International Civil Aviation Organization (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

Application Form for Emissions Units Programs

CONTENTS

SECTION I: ABOUT THIS ASSESSMENT

Background

Following the agreement at the 39th Assembly of the International Civil Aviation Organization (ICAO), governments and the aviation industry are getting ready to implement the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Together with other mitigation measures, CORSIA will help achieve international aviation's aspirational goal of carbon neutral growth from year 2020.

Aeroplane Operators will meet their offsetting requirements under CORSIA by purchasing and cancelling CORSIA eligible emissions units, which will be determined by the ICAO Council upon recommendations by its Technical Advisory Body (TAB), according to paragraph 20 d) of ICAO Assembly Resolution A39-3.

As an initial step, in November 2017, the ICAO Council provisionally approved CORSIA Emissions Unit Eligibility Criteria (EUC). Application of the EUC will serve as the basis for the Council's decisions on CORSIA-eligible emissions units.

To make further progress on the application of the EUC, the ICAO Council requested its Committee on Aviation Environmental Protection (CAEP) to informally test emissions unit programs against the EUC. The results and recommendations of the informal testing were provided to the Council, including the recommendation for the EUC to be used by the TAB in this assessment process.

Subsequently, in March 2019, the ICAO Council unanimously approved the EUC for use by the TAB in undertaking its tasks. At the same time, the ICAO Council also approved the 19 members of the TAB and its Terms of Reference (TOR).

ICAO has invited emissions unit programs to apply for the assessment, which will involve collecting information from each program through this program application form.

Through this assessment, the TAB will develop recommendations on the list of eligible emissions unit programs (and potentially project types) for use under the CORSIA, which will then be considered by the ICAO Council to make its decision on CORSIA eligible emissions units.

This form is accompanied by Appendix A "*Supplementary Information for Assessment of Emissions Unit Programs*", containing the EUC and *Guidelines for Criteria Interpretation*. These EUC and Guidelines are provided to inform programs' completion of this application form, in which they are cross-referenced **by paragraph number**.

Program responses to this application form will serve as the primary basis for the assessment. Such assessment may involve e.g. clarification questions, an in-person interview, and a completeness check of the application, as further requested. Programs which are invited for an in-person interview will receive advance notice of the time and date of the interview.

The working language of the assessment process is English. If the program documents and information are not published in English, the program should fully describe in English (rather than summarize) this information in the fields provided in this form, and in response to any additional questions. Translation services are not available for this process. Those programs that need to translate documents prior to submission may contact the ICAO Secretariat regarding accommodation.

Disclaimer: The information contained in the application, and any supporting evidence or clarification provided by the applicant including information designated as "business confidential" by the applicant, will be provided to the members of the TAB to properly assess the Program and make recommendations to the ICAO Council. The application and such other evidence or clarification will be made publicly available on the ICAO CORSIA website for the public to provide comments, except for information which the applicant designates as "business confidential". The applicant shall bear all expenses related to the collection of information for the preparation of the application, preparation and submission of the application to the ICAO Secretariat and provision of any subsequent clarification sought by the Secretariat and/or the members of the TAB. Under no circumstances shall ICAO be responsible for the reimbursement of such or any other expenses borne by the applicant in this regard, or any loss or damages that the applicant may incur in relation to the assessment and outcome of this process.

SECTION II: INSTRUCTIONS

Submission and contacts

A Program is invited to complete and submit the form, and any accompanying evidence, through the ICAO CORSIA website no later than close of business on **12 July 2019**. Within seven business days of receiving this form, the Secretariat will notify the Program that its form was received.

If the Program has questions regarding the completion of this form, please contact ICAO Secretariat via email: officeenv@icao.int. Programs will be informed, in a timely manner, of clarifications provided by ICAO to any other program.

Form basis and cross-references

Questions in this form are derived from the criteria and guidelines introduced in Section I (above). To help inform the Program's completion of this form, each question includes the paragraph number for its corresponding criterion or guideline that can be found in Appendix A "*Supplementary Information for Assessment of Emissions Unit Programs*".

Form completeness

The Program is strongly encouraged to respond to all questions in this application form. If any question(s) in this form does not apply to the Program, please briefly explain the exception.

Where "evidence" is requested, programs are encouraged to substantiate their responses in any one of these ways (in order of preference):

- web-links to supporting documentation included along with the written summary response; with instructions for finding the relevant information within the linked source, if necessary;

- copying/pasting information directly into this form (no character limits) along with the written summary response;

- attaching supporting documentation to this form at the time of submission, with instructions for finding the relevant information within the attached document(s);

Please note that written summary responses are encouraged—supporting documentation should not be considered as an alternative.

To help manage file size, the Programs should limit supporting documentation to that which directly substantiates the Program's statements in this form.

Form scope

The Program may elect to submit for analysis all or only a portion of the activities supported by the Program.

In the template provided by Appendix B "Program Scope Information Request", the Program should clearly identify and submit along with this form information on the following:

a) activities that the Program submits for analysis by describing them in this form;

b) activities that the Program does not wish to submit for analysis, and so are not described in this form;

c) identification details (e.g., methodology date, version) for activities described in this form.

Information provided under "c" should allow for the unambiguous identification of all methodologies/protocols that the Program has approved for use as of the date of submission of this form.

Program revision

Where the Program has any immediate plans to revise the Program (e.g., its policies, procedures, measures) to enhance consistency with a given criterion or guideline, provide the following information in response to the relevant form question(s):

- Proposed revision(s);

- Process and proposed timeline to develop and implement the proposed revision(s);

- Process and timeline for external communication and implementation of the revision(s).

"Linked" certification schemes

This application form should be completed and submitted exclusively on behalf of the Program that was invited to participate in the assessment.

Some programs may supplement their standards by collaborating with other schemes that certify, e.g., the social or ecological "co-benefits" of mitigation. The Program can reflect a linked scheme's procedures in responses to this form, where this is seen as enhancing—i.e. going "above and beyond"—the Program's own procedures.

For example, the Program may describe how a linked scheme audits sustainable development outcomes; but is not expected to report the linked scheme's board members or staff persons.

Programs should clearly identify any information provided in this form that pertains to a linked certification scheme and/or only applies when a linked certification scheme is used.

Disclosure of program application forms

Applications and other information submitted by emissions unit programs will be publicly available on the ICAO CORSIA website, except for materials which the applicants designate as business confidential.

The public will be invited to submit comments on the programs applications including regarding their consistency with the emissions units criteria (EUC), through the ICAO CORSIA website, for consideration by the TAB following its initial assessment of program applications.

SECTION III: APPLICATION FORM

PART 1: General information

A. Program Information

Program name: Thailand Voluntary Emission Reduction Program (T-VER)

Official mailing address: Thailand Greenhouse Gas Management Organization (Public Organization) 120 Ratthaprasasanabhakti Building, 9th Fl. The Government Complex Commemorating His Majesty, Chaeng Wattana Road Laksi, Bangkok 10210 Thailand

Telephone #: +66 (0) 2141 9841 to 49 Official web address: http://ghgreduction.tgo.or.th/t-ver

B. Program *Administrator* Information

Fullname: Puttipar Rotkittikhun (Ph.D.) Title: Director of Review and Monitoring Office

Employer/Company (*if not Program*):

E-mail address: r_puttipar@tgo.or.th Telephone #: +66 (0) 2141 9850

C. Program *Representative* Information (*if different from Program Administrator*)

D. Program Senior Staff / Leadership (*e.g., President / CEO, board members*)

List the names and titles of Program's senior staff / leadership, including board members:

1) Full name: Kurujit Nakornthap (Ph.D.)
   Title: Board of Director (Chairman)

2) Full name: Wijarn Simachaya (Ph.D.), Permanent Secretary of Ministry of Natural Resources and Environment
   Title: Board of Director (Member)

3) Full name: Yongyut Jantararotai, Director General, Department of Alternative Energy Development and Efficiency
   Title: Board of Director (Member)

4) Full name: Raweewan Bhuridej (Ph.D.), Secretary General, Office of Natural Resources and Environmental Policy and Planning (ONEP)
   Title: Board of Director (Member)

5) Full name: Sarawut Songsivilai, Director General of the Office of Transport and Traffic Policy and Planning
   Title: Board of Director (Member)

6) Full name: Saharath Boonpotipukdee, Enegy expert
   Title: Board of Director (Member)

7) Full name: Chaicharearn Atibaedya, Science and technology expert
Title: Board of Director (Member)

8) Full name: Ladawan Puengchit, (Ph.D.), Forestry expert
Title: Board of Director (Member)

9) Full name: Prasong Norajit, Industry expert
Title: Board of Director (Member)

10) Full name: Prasertsuk Patoonsittichai
Title: Executive Director of Thailand Greenhouse Gas Management Organization
and Board of Director (Secretary)
E-mail: sertsuk@tgo.or.th

11) Full name: Pongvipa Lohsomboon (Ph.D.)
Title: Deputy Executive Director of Thailand Greenhouse Gas Management Organization
E-mail: pongvipa@tgo.or.th

12) Full name: Natarika Wayuparb (Ph.D.)
Title: Deputy Executive Director of Thailand Greenhouse Gas Management Organization
E-mail: natarika@tgo.or.th

PART 2: Program summary

Thailand Voluntary Emission Reduction Program (T-VER) is a domestic greenhouse gas mitigation mechanism developed by Thailand Greenhouse Gas Management Organization (TGO). TGO launched T-VER program in 2014 to promote cooperation on GHG reduction of all relevant sectors in Thailand. Objectives of T-VER program are as follows;

1) To promote domestic voluntary greenhouse gas reduction.
2) To promote domestic carbon market and carbon credit trading.
3) To prepare readiness for all sectors in cope with greenhouse gas mitigation commitment.

By principle, T-VER's main features are applied from the principles of Clean Development Mechanism (CDM) as defined by UNFCCC as follows;

- Be a project-based mechanism with voluntary participation.
- Has additionality as "reductions in emissions that are additional to any that would occur in the absence of the certified project activity". Since T-VER is a domestic program, national policies and legislation are taking into account in order to assure that the project activity is additional to what required by law, regulation, or legally-binding mandate.
- Bases on ISO 14064-2: Specification with guidance at the project level for quantification, monitoring and reporting of GHG emission reductions or removal enhancements.
- Bases on ISO 14064-3: Specification with guidance for the validation and verification of GHG assertions, the project shall be validated and verified by the third party called "Validation and Verification Body (VVB)".
- Bases on ISO 14065: Requirements for GHG validation and verification bodies, from October 2019 the VVB shall be accredited by the National Standardization Council (NSC) as an accreditation body of Thailand.
- Covers 3 GHGs including CO_2, CH_4, and N_2O.
- Additional specifications: the project has been operated not exceed 3 years before project registration. In case project is in preparation phase, the project shall be started within 2 years after project registration.

TGO has responsibility to define criteria, project development process, methodology for GHG calculation, registration and carbon credit issuance processes as defining in the General Guidelines for T-VER Project Registration and Credit Issuance (T-VER GG). All registered projects shall be approved by Sub-committee on Consideration of GHG Mitigation Projects and Activities which consists of representatives from relevant government and private agencies. There are five main criteria of consideration as follows;

1. Project activities are not contrary to all relevant laws,
2. Project is able to demonstrate the consistent achievement of the requirement of T-VER GG,
3. Project is able to demonstrate project additionality,
4. Project activities are applicable to T-VER methodology, and
5. Monitoring and reporting of GHG reduction correspond with T-VER methodology.

Currently, TGO has developed 38 T-VER methodologies categorized into 6 sectors as the detail in Table 2-1. There are 153 registered T-VER projects and 80 issuance projects. The results of greenhouse gas emission reduction from T-VER program are shown in table 2-2 and 2-3.

Table 2-1: Number of T-VER methodology

Sector	Number of T-VER methodology
Alternative energy	7
Energy efficiency	15
Waste management	9
Forestry	3
Agriculture	2
Other	2
Total	**38**

Table 2-2: Number of registered T-VER project

Fiscal Year (FY)	**Registered Projects**	
	Number of Project	**Amount of Expected GHG Reduction (tCO_2e/year)**
2014	9	114,237
2015	11	590,175
2016	19	378,122
2017	41	1,035,672
2018	50	1,303,944
2019	23	643,397
Total	**153**	**4,065,547**

Table 2-3: Number of issued T-VER issuance credit

Fiscal Year (FY)	**Issued T-VER credit**	
	Number of Project	**Amount of GHG Reduction (tCO_2e)**
2015	7	339,537
2016	15	249,612
2017	22	493,207
2018	27	887,523
2019	9	126,413
Total	**80**	**2,096,292**

PART 3: Emissions Unit Program Design Elements

Note—where "evidence" is requested in *Part 3* and *Part 4*, the Program should provide web links to documentation. If that is not possible, then the program may provide responses in the text boxes provided and/or attached supporting documentation, as recommended in "SECTION II: INSTRUCTIONS—*Form Completeness*".

Note—"*Paragraph X.X*" in this form refers to corresponding paragraph(s) in Appendix A "*Supplementary Information for Assessment of Emissions Unit Programs*".

Note—Where the Program has any immediate plans to revise the Program (e.g., its policies, procedures, measures) to enhance consistency with a given criterion or guideline, provide the following information in response to the relevant form question(s):

- Proposed revision(s);
- Process and proposed timeline to develop and implement the proposed revision(s);
- Process and timeline for external communication and implementation of the revision(s).

3.1. Clear methodologies and protocols, and their development process

Summarize the Program's processes for developing and approving methodologies, including the timing and process for revision of existing methodologies:

In the T-VER program, TGO as secretary of the T-VER program has responsibility to develop most T-VER methodologies. The details of the T-VER methodology such as project conditions, applicability, project scope, and calculation of baseline and project emission are taken into account based on CDM methodology and IPCCC's guidelines. The draft T-VER methodology developed by TGO will be presented to the focus group meeting consisting of experts and stakeholders in order to discuss and to give comments and suggestion. After the draft T-VER methodology is corrected, the revised draft T-VER methodology will be presented to sub-committee on consideration. The sub-committee comprises of permanent secretary of the ministry of natural resource and environment as chairman, heads of the relevant agencies such as Office of Natural Resources and Environmental Policy and Planning (ONEP), Pollution Control Department (PCD), Royal Forest Department, Department of Alternative Energy Development and Efficiency (DEDE), Department of Industrial Works (DIW) etc. as committees, and TGO as secretary. Normally, the sub-committee meeting will be organized every 2 months. The approved methodologies will be published on the T-VER website.

In addition, TGO determines the project developer to propose the T-VER methodology to TGO as the following steps below;

1) The project developer prepares draft T-VER methodology according to the format specified by TGO.

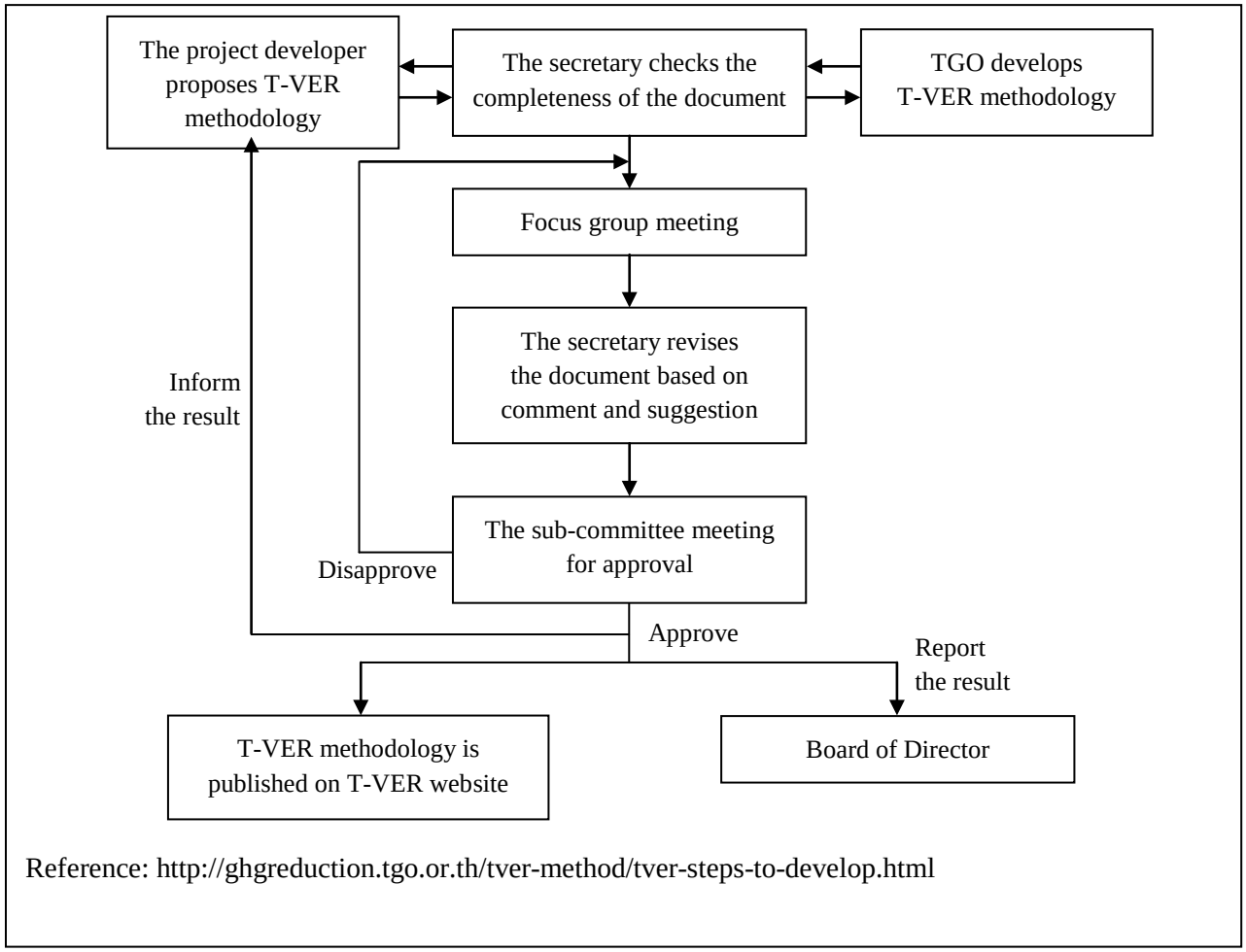
2) The project developer submits the draft T-VER methodology via 2 channels. Electronic files submission by e-mail to Mr. Jakgrapong Yamyim (jakgrapong@tgo.or.th) or submission by post including 1 copy of documents and 1 CD to TGO. The project developer has to provide contact address, phone number, and e-mail.

