5. 2018 年に総合レビュー報告書が発行される。

#### <成果 3 の活動>

- 3-1. MRV の研修コースが設けられ関係セクターに対し開催される。コース開催に際して、講師による受講生の成績評価及び受講生によるコース評価が実施される。
- 3-2. 研修やセミナーを実施し、気候変動政策実施の M&E に関する知見が共有される。
- 3-3. BMA によりマスタープラン進捗の M&E が、特に 2018 年に予定されている総合レビュー（Comprehensive Review）のために実施される。
- 3-4. マスタープランとその事業の M&E 及び MRV の手法が検討され、地方自治体としての BMA のための手順及びガイドラインが開発され、実証される。
- 3-5. 上記の総合レビュー（Comprehensive Review）の結果を、関連する利害関係者及び一般市民に広報する。

### 3-4 外部要因・前提条件

前提条件	<ul style="list-style-type: none"><li>・ 「バンコク都気候変動マスタープラン策定・実施能力向上プロジェクト（2012-2015）」（2013 年 3 月～ 2015 年 9 月）の成果を活用できる。</li></ul>
外部条件	<ul style="list-style-type: none"><li>・ 国家レベルの気候変動政策が大きく変更されない。</li><li>・ 関係省庁による BMA への協力が継続する。</li><li>・ プロジェクトにより技術移転を受けた C/P 要員の大多数が現職に留まる。</li></ul>

## 第4章 プロジェクトの評価

### 4-1 妥当性

「高い」

#### (1) 政策・開発ニーズとの整合性

2014年11月の国家気候変動委員会において NAMAs が承認され、同年12月の閣議決定を経て UNFCCC に通報された。また、2015年10月には国別目標案（Intended Nationally Determined Contributions : INDCs）が発出された。NAMAs や INDCs にみられる気候変動対策の実施に向け、セクター別には以下のような政策が策定・実施されている。

- ・ Climate Change Master Plan（2015-2050）
- ・ Thailand Smart Grid Development Master Plan（2015-2036）
- ・ Energy Efficiency Plan（2015-2036）
- ・ Alternative Energy Development Plan（2015-2036）
- ・ Environmentally Sustainable Transport System Plan（2013-2030）
- ・ National Industrial Development Master Plan（2012-2031）

このようにタイ政府は気候変動対策の実施促進に努力を傾注している。本プロジェクトが対象とする BMA マスタープランは地方行政レベルにおいてこれら国家政策の実施を促進する内容をもつ。

#### (2) 実施機関とプロジェクトアプローチの適切性

先行フェーズに引き続き本プロジェクトでも BMA 環境局を主な実施機関として協力の準備が進められてきた。バンコク都の気候変動対策の計画立案と実施を進めてきた環境局は、マスタープラン作成においても中心的な役割を果たした。マスタープランの実施を支援する本プロジェクトでも同様な役割が期待できる。また、環境局の大気汚染騒音管理部の一部署として、2016年中を目途に、気候変動対策課の設置が予定されている。部局にまたがる対策事業を実施して行くうえで、環境局は従前の経験を活かし部局間の調整の役割を果たすと期待される。

#### (3) 日本による支援の妥当性

2015年4月現在の対タイ王国事業展開計画には、環境・気候変動対策プログラムが含まれている。このプログラムは、「気候変動対策については、政策・制度面及び実施能力強化の支援を行うとともに、タイでの取り組み成果を周辺国に発信する協力を行う」ことが目的とされている。このプログラムのもとで多数の技協・有償案件が実施されており、本プロジェクトはその一つに含まれることとなる。本プロジェクトの基本計画は環境・気候変動対策プログラムの目的によく合致する。

### 4-2 有効性

「高いと見込まれる」

本プロジェクトでは、成果1に含まれる活動の実施を通じて、関係部局の間において組織横断

的な「制度的取り決め」(institutional arrangement) を設けることにより、部局横断的な事業の承認にかかる手続きも明確な形を取り、また多くのマスタープランの事業が正式に業務化されることで C/P によるプロジェクト活動の従事あるいはセミナー等の参加が本来業務化してくことが見込まれる。それにより、プロジェクト目標の達成は大きく前進するといえる。

#### 4-3 効率性

「高いと見込まれる」

2016 年中に設置が見込まれる気候変動対策課は、BMA にはこれまでなかった気候変動対策の専任部署となる。このような活動主体が稼働を開始することにより、当面はプロジェクトの効率性が一段と高まるが見込まれる。

#### 4-4 インパクト

「高いと見込まれる」

気候変動政策実施の結果として低炭素化社会に移行することが可能となれば、バンコク都のような人口稠密地域では GHG 排出量の低減に伴う環境改善効果は大きなものとなることが期待できる。また、BMA マスタープランは、地方自治体のイニシアチブを示すものとして、また政策実施体制の構築など地方行政レベルの先行事例を与えるものとして、今後の気候変動政策の全国的な整備と実施に大きな影響を与えることが期待できる。本プロジェクトの実施を通じて蓄積される経験と情報を活用することにより、BMA は他の地方行政機関または自治体が関連の行動計画を作成するに際して多大な貢献を行うことが可能となり、このような BMA による政策面での貢献は本プロジェクトが与えるインパクトの一つとして考えることができる。

#### 4-5 持続性

「高いと見込まれる」

NAMAs や INDCs の発出にみられるようにタイ政府による気候変動対策へのコミットは既に明確なものとなっている。また、2015 年に作成された国家版の気候変動マスタープラン (2015-2050) では中期計画の一つに地方レベルの行動計画の整備が含まれている。このように気候変動対策にかかる政策段階の持続性は既に確保されている。

BMA 環境局大気汚染騒音管理部の下に置かれる気候変動対策課は BMA にはこれまでなかった気候変動対策の専任部署となるものである。新たな活動主体が整備されることにより気候変動対策の部局横断的な実施促進が継続的に行われる体制が整うことが見込まれる。

BMA は行政機関であることから、人事異動による TF メンバーなどの C/P 要員の交替は避けられないものと考える必要がある。引継ぎ時点での十分な情報共有及び関連情報の蓄積により、当初から人事異動に備える体制を整えることにより、実施体制面の持続性を維持することができる。

今回の詳細計画策定調査により行ったインタビューを通じて、BMA の財政状態は決して良いとはいえないと TF 関係者から何度か発言があった。現状では、BMA が新たな事業に制約なく予算投入することは難しいと考えられるが、マスタープランの事業の相当数は、国の事業あるいは既に予算が配賦された通常業務そのものであることに留意したい。すなわち毎年の経常的な業務に気候変動対策を含ませることにより、気候変動対策事業の財務的持続性のレベルを高めているといえる。

## 付 属 資 料


1. 署名済み協議議事録（M/M）
2. 収集資料リスト
3. プロジェクト要請書
4. 気候変動対策課業務内容

**MINUTES OF MEETING  
ON  
THE DETAILED PLANNING SURVEY  
ON  
THE PROJECT FOR  
STRENGTHENING INSTITUTIONAL CAPACITY FOR  
THE IMPLEMENTATION OF  
BANGKOK MASTER PLAN ON CLIMATE CHANGE 2013-2023  
IN  
THE KINGDOM OF THAILAND**

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

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

Bangkok, 4<sup>th</sup> July 2016



Dr. Masato Kawanishi  
Senior Advisor  
Japan International Cooperation Agency  
Japan



Ms. Suwanha Junggrueng  
Director General  
Department of Environment  
Bangkok Metropolitan Administration  
Kingdom of Thailand

## THE ATTACHED DOCUMENT

### I. Draft Record of Discussions

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

Both sides agreed to the contents of the draft Record of Discussions (R/D) shown in Appendix.

