

PARTNERSHIP FOR MARKET READINESS: PMR - Thailand

(Ref. No. CS-8) Terms of Reference for Assessment of the DF&Bs energy management system and updating SEC for 11 sectors.

1. Background of the Partnership for Market Readiness (PMR) Programme

The World Bank established a Partnership for Market Readiness (PMR) programme, which is supported by a grant-based capacity building trust fund.¹ The PMR aims to provide financial and technical support to developing countries to build their capacity and pilot market instruments that would allow them to scale up their mitigation efforts. In addition, the PMR will provide a platform for technical discussions, and collective innovation on new market instruments. The PMR will also create and share, including with the UNFCCC, a body of knowledge on market instruments and lessons learned.

Thailand Greenhouse Gas Management Organization (Public Organization): TGO - under the Ministry of Natural Resources and Environment, the Royal Thai Government - as an Implementing Country Participant has proposed to the PMR to explore potential new domestic market mechanisms on four main components that cover several activities for the preparation and implementation phases. These components include:

- Component 1* Preparation of key market components of Energy Performance Certificate scheme (EPC);
- Component 2* Development of Local Greenhouse Gas Abatement Plans and a study on pricing mechanism for Low Carbon City program (LCC);
- Component 3* Policy recommendation on legal framework to establish the Emission Trading Scheme (ETS);
- Component 4* Project management.

In this connection, **Component 1** which has a focus on planning for establishing the voluntary EPC scheme brings to the objective of this Terms of Reference. The EPC is planned to be a “voluntary target-and-reward scheme” targeting the *Designated Factories and Buildings*(DF&Bs) of the intensive energy consumption sectors which in turn leading to intensive GHG emissions.

The PMR’s support for **Component 1** will focus on activities including:

- Activity 1* Reviewing and analyzing policies, laws, regulations and institutional arrangement required in order to implement the EPC;
- Activity 2* Developing the MRV system for the EPC in Thailand
- Activity 3* Assessing the DF&Bs energy management system and updating Specific Energy Consumption (SEC) for 11 sectors²;
- Activity 4* Verifying energy data of participating DF&Bs and setting up the baseline;
- Activity 5* Analyzing target setting methods for different industrial sectors and buildings; and
- Activity 6* Analyzing potential performance-based incentive and pricing mechanism for EPC.

¹More information on the PMR is online available at: <http://www.thepmr.org>

²(i) Cement (ii) Ceramic (iii) Iron & Steel (iv) Petro-chemical (v) Paper (vi) Food & Beverage (vii) Thermal power plant (viii) Department store (iv) Office (x) Hotel and (xi)Hospital.

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This term of reference (ToR) therefore aims at Activity 3 to assess energy management of the DF&Bs in 11 sectors by reviewing and collecting data from energy management reports and energy databases of the DEDE and update their Specific Energy Consumption (SEC) as an energy efficiency indicator in order to support baseline and target settings under the EPC scheme.

2. Objective of consultancy

The objectives of this TOR are;

- (1) To review and analyze energy data of DF&Bs in 11 sectors which consist of 6 manufacturing sectors, i) cement, ii) ceramic, iii) iron & steel, iv) petro-chemicals, v) pulp & paper and vi) food & beverage, 1 sector of thermal power plant and 4 types of commercial buildings i) department stores, ii) hotels, iii) hospitals and iv) offices for the year 2012, 2013 and 2014.
- (2) To study and analyze sector-specific energy usage pattern, potential improvement to reduce energy consumption, energy profile, GHG emissions and Specific Energy Consumption (SEC) at product(s) level of DF&Bs - 11 sectors.

3. Scope of Work

- 3.1 The consultant must review the conceptual design of the EPC scheme and Thailand Market Readiness Proposal (MRP) and design the system/process based on the principles/concepts provided in the MRP.
- 3.2 Execute assigned works and deliver outputs as defined in tasks 4.1 – 4.6.
- 3.3 Provide periodic reports on the progress of implementation of all activities under the consultancy services.
- 3.4 Coordinate with the key stakeholders, such as DF&Bs and the other consultants, to ensure seamless coordination and data/information sharing between all stakeholders under the EPC project.
- 3.5 Organize stakeholder consultations, preparations of meeting materials as well as documenting the outcomes and next steps of the work.
- 3.6 Provide response to comments and suggestions of the EPC Working Group and the PMR Steering Committee and then adjust the operation according to these.
- 3.7 Present progress of works to TGO once every two (2) months including active consultation and data sharing with other relative consultants.
- 3.8 Organize training/knowledge sharing for the TGO staff and relevant agencies at least 2 times with main contents as given below. The trainings will be held in Bangkok.