3) The T-VER program secretary checks the completeness of the documents within 10 working days. If the documents are found incomplete, the secretary will inform the project developer to revise the documents.

4) The focus group meeting will be organized to discuss on the draft T-VER methodology. The secretary will invite the project developer who submits the draft T-VER methodology to answer questions as appropriate.

5) The secretary corrects the draft T-VER methodology according to the comments and the suggestion received. After that, the revised draft T-VER methodology will be presented to sub-committee on consideration. The secretary will inform the results of the consideration to the developer. The approved methodologies will be published on the T-VER website.

Provide *evidence*[1] *of the public availability* of a) the Program's current processes for developing methodologies and protocols and b) the methodologies / protocols themselves: (*Paragraph 2.1*)



Reference: http://ghgreduction.tgo.or.th/tver-method/tver-steps-to-develop.html

3.2. Scope considerations

SECTION II: Application Form Scope includes questions related to this criterion. No additional information is requested here.

Evidence: Attached file for Program scope information

3.3. Offset credit issuance and retirement procedures

[1] For this and subsequent "evidence" requests, evidence should be provided in the text box (e.g., web links to documentation), and/or in attachments, as recommended in "SECTION II: INSTRUCTIONS—*Form Completeness*".

Are procedures in place… (*Paragraph 2.3*)

a) for unit issuance and retirement / cancellation? ☑ YES

b) related to the duration and renewal of crediting periods? ☑ YES

c) for unit discounting (*if any*)? ☐ YES

Provide evidence of the relevant policies and procedures related to a) through c) (*if any*, in the case of "c"), including their availability to the public:

The Guidelines for T-VER Project Registration and Credit Issuance (T-VER GG) specifies the procedure of project registration, opening of T-VER credit account, credit issuance and credit cancellation. The process for project registration and issuance is same as CDM except changing from CDM EB to the Sub-committee on Consideration of GHG Mitigation Projects and Activities. After the projects are registered, project developers have to submit their requests and documents to open T-VER account and TGO will send them necessary information for log in to T-VER registry system. The registry system has a cancellation account which any credits transferred to this account cannot be transferred to any accounts anymore (irreversible transfer). At present, the cancellation account is used for cancellation credits for 2 major purposes. The first purpose is for using in carbon offsetting in Thailand. And the second purpose is for receiving subsidy from foreign buyers who want to voluntary cancel the credits. Registrar will issue a cancellation notification for each cancellation, thus the buyer of the credits can use as an evidence. However, at present there is no policy concerning to retirement of T-VER credits.

The Guidelines for T-VER Project Registration and Credit Issuance (T-VER GG) specifies the crediting period of T-VER project as 7 years with no renewal of crediting period.

3.4 Identification and Tracking

Does the Program utilize an electronic registry or registries? (*Paragraph 2.4.2*) ☑ YES

Provide web link(s) to the Program registry(ies) and indicate whether the registry is administered by the Program or outsourced to a third party (*Paragraph 2.4 (e)*):

The website address is http://registry.tgo.or.th. The registry system is administered by TGO.

Do / does the Program registry / registries…:

a) have the capability to designate the ICAO eligibility status of particular units? (*Paragraph 2.4.3*) ☑ YES

b) identify and facilitate tracking and transfer of unit ownership/holding from issuance to cancellation/retirement? (*Paragraphs 2.4 (d) and 2.4.4*) ☑ YES

c) identify unit status, including retirement / cancellation, and issuance status? (*Paragraph 2.4.4*) ☑ YES

d) assign unique serial numbers to issued units? (*Paragraphs 2.4 (b) and 2.4.5*) ☑ YES

e) identify in serialization, or designate on a public platform, each unique unit's country and sector of origin, and vintage year? (*Paragraph 2.4.5*) ☑ YES

Summarize and provide evidence of the relevant policies and procedures related to a) through e), including their availability to the public:

Structure of T-VER registry system is designed to follow Data Exchange Standard (DES UNFCCC) with no Electronic Data Interchange (EDI). Database of T-VER registry system has 3 major tables including "Account", "Project" and "Credit". Table "Credit" can be restructured to add one more field for recording data about the ICAO eligibility status. T-VER registry system records any issuances of T-VER credits and any transfers of T-VER credits. No matter what type of accounts that the credits are transferred i.e. from one holding account to another holding account or from holding account to cancellation account.

Each T-VER credit is identified by a unique serial number based on DES UNFCCC. T-VER unit is identified in serialization with unique country code (Thailand = TH), unit type (TVER = 21), serial number of credits (start-stop), commitment period (1), current commitment period (1) and project ID (i.e. 10) but without sector of origin and vintage year. However, the sector of origin and vintage year can be retrieved from Table "project details" and "credit details" recorded in the database of the registry system.
For example, the unique serial number of 180 T-VER credits of project number 10 issued in the original commitment period 1 and the current commitment period 1 is TH-21-861664-861843-1-1-10.

The status of the T-VER credits can be tracked and the latest status of the credits is known i.e. after the request for credit issuance of T-VER project (ID No. 10) of company A was approved. The secretariat informed the registrar to issue 300 T-VER credits to the account of company A. The registrar issued T-VER credit with unique serial number TH-21-861664-861963-1-1-10 (300 credits) in Company A's account. Then TH-21-861664-861843-1-1-10 (180 credits) was transferred from Company A's account to Company B's account. And then company B used 100 T-VER credits to offset the company's carbon footprint, so the system recorded that TH-21-861664-861763-1-1-10 (100 credits) was transferred to the cancellation account. Since any credits transferred to cancellation account cannot be transferred anymore. So, the registrar issued the cancellation notification for company B and only TH-21-861764-861843-1-1-10 (80 credits) is still in company B's account.

List any/all international data exchange standards to which the Program's registry(ies) conform: (*Paragraph 2.4 (f)*)

Data Exchange Standard (DES UNFCCC)

Are policies in place to prevent the Program registry administrators from having financial, commercial or fiduciary conflicts of interest in the governance or provision of registry services? (*Paragraph 2.4.6*) ☑ YES

Program registry administrator or registrar is a permanent staff of TGO. He/she has no conflict of interest since he/she is not related to the process of T-VER credit issuance which responsible by another division (Review and Monitoring Office). Registrar will issue T-VER credits to an account according to request from the Review and Monitoring Office. Registrar has no right to open his/her own account and can transfer any credits only when requested by the project developers who are not able to process the transaction by themselves.

To address and isolate such conflicts, should they arise? (*Paragraph 2.4.6*) ☑ YES

Summarize and provide evidence of the relevant policies and procedures, including their availability to the public:

TGO staff is a government official and is bound by the Government anti-corruption law and is subject to prosecution according to relevant regulations.

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Are provisions in place…

a) ensuring the screening of requests for registry accounts? (*Paragraph 2.4.7*)	☑ YES
b) restricting the Program registry (or registries) accounts to registered businesses and individuals? (*Paragraph 2.4.7*)	☑ YES
c) ensuring the periodic audit or evaluation of registry compliance with security provisions? (*Paragraph 2.4.8*)	☐ YES

Summarize registry security provisions, including related to a) through c); and provide evidence of the relevant policies and procedures, including their availability to the public:

Every request for opening registry account is screened by the registrar, each juristic person or individual can open only one account even though they have more than one project and they shall submit required documents for opening T-VER account. The required documents are same as documents require for opening bank account.

3.5 Legal nature and transfer of units

Does the Program define and ensure the underlying attributes and property aspects of a unit? ☑ YES
(*Paragraph 2.5*)

Summarize and provide evidence of the relevant policies and procedures, including their availability to the public:

A TVER unit is a Voluntary Emission Reduction (VERs) carbon credit which is considered as an incorporeal "property" susceptible of having a value and of being appropriated whether for sale, use or any other purposes and falls within the definition of "goods" under the Revenue Code, which is subject to value-added tax in accordance with the relevant provisions of the Revenue Code, as determined by the Revenue Department in its letter no. 0702/3206 dated 24 April 2561, accessible to the public at <http://www.rd.go.th/publish/26816.0.html> and provided in the T-VER website at <http://ghgreduction.tgo.or.th/tver-news-all/tver-news/item/893-2018-06-25-21-47-38.html>.

The ownership of a TVER credit is represented in the T-VER Registry and is transferable by transfer of the TVER credit from a transferor (seller)'s account to the transferee (buyer)'s account in the Registry. The procedure for transfer/sale of TVERs is provided in the T-VER website at <http://ghgreduction.tgo.or.th/tver-step/tver-carbon-trading-procedure.html>.

3.6 Validation and verification procedures

Are standards and procedures in place for… (*Paragraph 2.6*)

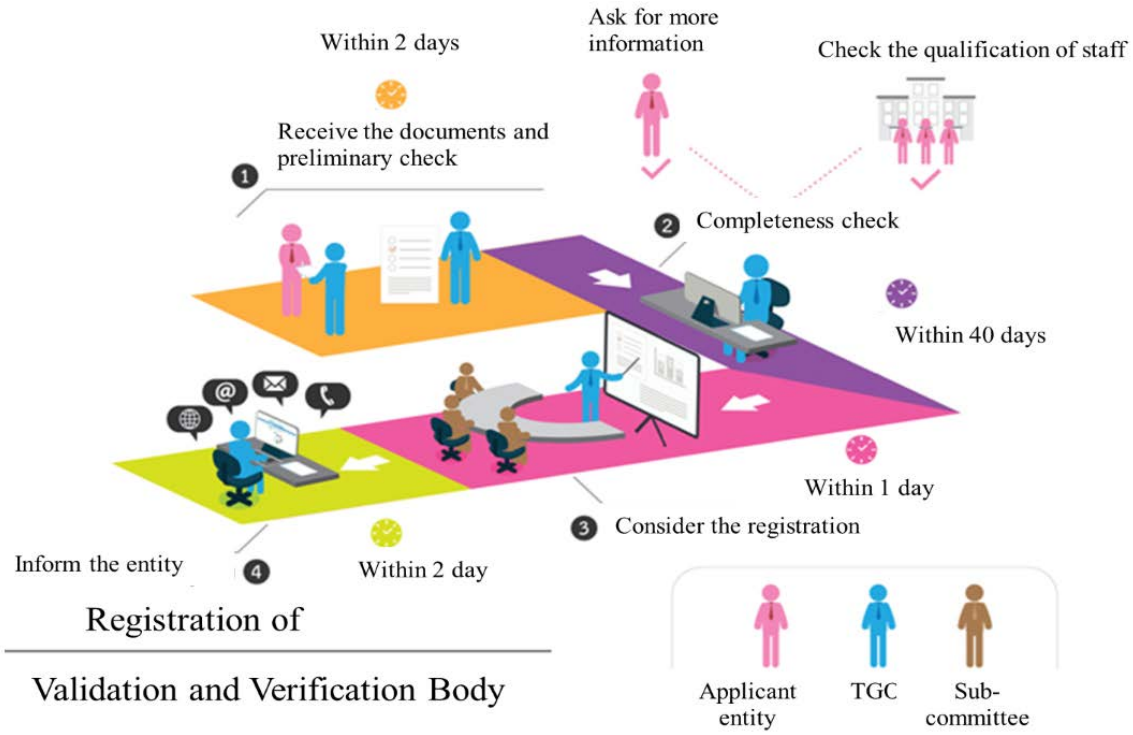
a) validation and verification processes? ☑ YES

b) validator and verifier accreditation? ☑ YES

T-VER's framework is in correspondence with the ISO 14064-2 which specifies principles and requirements and provides guidance at the project level for quantification, monitoring and reporting of activities intended to cause greenhouse gas (GHG) emission reductions or removal enhancements. Monitoring and Verification framework of GHG emission is also in correspondence with the ISO 14064-3 which specifies principles and requirements and provides guidance for those conducting or managing the validation and/or verification of greenhouse gas (GHG) assertions.

Currently, the Validation and Verification Body (VVB) are registered by TGO but from October 2019, the VVB shall be accredited by National Accreditation Body.

Provide evidence of the relevant policies and procedures related to a) and b), including their availability to the public:



Source: http://ghgreduction.tgo.or.th/tver-external-evaluator/tver-external-appraisal-voluntary-projects.html

3.7 Program governance

Does the Program publicly disclose who is responsible for the administration of the Program, and how decisions are made? (*Paragraph 2.7*) ☑ YES

TGO is responsible for the administration of the program. The project registration, carbon credit issuance, methodologies and tools and also the registration of VVB are considered and decided by the sub-committee on Consideration of GHG Mitigation Projects and Activities. This information is publicly disclosed on T-VER website.

Provide evidence that this information is available to the public:

Can the Program demonstrate that it has… (*Paragraph 2.7.2*)

a) been continuously governed and operational for at least the last two years? ☑ YES

T-VER has been operating since 2014.

b) a plan for the long-term administration of multi-decadal program elements which includes possible responses to the dissolution of the Program in its current form? ☑ YES

TGO will continue operating T-VER program to support the domestic carbon offsetting program. Furthermore, T-VER is planned to use for offsetting in ETS in the future.