### II. Main Points Discussed

#### (1) Priority Activities to be supported in the Project

Candidate activities to be supported for Output 2 under the Project were presented by BMA in the application for Japan's technical cooperation submitted on 13<sup>th</sup>, August 2014, as shown in Appendix.

Other potential activities were also indicated as below by the Task Force members during the interviews in the detailed planning survey.

##### (a) Transport

- Development of bikeway with funding by non-governmental sources and awareness building in target communities

##### (b) Energy

- Development of the integrated database system for electricity data collection and management for all BMA buildings

##### (c) Waste and wastewater

- MRV data collection and analysis in the waste and wastewater sector
- Water-saving technologies, with information on its potential to reduce GHGs emissions
- Development and promotion of composting techniques for households
- Efficient garbage collection system – model development in selected district(s)

##### (d) Urban Green Planning

- Development of M&E for the promotion of the Biotope Area Factor (BAF)
- Trials for the promotion of rooftop greening and wall greening
- Revision/updating of "Bangkok Comprehensive Plan" (2013)
- Data collection and analysis on urban greening

##### (e) Adaptation

- Development of flood hazard maps in selected district(s)

#### (2) Other findings of the interviews with the Task Force members

The interviews indicated the necessities (a) to make sure that the membership of the

Task Force corresponds to its evolving roles through different stages of planning and implementation of the Master Plan, and if necessary, consider a change of some members; and (b) to improve the decision making process of the Task Force, and if necessary, consider a possible merger with the Working Group along the respective sectors. The interviews also found the needs to strengthen the inter-departmental coordination in order to assign responsibilities and provide necessary budget and KPI to the relevant departments in an appropriate manner.

**(3) Involvement of Yokohama City**

JICA will provide BMA staff with opportunities to learn the experiences of local government concerning climate change measures in collaboration with Yokohama City through training and dispatching of experts and/or missions.

Yokohama City pointed to the importance of capacity development by cooperation for learning by doing activities under the Master Plan.

**(4) Contribution to mitigation and/or adaptation to climate change**

The Project is expected to contribute to mitigation and/or adaptation to climate change by promoting the implementation of the BMA Master Plan.

Appendix Draft of Record of Discussion (R/D)





(DRAFT)

**RECORD OF DISCUSSIONS  
ON  
THE PROJECT FOR STRENGTHENING INSTITUTIONAL  
CAPACITY FOR THE IMPLEMENTATION OF  
BANGKOK MASTER PLAN ON CLIMATE CHANGE 2013-2023  
IN  
THE KINGDOM OF THAILAND**

**AGREED UPON BETWEEN  
BANGKOK METROPOLITAN ADMINISTRATION  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY**

Bangkok, [date], 2016

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Mr. Hiroo Tanaka  
Chief Representative  
Thailand Office  
Japan International Cooperation  
Agency  
Japan

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Bangkok Metropolitan Administration  
Kingdom of Thailand

WB

S. Janyong

Based on the minutes of meetings on the Detailed Planning Survey on the project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023 (hereinafter referred to as "the Project") signed on 4<sup>th</sup> July 2016 between Bangkok Metropolitan Administration (hereinafter referred to as "BMA") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with BMA and relevant organizations to develop a detailed plan of the Project.

Both parties agreed to the details of the Project and main points discussed as described in the Appendix 1 and the Appendix 2, respectively, and to request their respective governments to proceed with the necessary procedures for implementation of the Project.

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

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

Appendix 1: Project Description

Appendix 2: Main Points Discussed

Appendix 3: Minutes of Meetings on the Detailed Planning Survey on the Project  
(excluding the draft R/D)



## PROJECT DESCRIPTION

### **I. BACKGROUND**

GOT 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 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.

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

Details of the Project are described in the Logical Framework (Project Design Matrix: PDM) (Annex 1) and the Plan of Operation (Annex 2).

#### 1. Input

##### (1) Input by JICA

##### (a) Dispatch of Experts

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.

(b) Training

JICA will offer training in Japan and/or other countries to Thai counterpart personnel connected with this project.

(c) Machinery and Equipment

- ① Equipment necessary for enhancing priority activities
- ② Office equipment such as PC and printer
- ③ Other equipment for implementing the project activities, if necessary

(d) Local Cost

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

Input other than indicated above will be determined through mutual consultations between JICA and BMA during the implementation of the Project, as necessary.

(2) Input by BMA

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

- (a) Services of BMA's counterpart personnel and administrative personnel as referred to in II-2;
- (b) Suitable office space with necessary equipment for Japanese experts;
- (c) Information as well as support in obtaining medical service;
- (d) Credentials or identification cards;
- (e) Available data (including maps and photographs) and information related to the Project; and
- (f) Running expenses necessary for the implementation of the Project

2. Implementation Structure

The project organization chart is given in the Annex 3. 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

The counterpart personnel listed in the Annex 4 are expected to participate in the Project.

(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. A list of proposed members of JCC is shown in the Annex 5.

3. Project Site(s) and Beneficiaries

The project site is the area covered by the Bangkok Master Plan on Climate Change 2013-2023.

4. Duration

Five (5) years from the arrival of the first expert.

5. Reports

BMA and JICA experts will jointly prepare the following reports in Thai and Japanese.

(1) Monitoring Sheet on semiannual basis until the project completion.

(2) Project Completion Report at the time of project completion.

6. Environmental and Social Considerations

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

### **III. UNDERTAKINGS OF BMA**

1. BMA will take necessary measures to:

- (1) ensure that the technologies and knowledge acquired by the Kingdom of Thailand nationals as a result of Japanese technical cooperation contributes to the economic and social development of the Kingdom of Thailand, and that the knowledge and experience acquired by the personnel of the Kingdom of Thailand from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project;
- (2) grant privileges, exemptions and benefits to the JICA experts referred to in II-1 above and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in the Kingdom of Thailand.
- (3) provide security-related information as well as measures to ensure the safety of the JICA experts; and
- (4) permit the JICA experts to enter, leave and sojourn in the Kingdom of Thailand for the duration of their assignments therein and exempt them



from foreign registration requirements and consular fees.

Other privileges, exemptions and benefits will be provided in accordance with the Agreement

#### **IV. MONITORING AND EVALUATION**

JICA and the BMA will jointly and regularly monitor the progress of the Project through the Monitoring Sheets based on the Project Design Matrix (PDM) and Plan of Operation (PO). The Monitoring Sheets will be reviewed every six (6) months.

Also, Project Completion Report will be drawn up one (1) month before the termination of the Project.

JICA will conduct the following evaluations and surveys to verify sustainability and impact of the Project and draw lessons. The BMA is required to provide necessary support for them.

1. Ex-post evaluation three (3) years after the project completion, in principle
2. Follow-up surveys on necessity basis

#### **V. PROMOTION OF PUBLIC SUPPORT**

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

#### **VI. MISCONDUCT**

If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, BMA and relevant organizations will provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Kingdom of Thailand.

BMA and relevant organizations will not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

#### **VII. MUTUAL CONSULTATION**

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

#### **VIII. AMENDMENTS**

The Record of Discussions may be amended by the minutes of meetings between JICA and BMA. However, PO may be amended in the Monitoring Sheets.