Contents	Time Frame	Participant	Number of Participant (at least)
<ul style="list-style-type: none">- SEC analysis, i.e. data requirement, normalization, product reference and equivalence and etc.- SEC Benchmarking- Other relevant principles	Within 3 months from the date of contract	TGO staff, DEDE staff and/or DF&Bs staff and relevant agencies	50

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Contents	Time Frame	Participant	Number of Participant (at least)
- Findings of the consultant's study, i.e. potential of improvement to reduce energy consumption and GHG emission of the DF&Bs 11 sectors, SEC benchmarks of these sectors and comparison to International SEC benchmarks	Within 1 month before closing date of contract	TGO staff, DEDE staff and/or DF&Bs staff and relevant agencies	50

4. Specific tasks to be carried out

4.1 Study and propose methodology for Specific Energy Consumption (SEC) analysis of the DF&Bs

The consultant will review and study process of SEC analysis, data requirement, data collection and source of data, including optional processes for the more accuracy analysis, such as normalization for energy performance analysis, product reference and equivalent etc., and then propose suitable methodology of SEC analysis for the EPC scheme.

4.2 Review and collect data of the DF&Bs from the energy databases of the DEDE

The consultant will review and collect the following data from the energy databases of all designated factories and buildings register with the DEDE for 11 identified sectors;

- General data, such as Name lists, location and number of DF&Bs register with the DEDE in each sector since the first year of reporting in 2010,
- Annual data on production and energy consumption required for SEC analysis of the DF&Bs for the years 2012, 2013 and 2014,
- Details on manufacturing process, products they make, fuels they consume, energy usage pattern, equipment/machines and technologies and major energy intensive processes
- Any other related data for measuring the energy performance.

The consultant will consolidate and present the data of the 11 sectors in a suitable format that helps for further analysis. In case data of the DF&Bs in the DEDE energy management reports and databases are incomplete or inaccurate, the consultant is responsible for collecting data through various methods, such as phone interviews, site visits, databases of other stakeholders such as energy and economic organizations, or estimation methods on the basis of scientific and/or engineering principles and certain assumptions.

4.3 Grouping of the DF&Bs - 11 Sectors

The consultant will review the database of the DF&Bs registered with the DEDE, National and International standard for industrial classification, and then classify types

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of product in each target sector that will be used for analyzing the SEC under this TOR. The consultant will actively consult with the industrial associations in order to set up the most suitable industrial groups. The consultant will also require to explore suitable criteria (for e.g. based on products or technologies) for grouping or sub-grouping of DF&B and provide rationale for their selection.

There are 11 sectors defined in the Market Readiness Proposal (MRP) to be considered;

(1) Cement Industry

The consultant will review the DF&Bs listed in this sub-sector and grouping them based on, but not limited to, their products into the main categories as follows;

- Manufacture of Cement
- Manufacture Ready-mixed Concrete
- Manufacture of Concrete for Building Construction
- Manufacture of other cement products, not elsewhere classified

(2) Ceramic Industry

The consultant will review the DF&Bs listed in this sub-sector and grouping them based on, but not limited to, their products into the main categories as follows;

- Manufacture of Tile and Plate Ceramic
- Manufacture of Tableware Ceramic
- Manufacture of Sanitary ware Ceramic
- Manufacture of Electrical Insulator Ceramic

(3) Iron and Steel Industry

The consultant will review the DF&Bs listed in this sub-sector and grouping them based on, but not limited to, their products into the main categories as follows;

- Manufacture of Iron and Steel Plate/Slab
- Manufacture of Iron and Steel, including Manufacture of Iron and steel base elementary and intermediate
- Manufacture of Iron and Steel, Iron and steel base elementary and intermediate, not elsewhere classified
- Casting of Iron
- Casting of Steel

(4) Paper Industry

All designated factories register with the DEDE in this sector will be considered.

(5) Petrochemical Industry

The consultant will review the DF&Bs listed in this sub-sector and grouping them based on their products into the main categories as follows;

- Manufacture of Products from Petroleum Refinery
- Manufacture of Thermoplastic and Plastic base elementary
- Manufacture of other Products from Petroleum Refinery, not elsewhere classified

(6) Food and Beverage Industry

The consultant will review the DF&Bs listed in this sub-sector and grouping them based on, but not limited to, their products into the main categories as follows;

- Manufacture of Pure Sugar
- Manufacture of Raw Sugar from Sugar cane

(7) Thermal Power Plant

All designated thermal power plant register with the DEDE in this sector will be considered.