Provide evidence of the relevant policies and procedures related to a) and b):

Are policies in place to prevent the Program staff, board members, and management from having financial, commercial or fiduciary conflicts of interest in the governance or provision of program services? (*Paragraph 2.7.3*) ☐ YES

To address and isolate such conflicts, should they arise? (*Paragraph 2.7.3*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

If applicable, can the Program demonstrate up-to-date professional liability insurance policy of at least USD$5M? (*Paragraph 2.7.4*) ☐ YES

Provide evidence of such coverage:

3.8 Transparency and public participation provisions

Does the Program publicly disclose… (*Paragraph 2.6*)

a) what information is captured and made available to different stakeholders? ☑ YES

All information on T-VER program is publicly disclosed on T-VER website (http://ghgreduction.tgo.or.th/t-ver) such as the project development cycle, eligibility criteria, methodologies and tools, positive list, registration of VVB, registered project design documents, co-benefit reports, monitoring reports etc.

b) its local stakeholder consultation requirements (if applicable)? ☐ YES

c) its public comments provisions and requirements, and how they are considered (if applicable)? ☐ YES

Provide evidence of the public availability of items a) through c):

Does the Program conduct public comment periods? ☐ YES

Provide evidence of the relevant policies and procedures:

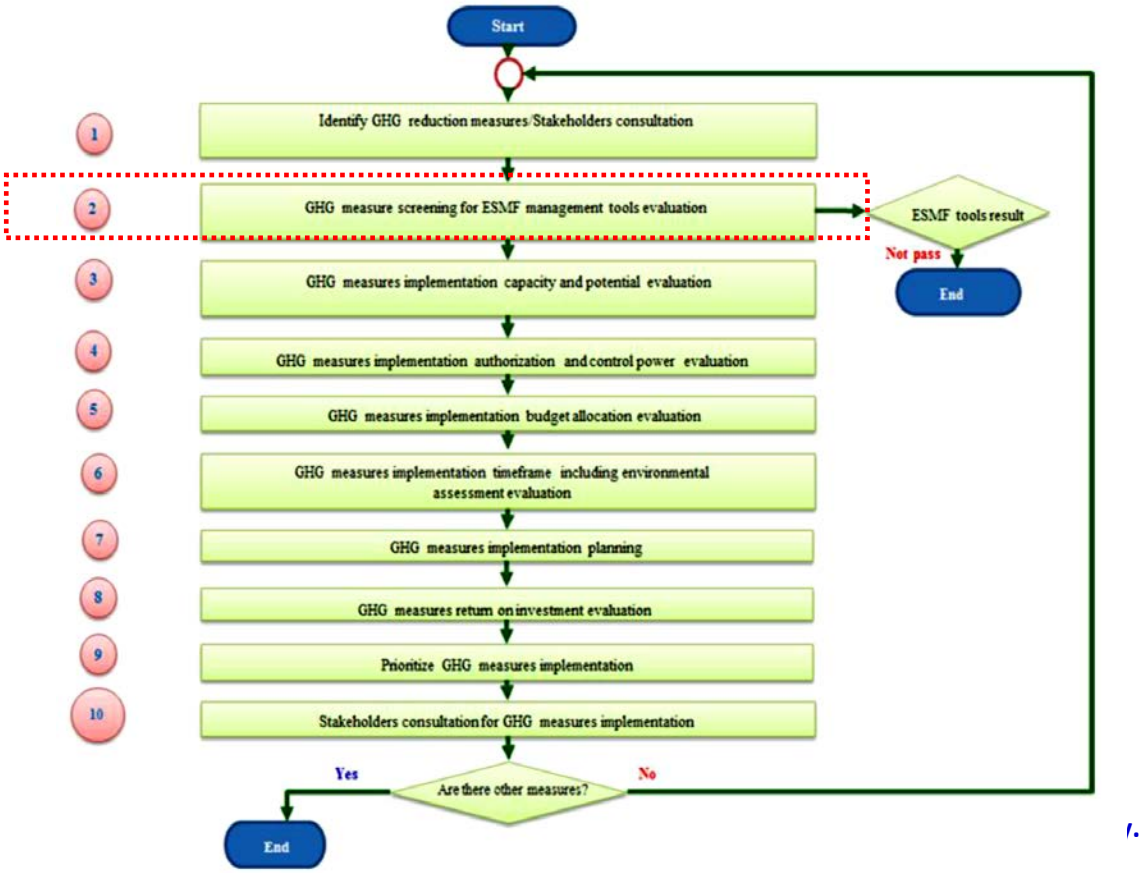
3.9 Safeguards system

Are safeguards in place to address environmental and social risks? (*Paragraph 2.9*) ☑ YES

Summarize and provide evidence of the relevant policies and procedures, including their availability to the public:

In the beginning, safeguard policy is applied for GHG mitigation project of city/municipality/community which shows expression of interest to receive financial support from foreign organizations. The Environmental and Social Management Framework (ESMF) tools are developed in accordance with the World Bank guidance and modified specifically for Thai context. The ESMF is established as a tool for assessing and setting up environmental and social impact reduction measures from city/municipality/community GHG mitigation projects. It also aims at enhancing stakeholders' participation. The tools are prioritized in the top rank of the project selection criteria as shown in figure below. The project shall pass this evaluation before continuing to the next step.

The framework, as the detail in the attached file, consists of 5 main parts; (1) Social and Environmental Policies and Legal Requirements (2) Environmental and Social Impacts Screening with the Assessment Forms and Impact severity level consideration (3) Preparation of Environmental and Social Impact Management Tools (4) Environmental and Social Co-benefits Assessment and (5) Public Participation and Information Consultation



Evidence: Attached file for ESMF of GHG Mitigation Project

3.10 Sustainable development criteria

Does the Program publicly disclose sustainable development criteria used (*if any*), and provisions for monitoring, reporting and verification in accordance with these criteria? (*Paragraph 2.10*)

☑ YES

All T-VER projects should submit co-benefit report to show their positive impacts on environment, economy, and society which are crucial cores of sustainable development principle. The co-benefit report comprises of 3 aspects including;

(1) Natural Resources and Environment Indicators

- Air pollution
- Water pollution
- Water supply
- Noise
- Waste
- Hazardous waste
- Odor
- Greenhouse gas
- Soil
- Biodiversity conservation
- Others

(2) Social Indicators

- Community cooperation
- Health and safety
- Support social and culture development
- Human resource development in community
- Others

(3) Economic Indicators

- Financial support to community
- Employment/income
- Promote domestic investment
- Others

Project developers need to enclose photos, documents or evidences for consideration. To ensure that the T-VER projects align with indicated co-benefits, TGO has set on-site monitoring process to monitor every T-VER project. The on-site monitoring will be conducted 1 year after the T-VER projects have been registered.

Furthermore, TGO is developing sustainable development criteria for T-VER project based on the sustainable development criteria used for Thailand CDM project. The sustainable development criteria for CDM project comprises of 4 aspects 24 indicators including environment and natural resources indicators, social indicators, technology development and/or technology transfer indicators and economic indicators.

Evidence: Attached file for SD evaluation of CDM project

Provide evidence of the public availability of any relevant policies and procedures:

3.11 Avoidance of double counting, issuance and claiming

SECTION III, Part 4.7—Are only counted once towards a mitigation obligation includes questions related to this criterion. No additional information is requested here.

For avoidance of double counting, there is one section in PDD which project developer has to self-declare on no double counting. Then in validation process, VVB has to check the database of registered projects of other schemes i.e. CDM, Gold Standard, Verified Carbon Standard to ensure that this project is not double registered.

For avoidance of double issuance, Registrar will issue T-VER credits to an account according to request from the Review and Monitoring Office. The information on project title, issuance period, and amount of carbon credits will be recorded in the Table "Credit" in case that there is irregularity of issuance credits, the Registrar will notice and cross check with the Review and Monitoring Office.

For double claiming, it is impossible due to the use of credits need to have the cancellation notification issued by TGO. The issuance of notification will be conducted when the certain amount of credits is transferred to cancellation account which is irreversible.

PART 4: Carbon Offset Credit Integrity Assessment Criteria

Note—Where the Program has any immediate plans to revise the Program (e.g., its policies, procedures, measures) to enhance consistency with a given criterion or guideline, provide the following information in response to the relevant form question(s):

- Proposed revision(s);

- Process and proposed timeline to develop and implement the proposed revision(s);

- Process and timeline for external communication and implementation of the revision(s).

4.1 Are additional

What is the threshold for over-issuance risk beyond which the Program provisions or measures require a response? (*Quantify if possible*)

There is no threshold for over-issuance, however, Guidelines for T-VER Project Registration and Credit Issuance (T-VER GG) specifies that if over-issuance is found, the project developer shall deduct the same amount of T-VER credits from its account or buy same amount of T-VER credits from other T-VER projects or CDM/GS/VCS projects that are located in Thailand or other projects as specified by TGO for compensation.

Is additionality and baseline-setting assessed by an accredited and independent third-party verification entity, and reviewed by the Program? (*Paragraph 3.1*) ☑ YES

Additionality and baseline-setting of an activity is assessed by the Validation and Verification Body during project validation. An activity can be registered as a T-VER project only if its additionality is proved. Baseline-setting shall follow T-VER methodology(ies) that the project uses for calculation of greenhouse gas emission reduction.

Summarize and provide evidence of the relevant policies and procedures, including their availability to the public:

Does the Program utilize one or more of the methods cited in Paragraph 3.1.2, which can be applied at the project- and/or program-level? (*Paragraphs 3.1.2 - 3.1.3*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures, including listing and describing any/all analysis / test types that the Program permits for use:

If the Program designates certain activities as automatically additional (e.g., through a "positive list" of eligible project types), does the Program provide clear evidence on how the activity was determined to be additional? (*Paragraph 3.1*) ☑ YES

T-VER program provides positive list of eligible project scales and types. The positive list is developed in order to promote the registration of microscale/small-scale activities and activities that use advanced technology as T-VER projects i.e. Tandem solar cells, tri-generation, brushless DC motor, semi-aerobic landfill. The T-VER positive list is published on T-VER website.

Summarize and provide evidence of the availability to the public of relevant policies and procedures, including the criteria used to determine additionality:

Describe how the procedures described in this section provide a reasonable assurance that the mitigation would not have occurred in the absence of the offset program: (*Paragraph 3.1*)

During development of T-VER methodology, the baseline-setting is considered carefully and conservatively in order to make the greenhouse gas emission reductions real and reasonable. Additionality proof is required for every project that do not meet the criteria specified in the positive list in order to make sure that the greenhouse gas emission mitigation have occurred due to the T-VER program.

4.2 Are based on a realistic and credible baseline

Are procedures in place to issue emissions units against realistic, defensible, and conservative baseline estimations of emissions? (*Paragraph 3.2*) ☑ YES

T-VER credits shall come from eligible activities according to the applicability criteria specified in T-VER methodologies. Hence, development of T-VER methodology is the major procedure to assure realistic, defensible and conservative baseline. T-VER methodology is based on CDM methodology and IPCC guidelines with more country specific data, law and regulations i.e. MEPS (Minimum Energy Performance Standard) issued by the Ministry of Energy. The baseline scenario is identified conservatively and the most conservative default value is selected and used for calculation.

Summarize and provide evidence of the relevant policies and procedures, including that baselines and underlying assumptions are publicly disclosed:

Are procedures in place to ensure that methods of developing baselines, including modelling, benchmarking or the use of historical data, use assumptions, methodologies, and values do not over-estimate mitigation from an activity? (*Paragraph 3.2.2*) ☑ YES

Baseline scenario identification for T-VER project shall follow the applied methodology. In case that there is any uncertainty or variance due to operation of the project activity i.e. for energy efficiency improvement project, the higher efficiency of the project equipment shall be compared with the baseline equipment at the same performance load. So, historical data of efficiency of baseline equipment at varied performance load is needed in order to get the baseline efficiency instead of single piece of data that will lead to over-estimate of emission reduction of the project.

Summarize and provide evidence of the relevant policies and procedures:

Are procedures in place for activities to respond, as appropriate, to changing baseline conditions that were not expected at the time of registration? (*Paragraph 3.2.3*) ☐ YES

Revalidation is needed if changes of the registered project meets one of the following criteria (as specified in T-VER Project Registration and Credit Issuance (T-VER GG));

1. Add more project activity that requires additional methodology for calculation of greenhouse gas emission.
2. Has any change(s) that increase(s) the expected greenhouse gas emission reduction from the registered amount to more than 60,000 tCO_2e/y or more than 15% i.e. increase source/volume/COD of wastewater, change technology of the project.

Summarize and provide evidence of the relevant policies and procedures:

4.3 Are quantified, monitored, reported, and verified

Are procedures in place to ensure that…

a) emissions units are based on accurate measurements and valid quantification methods/protocols? (*Paragraph 3.3*) ☑ YES

The VVB will check the accuracy of GHG emission reductions from the project based on the applied methodology. The results of monitored parameters as defined in the registered PDD shall come from the calibrated equipments or from standard testing method.

b) validation occurs prior to or in tandem with verification? (*Paragraph 3.3.2*) ☑ YES

The validation occur prior to verification.

c) results of validation and verification are made publicly available? (*Paragraph 3.3.2*) ☑ YES

The validation and verification reports are publicly disclosed on T-VER website.

d) monitoring, measuring, and reporting of both activities and the resulting mitigation is conducted at specified intervals throughout the duration of the crediting period? (*Paragraph 3.3*) ☑ YES

The project developer shall conduct monitoring and measuring according to the monitoring plan as specified in the registered PDD.

e) mitigation is measured and verified by an accredited and independent third-party verification entity? (*Paragraph 3.3*) ☑ YES

The verification has to be conducted by third-party verification entity.

f) *ex-post* verification of mitigation is required in advance of issuance of emissions units? (*Paragraph 3.3*) ☑ YES

: The ex-post verification of mitigation is required in advance of issuance of emission units.

Summarize and provide evidence of the relevant policies and procedures related to a) through f)

T-VER project development cycle

Are provisions in place… (*Paragraph 3.3.3*)

a) to manage and/or prevent conflicts of interest between accredited third-party(ies) performing the validation and/or verification procedures, and the Program and the activities it supports? ☑ YES

In validation and verification reports, the VVB have to self-declare that there is no conflict of interest between the VVB performing the validation and/or verification procedures and the project.

b) requiring accredited third-party(ies) to disclose any conflict of interest? ☑ YES

In validation and verification reports, the VVB have to self-declare that there is no conflict of interest. The validation and verification reports will be disclosed on T-VER website.

c) to address and isolate such conflicts, should they arise? ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

The validation and verification report templates can be downloaded from T-VER website (http://ghgreduction.tgo.or.th/download-tver/66-t-ver-download-form.html).

Are procedures in place requiring that renewal of any activity at the end of its crediting period includes a reevaluation and update of baseline? (*Paragraph 3.3.4*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

Are procedures in place to transparently identify units that are issued *ex-ante* and thus ineligible for use in the CORSIA? (*Paragraph 3.3.5*) ☐ YES

Provide evidence of the relevant policies and procedures:

4.4 Have a clear and transparent chain of custody

SECTION III, Part 3.4—Identification and tracking includes questions related to this criterion. No additional information is requested here.

4.5 Represent permanent emissions reductions

List any emissions sectors (if possible, activity types) supported by the Program that present a potential risk of reversal of emissions reductions, avoidance, or carbon sequestration:

The forestry and agricultural projects (carbon sequestration and reducing emission in orchards) are sectors that present a potential risk of reversal of emission reductions. The carbon credits from these sectors are planned to offset domestically only.

What is the minimum scale of reversal for which the Program provisions or measures require a response? (Quantify if possible)

For sectors/activity types identified in the first question in this section, are procedures / provisions in place to require and support these activities to…

a) undertake a risk assessment that accounts for, *inter alia*, any potential causes, relative scale, and relative likelihood of reversals? (*Paragraph 3.5.2*) ☐ YES

b) monitor identified risks of reversals? (*Paragraph 3.5.3*) ☐ YES

c) mitigate identified risks of reversals? (*Paragraph 3.5.3*) ☐ YES

d) ensure full compensation for material reversals of mitigation issued as emissions units and used toward offsetting obligations under the CORSIA? (*Paragraph 3.5.4*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures related to a) through d):

Are provisions in place that… (*Paragraph 3.5.5*)

a) confer liability on the activity proponent to monitor, mitigate, and respond to reversals in a manner mandated in the Program procedures? ☐ YES

b) require activity proponents, upon being made aware of a material reversal event, to notify the Program within a specified number of days? ☐ YES

c) confer responsibility to the Program to, upon such notification, ensure and confirm that such reversals are fully compensated in a manner mandated in the Program procedures? ☐ YES

Summarize and provide evidence of the relevant policies and procedures related to a) through c):

Does the Program have the capability to ensure that any emissions units which compensate for the material reversal of mitigation issued as emissions units and used toward offsetting obligations under the CORSIA are fully eligible for use under the CORSIA? (*Paragraph 3.5.6*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

Would the Program be willing and able, upon request, to demonstrate that its permanence provisions can fully compensate for the reversal of mitigation issued as emissions units and used under the CORSIA? (*Paragraph 3.5.7*) ☐ YES

4.6 Assess and mitigate against potential increase in emissions elsewhere

List any emissions sectors (if possible, activity types) supported by the Program that present a potential risk of material emissions leakage:

The T-VER program concerns material emission leakage leading to greenhouse gas emission reduction. There are three T-VER methodologies according to energy efficiency sector in lighting (T-VER-METH-EE-01), chiller (T-VER-METH-EE-08), and air conditioner (T-VER-METH-EE-14) which have set the material emission leakage as one of the project conditions. This means that the equipments have not been installed in anywhere prior to the implementation of the T-VER project.