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



- Annex 1 Logical Framework (Project Design Matrix:PDM)
- Annex 2 Tentative Plan of Operation
- Annex 3 Project Organization Chart
- Annex 4 A List of Thai Counterparts and Administrative Personnel
- Annex 5 A List of Proposed Members of Joint Coordinating Committee/  
Steering Committee



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# 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 4<sup>th</sup> 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"> <li>Sufficient budget and staff are allocated by each responsible department in BMA to implement the Master Plan.</li> <li>Positive effects on adaptation and mitigation are recognized by a review of the Master Plan in 2023.</li> </ol>	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"> <li>The endorsement mechanism for the inter-department projects for the climate change is established in BMA by the end of the project term.</li> <li>Inter-department resources become available for implementation of the Master Plan.</li> <li>Intra/inter-organizational cooperation and implementation structure is established to implement the Master Plan.</li> </ol>	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"> <li>The national climate change policies strategies are not drastically changed.</li> <li>Relevant ministries and agencies continue to cooperate with BMA.</li> </ul>
Output 1: Institutional arrangements are improved for the effective and smooth implementation of the Master Plan.	<ol style="list-style-type: none"> <li>1-1. The assessment reports on the institutional arrangements are prepared by the end of the first year of the project term.</li> <li>1-2. Procedure for implementing inter-department project is documented.</li> <li>1-3. Institutional and organizational arrangements for implementing inter-department project are documented.</li> </ol>	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"> <li>Projects and programs for the climate change mitigation and adaptation in Thailand are steadily carried out.</li> <li>Majority of the counterpart personnel trained by the project is retained in their respective position.</li> <li>The implementation structure of the Project (including roles and responsibilities of</li> </ul>
Output 2: Capacity for planning and implementation of prioritized projects under the Master Plan is strengthened.	<ol style="list-style-type: none"> <li>2-1. Number of priority activities applied with low carbon technologies and/or practices</li> <li>2-2. Screening tool of climate risks for economic development planning in BMA comes to be utilized.</li> <li>2-3. Budget amount, number of staff, utilization of equipment and materials in course of the priority activities implementation.</li> </ol>	Minutes of JCC and Task Force meeting, records of workshops and seminars held in a course of the Project implementation	

Design



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Output 3: Capacity for monitoring and evaluation (M&E) to assess the progress of the Master Plan is strengthened.	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.		participating organizations) is sustained.
Activities 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.	Inputs		
	<b>Japanese side</b>  <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.  <u>Training in Japan and/or Other Counties</u>  <u>Machinery and Equipment</u> (1) Equipment necessary for enhancing priority activities (2) Office equipment such as PC and printer	<b>Thailand side</b>  <u>Counterpart personnel</u> (1) Project Director (2) Project Manager (3) Other Personnel  <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  <u>Budgetary Arrangement</u> Administration and Operational costs	
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.			<b>Pre-conditions</b> <ul style="list-style-type: none"> <li>Conditions are satisfied to initiate the Project as indicated in the Record of Discussion.</li> </ul>

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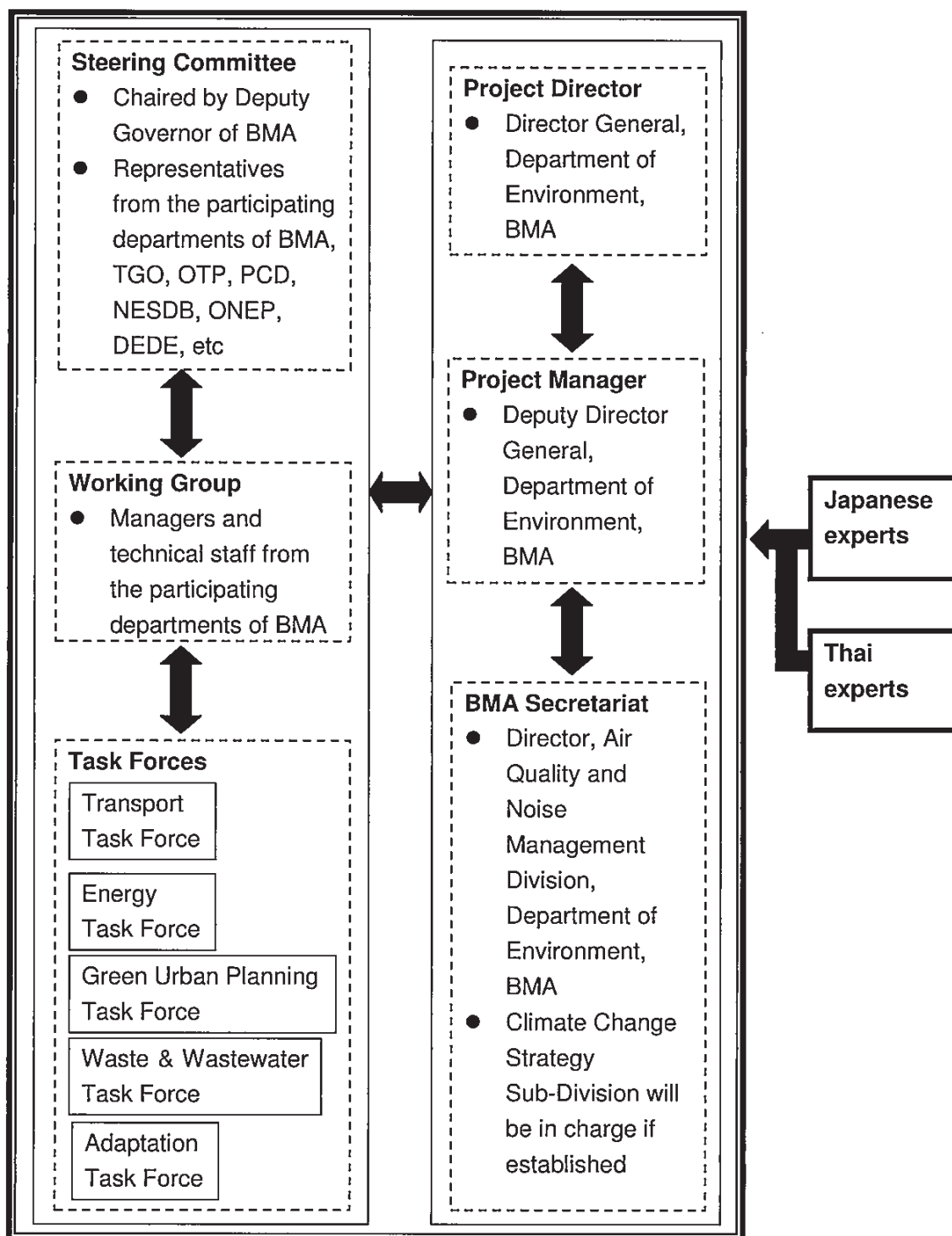
<p>3-1. Training courses for MRV are set up and conducted for relevant sectors. The courses include evaluation on trainee's performance, as well as feedback from trainees in form of their course assessment.</p> <p>3-2. Knowledge concerning M&amp;E on climate change policy implementation is shared through training and seminars.</p> <p>3-3. BMA conducts M&amp;E of the progress of the Master Plan, in particular for the comprehensive review to be scheduled in 2018.</p> <p>3-4. Methodologies for M&amp;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>3-5. BMA communicates the result of the above-mentioned comprehensive review with the relevant stakeholders and the general public.</p>	<p>(3) Other equipment for implementing the project activities, if necessary</p>		
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Version 0 as of 4th July 2016

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### ANNEX 3 Project Organization Chart



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#### **Annex 4 A List of Thai Counterparts and Administrative Personnel**

The following is a list of the counterparts, as provided by BMA in the application for Japan's technical cooperation on 13th, August 2014.