(8) Hotel Building

All designated hotel buildings register with the DEDE will be considered.

(9) Hospital Building

All designated hospital buildings register with the DEDE will be considered.

(10) Department Store Building

All designated department store buildings register with the DEDE will be considered.

(11) Office Building

All designated office buildings register with the DEDE will be considered.

4.4 Analyze the energy data and SEC of the target DF&Bs

- Analyze collected data of the DF&Bs defined in 4.3 and calculate the SEC at product or process level, as appropriate, for each sector.
- Evaluate uncertainties associated with calculating SEC, quantify implications of such uncertainties and accordingly propose remedies to address them.

4.5 Analyze potential improvement to reduce energy consumption

- Review of latest energy improvement technology in other countries/global market in each sector. Then, compare existing technology used and the best available technology in each sector.
- Evaluate potential of improvement to reduce energy consumption and SEC including GHG emission of the DF&Bs – 11 sectors by reviewing technology practices, capacity of industry, policies that are in place to support the implementation, financing needs, and other related factors.

4.6 Develop SEC Benchmarks of the DF&Bs - 11 sectors

Set up appropriate product level SEC benchmark of each sector and compare with International SEC benchmarks.

5. Contract Supervision

The consultant will work under the overall oversight of the Thailand Greenhouse Gas Management Organization (Public Organization: TGO), and in close cooperation with The World Bank.

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6. Timeline and Key Deliverables

The Consultant shall prepare the reports as following:

- 6.1 **Inception report** 10 copies and CD recording 3copies within 1 month from the date of the contract. This report should cover monthly operational plan, and tasks 4.1.
- 6.2 **Progress report (1)** 10 copies and CD recording 3copies within 6 months from the date of the contract. This report should cover tasks 4.1 - 4.3, including the key deliverables of i) SEC analysis methodology ii) data collection formats of 11 sectors and iii) results of grouping of the DF&Bs – 11 sectors.
- 6.3 **Progress report (2)** 10 copies and CD recording 3copies within 12 months from the date of the contract. This report should cover tasks 4.1 - 4.5 with the key deliverable of analytical results of at least 6 sectors.
- 6.4 **Draft final report** 10 copies and CD recording 3copies within 16 months from the date of the contract. This report should cover tasks 4.1 - 4.6, including the key deliverable of SEC benchmarks of the DF&Bs – 11 sectors.
- 6.5 **Final report** 10 copies and CD recording 3copies within 18 months from the date of the contract.

All reports should be submitted both in Thai and English.

- Reports as mentioned in 6.1-6.3 should be full report in Thai and summary in English.
- Draft final and final report should be submitted both in Thai and English.

7. Minimum Qualifications Requirement

The consultants will be selected through Quality- and Cost-based Selection (QCBS) process.

The consulting firm: is expected to meet the following minimum qualifications:

- Minimum five (5) years of substantive experience in energy data management, energy audit, energy efficiency technology, and energy benchmarking;
- Familiar with Thai industry, energy management system, energy legal and regulations, policies and strategies, and or related issues;
- Experience in consultation and need assessment; and

Key staff: (The qualifications of the proposed key staff will be evaluated at the proposals stage)

- Key staff of consultant and their committed availability to have experience in similar projects.
- Team Leader's minimum requirement:
 - (i) At least Master's Degree in Engineering;
 - (ii) Minimum 10 years of substantive experiences in energy data management, energy audit, energy policy, energy efficiency technology in industry and/or building, and energy project management;
 - (iii) Good command of written and spoken English.
- Energy specialist's minimum requirement:
 - (i) At least Master's Degree in Energy or Mechanical Engineering;
 - (ii) Minimum 10 years of substantive experiences in energy data management, energy efficiency technology, and energy audit.

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- Technical officer's minimum requirement:
 - (i) Bachelor's Degree in Mechanical Engineering, Energy Engineering, Energy Science, or related fields;
 - (ii) Minimum 5 years of substantive experiences in energy data management and energy audit.
- Coordinator's minimum requirement:
 - (i) Bachelor's Degree in Engineering, Science, Environmental Science or related fields;
 - (ii) Minimum 2 years of substantive experiences in project coordination, data management, computer literacy and administration.