Are measures in place to assess and mitigate incidences of material leakage of emissions that may result from the implementation of an offset project or program? (*Paragraph 3.6*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

Are provisions in place requiring activities that pose a risk of leakage when implemented at the project-level to be implemented at a national level, or on an interim basis on a subnational level, in order to mitigate the risk of leakage? (*Paragraph 3.6.2*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

Are procedures in place requiring activities to monitor identified leakage? (*Paragraph 3.6.3*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

Are procedures in place requiring activities to deduct from their accounting emissions from any identified leakage that reduces the mitigation benefits of the activities? (*Paragraph 3.6.4*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

4.7 Are only counted once towards a mitigation obligation

Are measures in place to avoid the following, as defined in the corresponding Paragraphs, particularly with respect to registry-related protocols and/or oversight?

a) double-issuance? (*Paragraphs 3.7.1 and 3.7.5*) ☑ YES

b) double-use? (*Paragraphs 3.7.2 and 3.7.6*) ☑ YES

c) double-selling? (*Paragraph 3.7.7*) ☑ YES

Summarize and provide evidence of the relevant policies and procedures related to a) through c):

Double-issuance is not possible since every request will be considered by Review and Monitoring Office before propose to the sub-committee for approval. If there is repeated request, TGO will notice this irregularity. The information of credit issuance is published in the T-VER website http://ghgreduction.tgo.or.th/tver-database-and-statistics/t-ver-registered-project.html. Registrar will issue T-VER credits to an account according to request from the Review and Monitoring Office. The information on project title, issuance period, and amount of carbon credits will be recorded in the Table "Credit" in case that there is irregularity of issuance credits, the Registrar will notice and cross check with the Review and Monitoring Office.

The registrar issued T-VER credits with unique serial number in T-VER registry system. The registry system records any issuances of T-VER credits and any transfers of T-VER credits, no matter what type of accounts that the credits are transferred i.e. from one holding account to another holding account or from holding account to cancellation account which is an irreversible transfer.

Project developers can sell their credits at any time. However, T-VER registry system does not support forward selling and the account holders can transfer only certain amount of T-VER credits from their account.

Are measures in place (or *would the Program be willing and able to put in place measures*) to avoid double-claiming as defined in *Paragraph 3.7.3*? ☑ YES

As resolved as in *Paragraphs 3.7.8 – 3.7.9*? ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

The program is currently considering potential approaches which could be applied to avoid double-claiming between international mitigation objectives, with the understanding that this consideration is relevant and subject to the ongoing discussion under the UNFCCC process, in particular concerning Decision 1/CP.21, paragraph 36 on guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement, which is currently not conclusive. Upon the adoption of the aforementioned guidance (expected by the end of 2019), the program would assess and determine how double-claiming could be best avoided in its context.

If no measures are currently in place, describe what measures the Program would consider putting in place in relation to the guidelines in *Paragraphs 3.7.3* and *Paragraphs 3.7.8 – 3.7.9*:

The approach taken to avoid double-claiming would need to take into account the relation between the emissions reduction from the T-VER projects and the host country's international mitigation contribution, including the characteristic and scope of its contribution. Accounting approach(es) expected to be provided by the guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement may be applied to other international mitigation objectives outside the Convention. Otherwise, other feasible and compatible approaches may be considered.

Are measures in place (or *would the Program be willing and able to put in place measures*) to…

a) make publicly available any national government decisions related to accounting for the underlying mitigation associated with units used in ICAO, including the contents of host country attestations described in the criterion guidelines (*Paragraph 3.7.10*)

b) update information pertaining to host country attestation as often as necessary to avoid double-claiming? (*Paragraph 3.7.10*) ☑ YES

c) monitor for double-claiming by relevant government agency(ies) that otherwise attested to their intention to not double-claim the mitigation? (*Paragraph 3.7.11*) ☑ YES

d) report to ICAO's relevant bodies, as requested, performance information related to, *inter alia*, any material instances of and Program responses to country-level double-claiming; the nature of, and any changes to, the number, scale, and/or scope of host country attestations; any relevant changes to related Program measures? (*Paragraph 3.7.12*) ☑ YES

☑ YES

e) to compensate for, replace, or otherwise reconcile double-claimed mitigation associated with units used under the CORSIA which the host country's national accounting focal point or designee otherwise attested to its intention to not double-claim? (*Paragraph 3.7.13*)

☑ YES

Summarize and provide evidence of any relevant policies and procedures related to a) through e):

TGO, as the T-VER program administrator, is willing and intends to put in place approaches and procedures for a) to e) prior to the authorization of transfer/use of TVERs by any airline for the purpose of CORSIA and will take into account the EUC, the relevant decisions under the UNFCCC, as well as national policies and legislation.

If no measures are currently in place, describe what measures the Program would consider putting in place in relation to the guidelines in *Paragraphs 3.7.10 – 3.7.13*:

3.7.10 – The information required under this paragraph could potentially be provided in the T-VER website or published by relevant national authorities. As a common practice, decisions, regulations, and terms relating to the T-VER is made publicly accessible on the T-VER website in order to inform the project developers and relevant stakeholders and ensure transparency in its process.

3.7.11 – The process to avoid double-claiming could potentially be integrated with the accounting procedure for the country's international mitigation contribution, which is being developed for the post-2020 period. Existing institutional arrangement is in place to ensure coordination among relevant government agencies responsible for national emissions and mitigation reporting. Thailand has consistently submitted information on international market mechanisms as part of the biennial update reports as well as the national communication to the UNFCCC.

3.7.12 – The process for reporting of information to the ICAO for this purpose should be set clear and

informed early-on in order to allow the Program Administration (TGO) to coordinate with the national focal point for ICAO (CAAT) and set up necessary institutional arrangement and procedures for such reporting requirements.

3.7.13 – The reconciliation process could potentially be provided within the requirements of responsibility of the owner of TVERs who transfer the credits or benefit from such transfer to an airline for use for the purpose of CORSIA.

4.8 Do no net harm

Are procedures in place to ensure that offset projects do not violate local, state/provincial, national or international regulations or obligations? (*Paragraph 3.8*) ☐ YES

Summarize and provide evidence of the relevant policies and procedures:

The project developer must confirm, in the T-VER project registration form, that the project does not involve any activity which is unlawful or in contrary to relevant regulations and complies with the terms set by the TGO Board of Directors. In case where any unlawful activity or incompliance with the relevant regulations occurs, TGO will withdraw the project.

Additionally, the project developer must submit an Environmental Impact Assessment (EIA) report, if required by law, as accompanying evidence to the registration form.

Provide evidence that the Program complies with social and environmental safeguards: (*Paragraph 3.8*)

Provide evidence of the Program's public disclosure of the institutions, processes, and procedures that are used to implement, monitor, and enforce safeguards to identify, assess and manage environmental and social risks: (*Paragraph 3.8*)

PART 5: Program comments

Are there any additional comments the Program wishes to make to support the information provided in this form?

SECTION IV: SIGNATURE

I certify that I am the administrator or authorized representative ("Program Representative") of the emissions unit program ("Program") represented in a) this form, b) evidence accompanying this form, and c) any subsequent oral and/or written correspondence (a-c: "Program Submission") between the Program and ICAO; and that I am duly authorized to represent the Program in all matters related to ICAO's analysis of this application form; and that ICAO will be promptly informed of any changes to the contact person(s) or contact information listed in this form.

As the Program Representative, I certify that all information in this form is true, accurate, and complete to the best of my knowledge.

As the Program Representative, I acknowledge that:

the Program's participation in the assessment does not guarantee, equate to, or prejudge future decisions by Council regarding CORSIA-eligible emissions units; and

the ICAO is not responsible for and shall not be liable for any losses, damages, liabilities, or expenses that the Program may incur arising from or associated with its voluntary participation in the assessment; and

as a condition of participating in the assessment, the Program will not at any point publicly disseminate, communicate, or otherwise disclose the nature, content, or status of communications between the Program and ICAO, and of the assessment process generally, unless the Program has received prior notice from the ICAO Secretariat that such information has been and/or can be publicly disclosed.

Signed:

Ms. Prasertsuk Patoonsittichai — 11 July 2019

Full name of Program Representative (*Print*) — Date signed (*Print*)

Program Representative (*Signature*)

(This signature page may be printed, signed, scanned and submitted as a separate file attachment)

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SECTION IV: SIGNATURE

I certify that I am the administrator or authorized representative ("Program Representative") of the emissions unit program ("Program") represented in a) this form, b) evidence accompanying this form, and c) any subsequent oral and/or written correspondence (a-c: "Program Submission") between the Program and ICAO; and that I am duly authorized to represent the Program in all matters related to ICAO's analysis of this application form; and that ICAO will be promptly informed of any changes to the contact person(s) or contact information listed in this form.

As the Program Representative, I certify that all information in this form is true, accurate, and complete to the best of my knowledge.

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the Program's participation in the assessment does not guarantee, equate to, or prejudge future decisions by Council regarding CORSIA-eligible emissions units; and

the ICAO is not responsible for and shall not be liable for any losses, damages, liabilities, or expenses that the Program may incur arising from or associated with its voluntary participation in the assessment; and

as a condition of participating in the assessment, the Program will not at any point publicly disseminate, communicate, or otherwise disclose the nature, content, or status of communications between the Program and ICAO, and of the assessment process generally, unless the Program has received prior notice from the ICAO Secretariat that such information has been and/or can be publicly disclosed.

Signed:

Ms. Prasertsuk Patoonsittichai	11 July 2019
Full name of Program Representative (*Print*)	Date signed (*Print*)
P. Prasertsuk	
Program Representative (*Signature*)	

(This signature page may be printed, signed, scanned and submitted as a separate file attachment)

Program Application Form, Appendix B

Program Scope Information Request

CONTENTS: This document collects information from emissions unit programs pertaining to the following:

Sheet A) Activities the program describes in this form, which will be assessed by ICAO's body of experts
Sheet B) Any activities that the program does not wish to submit for assessment
Sheet C) List of all methodologies / protocols that support activities described under Sheet A

SHEET A: DESCRIBED ACTIVITIES *(Here, list activities supported by the program that are described in this form for further*

Sector	Supported activity type(s)	Implementation level(s)	Geography(ies)
Energy efficiency	Replace with high efficiency lighting	Project-level only	Country (Thailand) only
	Install high efficiency lighting for new buildings	Project-level only	Country (Thailand) only
	Install cogeneration system to replace electricity purchasing and thermal energy production	Project-level only	Country (Thailand) only
	Install cogeneration system for new plants or new factories	Project-level only	Country (Thailand) only
	Improve thermal units such as boiler, industrial furnace, etc to achieve high energy efficiency	Project-level only	Country (Thailand) only
	Improve existing power plants to achieve high energy efficiency	Project-level only	Country (Thailand) only
	Install waste heat recovery unit to generate electricity at cement plants	Project-level only	Country (Thailand) only
	Replace existing chillers with high efficiency chillers	Project-level only	Country (Thailand) only
	Improve turbines to achieve high efficiency at existing power plant	Project-level only	Country (Thailand) only
	Replace existing motors with high efficiency motors or install variabel frequency drive (VFD) in motor system	Project-level only	Country (Thailand) only
	Install combined heat and power system for electricity and chilled water generation to replace the separated system by electricity purchasing and chiller	Project-level only	Country (Thailand) only
	Install waste heat recovery unit to acheive high energy efficiency in thermal gerneration unit	Project-level only	Country (Thailand) only
	Install thermal chiller system such as absortion chiller, adsorption chiller to substitute vapor compression chiller	Project-level only	Country (Thailand) only
	Replace existing air conditioners with high efficiency air	Project-level only	Country (Thailand) only
	Replace existing uninterruptible power supply (UPS) with high efficiency UPS	Project-level only	Country (Thailand) only
Alternative energy	Install on-grid power plant by renewable energy or alternative energy	Project-level only	Country (Thailand) only
	Install off-grid power plant by renewable energy or alternative energy to subsitute electricity generation by fossil fuel	Project-level only	Country (Thailand) only
	Switch fossil fuel with renewable energy or alternative energy to generate thermal energy	Project-level only	Country (Thailand) only
	Install new thermal generation unit by renewable energy	Project-level only	Country (Thailand) only
	Install biodiesel production process using as fuel of vehicle	Project-level only	Country (Thailand) only
	Switch fossil fuel with renewable energy or alternative energy in a cogeneration/trigeneration system	Project-level only	Country (Thailand) only
	Install production process of compressed biomethane gas (CBG) to replace fossil fuel	Project-level only	Country (Thailand) only
Waste	Install anaerobic wastewater treatment from industrial wastewater to capture methane for utilization or flaring	Project-level only	Country (Thailand) only
	Install municipal solid waste incineration to replace landfill	Project-level only	Country (Thailand) only
	Install aerobic composting or mechanical biological treatment (MBT) to produce compost or soil amendments from organic waste to replace landfill	Project-level only	Country (Thailand) only
	Install production process of refused derived fuel (RDF) from municipal solid waste to replace landfill	Project-level only	Country (Thailand) only
	Install anaerobic digestion process from residual waste to capture methane for utilization	Project-level only	Country (Thailand) only
	Install anaerobic organic waste treatment to capture methane for utilization	Project-level only	Country (Thailand) only
	Recovery methane from municipal solid waste management (Sanitary landfill) for utilization or flaring	Project-level only	Country (Thailand) only
	Install anaerobic wastewater treatment from swine farm to capture methane for utilization or flaring	Project-level only	Country (Thailand) only
	Recovery and recycling of plastic from solid waste	Project-level only	Country (Thailand) only
Other	Install recovery process of carbon dioxide from exhausted gas for utilization	Project-level only	Country (Thailand) only
	Detect and repair methane leakage in petroleum process and distribution system	Project-level only	Country (Thailand) only
Agriculture	Use compost or soil amendments to reduce chemical fertilizer in agricultural land	Project-level only	Country (Thailand) only

SHEET B: EXCLUDED ACTIVITIES *(Here, list activities supported by the program that are not described in this form for further assessment)*

Sector	Supported activity type(s)	Implementation level(s)	Geography(ies)
Forestry	Sustainable forestation for small scale	Project-level only	Country (Thailand) only
	Deforestation and forest degradation and enhancing carbon sequestration in forest area project level: P-REDD+	Project-level only	
	Sustainable forestation for largel scale	Project-level only	Country (Thailand) only
Agriculture	Carbon Sequestration and Reducing Emission in Orchards	Project-level only	Country (Thailand) only

SHEET C: METHODOLOGIES / PROTOCOLS LIST *(Here, list all methodologies / protocols that support activities described in Sheet A)*