The list will be updated and provided by BMA before the start of the project.

<b>Name</b>	<b>Position/Department</b>
<b>Ms. Suwanna Jungrungrueng</b>	Director General, Department of Environment
<b>BMA Secretariat</b>	
<b>Ms. Siriporn Tantivanich</b>	Director, Air quality and Noise Management Division, Department of Environment
<b>Act. Sub Lt. Wiruch Tanchanapradit</b>	Chief of Environmental Impact Study and Analysis Sub-Division, Air quality and Noise Management Division, Department of Environment
<b>Ms. Supaporn Kittwarodom</b>	Environmentalism, Environmental Study and Analysis Sub-Division, Air quality and Noise Management Division, Department of Environment
<b>Ms. Natnares Macharoen</b>	Environmentalism, Air quality and Noise Management Division, Department of Environment
<b>Ms. Panyalai Thawonrat</b>	Environmentalism, Air Quality and Noise Management Division, Department of Environment
<b>Ms. Thanaporn Kemdang</b>	Environmentalism, Air quality and Noise Management Division, Department of Environment
<b>Transport Task Force</b>	
<b>Mr. Thosapol Suparee</b>	Civil Engineer, Traffic and Transportation Department, (Team Leader)
<b>Mrs. Kreufah Boondoung</b>	Computer Technician, Traffic and Transportation Department
<b>Mr. Jakrapon Wannakul</b>	Civil Engineer, Traffic and



	Transportation Department,
<b>Miss Hunsa Amattayakul</b>	Civil Engineer, Department of Public Works, BMA
<b>Mr. Tharathon Kanjanakorn</b>	Civil Engineer, Traffic and Transportation Department, BMA (Secretary)
<b>Mr. Ariyah Mekhakul</b>	Chief of Building Engineer, Department of Public Works, (Team Leader)
<b>Mr. Choowet Senparn</b>	Civil Engineer, Department of Public Works, BMA
<b>Mr. Siriwat Thaisuriyo</b>	Architect, Department of Public Works, BMA
<b>Mr. Kangwan Chanprasert</b>	Policy and Planning Analyst, Professional Level, Environment Strategy Sub-division, Public Health and Environment Strategy Division, Strategy and Evaluation Department
<b>Ms. Supawan Intoon</b>	Environmentalist, Air Quality and Noise Management Division, Department of Environment
<b>Mr. Nattapol Nakapan</b>	Civil Engineer, Department of Public Works
<b>Waste and Wastewater Task Force</b>	
<b>Ms. Sirilak Leerasiri</b>	Chief of Database and Tariff Collection Sub-Office, Department of Drainage & Sewerage (Team Leader)
<b>Ms. Wankaew Homnan</b>	Sanitary Technical officer, Solid Waste Hazardous Waste and Nightsoil Management Division, Department of Environment
<b>Mr. Pakpoom Suakham</b>	Mechanical Engineer, Solid Waste Disposal Division Department of Environment
<b>Mr. Pathan Banjongproo</b>	Sanitary Engineer, Department of Drainage & Sewage
<b>Mr. Panuwatt Ontes</b>	Policy and Plan Analyst, Policy and

	Plan Division, Department of Environment
<b>Ms. Suchada Bosup</b>	Sanitary Technical officer, Air Quality and Noise Management Division, Department of Environment
<b>Ms. Wontana Wuttiyingyong (Nong)</b>	Sanitary Technical officer (Professional level), Solid Waste Hazardous Waste and Nightsoil Management Division, Department of Environment (Secretary)
<b>Green Urban Planning Task Force</b>	
<b>Mr. Surasak Wongpoot</b>	City Planner Senior Professional Level, Urban Development Planning Division, City Planning Department (Team Leader)
<b>Ms. Khwanchanok Sakkosit</b>	City Planner, Urban Development Planning Division, City Planning Department
<b>Ms. Sukontha Yumpong</b>	Urban Planner, Urban Development Planning Division, City Planning Department
<b>Ms. Thipawan Saenchan</b>	Urban Planner, Urban Development Planning Division, City Planning Department
<b>Mrs. Warittha Chaimchirakun</b>	Agriculture Technical Officer, Public Parks Office, Department of Environment
<b>Ms. Chanida Rodsawat</b>	Agriculture Technical Officer, Public Parks Office, Department of Environment
<b>Ms. Soysook Phongspul</b>	Urban Planner, Urban Development Planning Division, City Planning Department, (Secretary)
<b>Adaptation Task Force</b>	
<b>Mr. Surart Jaroenchaisakul</b>	Chief of Drainage System Development Sub-Division 3,




	Department of Drainage & Sewerage Team Leader)
<b>Ms. Pornapa Methaweewongs</b>	Strategy and Evaluation Department
<b>Ms. Orapim Pimcharoen, Ph.D</b>	Senior Urban Planner, City Planning Department
<b>Namoiy Pradabphet, POL.SGT.MAJ.</b>	Disaster Prevention and Mitigation Professional Level, Bangkok Fire and Rescue Department
<b>Mr. Keerati Sripramai,Dr. Eng.</b>	Disaster Prevention and Mitigation Practitioner Level, Bangkok Fire and Rescue Department
<b>Mr. Woraphong Billy</b>	Environmental Officer, Department of Environment
<b>Mr. Visnu Charoen</b>	Civil Engineer Professional Level, Department of Drainage & Sewerage

*Wb*

*S. Janyong*



## **Annex 5 List of Members of Joint Coordinating Committee**

### **1. Function**

The Joint Coordinating Committee (hereinafter referred to as "JCC"), composed of members listed in 2 below, will meet at least once a year and whenever the necessity arises. JCC may be organized jointly with Steering Committee (as shown in Annex 4). The main functions of JCC shall be as follows;

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

### **2. Compositions**

The JCC shall be comprised of;

#### **(1) Chairperson**

Deputy Governor of BMA

#### **(2) Committee Members**

##### **1) Thai side**

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



- Other official(s) appointed by the Chairperson or the Project Director
- 2) Japanese side
- JICA Experts to be dispatched by JICA
  - Representative(s) of JICA Thailand Office
  - Other personnel concerned to be decided and/or dispatched by JICA, if necessary
- 3) Observer
- Official(s) of the Embassy of Japan in Thailand
  - Other official(s) appointed by the Chairperson or the Project Director may attend the Committee meetings as observer(s)



## MAIN POINTS DISCUSSED

### (1) Priority Activities to be supported in the Project

Candidate activities to be supported for Output 2 under the Project were presented by BMA in the application for Japan's technical cooperation submitted in 13<sup>th</sup>, August 2014, as shown in Annex.

Other potential activities were also indicated as below by the Task Force members during the interviews in the detailed planning survey.

#### (a) Transport

- Development of bikeway with funding by non-governmental sources and awareness building in target communities

#### (b) Energy

- Development of the integrated database system for electricity data collection and management for all BMA buildings

#### (c) Waste and wastewater

- MRV data collection and analysis in the waste and wastewater sector
- Water-saving technologies, with information on its potential to reduce GHG emissions
- Development and promotion of composting techniques for households
- Efficient garbage collection system – model development in selected district

#### (d) Urban Green Planning

- Development of M&E for the promotion of the Biotope Area Factor (BAF)
- Trials for the promotion of rooftop greening and wall greening
- Revision/updating of "Bangkok Comprehensive Plan" (2013)
- Data collection and analysis on urban greening

#### (e) Adaptation

- Development of flood hazard map in selected district(s)

### (2) Other findings of the interviews with the Task Force members

The interviews indicated the necessities (a) to make sure that the membership of the Task Force corresponds to its evolving roles through different stages of planning and implementation of the Master Plan, and if necessary, consider a change of some members; and (b) to improve a decision making process of the Task Force, and if necessary, consider a possible merge with the Working Group along the respective sectors. The



interviews also found the needs to strengthen the inter-departmental coordination in order to assign responsibilities and provide necessary budget and KPI to the relevant departments in an appropriate manner.

**(3) Involvement of Yokohama City**

JICA will provide BMA staff with opportunities to learn the experiences of local government concerning climate change measures in collaboration with Yokohama City through training and dispatching of experts and/or missions. Yokohama City pointed to the importance of capacity development by cooperation for learning by doing activities under the Master Plan.

**(4) Contribution to mitigation and/or adaptation to climate change**

The Project is expected to contribute to mitigation and/or adaptation to climate change by promoting the implementation of the BMA Master Plan.

Annex      Example of Projects under the BMA Master Plan



## **Annex Example of Projects under the BMA Master Plan**

To implement the Bangkok Master Plan on Climate Change 2013-2023, currently, the following projects are planned or being planned, including internal budgetary arrangement (budget request has been made, or will be made, from the line departments to the finance department), as well as external budget support, such as from subsidy programs of the central government.

*In the Technical Cooperation Project, it is expected that JICA will provide support to BMA in materializing, implementing, and monitoring and evaluating such projects under the Master Plan, through dispatching experts, conducting technical studies and providing advices, providing training, as well as organizing seminars and workshops, etc.*

### **1. Transport**

1.1) Title: Project for improving traffic congestion through traffic sign systems

Rationale and Activity Contents: Traffic congestion has been recognized as a major source of GHG emission, as well as a potential area for mitigation. As the major part of traffic sign system in Bangkok has been controlled by BMA, the Transport Task Force considered that changing the traffic control system would be effective in alleviating congestion and thus reducing GHGs. This project should involve advices from experts as well as traffic data collection on model areas (roads), and elaborate possible improvement or changes, including hardware and software, as well as ways to control traffic by BMA.

1.2) Title: Project for developing bicycle lanes to promote non-motorized transport

Rationale and Activity Contents: BMA has been encouraging Bangkok citizens to use non-motorized transport, such as bicycles, in order to avoid increasing traffic as well as associated emission of GHGs and air pollution substances. As a part of such efforts, it has been now discussed that introducing bicycle lanes is one of useful measures. The project involves conducting technical studies of suitable locations and design of bicycle lanes, which will encourage commuters to replace their transport modes, from passenger vehicles to bicycles.

1.3) Title: Project for developing canal transportation to promote passenger modal shift

Rationale and Activity Contents: BMA has developed new canal transportation routes; Saen Saep canal extension and Phasricharoen canal. The major objectives of the project are to provide Bangkok citizens with a variety of the means of

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transportation, and to shift passenger from road transportation to reduce road traffic, and thus reducing GHGs. In order to evaluate the effects of the project, a practical MRV system is necessary to be developed, and a survey/data collection should be appropriately designed and conducted. To effectively implement these activities, it is important to have technical support from experts.

1.4) Title: Project for promoting eco-driving

Rationale and Activity Contents: Under the Master Plan, BMA has planned to promote eco-driving among those drivers of BMA vehicles (garbage trucks, other service cars/trucks) and BMA officers. The objective of the project is to reduce fuel consumption of BMA vehicles, and to demonstrate such activities and behavioral changes to the citizens. Major activities include organizing seminars and training courses on eco-driving, and implementing eco-driving by the BMA drivers/officers, as well as monitoring the emission reductions.

## 2. Energy

2.1) Title: Project for improving standard of monitoring, analysis and evaluation of project implementation on measures for energy efficiency in BMA's buildings

Rationale and Activity Contents: BMA plans to implement a project for improving energy efficiency for buildings in BMA2 by (1) retrofitting BMA's buildings with energy efficiency equipment, (2) changing pump model to inverter system, (3) modifying windows to match air conditioning rooms, (4) changing air conditioning system to district cooling system, (5) installing insulation system to reduce RTTV, and (6) installing system for separating meter from central measurement system to a decentralized measurement system in each office. Accordingly, BMA would like to develop a MRV system to effectively measure, track records, and analyze data in order to improve efficient energy consumption in BMA's buildings and replicate such models to other buildings outside BMA.

For this project, it is necessary to have expert advices in conducting feasibility study as well as monitoring the effectiveness of energy management and GHG emission reduction.

## 3) Waste and Wastewater

3.1) Title: Project for improving people's participation in reducing and separating community garbage

Rationale and Activity Contents: In 2011, BMA collected 8,930 tons per day of municipal waste on average. BMA has been implementing campaigns and activities in accordance with the 3R principles, resulting in increasing public cooperation in reducing and sorting waste at source. In particular, the concept of Community Based



Solid Waste Management (CBM) has been introduced and implemented since 2007. At the beginning of the CBM project, the Department of Environment (DOE) implemented a capacity building of BMA officers in charge of solid waste management, and later recruited community representatives to participate in the pilot project during the first year, 2009. There were around 12 participating communities in the first year, and the numbers has gradually increased in the following years to almost 314 communities nowadays. At present, DOE has also expanded the mentioned project to other target groups (e.g. educational institutes, department stores, hotels, hospitals, and villages). The advantages of this project are to improve the performances of BMA officers and to promote public cooperation in reducing and sorting solid waste at sources. Currently, the following steps are considered:

(1) Improving the capacity of BMA officers and 150 selected representatives from good practice communities who are in charge of solid waste management, to become smart leaders with abilities to convey messages, knowledge and exchange experiences in the field of reducing and sorting municipal waste at sources to target groups.

(2) Selecting and recruiting target groups who are willing to participate in and cooperate with this project. The target groups will be divided into 7 different groups as follows:

- School: 20
- University: 5
- Village: 10
- Hospital: 10
- Department store: 5
- Hotel: 5
- Community: 50 (from 50 districts)

Total 105 places

(3) Providing knowledge and technical support, sharing experiences, organizing study tours to the best practice communities, and organizing training courses and workshops regarding solid waste management (e.g. CBM, 3Rs concept and related fields) for the above 7 target groups in order to raise awareness and improve their abilities to implement those activities.

(4) Setting up appropriate working groups to support each group in implementing and monitoring the progress of project.

(5) Providing strategies and methodologies in this project to the above target groups in order for them to apply the concepts and ideas, and introducing key success factors and lessons from Japanese municipalities (e.g. Yokohama City) to raise awareness and change attitudes and behaviors.



(6) Implementing effective and appropriate public relations and promotion campaigns in every target group and the public by disseminating the success of pilot study from target groups.

(7) Inspecting, auditing, and evaluating the progress of projects in timely manner.

(8) Finally, once obtaining the best practices of CBM and the code of practices to key success, further studies should be carried out to expand the target communities and to sustain the practices. After training workshops, the successful groups will be selected as a pilot model to distribute knowledge to other groups.

#### **4. Green Urban Development**

4.1) Title: Project for promoting rooftop greening and wall greening in BMA Rationale and Activity Contents: The objective of this project is to study appropriate models and standard design of rooftop greening and wall greening for BMA, including best practices, design guidelines, and standard drawing. Through this project, it is expected to formulate incentive measures for increasing rooftop greening and wall greening in the next BMA's city plan.

4.2) Title: Project for improving greening sided road.