Methodology name	Unique Methodology / Protocol Identifier	Applicable methodology version(s)	Date of entry into force of most recent version	Prior versions of the methodology that are credited by the Program (if applicable)	Greenhouse / other gases addressed in methodology	Web link to methodology
Energy Efficiency Improvement from Lightings	T-VER-METH-EE-01	3	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/444-energy-efficiency-improvement-from-lightings.html
High Energy Efficiency Lighting Installation in Buildings	T-VER-METH-EE-02	3	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/445-high-energy-efficiency-lighting-installation-in-buildings.html
Installation of Cogeneration System to Replace of Separated System	T-VER-METH-EE-03	3	07/08/2018		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/445-high-energy-efficiency-lighting-installation-in-buildings.html
New Installation of Cogeneration System	T-VER-METH-EE-04	2	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/447-new-installation-of-cogeneration-system.html
Energy Efficiency Improvement for Thermal Generation	T-VER-METH-EE-05	2	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/448-energy-efficiency-improvement-for-thermal-generation.html
Energy Efficiency Improvement in Existing Power Plants	T-VER-METH-EE-06	2	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/449-energy-efficiency-improvement-in-existing-power-plants.html
Waste Heat Recovery and Utilisation for Power Generation at Cement Plants	T-VER-METH-EE-07	2	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/450-waste-heat-recovery-and-utilisation-for-power-generation-at-cement-plants.html
Replacement or Installation of High Efficiency Chiller	T-VER-METH-EE-08	3	04/02/2019		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/451-replacement-of-existing-chiller-with-high-efficiency-chiller.html
Energy Efficiency Improvement of a Power Plant through Retrofitting Turbines	T-VER-METH-EE-09	1	28/09/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/452-energy-efficiency-improvement-of-a-power-plant-through-retrofitting-turbines.html
Energy Efficiency Improvement in Motor Systems	T-VER-METH-EE-10	2	04/09/2017		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/453-energy-efficiency-improvement-in-motor-systems.html
Power Generation and Chilled Water Supply from Combined Heat and Power to Replace the Separated System	T-VER-METH-EE-11	2	06/03/2017		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/454-power-generation-and-chilled-water-supply-from-combined-heat-and-power-to-replace-the-separated-system.html
Waste Heat Recovery and Utilisation	T-VER-METH-EE-12	1	04/09/2017		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/455-waste-heat-recovery-and-utilisation.html
Installation of Thermal Chiller System to Substitute Mechanical Chiller System	T-VER-METH-EE-13	1	23/02/2018		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/913-installation-of-thermal-chiller-system-to-substitute-mechanical-chiller-system.html
Installation of High Efficiency Air Conditioning System	T-VER-METH-EE-14	1	23/02/2018		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/914-installation-of-high-efficiency-air-conditioning-system.html
Energy Efficiency Improvement for Uninterruptible Power Supply: UPS Replacement	T-VER-METH-EE-15	1	30/04/2018		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ee/item/915-energy-efficiency-improvement-for-uninterruptible-power-supply-ups-replacement.html
Electricity Generation from Renewable Energy	T-VER-METH-AE-01	4	23/11/2018		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ae/item/456-on-grid-renewable-electricity-generation.html
Off-Grid Renewable Electricity Generation	T-VER-METH-AE-02	2	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ae/item/457-off-grid-renewable-electricity-generation.html
Switching of Fossil Fuel or Increasing of Renewable Energy Utilization to Generate Thermal Energy	T-VER-METH-AE-03	1	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ae/item/458-switching-of-fossil-fuel-or-increasing-of-renewable-energy-utilization-to-generate-thermal-energy.html
New Installation of Renewable Energy System to Generate Thermal Energy	T-VER-METH-AE-04	1	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ae/item/459-new-installation-of-renewable-energy-system-to-generate-thermal-energy.html
Biodiesel Production for Use as Fuel of Vehicle or Machinery	T-VER-METH-AE-05	1	22/04/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ae/item/460-biodiesel-production-for-use-as-fuel-of-vehicle-or-machinery.html
Fossil fuel switch in a cogeneration/trigeneration system	T-VER-METH-AE-06	1	06/03/2017		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ae/item/461-fossil-fuel-switch-in-a-cogeneration-trigeneration-system.html
Compressed Biomethane Gas: CBG Production to Replace Fossil Fuel	T-VER-METH-AE-07	1	30/04/2018		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/ae/item/912-compressed-biomethane-gas-cbg-production-to-replace-fossil-fuel.html
Methane Capture from Anaerobic Wastewater Treatment for Utilization or Flaring	T-VER-METH-WM-01	4	04/09/2017		CO_2, CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/467-methane-capture-from-anaerobic-wastewater-treatment-for-utilization-or-flaring.html
Municipal Solid Waste Incineration	T-VER-METH-WM-02	2	22/04/2016		CO_2, CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/468-municipal-solid-waste-incineration.html
Production of compost or soil amendments from organic waste	T-VER-METH-WM-03	5	02/04/2019		CO_2, CH_4, N_2O	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/469-production-of-compost-or-soil-amendments-from-organic-waste.html
Refused Derived Fuel: RDF Production from Municipal Solid Waste	T-VER-METH-WM-04	3	23/02/2018		CO_2, CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/470-refused-derived-fuel-rdf-production-from-municipal-solid-waste.html
Methane Capture from Anaerobic Digestion of Residual Waste for Utilization	T-VER-METH-WM-05	1	06/03/2017		CO_2, CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/471-methane-capture-from-anaerobic-digestion-of-residual-waste-for-utilization.html
Methane Capture from Anaerobic Organic Waste Treatment for Utilization	T-VER-METH-WM-06	2	22/04/2016		CO_2, CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/472-methane-capture-from-anaerobic-organic-waste-treatment-for-utilization.html
Methane Recovery from Municipal Solid Waste Management for Utilization or Flaring	T-VER-METH-WM-07	3	04/09/2017		CO_2, CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/473-methane-recovery-from-municipal-solid-waste-management-for-utilization-or-flaring.html
Methane Recovery in Swine Wastewater Treatment	T-VER-METH-WM-08	2	22/04/2016		CO_2, CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/474-methane-recovery-in-swine-wastewater-treatment.html
Recovery and Recycling of Plastic from Solid Waste	T-VER-METH-WM-09	1	04/02/2019		CO_2, CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/wm/item/1101-recovery-and-recycling-of-plastic-from-solid-waste.html
Sustainable Forestation	T-VER-METH-FOR-01	4	02/04/2019		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/for/item/475-sustainable-forestation.html
Reducing Emission from Deforestation and Forest Degradation and Enhancing Carbon Sequestration in Forest Area Project Level: P-REDD+	T-VER-METH-FOR-02	2	28/09/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/for/item/476-reducing-emission-from-deforestation-and-forest-degradation-and-enhancing-carbon-sequestration-in-forest-area-project-level-p-redd.html
Large Scale Sustainable Forestation Project	T-VER-METH-FOR-03	2	28/09/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/for/item/477-large-scale-sustainable-forestation-project.html
Good Fertilization Practice in Agricultural Land	T-VER-METH-AGR-01	2	27/06/2014		CO_2, N_2O	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/agr/item/478-good-fertilization-practice-in-agricultural-land.html
Carbon Sequestration and Reducing Emission in Orchards	T-VER-METH-AGR-02	1	27/06/2014		CO_2, N_2O	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/agr/item/479-carbon-sequestration-and-reducing-emission-in-orchards.html
Carbon Dioxide Recovery and Utilization	T-VER-METH-OTH-01	1	28/09/2016		CO_2	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/oth/item/480-carbon-dioxide-recovery-and-utilization.html
Methane Leak Detection and Repair in Petroleum Processing and Distribution Systems	T-VER-METH-OTH-02	1	28/09/2016		CH_4	http://ghgreduction.tgo.or.th/tver-method/tver-methodology-for-voluntary-greenhouse-gas-reduction/oth/item/481-methane-leak-detection-and-repair-in-petroleum-processing-and-distribution-systems.html

Environmental and Social Management Framework (ESMF) of Greenhouse Gas Mitigation Project

Introduction

Environmental and Social Management Framework or ESMF has been established as a tool for assessing and setting up environmental and social impact reduction measures from city greenhouse gas mitigation projects. It also aims at enhancing stakeholders' participation. ESMF composes of screening stages to gain more understanding of the impact, and prepare for appropriate management tools. However, suitable tools to manage the impacts will depend on sizes and characteristics of activities and the impact significant level. Examples of the impact management tools generally used are; Environment Impact Assessment (EIA), Initial Environment Evaluation (IEE), Environmental and Social Management Plan (ESMP), and Environmental Codes of Practices (ECOPS), etc. For the advantage of ESMP, it can be used as a guideline for setting an impact tracking measure while implementing the project, and proposing ECOPs, as well as the templates of ESMP of the city-level greenhouse gas mitigation projects to be a guideline for further an implementation.

ESMF takes into considerations the legal requirement of environment, social assessment/management, several procedures related to Thailand Greenhouse Gas Management Organization (public organization) or TGO, and other international best practices on environmental and social impact assessment, for example, World Bank Environmental and Social Policy or "Safeguard Policy".

1. Social and environmental policies and legal requirements

Greenhouse gas mitigation projects or activities have to be implemented in accordance with legal requirement, rules and regulations on environmental and social aspects of relevant countries. Examples of such legal requirement are; Acts, Ministerial Regulations/Announcement, and other standards. The projects will not act against any related laws of energy; environment; industry; agricultural, forestry and other land use, etc. **The table 1 and 2** show the list of laws related to each greenhouse gas mitigation activities and laws related to information provision to the public, public hearing and public participation respectively.

Table 1: The list of some laws related to each greenhouse gas mitigation activities.

Project	Project Related Law	Monitoring and Controlling Agency
Energy Conservation and Renewable Energy Consumption	Law/Related Energy Act	- Department of Alternative Energy Development and Efficiency
	- Energy Conservation and Promotion Act, B.E. 2535 (1992), and its Second Amendment, B.E. 2550 (2007)	- Department of Alternative Energy Development and Efficiency
	- National Energy Policy Council Act, B.E. 2535 (1992), and its additional amendment	- Office of the Policy and Plan, Ministry of Energy
	- Metropolitan Electricity Authority Act, B.E. 25011 (1958), and its additional amendment	- Metropolitan Electricity Authority
	- Electricity Generating Authority of Thailand , Act B.E. 2511 (1968), and its additional amendment	- Metropolitan Electricity Authority
	- Fuel Control Act, B.E. 2542 (1999)	- Department of Energy Business, Ministry of Energy

Project	Project Related Law	Monitoring and Controlling Agency
	- Petroleum Act, B.E. 2514 (1971)	- Department of Mineral Fuels, Ministry of Energy
	- Energy Industry Act, B.E. 2550 (2007)	- Office of Energy Regulatory Commission
	- ERC Code of Practice : Solar for Electricity	- Energy Regulatory Commission (ERC)
Communication/ Transportation	-Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992)	- Office of Natural Resources and Environmental Policy and Planning
	- Air Navigation Act, B.E. 2497 (1954)	- Department of Airport, Ministry of Transport
	- Mass Rapid Transit Authority of Thailand Act, B.E. 2543 (2000)	Mass Rapid Transit Authority of Thailand
	- Road Traffic Act, B.E. 2477 (1934) and additional amendment	Royal Thai Police Headquarters
Waste	Waste Management Law	- Pollution Control Department, Ministry of Natural Resources and Environment
	- Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992) (Article 78 and 79)	- Ministry of Science and Technology
	- Public Health Act B.E.,2535, and its second amendment, B.E 2550 (2007)	- Bangkok Metropolitan Administration and Local Administration Organizations
	- Provincial Administrative Organizations Act, B.E. 2540 (1997)	Administrative Organizations and Bangkok Metropolitan Administration
	- Sub-district Council and Sub-district Administrative Authority Act, B.E. 2537 (1994)	Department of Local Administration
	- Government Administration Act, B.E. 2528 (1985)	Ministry of Interior
	- Government Local Administration Law Groups giving authorities to Local Government Organizations for cleaning and waste disposal in various areas	
	- Factory Act B.E. 2535 (1992)	Department of Industrial Works
Industrial Processes and Product Use (IPPU)	- Regulations of the Ministry of Industry	- Ministry of Industry
	- Factory Act B.E. 2535 (1992)	- Department of Industrial Works
Agriculture, Forestry and Other Land Use (AFOLU)	- Law related to natural resources	- Ministry of Natural Resources and Environment
	- Water Law	
	- Animal Law	
Environment Impact Assessment (EIA) and its reporting	- Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992) - Notification of Ministry of Natural Resources and Environment by the virtue of 48 of the 2nd Enhancement and Conservation of National Environment Quality Act, No. 2, B.E. 2561 (2018) - Notification of Ministry of Natural Resources and Environment on Land Determination and Environmental Protection Measures which identify types and sizes of project or activities requiring environmental impact assessment (EIA) report and initial environment examination (IEE).	Ministry of Natural Resources and Environment

Project	Project Related Law	Monitoring and Controlling Agency
	- The Cabinet resolution on additional conserved forest (13 September 1994)implementation tools to assess environmental impact of the projects as approved by the Cabinet resolution on 26 April 2011.	

Table 2: List of laws related to information provision to the public, public hearing and public participation

Principle	Related Law
Information Access	Constitution of the Kingdom of Thailand B.E. 2560 (2017), for example: **Article 56. "**A person shall have the right to get access to public information in possession of a State agency, State enterprise or local government organization..". **Article 57. "A** person shall have to right to receive information, explanation and reason from a State agency, State enterprise or local government organization before permission is given for operation of any project or activity which may affect the quality of environment, health and sanitary conditions, quality of life.., and shall have the right to express his or her opinion on such matters to agencies concerned for consideration in that matters..In undertaking any development planning, city planning, and issuance of regulations which may affect the interests of the people, the State shall thoroughly hold public hearings procedure prior to implementation". **Article 59.** A person shall have the right to present a petition and to be informed about the result of its consideration within a short time.
	- Official Information Act, B.E. 2540 (1997)
	- Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992)
Public Hearing	- Rule of the Office of the Prime Minister on Public Consultation by means of Public Hearings, B.E. 2539 (1996)
Public Participation	Constitution of the Kingdom of Thailand 2017, for example: **Article 66.** "Persons so assembling as to be a community, local community or traditional community shall have the right to conserve or restore their customs, local traditional knowledge, arts or good culture of their community, and participate in the management, maintenance, preservation and exploitation of natural resources and environment…". **Article 67. "**A person shall have to right to participate, in conjunction with the State and communities, in the conservation, preservation an exploitation of natural resources and biological diversity, and in the protection, promotion and preservation of the quality of environment..".
	- Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992)
	- Rule of the Office of the Prime Minister on Public Consultation B.E.2548 (2005)
	- Notification of Ministry of Natural Resources and Environment on types and sizes of projects or activities requiring environmental impact assessment (EIA) report and rules, procedures, practices and guidelines for preparing environmental impact assessment report B.E. 2553 (1980)

2. Environmental and Social Impact Screening

Environmental and social impact screening is an initial assessment process to consider the impact level of social and environmental measures/projects, and make decision to properly use the management tools to deal with the environmental and social impact which are probably

occurred. How the impact management tools are used depend on significant level of such impacts. The tools are various serving with different purposes, such as Environmental Impact Assessment Report (EIA), Initial Environmental Evaluation Report (IEE), Environmental and Social Management Plan (ESMP), and Environmental Codes of Practices (ECOPs), etc.

There are, however, the activities/projects that should not be included in the greenhouse gas abatement plan, which are listed as follows:

- Activities/projects that may severely affect to the environment, or health to the extent that can be fatal to human life. Any measures to safeguard, remedy or reduce such critical effects cannot be setup or cannot make all affected resources to become resilience, or no compensation measures can be appropriately considerable undertaken.
- Activities/projects which are against the laws or rules that are related to government bodies

The following impact screening will be applied as the criteria for environmental and social impacts arisen from the project implementation, and project co-benefit assessment

Assessment Form E-1:Initial Assessment of Project Location Sensitivity

Topic	Assessment(Mark(✓)in the space)		Additional Comments
	Yes	No	
Disaster Risk Location In the locations or adjacent areas that are at risk with disaster (flood, earthquake, landslide, broken dam, wildfire, chemical leakage)			
Valuable historic, archaeological and tourist site In the locations or adjacent areas that are valuable for religion, history, archaeology, or tourist and aesthetic; community location valuable to its ethnic group			
Wildlife habitat and forest In the locationsor nearby areas to a wildlife sanctuary, community forest, conservation area or important natural habitation area,migratory routes of birds and wildlife, etc.			
Water source In a location of or nearby to water source (i.e. for consumption and agricultural purpose)			
Impact sensitivity location In a location or nearby where there is an environmental impact sensitivity, i.e. temple, hospital, dense housing, etc.			
Others			

Remarks: Nearby locations can be considered from the project impact, for example, a housing project having an adjacent area with 1 kilometer radius around a project located area, a mining project having an adjacent area with 3 kilometer radius around a project located area, a real-estate or airport project having an adjacent area with 5 kilometer radius around a project located area.

Assessment Form E-2:Initial Environmental Impact Likelihood and Severity

Impact Occurrence Probability	Impact Severity Level Assessment(mark(✓)in the space)				Additional Remarks
	No Impact	Less Impact	Medium Impact	High Impact	
Physical Resources					
Water pollution occurrence					
Soil pollution occurrence					
Air pollution occurrence					
Noise pollution occurrence					
Odor pollution occurrence					
Soil erosion, coastal/river bank erosion occurrence					
Waste					
Increase of general waste					
Increase of toxic waste, i.e. contaminated waste from oil, chemicals, electronics and used oil, etc.					
Increase of infectious waste					
Increase of electronics waste					
Bio-resources					
Forest area/land use change					
Land and wildlife ecosystem loss					
Water and aquatic animal ecosystem loss					
Human Utilization					
Flood, drainage obstruction or waterway change					
Change in water utilization					
Land occupation change					
Quality of Life					
Cause a damage to the value of religion, antique, ancient monument, and tourism					
Others					

Assessment Form E-3: Initial Social Impact Likelihood and its Severity

Impact Occurrence Probability	Level of Impact Severity Assessment(Mark(✓)in the Space)				Additional Remarks
	No Impact	Less Impact	Medium Impact	High Impact	
Public Safety					
Health Impact					
Immigration or temporary/permanent land loss					
Income/occupation loss					
Impact on public utility, i.e. electricity, telephone					
Traffic Impact					
Community conflict impact					
Employment and workforce					
Race, religion and ethnic group impact					

Impact severity level can be considered having regards to the criteria shown in **Table 3**.

Table 3: Criteria Considering Impact Severity Level

Severity Level	Consideration Criteria
No impact	- Activities that do not cause any changes or any direct/indirect impacts on environment and natural resources
Less impact	- Activities that cause changes of some existing conditions but do not affect the overall quality of environment and social aspects - Area boundary being affected is not so large and occurred shortly or occasionally.
Medium impact	- Activities that cause changes from the existing conditions and may affect the value/importance of such natural, environmental and social status. - Area boundary being affected is somewhat large but limited to the surrounding project area, or only in specific communities/related areas. Occurrence of impact duration is rather long but not permanent. For example, the impact occurs only during the implementation time that may be able to determine safeguard, remedy or impact reduction measures.
High impact	- Activities that cause a high level of environmental and social change and may affect other conditions including ecological function and value of the ecosystem significance in the system. - Area boundary being affected disperses more widely than the surrounding project. Duration of an impact occurrence is long and permanent, and needs to be in the scope of EIA reporting by law.