Rationale and Activity Contents: As a part of BMA governor's policy, BMA has made efforts to increase greening sided roads, whereby reducing air pollution. In this project, it is planned to increase 40 greening sided roads as a pilot project (with 2 meters back-off from the main roads according to the BMA's new regulation).

#### **5. Adaptation**

5.1) Title: Project for improving knowledge on Bangkok anti-flood measures

Rationale and Activity Contents: As a major concern and threat to Bangkok, flood control is a matter of urgency as well as a long term consideration. As a part of this, BMA endeavors to increase its efforts to provide education on disaster preparedness to people and communities to prevent and mitigate the potential effects of disaster. In this project, expected activities include (1) making hazard maps such as flood-prone area maps, flash flood area maps, coastal erosion maps, and maps for other disasters; (2) preparing disaster prevention manuals to educate people; (3) providing training courses for people and communities who live in disaster-prone areas. Moreover, project activities should include improving anti-flood structural measures in BMA. For this, it is necessary to have both short and long term experts to provide technical knowledge and consultations to BMA. Also, provision of training to BMA official regarding necessary activities is expected.





調査名：タイ国「バンコク都気候変動マスタープラン2013-2023実施能力強化プロジェクト」詳細計画策定調査

番号	名 称	図書・ビデオ 地図・写真等	デジタル・コピー	発行機関	発行年
1	The Bangkok Master Plan on Climate Change 2013-	図書	電子ファイル	BMA	2015
2	Climate Change Master Plan and Local Authority	図書（プレゼン資料）	電子ファイル	ONEP	2014/15
3	Climate Change Master Plan（タイ語）	図書	電子ファイル	ONEP	2015
4	Current situation of the implementation_1	図書	電子ファイル	BMA	2016
5	Current situation of the implementation_2	図書	電子ファイル	BMA	2016
6	Report on Observance of Standards and Codes	図書	電子ファイル	IMF	2009
7	Organization Chart of Management of Air Quality	図書	電子ファイル	DOE, BMA	2016
8	Strategy of Climate Change Sub Division	図書	電子ファイル	DOE, BMA	2016
9	Summary Bangkok 20 Year Development Plan	図書	電子ファイル	BMA and other	2013?
10	Thailand INDC (Oct 2015)	図書	電子ファイル	ONEP	2015

### 3. プロジェクト要請書

Application Form (Technical Cooperation Project)  
Technical Cooperation for Development Planning

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バンコク都気候変動マスタープラン  
2013-2023 実施能力強化プロジェクト  
技術協力プロジェクト

#### APPLICATION FORM FOR JAPAN'S TECHNICAL COOPERATION

1. **Date of Entry:** Day 13 Month August Year 2014
2. **Applicant:** The Government of Thailand
3. **Project Title:** Project for Strengthening Institutional Capacity for the Implementation of Bangkok Master Plan on Climate Change 2013-2023
4. **Contact Point (Implementing Agency):** Department of Environment,  
Bangkok Metropolitan Administration  
Address: City Hall 2, Mitrmaitri Road, Dindaeng, Bangkok, 10400, Thailand  
**Contact Person:** Siriporn Tantivanich (Ms.)  
Tel. No.: (66) 22463041 Fax No. (66)22468114  
E-Mail: siribhond@hotmail.com / jica\_bma\_secretariat@googlegroups.com
5. **Background of the Project**

*(Current conditions of the sector, Government's development policy for the sector, Issues and problems to be solved, Existing development activities in the sector, the Project's priority in the National Development Plan/Public Investment Program, etc.)*

In Thailand, rapid economic development is ongoing. Especially in Bangkok Metropolitan Region, issues of urbanization such as traffic congestion and increase in waste amount have become serious. Bangkok has addressed not only these traditional urbanization issues, but also paid growing attention to new issues such as reduction of Greenhouse Gases (GHGs), or climate change mitigation and adaptation, as well as disaster risk reduction (DDR), and tried to tackle these problems, by establishing Bangkok's policy to address climate change. From international perspectives, the significance of climate change mitigation and adaptation has been increasing, driven by the United Nations Framework Convention on Climate Change (UNFCCC). In its COP21 in 2015, a new international regime is expected to be agreed, as the same time, efforts at the sub-national level, such as Bangkok, is recognized as an effective approach to address the abovementioned issues.

As the local level, Bangkok Metropolitan Administration (BMA) is now developing "Bangkok Master Plan on Climate Change 2013-2023", supported by JICA, and in collaboration with Yokohama City. Similar efforts are now in progress in other municipalities, such as Rayong (east), Khon Kaen (northeast),

and Nakhon Si Thammarat (south), where high pace of economic development and growing confluence of logistics and persons are expected. Therefore, it will be important to address various issues through comprehensive and cross-cutting approaches and realize low carbon and resilient communities under the concept of sustainable and low carbon development. These efforts are in line with ongoing policy formulation at the national level, namely the draft Thailand Climate Change Master Plan 2012-2050. These are inter-related and inter-dependent, and mutually reinforcing.

While the efforts of BMA and other local governments in elaborating a climate change master plan or any other environmental strategies are significant in terms of promoting low carbon and resilient society, there are many challenges found in the process of preparation. For example, the Bangkok Master Plan is designed to include many mitigation and adaptation activities as sub-projects at their first time, but BMA's technical expertise is not necessarily sufficient to implement these mitigation and adaptation activities. Also, measurement, reporting, and verification (MRV) of mitigation and monitoring and evaluation (M&E) of adaptation are crucial and should be integrated in the design of the Master Plan. Due to the lack of practical experiences of demonstrating such MRV and M&E cycles, difficulties are expected at the phase of operationalization. In this regard, capacity to carry out such activities should be strengthened for effective and sustainable implementation of the Master Plan.

In Japan, existing local government efforts to address environmental issues have now strategically transformed into comprehensive city development and management efforts, which cover high level policies as well as specific individual projects. Such local governments are highly motivated for expanding and deepening their international partnership with their counterparts in other countries, in collaboration with international organizations, and expected to play an important role for contributing their know-how and transfer of technologies, with involvement of business and other stakeholders. In this regard, information and knowledge from Japanese local governments are regarded as useful resources for this kind of efforts.

## **6. Outline of the Project**

### **(1) Overall Goal**

*(Long-term objective)*

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

### **(2) Project Purpose**

*(Objective expected to be achieved by the end of the project period.)*

*Elaborate with quantitative indicators if possible)*

The Implementation of Bangkok Master Plan on Climate Change 2013-2023 is promoted.

(3) Outputs

*(Objectives to be realized by the “Project Activities” in order to achieve the “Project Purpose”)*

1. Institutional and organizational arrangements are improved for the effective and smooth implementation of Bangkok Master Plan on Climate Change 2013-2023.
2. Capacity for planning and implementation of prioritized mitigation and adaptation projects under the Master Plan is strengthened.
3. Capacity for monitoring and evaluation (M&E) to assess the progress of the Master Plan is strengthened.

(4) Area to be covered by the Project

*(In case the proposed project assumes a particular area, please enter the name of the target area for the project and attach a rough map to the documents submitted. The attached map should be at a scale that clearly shows the project site.)*

Bangkok Metropolitan Area and its related vicinity

(5) Project Activities

*(Specific actions (including study items if project contains study activities) intended to produce each “Output” of the project by effective use of the “Input”. )*

**Output 1:** Institutional and organizational arrangements are improved for the effective and smooth implementation of Bangkok Master Plan on Climate Change 2013-2023.