3. Preparation of Environmental and Social Impact Management Tools

Based on the results of the initial environmental and social impact screening of measures/activities already mentioned, the impact management tools can be considerably chosen as appropriate; generally used are, among others, EIA, IEE, ESMP or ECOPs. The chosen tools are different in its significant importance of the impact management of those projects mentioned earlier. The following assessment form can be used for consideration of appropriate impact management tools for the project impact level.

Assessment Form E-4: Selection of Environmental and Social Impact Mitigation Management Tools

Project Impact Level	Criteria, Procedures/Practices [1)]
- Projects with no impact	- Immediate action
- Projects with less/medium impact - Projects that may affect environmental/social sensitivity areas as stated in Assessment FormE-1.	- Implementation in accordance with measures related to ECOP, or ECOP/ESOP
- Projects that are in the scope of IEE reporting by law.	- IEE reporting
- Projects with high impact that need EIA report by law.	- EIA reporting
- Projects with severe impact where the measures for safeguard, reduction and appropriate compensation cannot be determined. - Projects being contrary to law and government procedures	- Not considered for embedding in greenhouse gas abatement plan

Remarks:

1) **Environmental Code of Practices and Environmental and Social Management Plan for Greenhouse Gas Emissions Reduction Projects** are required to identify the methods to reduce the impact likelihood as contained in **the Assessment Form 4 : Selection of Impact Management Tools : The Impact Assessment and Details and Tools Used for the Practices of Environmental and Social Impact Management.** However, the tool selection and practices

should also depend on activity characteristics, size and significant impact level. Examples of tools/practices being applicable are:

1. Initial Environment Evaluation(IEE)
   This management tool can be applied for a small project that may cause the environmental impact probability by conducting the preliminary study to find any impact of the project on environment. This initial assessment can be used for further preliminary study on information to find whether the project causes any environmental problem. The assessment can be further used to set a guideline for the TOR of ESIA. For example, a 10 MW power plant installation project will require IEE assessment report.
2. Environmental Impact Assessment (EIA)and Environmental and Health Impact Assessment (EHIA)
   EIA is an assessment to predict a positive and negative side of environmental and social impact resulted from the project development, sub-projects or key activities. It aims to set preventive measures and solve the environmental and social problems as well as make a decision on project development. The study result is made in the form of the EIA report. In most cases, the EIA report can be a study reference on environmental impact study of a large scale project with, for example, more than 10 MW power plant installation where ESIA and EHIA reporting are to be conducted.

3. Environmental Code of Practices
   Environmental Code of Practices is the standard not enforced by law but rather used as a general practical guideline commonly acceptable and in line with the law.

4. Environmental and Social Co-benefits Assessment Form

Criteria for co-benefit assessment of city greenhouse gas mitigation projects have the following key components:

Principle is the overall picture of scope and criteria of the assessment stipulated by compiling and making analysis from the principle of city greenhouse gas mitigation project implementation, which focuses on the linkage of 3 sectors; environmental, social and economic sector.

Criteria have its content characteristics and details representing terms/conditions required by each principle, and can be directly verified. Its details are linked to the indicators that are applied suitably with the city context.

Indicator is a quantitative variables being able to be practical and verified, with the relation to specified criteria. In determining the indicators, it is necessary to have their various characteristics sufficiently for work performance evaluation covering in all specified principles and criteria.

Criteria for co-benefit assessment from the implementation of city greenhouse gas reduction projects comprise 3 environmental criteria, 10 social criteria, making the total of 13 criteria.

Assessment Form E-5: Environmental Co-benefits from the Projects

Indicator	Co-benefit List	Supportive View
Criteria 1 Waste Management		
1.1 Campaign on waste reduction, separation and usage	☐Having co-benefits o Waste disposal system o Others(If any)..... ☐No co-benefits	
1.2 Greenhouse gas emission reduction from usage of organic waste product	☐Having co-benefits o Encouragement of waste processing and usage o Others(if any)..... ☐Noco-benefits	
Criteria 2 Waste Water Management		
2.1 Water quality analysis	☐Having co-benefits o Water quality testing from water sources at least once every 3 months o Others(if any)..... ☐No co-benefits	
2.2 Water quality control and conservation	☐Having co-benefits o Reduce contamination flow into water sources, compared to the base year/before the project, such as; ( ) Heavy Metal ( ) Pesticides ( ) Other toxins ( )Nitrate o Others(if any)..... ☐Noco-benefits	
Criteria 3 Entire Environmental Quality Enhancement of Community/Environmental Pollution Mitigation		
3.1 Increase aesthetic value to the community	☐Having co-benefits o Promote tree plantation in natural areas, crops should be planted in compatible with the former ecosystem of the areas o Others(if any)..... ☐No co-benefits	
3.2 Air pollution mitigation	☐Having co-benefits o No air pollution occurrence compared to the base year o Help mitigate air pollution compared, to the base year ( ) SO_2 ( ) NO_x as NO_2 ( ) TSP ( ) CO o Others(if any)..... ☐No co-benefits	

Indicator	Co-benefit List	Supportive View
3.3 Disturbed order mitigation	☐Having co-benefits o Help mitigate disturbed order, compared to the base year o Others (if any)..... ☐No co-benefits	
3.4 Water pollution mitigation	☐Having co-benefits o Do not discharge nor reduce effluent discharge of the project, compared to the base year/prior to the project o Wastewater passing the effluents standard can be used outside the project compounds o Others(if any)..... ☐No co-benefits	
3.5 Soil contamination and pollution reduction	☐Having co-benefits o Hel reduce toxic chemicals contamination into soil as compared to the base year/prior to the project ( ) Heavy metal ( ) Pesticides ( ) Other toxics o Others(if any)..... ☐No co-benefits	

Assessment Form E-6: Social Co-benefit Assessment from the Projects

Indicator	Co-benefit List	Supportive View
Social Issue		
Criteria4 Enhancement of Heath and Safety of Urban Community		
4.1 Project management regarding community health promotion	☐Having co-benefits o Enhancement of green space and big tree conservation in the areas o Other (if any)..... ☐No co-benefits	
4.2 Enhancement of community sanitation in the projects and surrounding areas	☐Having co-benefits o Enhancement of community sanitation in the project area o Others(if any)..... ☐No co-benefits	
Criteria5Job Creation and Poverty Alleviation		
5.1 Encouragement of urban income in the project areas	☐Having co-benefits o New or part-time job creation o Others(if any)..... ☐No co-benefits	

Indicator	Co-benefit List	Supportive View
Social Issue		
5.2 Technological Development and its access	☐Having co-benefits o Technology development and its access with plans/activities for the development access o Others (if any)..... ☐No co-benefits	
Criteria6Community Participation		
6.1 Participation process of people in communities	☐Having co-benefits o Communities get access to information through various channels and participate in sharing comments on the start-to-end project implementation o Information disclosure/receipt of and response to complaints from the public in a systematic way o Others(if any)..... ☐No Co-benefits	
6.2 Enhancement of community grouping/inter-community networking	☐Having co-benefits o Community grouping or net networking occurred from the project o Others(if any)..... ☐No co-benefits	
Criteria 7 Enhancement of Knowledge and Understanding of Climate Change		
7.1 Creation/enhancement of potential in responding to climate change	☐Having co-benefits o Activities to enhance the potential for climate change response o Others(if any)..... ☐No co-benefits	
Criteria 8 Women, Children, and Disables Organization Potential Development		
8.1 Potential development of women/ children/and disable people in the urban area, including migrant workers.	☐Having co-benefits o Enhancement of women organization potential o Others(if any)..... ☐No co-benefits	
8.2 Development of quality of life of people with disabilities	☐Having co-benefits o Plans to support expenditure to empower people who are poverty and disabilities o Others (if any)..... ☐No co-benefits	

Indicator	Co-benefit List	Supportive View
Social Issue		
Criteria 9 Support for Social and Cultural Development, and Sufficient Economy Philosophy		
9.1 Support activities for social and cultural development, and sufficiency economy philosophy	☐Having co-benefits o Sufficiency economy philosophy in accordance with its definition and CSR standard o Others (if any)..... ☐No co-benefits	
Criteria 10 Enhancement of Energy Security		
10.1 Energy conservation promotion	☐Having co-benefits o Energy consumption reduction by the replacement with energy efficiency equipment and electric appliances o Bio-diesel production from waste cooking oil in urban workplaces o Others(if any)..... ☐No co-benefits	

5. Public Participation and Information Consultation

5.1 Public participation during the study of environmental and social management framework (ESMF)

The process of public participation aims at enhancing people's self-development to become stronger and united. This will lead to a more decentralization decision making in social and environment issues of people than ever before. It is indeed very important to allow people to participate in making decision on the project implementation. The citizen, by the Constitution of the Kingdom of Thailand B.E. 2550 (2007), are given the rights to make decision in various projects. As stated in the Constitution in Article 67, Paragraph 2 "Any project or activity which may be seriously affect to the community in the quality of environment, natural resources, and health shall not be permitted, unless its impact on the quality of environment and people's health in the community have been studied and evaluated and the public hearing process to obtain the opinion of people and interested ….".

5.2 Public participation during the greenhouse gas abatement planning development

People's participation has its importance for greenhouse gas emission reduction potential, as it will ensure the project well receipt of all related, but not distort information. Level of public participation is detailed as follows:

- **Information provision** is regarded as the people participation at the lowest level, for it is the first government step to open the opportunity for people to reach the participation process in related affairs. Methods of information provision can be made through printed matters, information dissemination through media channels, exhibitions, newsletters, press conference, announcement, and websites, etc.
- **Public Hearing** is a process to allow the general public to take part in information/fact/opinion sharing and make the project decision, for example, brainstorming, survey, public meeting/forum, comments through websites, etc.
- **Opinion sharing** is to give the public an opportunity to join in working or recommending ways towards the decision making in order to ensure that their input can be used for consideration of project design and management choices. Opining sharing can be found, for example, from any workshops for public hearing issue consideration.
- **Cooperation** is to provide representatives from public sector with continuously participative joint activity implementation such as, committee members with representative from a civil sector.
- **People empowerment** is the highest step of people participation which can make their own decisions such as, projects/activities occurring from their own requirement.

The composition of public participation preparation is shown in **Table 4.**

Table 4: The composition of public participation preparation

Activity	Required Document (If approved)
Public participation activity plan	Action plan, duration and location
Public relations for stakeholder information access to the project	Public relations plan and communication information
Enhancement of the stakeholder's gender to be able for expressing their opinion	Identify appropriate proportion

6. Relevant Institutional Structure of Environment and Social Impact Management of City Greenhouse Gas Mitigation Project

The institutional structure relating to the environmental and social impact management of city greenhouse gas mitigation projects is to determine the structure and responsibility of stakeholders involved in the projects belong to government agencies given the authorities by laws. For example, the project requiring for EIA report is to be approved by the Office of Natural Resources and Environmental Policy and Planning, the power plant installation is to be permitted by the local administration organization.

Examples of agencies involving in the projects relating to environmental and social impacts:

- Office of Natural Resources and Environmental Policy and Planning (ONEP), has the functions and responsibility to develop and propose environmental and natural resources conservation policies and plans, and support effective implementation, monitor and assess the environmental impact mitigation measures in accordance with the environmental impact assessment report, in order to strengthen and support the country's economic and sustainable development and good quality of life.
- Department of Alternative Energy Development and Efficiency (DEDE) has the functions to promote energy efficiency, regulate energy conservation, and provide energy sources as well as develop energy mix and disseminate energy technology
- Thailand Greenhouse Gas Management Organization (Public Organization) plays the vital roles as the center of information related to greenhouse gas implementation situations, makes a database about the authorized projects and the approved trading of greenhouse gas quantity, to enhance the efficiency and provide instructions for public agencies and private bodies in the operations on greenhouse gas management.
- Department of Pollution Control has its functions to set the polices and plans on the enhancement and conservation of environmental quality with respect to pollution control, to petition the complaint on pollution matters, and to develop the environment quality management plans to control, prevent, and remedy environmental problems caused by pollutants.
- Local Administration Organization LAO performs its duties to develop the system, format, and structure of LAO, to make, enact, and improve the related laws and regulations related, give the consultation, recommendations, and monitoring of work operation pursuant to LAO power and authorities, and to enhance the participation of people in the management and inspection of LAO operation.

Guidelines for Preparing Report on Initial Environmental Evaluation (IEE) and Self-Evaluation on Sustainable Development of CDM Projects in Thailand (IEE-SD Report)

Thailand Greenhouse Gas Management Organization (Public Organization)
Ministry of Natural Resources and Environment 2010 (B.E. 2553)

Thailand Greenhouse Gas Management Organization (Public Organization)
120 Moo 3, 9th floor, The Government complex, Commemorating His Majesty,
Chaeng Wattana Road, Laksi, Bangkok 10210, Thailand

Introduction

The objective of the Initial Environmental Evaluation (IEE) and Self-Evaluation on Sustainable Development of CDM Projects (IEE-SD Report) is to provide project information in order to assess the potential for sustainable development under the Clean Development Mechanism (CDM), prior to the issuance of the Letter of Approval (LoA). The Kyoto Protocol has prescribed that all CDM projects must support the national sustainable development of the host country as a step prior to the project registration. The approval of support to national sustainable development would lead to validation and verification of the amount of Certified Emission Reductions (CERs) of the project by the Clean Development Mechanism Executive Board (CDM Executive Board) of the United Nations. The enforcement of the Kyoto Protocol under the United Nations Framework Convention on Climate Change (UNFCCC) has created economic value for greenhouse gases emission reduction. They can be traded as "Carbon credits" in the carbon market.

Thailand Greenhouse Gas Management Organization. (Public Organization) or TGO, recognizes the importance to approve CDM projects within the shortest time possible. There is a need to prevent negative social and environmental impacts caused by CDM projects in Thailand. The information used for the environmental impact assessment as well as the indicators for sustainable development are important for all parties involved to ensure project approval in a timely manner, as well as to increase the quality and value of the project. In order to be able to assess the project's potential for sustainable development with efficiency and reliability, it is necessary to first assess the initial environmental impact assessment. The information contained in the Project Design Document (PDD) will also be used to support the report preparation.

Thailand Greenhouse Gas Management Organization (Public Organization) has prepared a guideline for preparing report on initial environmental evaluation (IEE) and self-evaluation on Sustainable Development of CDM projects in Thailand (IEE-SD Report) for the project developer. This will ensure that correct and completed information will be provided in the report submitted.

Content of the Report on Initial Environmental Evaluation (IEE) and Self-Evaluation on Sustainable Development of CDM Projects in Thailand (IEE-SD Report)

Content

Cover Page

Project title (English) <u>as indicated in the PDD</u>

Project title (Thai).....

Project owner.....

Project location.....

Project developer (Thai partner)……..……..…..…...

(Foreign partner).....

The report was prepared by (name and address of the company) .....

…….…….……...…..

Project type

The project generates heat from .....

The project generates electricity from.....

Electricity is sold to the grid Yes ( )
No ( )

The project generates heat and electricity from.....

Electricity is sold to the grid Yes ( )
No ( )

Other type of project (please specify) …….……..

CDM project status (On dd/mm/yyyy)

( ) Construction has not started
( ) Under construction
( ) Construction is completed and the system is being test run
( ) Operation has started on dd/mm/yyy

Delegation of Authority

The project developer has transferred its authority to prepare the report to..... as per the delegation of authority letter enclosed.

The project developer has not transferred the right.