**Activities**

- National and local legal framework, such as decrees, regulations, and procedures, which are closely related to the implementation of the Master Plan, are identified. Especially, related elements are extracted from climate change policies and measures related to nationally appropriate mitigation actions (NAMAs) in a measurable, reportable, and verifiable (MRV) manner by the Thai government.
- New items which should be incorporated into existing rules and regulations, and new rules and regulations which should be introduced by BMA (e.g. incentive to the private sector, and new rules and

standards which the private sector need to follow for saving energy and/or reducing wastes, and other economic and financial mechanisms) for effective and smooth implementation of the Master Plan are identified and introduced.

- Modality of work for implementing the Master Plan under the established institutional arrangement (Steering Committee, Working Group, Task Forces, and Secretariat) is developed for cross-cutting and comprehensive efforts.

**Output 2:** Capacity for planning and implementation of prioritized mitigation and adaptation projects under the Master Plan is strengthened.

**Activities**

- Useful knowledge, such as energy efficiency technologies, and good practices by the private sector and local governments in Japan, which contribute to effective implementation of prioritized projects, are shared through training and seminars.
- Knowledge sharing bases are established by utilizing the above efforts.
- Awareness raising activities for promoting the implementation of the Master Plan and prioritized projects are planned and conducted.
- Selected prioritized projects under the Master Plan are planned and implemented.
- \* *Details of the candidate projects under the Master Plan are explained in Annex I*

**Output 3:** Capacity for monitoring and evaluation (M&E) to assess the progress of the Master Plan is developed.

**Activities**

- Training plans for M&E and MRV, including PDCA cycle, for BMA officials, are elaborated and implemented, including demonstrating pilot monitoring in each sector of the Bangkok Master Plan on Climate Change 2013-2023
- Capacity of BMA officials to conduct MRV (Measurement, Reporting and Verification) for the Bangkok Master Plan on Climate Change 2013-2023 Project is developed.
- Methodologies for M&E and MRV for the Master Plan and its projects are studied, and procedures and guidelines for BMA as a local government are developed and demonstrated.

(6) Input from the Recipient Government

*(Counterpart personnel (identify the name and position of the Project manager), support staff, office space, running expenses, vehicles, equipment,*

*etc.)*

BMA will arrange an office space and assign a project manager and counterpart team to work with the Japanese experts in order to achieve the target purposes as follows:-

**Counterpart personnel/Project manager**

- Ms. Suwanna Jungrungrueng, Deputy Director General, Department of Environment, BMA

**Support staff**

- Director and working level staff (approximately 6 officials) Air quality and Noise Management Division, Department of Environment
- Heads and members of 5 Sectoral Task Forces from 7 BMA departments and subdivisions (approximately 60 officials)

*\* The list of officials are attached as Annex II*

**Office space**

- Will be provided as a Japanese experts working space

(7) Input from the Japanese Government

*(Number and qualification of Japanese experts/consultants, contents of training (in Japan and in-country) courses, seminars and workshops, equipment, etc.)*

**Japanese Experts/Consultants**

- [Overall Management] 1 chief manager and 1 sub-chief manager for overall control and advising for implementing the Master Plan, qualified in and experienced with master planning and M&E at national and local levels
- [Transport Sector] 1 sub-chief manager and 4 working-level consultants ((1)project designing, (2)data collection and analysis, (3)technology assessment, and (4) MRV, qualified in and experienced with climate change mitigation in the transport sector
- [Energy] 1 sub-chief manager and 4 working-level consultants ((1)project designing, (2)data collection and analysis, (3)technology assessment, and (4) MRV, qualified in and experienced with climate change mitigation in the energy sector
- [Waste and wastewater] 1 sub-chief manager and 4 working-level consultants ((1)project designing, (2)data collection and analysis, (3)technology assessment, and (4) MRV, qualified in and experienced with climate change mitigation in the waste and wastewater sector
- [Green Urban Planning] 1 sub-chief manager and 4 working-level consultants

((1)project designing, (2)data collection and analysis, (3)technology assessment, and (4) MRV, qualified in and experienced with climate change mitigation in the green urban planning sector

- [Adaptation] 1 sub-chief manager and 4 working-level consultants ((1)project designing, (2)data collection and analysis, (3)technology assessment, and (4) M&E, qualified in and experienced with climate change mitigation in adaptation to climate change

- [Coordination and training]

*2 project coordinators, including coordination for local governments, and 2 training planners*

## **7. Implementation Schedule**

Mo October, 2015 through October 2020

## **8. Description of Implementing Agency**

*(Budget allocated to the Agency, Number of Staff of the Agency, Department/division in charge of the project, etc.)*

Budget for implementing projects under the Master Plan will be planned and requested in the regular budget cycle of BMA on annual basis. The Number of staff (approximately 40) is shown in the 6.(6) above and its Annex II

## **9. Related Information**

(1) Prospects of further plans and actions/ Expected funding resources for the Project:

*(If implementing agency plans to take some (future) actions in connection with this proposed project, please describe the concrete plans/action and enter the funding sources for the plans and actions.)*

Budget for implementing projects under the Master Plan will be planned and requested in the regular budget cycle of BMA on annual basis.

Other than this, it is also planned to apply for energy-related subsidies provided by the Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy. Also for regular training of the staff on climate change, training programmes may be provided by Thailand Greenhouse Gas Management Organization (TGO) and Office of Environmental Policy and Planning (ONEP) of the Ministry of Environment and Natural Resources

(MNRE)

(2) Projects by other donor agencies, if any :

*(Please pay particular attention to the following items:*

The present proposal emanates from the JICA Technical Cooperation Project for Bangkok Master Plan on Climate Change 2013-2023, and is discussed with and requested to JICA only.

Green City Programme is being conducted by the Organization for Economic Development and Cooperation (OECD), which may be regarded on the same rationale for smart city development. However, the OECD work is focused on analysis on macro-level statistics, and not directly relevant to implementation and action of the Master Plan, while it may provide useful inputs of elaborating strategies.

Inter-city cooperation between BMA and the City of Yokohama was initiated by the memorandum of understanding (MOU) on technical cooperation for development of sustainable urban development in 2013. The cooperation promotes technology information sharing on energy management, public transport, waste and wastewater management, etc, with involvement of business, academia, and local communities.

(3) Other relevant Projects (Activities in the sector by the recipient government and NGOs), if any:

JICA Chao Phraya River Basin Flood Control Project

(4) Other relevant information(Available data, information, documents, maps, etc. related to the Project)

Data collected during the development of Bangkok Master Plan on Climate Change 2013-2023 are useful, while, there is a necessity to collect project specific data, as appropriate.

Information and data used for drafting the Thailand Master Plan on Climate Change 2012-2050 are also useful. Through the cooperation with national governmental agencies, these are used as reference information for the implementation of the Bangkok Master Plan on Climate Change 2013-2023.

## **10. Global Issues (Gender, Poverty, Climate change, etc.)**



*(Any relevant information of the project from global issues (gender, poverty, climate change, etc.) perspective.)*

The main objective of the proposed project is climate change, on which BMA endeavors to contribute to mitigation and adaptation with local efforts.

## **11. Environmental and Social Considerations**

*(Please fill in the attached screening format.)*

## **12. Beneficiaries**

*(Population for which positive changes are intended directly and indirectly by implementing the project and gender disaggregated data, if available)*

Bangkok residents, approximately 10 million people (including on registered population)

## **13. Security Conditions**

## **14. Others**

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

On behalf of the Government of \_\_\_\_\_

Date: \_\_\_\_\_

## **Screening Format (Environmental and Social Considerations)**

Question 1 Address of a project site

In Bangkok area.