Delegation of Authority letter

Project Summary

<table>
<tr><td colspan="2">Project title (as per the PDD).....</td></tr>
<tr><td colspan="2">Location: .....</td></tr>
<tr><td>Project Developer (Company name/Thai partner): ……..…</td><td>Project Developer (Foreign partner): ……</td></tr>
<tr><td>Company’s product: .....</td><td>Production capacity: .....</td></tr>
<tr><td colspan="2">Technical description of the CDM project activity:
(Summary of the project such as type and size of the project, electricity generation capacity .....MWh/year, and heat generation capacity..... TJ/year)
• Machinery and equipment of the project activity
1) .....no. of machine/equipment.....
2) .....no. of machine/equipment.....
3) .....no. of machine/equipment.....
4) .....no. of machine/equipment.....</td></tr>
<tr><td>Technology employed: ……...</td><td>Sources of technology: .....</td></tr>
<tr><td colspan="2">Highlights of the technology :
.....
.....
.....</td></tr>
<tr><td>Type and sources of raw material/fuel: …… ……...</td><td>Amount of raw material/fuel
Wastewater ..... m^3/year
(wastewater..... m^3/day, No. Operating day/year ……)
COD .....mg/L</td></tr>
<tr><td>Output of the CDM project activity: .....</td><td>Byproduct of CDM project activity:
1) .....
2) .....</td></tr>
<tr><td colspan="2">CDM Baseline and Monitoring methodology adopted and the date of EB approval:
……..……</td></tr>
<tr><td colspan="2">Greenhouse Gas Emission Reduction
1. Methane (CH_4).....tCO_2e/y
2. Carbon dioxide (CO_2)……...…tCO_2e/y
3. Other ...……..……..tCO_2e/y
Total Greenhouse gas emission reduction)……..tCO_2e/y</td></tr>
<tr><td colspan="2">Project life: …….. years</td></tr>
<tr><td colspan="2">Crediting period : …….. years</td></tr>
<tr><td colspan="2">Investment of CDM project activity : ……..…… million THB</td></tr>
<tr><td>Internal rate of return on investment without being registered as CDM project
IRR = ……. %</td><td>Internal rate of return on investment , the project registered as CDM project
IRR = ……. %</td></tr>
<tr><td colspan="2">Country that will purchase CER……</td></tr>
<tr><td colspan="2">Price of CER.....Currency.....</td></tr>
<tr><td colspan="2">Current project status (planning, under construction or operating) :
.....</td></tr>
</table>

Total score for all indicators: ……	
Benefits to sustainable development	
1. Economic	
1.1 Nationally	
.....	.....
1.2 Locally	
.....	.....
2. Social	
2.1 Nationally	
.....	.....
2.2 Locally	
Employment (person/year)	During construction ..... Operation
Average wage per year	Average…..... THB/person/month Total..... million THB/year
3. Environment	
3.1 Nationally	
Overall national environmental quality	.....
3.2 Locally	
Local environmental quality	.....

Chapter 1
Introduction

1.1 Project rationale and objective

This section should include a description of project objective, rationale; scope of the study, the study area (not less than 1 km from the project boundary), and the additionality of the project activity as defined under the Kyoto Protocol should be mentioned.

1.2 Project activity plan

This section should include the details of the project activity and the operational plan for the project activity in a form of a Gantt chart.

1.3 Current project status (dd/mm/yyyy)

This section should present the details of the existing environment of the project area, with appropriate pictures.

Chapter 2
Project Description

2.1 Location and transportation to the project site

- Details of the location of the project site
- A picture taken from a map with a scale 1: 50,000 to illustrate the location of the project site. Or other maps that clearly illustrate the location of the project activity. The picture should include direction and scale.
- An aerial photograph with direction and scale, illustrating the factory boundary (if CDM project is located in a factory), CDM project boundary, land use around the project site (such as rice paddy, palm oil plantation, sugarcane plantation), location of households and communities, and public water resources.

2.2 Type and Scope of the project activity

- Overall project description, including factory related to the project activity. This includes type of industry, product, and production process related to the CDM project activity. An industrial license shall be attached in the annex of this report (if any).
- The section should include the details of the project, scope of work, components of the CDM project activity, expected emission reduction and CDM project boundary. An industrial license shall be attached in the annex of this report (if any).
- A summary of machinery and equipments that is required to be installed for the CDM project shall be listed in the table format provided below.

Table 2-..... List of additional machinery and equipment required by the CDM project

Item	No.
1. Biogas generation/wastewater treatment system type ……	
2. Capacity of Gas Engine .....MW	
3. ……	
4. ……	
5. ……	

- The plant layout that illustrates the CDM project boundary should include: Layout of machinery and equipment installed in the project, biogas system, electricity generator, post treatment system, and water storage facility (if any).
  (In a case that the position of main equipment and machinery of CDM project could not be clearly seen in the plant layout, the layout should be enlarged.)

2.3 Production process of CDM project

Production process of the CDM project should be described, from the sources of raw material and fuel of the project up to finished products.

⊙ **For projects that generate electricity and/or heat from biogas (Biogas)**

1. Sources of fuel/raw material

Amount and characteristics of wastewater entering the biogas system of the CDM project.

2. Biogas production process and post treatment of wastewater

The details of the biogas production system and post treatment of wastewater (if any) together with a flow diagram that illustrates wastewater treatment of the project as follows:

(1) Biogas production system

The details of the biogas production process, system/technology adopted, principle of the system, size, wastewater storage capacity, hydraulic retention time, and the efficiency of the digester. The design calculation shall be attached in the annex of this report.

(2) Post treatment of wastewater system

The details of the post treatment process, system/technology adopted, size, wastewater holding capacity, retention time, and the efficiency of the post-treatment system. The influent and effluent characteristics analysis results must be attached in the annex of this report.

3. Hydrogen sulfide (H_2S) and moisture removal system

The details of the selected system for H_2S and moisture removal shall be presented in this section. This section should also include: H_2S and moisture removal efficiency, H_2S and moisture content, and H_2S content before entering the electricity generator.

4. Electricity generation system and/heat

- Technical details of the selected electricity generator, such as selected technology (brand/model), installed capacity, output electricity, and the amount of H_2S allowed in the system.
- In a case that the project uses generated heat to replace fossil fuel, the details of additional boiler or burner, shall be presented in this section.

⊙ **Biomass for electricity generation**

1. Sources of raw material
   - Type, amount, origin and demand of biomass fuel
   - Transportation to the power plant, and prevention of dust during transportation
2. Electricity generation
   - The details of the process from the storage of biomass fuel, handling system, electricity generation process, system and technology used for electricity generation, electricity output, control and connection system to the transmission line, and a flow diagram of the electricity generation system.
3. Pollution and control
   - Air pollution control system from stack emission such as dust collection system, principle of the system and efficiency to reduce air pollution from stack.

2.4 Water use (if any)

- Indicate the water demand and identify project activities that require water, sources of water, detail of the water storage pond (size and capacity (if any)). A picture or map that illustrates the location of the water storage pond. A copy of the license to draw water from public water resources from concerned agency shall be attached in the annex.
- In a case that the project has water pretreatment system, please indicate the process and steps. Include a flow diagram illustrating the process and steps of water pretreatment system.

2.5 CDM project activity wastewater management and use

Indicate the details of the project activity final effluent management or use.

- In a case that the project activity does not discharge final effluent outside of the project boundary or factory that received wastewater from CDM project. The layout of the wastewater treatment pond and a water balance diagram should be attached to illustrate the details.
- In a case that the final effluent is being used for irrigation outside of the project boundary or factory that received wastewater from CDM project, please include the necessary details include amount of effluent, use of effluent, location of the irrigation area, letter of intend from the farmers to use the final effluent, as well as a license to transport treated wastewater issued by the Provincial Office of Industrial Works of the Department of Industrial Works, shall be attached in the annex.

2.6 Waste and hazardous waste management

2.6.1 Waste

- Amount of waste, source, and type of waste generated from the CDM project activity (For example: sludge from wastewater treatment system, sludge from water pre-treatment, production/combustion process, and other pollution treatment system.
- Details of waste management
  - In a case that the waste is treated within the project or factory boundary. Please indicate the details of the waste treatment method, detailed design and location of waste treatment system. For example if a landfill is adopted, the location of the landfill, landfill method, an illustration of the landfill site, and the detailed design of the landfill site. A copy of the license or letter of no objection to operate the landfill site from concerned agencies should be attached in the annex.
  - In a case that the waste is removed from the project or factory boundary. If the sludge is removed from the wastewater treatment plant or the ash is given to the farmers as fertilizer or soil conditioner; details of the location for land application of sludge or ash should be described. Please attach in the annex the letter of intend from the farmers and the license to remove waste from the factory issued by the Department of Industrial Works. In a case that the waste is treated outside of the project or factory boundary by another entity, the name of the entity that receives the waste for treatment, and the license to remove waste issued by the Department of

Industrial Works should be attached in the annex.

2.6.2 Hazardous waste (if any)

- Amount and source of hazardous waste from the CDM project activity.
- Treatment method of hazardous waste generated by the project activity. The following details should be identified: the entity that receives hazardous waste for treatment, location, and the license to remove hazardous waste outside the project/factory boundary shall be attached in the annex.

2.7 Fire prevention system

- The details of the fire prevention system, fire alarm, and personal fire protective equipment within the CDM project boundary.
- Accident prevention plan, training plan, and other emergency plans for the CDM project.

2.8 Green area

- The size of the green area that is increased by the CDM project (if any)
- An illustration of the green area and the details of each tree planted
- Note: Green area is defined as covers with perennial plants to act as carbon storage. Green area can be within or outside the project boundary. But it must have been planted by the CDM project.

2.9 Number of staffs and officers

- The number of staffs and officers that was directly recruited and hired as a result of the CDM project. The number of employments as an indirect result of the CDM project, such as transportation of raw material.

2.10 Operational plan after the end of the crediting period of the CDM project

- Operational plan for the end of the project's crediting period. For example, the maintenance of the machinery or plan to restore the project activity area (if any).

2.11 Investment and return on investment

- The details of the machinery, materials, and equipment imported and locally acquired and total investment of the CDM project shall be presented in a table format.
- The internal rate of return of the project with and without CDM revenue shall be identified.

Chapter 3
Existing Environment

This chapter represents the details of the existing environment related to the CDM project within 1 km radius from the project boundary. The necessary and adequate information for the assessment of the environmental impact is in Chapter 4. The measurement/analytical report from the laboratory registered with the Department of Industrial Works or the government laboratory should be attached in the annex.

3.1 Physical Resources

3.1.1 Topography

- Topography, heights and other unique features such as steep areas and flood plains.

3.1.2 Climate

- Climate information from the past 30 years or at least 10 years from the nearest meteorological station. The information should include at least the amount of rainfall, evaporation rate that was used to calculate the water balance of the project.

3.1.3 Soil

- Soil type, soil texture and permeability.
- In a case that the project activity is a landfill project where the landfill site is not lined with high-density polyethylene (HDPE), a soil boring test results must be presented.

3.1.4 Noise

- A map illustrates the location of the noise source from the CDM project and household/community nearest to the CDM project. The distance from the noise source to the household/community. It should be clearly illustrated whether there is a household/community within 500 m of the noise source from CDM project or not. The information will be used to assess the noise impact in chapter 4.
- **In a case the household/community is within 500 m of the noise source.** The actual measurement on-site closest to the household/community shall be presented. The information required for the assessment of the noise impact in chapter 4 is as follows:

  - In a case the CDM project has started opeartion. The actual measurement shall be performed at the household/community nearest to the noise source of the CDM project as follows.
    (1) Noise level measured during operating the equipment or machine of both the factory related to the CDM project and the CDM project

- 24 hours a-weighted equivalent continuous sound level (L_{eq}24hr)
- Maximum sound presssure level (L_{max})
- 1 hour equivalent continuous sound pressure level (L_{Aeq} 1 hour)

(2) Background noise without the CDM project activity for the assessment of the annoyance caused by the CDM project activity in Chapter 4. The noise from the industry related to the CDM project activity shall be included as follows:

- 1 hour equivalent continuous sound pressure level without the project activity (L_{eq} 1 hour)
- Background noise level (L_{90})

In a case that the CDM project activity has operated continuously and the noise source could not be stopped, the measurement can take place at a location with similar environment to the project. The noise measurement must follows the Pollution Control Department guideline of noise measurement.

- In a case the CDM project activity has not started. The actual measurement from the household/community closest to the noise source of the CDM project activity will be used to estimate the noise impact expected from the operation of the project activity.
  - 24 hours a-weighted equivalent continuous sound level (L_{eq}24hr)
  - Maximum sound presssure level (L_{max})
  - 1 hour equivalent continuous sound pressure level without the project activity (L_{eq} 1 hour)
  - Background noise level (L_{90})

3.1.5 Surface water

The closest surface water resource to the CDM project. In a case that there is a discharge from the CDM project to the public water resource, the details of the surface water resources shall be indicated as follows: the physical characteristics of the water resources, water quality, water used in nearby community. The analysis results of water quality upstream and downstream of the discharge point shall be included. The indicators of water quality include: acidity (pH), dissolved oxygen (DO), suspended solids (SS), and temperature.

3.1.6 Underground water

In a case that the CDM project activity is likely to cause underground water contamination, the groundwater hydrology and the underground water quality analysis at a nearby location shall be presented.

3.2 Biological Resources

3.2.1 Terrestrial biological resources

Details of terrestrial biological resources that are important or worthy of conservation shall be described. The coverage includes the CDM project boundary and the 1 km radius from the CDM project.

3.2.2 Marine or aquatic biological resources

Details of marine and aquatic biological resources that are important or worthy of conservation, as well as their breeding and natural habitat.

3.3 Human Use Values

3.3.1 Land Use

- Details and illustration of land-use within 1 km radius of the CDM project.
- In a case of a greenfield CDM project where the historical land use has been changed. The demonstration that the land use is in accordance with the land use planning (if any) must be indicated.

3.3.2 Infrastructure and public services for the community

Details of water use (potable and non-potable), electricity, transportation, and waste management for the community.

3.4 Quality of Life Values

3.4.1 Socioeconomic

A description of the socioeconomic, employment and income of the people nearby the CDM project shall be described. The projects that support employment or poverty eradication for the community nearby the CDM project.

3.4.2 Public health

Public health information of the people nearby the CDM project, public health service centers such as health centers, public and private hospitals.

3.5 Public participation

Details of the stakeholder consultation event for the people nearby the CDM project (referring to TGO's guideline for stakeholder consultation for CDM project)

- Stakeholders include: representatives of public and local organizations (such as the regional environment office and Tambon Administration Organization), stakeholders from the CDM project activity (such as operator partners), as well as people nearby who might be effected by the CDM project activity.
- The number of stakeholders, who attended the consultation, must be statistically represented the stakeholders who lives within 1 km radius of the CDM project activity.
- Name list and signature of those who attended the stakeholder consultation

- The presentation and details of the stakeholder consultation
- Summary of stakeholder comments, details of questions raised and answers provided, the number of people who agreed with the CDM project activity, and the number of people who disagreed with the CDM project activity with rationales.

Chapter 4
Initial Environmental Evaluation and Self-evaluation on Sustainable Development

⊙ Basic requirement

In order to be able to approve the sustainable development contribution of the project activity, the project must meet all legal requirements set under Thai law. The law includes laws and regulations related to pollution control and environmental regulations. **If the CDM project could not meet all legal requirements, proper mitigation measures shall be proposed in order to make to project meet all legal requirements. The committee will not consider the illegal project.**

⊙ Assessment guideline

1. The initial environmental evaluation will be assessed based on the activity within the CDM project boundary.
2. In a case that the CDM project has started operation, actual measurement must be shown.
3. In a case that the CDM project has not started, the estimation of the impact anticipated from the project shall be calculated (together with actual measurement and/or analysis result).

4 The assessor may use the assessment tools in a way that is appropriate. The environmental evaluation involves explaining the rationales for the assessment of the CDM project, whether it follows the principle of sustainable development or not. (Refer to "Guidelines for Environmental Impact Evaluation and the Self-evaluation Sustainable Development" in the attached table).

⊙ Details of the assessment

The initial environmental evaluation and the self-evaluation on sustainable development shall be assessed in accordance with the Sustainable Development Criteria as follows:

4.1 Natural Resources and Environment

4.1.1 Environment Indicators

1) Reduction of greenhouse gases under the Kyoto Protocol

The details of the assessment, proposed mitigation measures and rationale for scoring.....
.....

Score: …….. (In accordance with the sustainable development criteria)

2) Air pollution

The details of the assessment, proposed mitigation measures and rationale for scoring.....
.....

Score : …….. (In accordance with the sustainable development criteria)

The assessment of other indicators will follow the format above.

3) Noise Pollution
4) Odor
5) Wastewater Management
6) Waste management
7) Soil Contamination
8) Underground water Contamination
9) Hazardous waste management

4.1.2 Natural Resources Indicators

10) Water demand and utilization efficiency
11) Soil/coastal/river bank erosion
12) Green area
13) Other indicators that have significant impact

4.2 Social Indicators

1) Public participation
2) Support of social, cultural, and sufficiency economy development activity
3) Workers and nearby community health

4.3 Technology Development and/or Technology Transfer Indicators

1) Technology Development
2) End of project life plan or end of crediting period plan that the project activity has adopted
3) Capacity building for personnel

4.4 Economic Indicators

1) Employment
2) Stakeholder income
3) Renewable Energy Utilization
4) Energy efficiency
5) Local content

Chapter 5
Summary of sustainable development scores and mitigation measures to prevent environmental impact of the project.

Indicators	Score	Prevention and Mitigation Measures	Responsibility
1) Natural Resources and Environment			
1.1 Environmental Indicators			
1) Reduction of greenhouse gases under the Kyoto Protocol			
2) Air pollution			
3) Noise Pollution			
4) Odor			
5) Wastewater Management			
6) Waste management			
7) Soil Contamination			
8) Underground water Contamination			
9) Hazardous waste management			
1.2 Natural Resources Indicators			
10) Water demand and utilization efficiency			
11) Soil/coastal/river bank erosion			
12) Green area			
(13) Other indicators that have significant impact			
Total score			
2. Social Indicators			
1) Public participation			
2) Support of social, cultural, and sufficiency economy development activity			
3) Workers and nearby community health			
Total score			
3. Technology Development and/or Technology Transfer Indicators			
1) Technology Development			
2) End of project life plan or end of crediting period plan, that the project activity has adopted			
3) Capacity building for personnel			
Total score			

Indicators	Score	Prevention and Mitigation Measures	Responsibility
4. Economic Indicators			
1) Employment			
2) Stakeholder income			
3) Renewable Energy Utilization			
4) Energy efficiency			
5) Local content			
Total score			
Total score for all indicators			

Annex

The annex shall include:

1. Official Documents
2. Analytical reports/measurements from laboratories

    2.1 Air quality measurement

    2.2 Noise level measurement

    2.3 Water quality measurement

3 Technical specification of the equipment and machinery installed for the CDM project

4 Calculation details from the project developer

Guidelines for Initial Environmental Evaluation and the Self-evaluation on Sustainable Development

Topic	Framework of Evaluation and Details	Related Laws and Regulations
4.1 Natural Resources and Environment Indicators		
4.1.1 Environmental Indicators		
1) Reduction of greenhouse gases under the Kyoto Protocol from the project activity (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6)	• Project emission (CO_2 equivalent) compared to the baseline emission as presented in the PDD. • Percentage of greenhouse gas emission reduction	-
2) Air pollution	• Air pollutants emission of the project activity (e.g. from boiler, gas engine etc.) compared to relevant standards (the main pollutants considered are: NO_x, SO_2, H_2S, and TSP) • Percentage of air pollution reduction due to the CDM project activity compared to the baseline scenario (The indicator is used only where the baseline is available, e.g. replacing gasoline with biogas for the boiler, the changes/modifications of the production system that results in air pollution reduction from the baseline, etc.) - <u>The project activity is operational:</u> actual measurement compared to the standards and baseline scenario. Please attach the actual measurement results from the laboratory that is registered with the Department of Industrial Works. - <u>The project activity is not yet operational</u>: Consideration is made based on the technical specification of the machinery and the	• The Ministry of Industry Notice, B.E. 2549 (2006), Subject: Prescription of the Content Values of Contaminants in Air Emitted from the Factory (NO_x, SO_2, TSP, and H_2S) • The Ministry of Industry Notice, B.E. 2547 (2004), Subject: Prescription of the Content Values of Contaminants in Air Emitted from the Factory that generate, transmit and sell electricity (NO_x, SO_2, and TSP) • The Ministry of Industry Notice, B.E. 2549 (2006), Subject:

Topic	Framework of Evaluation and Details	Related Laws and Regulations
	guarantee certificate from the manufacturer that air pollution emissions will not exceed Thailand's national standards. Alternatively, the air pollution report from another site that uses the same model of machinery, with the same type of factory, and shares the same characteristics of wastewater, fuel or similar raw materials can be used. Mitigation measures are required if the air pollution emissions are above the standards.	Prescription of the Content Values of Contaminants in Air Emitted from the Cement Factory (TSP, SO_2 and NO_x as NO_2) • Other related laws and regulations
3) Noise pollution	Assessment of the noise impact on households/community within 500 m radius from the noise source, compared to the ambient noise standard and annoyance noise standard. The noise sources include but are not limited to machinery, or other equipments from the CDM project, such as gas engine, blower, and steam turbine. 1) Ambient Noise Level - <u>The project activity is operational:</u> actual measurement compared to the standards. - <u>The project activity is not yet operational:</u> Consideration is made based on the calculation and actual measurement from households/community nearby the CDM project activity. 1. Calculate the noise level at the community from the machine specification by using the noise reduction equation: LP2 = LP1 – 20log(r2/r1) 2. Assess Leq 24 hour and Lmax after the start of the operation of the CDM project activity. The result in 1) should be an input together with the actual measurement before the project activity starts operation, using the total noise equation: $LPtotal = 10 \log(10^{LpA/10} + 10^{LpB/10})$ 2) Annoyance Noise Level Assess the annoyance noise level in accordance with the Pollution Control Department (PCD)'s guideline and the excel	• The 15th notification of the National Environment Board, B.E. 2540 (1997), Subject: Ambient noise level standard (Leq24 hour not more than 70 dB(A)) (Lmax not more than 115 dB(A)) • The 29th notification of the National Environment Board, B.E. 2550 (2007), Subject: annoyance noise level (annoyance noise level not more than 10 dB(A)) • The Ministry of Industry Notice, B.E. 2548 (2005), Subject: annoyance noise level from the operation of factory (annoyance noise level not more than 10 dB(A)) (Leq24 hour not more than 70 dB(A)) (Lmax not more than 115 dB(A)) • Other related laws and regulations

Topic	Framework of Evaluation and Details	Related Laws and Regulations
	sheet (http://www.pcd.go.th/info_serv/air_excelnoise.html). The annoyance noise is the difference between noise from the source and the ambient noise level (L90), taken into account the baseline scenario. - The project activity is operational: 1. Measurement of LAeq 1 hour while operating the related factory and CDM project activity at the nearest household/community over 24 hours. 2. Measurement of LAeq 1 hour without annoyance noise level at the household/community while operating the related factory, but not the CDM project activity. 3. Enter the value from 1. and 2. in the excel sheet prepared by PCD to calculate hourly the annoyance noise level. The lowest value of L90 will be used for the calculation of the worst-case scenario. - The project activity is not yet operational: 1. Measurement of LAeq 1 hour and ambient noise level (L90) at the household/community or the boundary of the CDM project activity over 24 hours (without annoyance noise) 2. The noise from source at the household/community is the combination of noise of the machine at the household/ community and LAeq 1 hour from the actual measurement at the community without the CDM project activity calculated by using the noise reduction equation and total noise equations. 3. Enter the values in the PCD's excel sheet to calculate hourly annoyance noise level or selected hours with the lowest L90 for the calculation of the worst case scenario.	

Topic	Framework of Evaluation and Details	Related Laws and Regulations
	In a case that the CDM project activity creates noise pollution, mitigation measures must be adopted to reduce the impact such as construction of an engine house, the use of soundproof insulation, and planting trees (indicate the tree species and the plantation area). The calculation must demonstrate that the measures can reduce the noise level to the required standard. **Note:** If it was later found that the household/community is located within 500 m of the noise source of the CDM project activity, then the project developer must measure the noise level at the household/community.	
4) Odor	- Assessment of the operation of the CDM project activity, whether it releases odor or not, compared to the baseline. However, if the CDM project activity has a tendency to release odor, mitigation measures must be adopted to prevent complaints and nuisance. - In a case that there are additional mitigation measures to reduce odor from the operation of the CDM project activity, details shall be provided.	-
5) Wastewater management	Assess from the final effluent characteristics after the operation of the CDM project activity, compared to the concerned standards, the water balance of the project and the use of final effluent as follows: **1) Final effluent characteristics after the start of the operation of the CDM project activity compared to the standards and baseline scenario.** (The main parameters used for the assessment are BOD, COD and temperature) - <u>The project activity is operational</u> : wastewater characteristics analysis results of influent and effluent of the wastewater treatment system/ digester system	• The Ministry of Industry Notice, No.2 , B.E.2539 (1996), Subject: Characteristics of Wastewater Effluent from Factory • The Department of Industrial Works Notice, Subject: Characteristics of Wastewater Effluent from Factory that is different from the "The Ministry of Industry Notice, B.E. 2539 (1996), Subject: Characteristics of

Topic	Framework of Evaluation and Details	Related Laws and Regulations
	of the CDM project, wastewater characteristics analysis of final effluent after the post treatment; after the start of the operation of CDM project activity. : Compare the characteristics of the final effluent before and after the start of the operation of CDM project activity. - <u>The project activity is not yet operational</u> : Estimate the final effluent quality after the start of the operation of the CDM project activity with the related standards and the efficiency of the system from the design of the digester, together with the efficiency of the post-treatment system. : Compare the wastewater characteristic analysis before the CDM project activity with the expected quality of the final effluent. **2) Water Balance** In a case that the CDM project activity does not release final effluent outside the project boundary (zero discharge)/ the industrial license specified that the effluent cannot be discharged: The details must be presented together with a water balance diagram that illustrates no wastewater discharge outside the project boundary or the capacity to contain water without discharge. However, if the final effluent is being used for green area irrigation, the water demand from the green area must be demonstrated with reliable reference, and illustrate clearly the location of the green area. **3) Final effluent utilization (outside the project /factory boundary)** In a case the final effluent is given to farmers outside the project activity/factory boundary: The consideration must be made from the details, a map of the irrigation area, area, and utilization (e.g.	Wastewater Effluent from Factory", Subject: Characteristics of Wastewater Effluent from Factory. • The Ministry of Science, Technology and Environment Notice, No. 3, B.E.2539 (1996), Subjuect: Standard for Control Discharge of Wastewater Effluent from Factory and Industrial Estate. • The Ministry of Natural Resources and Environment Notice, B.E. 2548 (2005), Subject: Standard for Control Discharge of Wastewater Effluent from Pig Farm. • Other related laws and regulations

Topic	Framework of Evaluation and Details	Related Laws and Regulations
	palm oil and rubber plantation irrigation) and the water demand of the plants from reliable sources or academic papers, letter of intent from the farmers, and a permission/license to remove wastewater from the Provincial Industrial Office or the Department of Industrial Works.	
6) Waste management (**Note:** Waste means leftover materials or waste and unused material from the project activity. This does not include hazardous waste.)	Indication of type, amount and sources of waste generated from the CDM project activity. The assessment is based on the appropriateness, in line with legal requirements and the anticipated impacts such as: • <u>In a case that the project activity sends the waste for treatment outside the project/factory boundary:</u> Indicate the entity that treats the waste and present permission/license to move the waste from the factory. • <u>In a case that the project activity removes the sludge from the wastewater treatment plant outside the project/factory boundary:</u> For the use as fertilizer or soil conditioner, the details of the sludge receiver such as name, address and application area must be presented. In addition, an illustration of the application area, agreement letter or license to move waste outside the factory, and the letter of intent from the farmers must be presented. • <u>In a case that the waste is treated within the project or Factory boundary:</u> For example, if a landfill is adopted, analysis report of physical and chemical characteristics of the waste shall be attached. Waste management shall follow the procedure of the Department of Industrial Works. Method of landfilling, lining, wastewater treatment, carrying capacity of the landfill and possible impacts caused by soil or underground water contamination shall be	• The Ministry of Industry Notice, Subject: Waste or non-use material disposal B.E. 2548 (2005) • Other related laws and regulations

Topic	Framework of Evaluation and Details	Related Laws and Regulations
	evaluated.	
7) Soil contamination indicator	- Assess from the composition of waste and wastewater generated from the CDM project activity whether it contains hazardous substances that may cause soil contamination or not. If a hazardous substance is present, management/mitigation measures to prevent soil contamination must be adopted.	• The 25th notification of the National Environment Board, B.E. 2547 (2004), Subject: Soil quality standard (Volatile organic compounds, heavy metals, pesticide and herbicides, and toxic) • Other related laws and regulations
8) Underground water Contamination indicator	- Assess from the waste and wastewater management of the CDM project activity if it is likely to create underground water contamination or not. If the project is likely to create underground water contamination, mitigation measures to prevent underground water contamination and monitoring measures must be adopted.	• The 20th notification of the National Environment Board, B.E. 2543 (2000), Subject: Underground water quality standard (Volatile organic compounds, heavy metals, pesticide and herbicides, and toxic) • Other related laws and regulations
9) Hazardous waste management indicator	- Assess from the amount of hazardous waste generated from the CDM project activity whether the amount of waste is the same, more or less than the baseline scenario. - Indicate the collection system for hazardous waste within the project, transporter, and the entity that receives the hazardous waste for disposal. In addition, an evidence of service from the entity that receives the hazardous waste for disposal, hazardous waste transportation license, and permission to remove hazardous waste from the factory, must be presented.	• The Ministry of Industry Notice, Subject: Waste or non-use material disposal B.E. 2548 (2005) • Other related laws and regulations
4.1.2 Natural Resources Indicators		

Topic	Framework of Evaluation and Details	Related Laws and Regulations
10) Water demand and utilization efficiency	- Indicate: the water demand of the CDM project activity, whether it has increased or decreased from the baseline. In a case that the water demand has decreased from the baseline scenario, a rationale must be provided such as the final effluent is reused to replace fresh water, or a new technology is employed to reduce water utilization in the production process. - Assess the amount of water for the CDM project activity, whether it has any impact on the water resources and the demand from the community or not. The consideration is based on the license to draw water from public water resources from the concerned agency. - In a case that a water storage facility is developed within the project boundary, details of location, volume, and storage capacity must be provided. In addition, it should also be mentioned whether the water storage facility is used for the CDM project only or it also serves the community.	
11) Soil/coastal/river bank erosion	- Whether soil/coastal/river bank erosion occurred during the construction or as a results of the CDM project activity. In a case that the project is likely to cause erosion, management/mitigation measures to prevent erosion must be adopted.	
12) Green area	- If the CDM project increases green area from the baseline scenario, the ratio of increased green area compared to CDM project area shall be indicated. **Note:** Green area is defined as covers with perennial plants to act as carbon storage. The green area can be within or outside the project boundary. The green area must be planted by CDM project. : Perennial tree planting for the community will gain a	

Topic	Framework of Evaluation and Details	Related Laws and Regulations
	score from this indicator. It should not be double counted as an additional score for the social, cultural, and sufficiency economy development activity indicator.	
13) Other indicators that have significant impact	- Consider other indicators that have significant impact on the environment, also indicate anticipated impact.	
4.2 Social Indicators		
1) Public participation	- Assess the level of stakeholder participation from the report of the organized public participation forum or seminar. (Referring to TGO's guideline for stakeholder consultation for CDM project activity)	
2) Support of social, cultural, and sufficiency economy development activity	- Indicate the details of activity that supports social, cultural and sufficiency economy philosophy; in addition to the benefits of the CDM project. For example, scholarships for students, health promotion, and community environment improvement activities. In a case that a public fund and a multilateral committee are set up or there are social services in accordance with the Corporate Social Responsibility (CSR) guideline, additional details must be provided.	
3) Workers and nearby community health	- Consider from the action plan under the labor protection act, laws and regulations related to health and safety at work, emergency action plan, and employees' health check. - In a case that there is a project/activity to promote employees' health and/or surrounding communities, clear details and a work plan must be presented.	
4.3 Technology Development and/ Technology Transfer Indicators		
1) Technology development	- Indicate the origin of the technology adopted, as well as machinery for the CDM project, whether they are imported or locally developed. In a case that the project adopted foreign technology, an indication whether the technology	

Topic	Framework of Evaluation and Details	Related Laws and Regulations
	was further developed in Thailand or not, and how it was developed, must be provided.	
2) End of project life plan or end of crediting period plan that the project activity has adopted.	- Assess the operational plan for the end of the crediting period of the CDM project. In a case that the project may create social and environmental impacts after the end of the crediting period, an appropriate operational plan to prevent or mitigate the impacts after the end of the project life or the crediting period must be provided.	
3) Capacity building for personnel	- <u>The project activity is operational</u> : provide details of training to improve the skills of CDM project workers, title of the training, date of the training, and the names of workers who received training. In a case that the project activity shared knowledge with the public, details must be provided. - <u>The project activity is not yet operational</u> - : Provide training plan to improve the skills of CDM project workers, title of the training and frequency of the training. In a case that the project activity plans to share knowledge with the public, details must be provided.	
4.4 Economic Indicators		
1) Employment	- Indicate the number of employees and officers employed under the CDM project, both direct and indirect. Indirect employment may include raw material transportation. In a case that the project employs workers within the province or nearby provinces, details must be provided.	
2) Stakeholder income	- Indicate the stakeholders that have additional income or benefit such as farmers who have additional income from selling raw materials.	
3) Renewable Energy	- Applies to CDM project that use renewable energy only.	

Topic	Framework of Evaluation and Details	Related Laws and Regulations
Utilization	Assess the percentage increase of renewable energy used as a result of the CDM project, compared to the baseline scenario. **Note:** Renewable energy is defined as energy that replaces fossil fuel. There are two types of energy: 1) finite energy sources such as coal, natural gas, nuclear, oil shale, tar sand, etc. 2) Energy from renewable sources such as solar, wind, biomass, hydro and hydrogen.	
4) Energy efficiency	- Applies to CDM project that improve energy efficiency only. Assess the percentage increase of energy efficiency of the CDM project activity.	
5) Local content	- Provide details of machinery and other equipments imported or locally made, and the percentage of investment on machinery and other equipments acquired locally compared to the total investment.	