Question 2 Outline of the project

2-1 Does the project come under following sectors?

☒ Yes      ☐ No

If yes, please mark corresponding items.

☐ Mining development

☐ Industrial development

☐ Thermal power (including geothermal power)

- ☐ Hydropower, dams and reservoirs
- ☒ River/erosion control
- ☐ Power transmission and distribution lines
- ☒ Roads, railways and bridges
- ☐ Airports
- ☐ Ports and harbors
- ☒ Water supply, sewage and waste treatment
- ☒ Waste management and disposal
- ☐ Agriculture involving large-scale land-clearing or irrigation
- ☐ Forestry
- ☐ Fishery
- ☐ Tourism

2-2 Does the project include the following items?

- ☐ Yes    ☒ No

If yes, please mark following items.

- ☐ Involuntary resettlement (scale: households, persons)
- ☐ Groundwater pumping (scale: m<sup>3</sup>/year)
- ☐ Land reclamation, land development and land-clearing (scale: hectors)
- ☐ Logging (scale: hectors)

2-3 Did the proponent consider alternatives before request?

- ☐ Yes: Please describe outline of the alternatives  
☒ No

2-4 Did the proponent have meetings with related stakeholders before request?

- ☒ Yes    ☐ No

If yes, please mark the corresponding stakeholders.

- ☒ Administrative body
- ☐ Local residents
- ☐ NGO
- ☐ Others ( )

### Question 3

Is the project a new one or an on-going one? In case of an on-going one, have you received strong complaints etc. from local residents?

- ☐ New    ☐ On-going (there are complaints)    ☒ On-going (there are no complaints)  
☐ Others ( )

### Question 4 Name of laws or guidelines:

Is Environmental Impact Assessment (EIA) including Initial Environmental Examination

(IEE) required for the project according to laws or guidelines in the host country?

☐ Yes ☒ No

If yes, please mark corresponding items.

☐ Required only IEE (☐ Implemented, ☐ on going, ☐ planning)

☐ Required both IEE and EIA (☐ Implemented, ☐ on going, ☐ planning)

☐ Required only EIA (☐ Implemented, ☐ on going, ☐ planning)

☐ Others: ( )

#### Question 5

In case of that EIA was taken steps, was EIA approved by relevant laws in the host country?

If yes, please mark date of approval and the competent authority.

<input type="checkbox"/> Approved: without a supplementary condition	<input type="checkbox"/> Approved: with a supplementary condition	<input type="checkbox"/> Under appraisal
--	---	--

(Date of approval: Competent authority: )

☐ Not yet started an appraisal process

☐ Others:( )

#### Question 6

If a certificate regarding the environment and society other than EIA, is required, please indicate the title of certificate.

☐ Already certified ☐ Required a certificate but not yet done

Title of the certificate :( )

☒ Not required

☐ Others ( )

#### Question 7

Are following areas located inside or around the project site?

☐ Yes ☒ No ☐ Not identified

If yes, please mark the corresponding items.

☐ National parks, protected areas designated by the government (coast line, wetlands, reserved area for ethnic or indigenous people, cultural heritage) and areas being considered for national parks or protected areas

- ☐ Virgin forests, tropical forests
- ☐ Ecological important habitat areas (coral reef, mangrove wetland, tidal flats)
- ☐ Habitat of valuable species protected by domestic laws or international treaties
- ☐ Likely salts cumulus or soil erosion areas on a massive scale
- ☐ Remarkable desertification trend areas
- ☐ Archaeological, historical or cultural valuable areas
- ☐ Living areas of ethnic, indigenous people or nomads who have a traditional lifestyle, or special socially valuable area

### Question 8

Does the project have adverse impacts on the environment and local communities?

- ☐ Yes      ☒ No      ☐ Not identified

Reason:  

### Question 9

Please mark related environmental and social impacts, and describe their outlines.

- |   |   |
|---|---|
| <input type="checkbox"/> Air pollution  | <input type="checkbox"/> Social institutions such as social infrastructure and local decision-making institutions |
| <input checked="" type="checkbox"/> Water pollution                           | <input type="checkbox"/> Existing social infrastructures and services   |
| <input type="checkbox"/> Soil pollution                                       | <input type="checkbox"/> The poor, indigenous or ethnic people  |
| <input checked="" type="checkbox"/> Waste                                     | <input type="checkbox"/> Maldistribution of benefit and damage  |
| <input type="checkbox"/> Noise and vibration                                  | <input type="checkbox"/> Local conflict of interests  |
| <input type="checkbox"/> Ground subsidence                                    | <input type="checkbox"/> Gender   |
| <input type="checkbox"/> Offensive odors                                      | <input type="checkbox"/> Children's rights  |
| <input type="checkbox"/> Geographical features                                | <input type="checkbox"/> Cultural heritage  |
| <input type="checkbox"/> Bottom sediment                                      | <input type="checkbox"/> Infectious diseases such as HIV/AIDS etc.  |
| <input type="checkbox"/> Biota and ecosystem                                  | <input type="checkbox"/> Others ( )   |
| <input type="checkbox"/> Water usage  |   |
| <input type="checkbox"/> Accidents  |   |
| <input checked="" type="checkbox"/> Global warming                            |   |
| <input type="checkbox"/> Involuntary resettlement                             |   |
| <input type="checkbox"/> Local economy such as employment and livelihood etc. |   |
| <input type="checkbox"/> Land use and utilization of local resources          |   |

Outline of related impacts:

Impact on the above mentioned areas are basically to improve baseline situation, by implementing the Master Plan

Question 10

Information disclosure and meetings with stakeholders

10-1 If the environmental and social considerations are required, does the proponent agree on information disclosure and meetings with stakeholders in accordance with JICA Guidelines for Environmental and Social Considerations?

☒ Yes

☐ No

10-2 If no, please describe reasons below.

[ ]

### **Strategy of Climate Change Sub-Division**

The responsibilities of the sub-division are divided into two categories as follows:

#### **1. Climate change mitigation and adaptation**

- Establishing the Bangkok Master Plan and Action Plan on Climate Change
- Scoping guidelines and measures as well as conducting campaigns/ activities for mitigation and adaptation
- Cooperating with relevant organizations to conduct countermeasures, activities, or campaigns for climate change resilient city
- Promoting the implementation on reducing GHG emission in Bangkok area
- Evaluation of GHG emission reduction in Bangkok area
- Implementing capacity building projects so as to enhance the resilience of Bangkok and reduce climate change including its impacts
- Collaborating with international organizations in order to increase technical efficiency and knowledge regarding climate change mitigation and adaptation
- Collecting information on the implementation of climate change
- Providing technical documents and practical manuals for greenhouse gas reduction to related stakeholders including transferring the knowledge and disseminating information for perceiving the impacts of climate change
- Others

#### **2. Promoting the use of renewable energy and energy conservation**

- Studying and analyzing energy consumption data in Bangkok in order to determine strategic plans on conserving energy and promoting the use of renewable energy
- Setting up projects and activities associated with energy conservation and promotion of the use of renewable energy
- Monitoring and evaluation (M&E) to assess the implementation of the plans included energy conservation and promotion of the use of renewable energy within their projects and activities
- Promoting knowledge, constructing understanding, and disseminating information on how to reduce Bangkok Metropolitan Administration's energy use
- Providing academic counseling and recommendations for energy conservation and promotion of the use of renewable energy to the public
- Cooperating with both involved national and international organizations to enhance energy-efficient technologies as well as strengthen capacity for related officials
- Others

