VALIDATION REPORT

EDF TRADING LTD

WEST HUAYBONG 3 WIND FARM PROJECT

Report No: 8000400482 – 11/546

Date: 2012-10-22

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Validation Report:	***Report No.***	***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
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Project:	***Title:***		***Initial PDD Version:***	***Final PDD Version***
	West Huaybong 3 wind farm project		2011-10-04	2012-08-16
Client:	EDF Trading Limited		***Client ref:***	Dr. Adrian Stott
Project Participant(s):	***Host Party:***		***Other involved parties:***	
	Thailand		France	
Applied methodology/ies:	***Title:***		***No.:***	***Scope / TA:***
	Consolidated baseline methodology for grid-connected electricity generation from renewable sources		ACM0002 Ver. 12.3.0	1 / 1.2
Validation team / Technical Review and Final Approval	***Validation Team:***		***Technical review:***	***Final approval:***
	Nattapon Vasasmith, Nicholas Cheong, Martin Saalmann (TL)		Markus Knödlseder, Jochen Schubert	Ingo Klein
Expected Emission reductions: [t CO_2e]	***Expected emission reductions over the first crediting period:***		***(Expected) starting date of crediting period:***	
	973,245		2012-12-01	
Confidential content:	☐ Yes		☒ No	
Summary of Validation Opinion:	☒ Positive validation opinion		☐ Negative validation opinion	
	The validation opinion will be issued in the course of the final validation report. In detail the conclusions can be summarised as follows: ☒ The project is in line with all relevant host country criteria (Thailand) and all relevant UNFCCC requirements for CDM. Project activity approvals have been obtained from DNA of Thailand vide the Letter of Approval (HCA) dated 2012-04-05 and from the DNA of France dated 2012-10-04. ☒ The project additionality is sufficiently justified in the PDD. ☒ The monitoring plan is transparent and adequate. ☒ The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 973,245 tCO_2e are most likely to be achieved within the (1st renewable) crediting period. ☒ The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.			
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Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CPI	Consumer Price Index
DNA	Designated National Authority
EB	CDM Executive Board
EGAT	Electricity Generating Authority of Thailand
EIA	Environmental Impact Assessment
FAR	Forward Action Request
FKW	First Korat Wind Co. Ltd.
GHG	Greenhouse gas(es)
IEE	Initial Environmental Evaluation
IPCC	Intergovernmental Panel on Climate Change
NTP	Notice To Proceed
PDD	Project Design Document
PO	Project Owner
PP	Project Participant
QC/QA	Quality control/Quality assurance
TGO	Thailand Greenhouse Gas Management Organisation
TOU	Time of Use
TSC	Turbine Supply Contract
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual
WH3	West Huaybong 3 project
WYA	Wind Yield assessment

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1 OBJECTIVE / SCOPE

The purpose of a validation is to have an independent third party assess the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol;
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 3/CMP.1
- the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board and
- other relevant rules, including the host country legislation and sustainability criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs).

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology, the project's baseline study, additionality justification, local stakeholder commenting process, environmental impacts and monitoring plan, which are included in the PDD and other relevant supporting documents, to ensure that the proposed CDM project activity meets all relevant and applicable CDM criteria.

The information included in the PDD and the supporting documents were reviewed against the requirements as set out by the UNFCCC. The validation team has, based on the requirements in the Validation and Verification Manual[/VVM/], carried out a full assessment of all evidence to assess the compliance of the project with the key areas as outlined in section V.E. and V.F. of the VVM (version 01.2, EB 55).

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

The validation is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

2 GHG PROJECT DESCRIPTION

2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data		
Project title	West Huaybong 3 wind farm project		
Project size	☒ Large Scale ☐ Small Scale		
Project Scope *(according to UNFCCC sectoral scope numbers for CDM)*	☒	1	Energy Industries (renewable- /non-renewable sources)
	☐	2	Energy distribution
	☐	3	Energy demand
	☐	4	Manufacturing industries
	☐	5	Chemical industry
	☐	6	Construction
	☐	7	Transport
	☐	8	Mining/Mineral production
	☐	9	Metal production
	☐	10	Fugitive emissions from fuels (solid, oil and gas)
	☐	11	Fugitive emissions from production and consumption of halocarbons and hexafluoride
	☐	12	Solvents use
	☐	13	Waste handling and disposal
	☐	14	Afforestation and Reforestation
	☐	15	Agriculture
Applied Methodology	ACM0002 Ver. 12.3.0		
Technical Area(s)	1.2 Renewable Energies		
Crediting period	☒ Renewable Crediting Period (7 y) ☐ Fixed Crediting Period (10 y)		
Start of crediting period	2012-12-01		

2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Thailand	First Korat Wind Company Limited
Other involved party/ies	France	EDF Trading Limited

2.3 Project Location

The details of the project location are given in table 2-3:

Table 2-3: Project Location

No.	Project Location
Host Country	Thailand
Region:	Nakhon Ratchasima
Project location address:	Tambol Huaybong, Amphur Dan Khun Thot and Tambol Nong Wang of Amphur Teparak
Latitude:	15°12’ 24.18” N
Longitude:	101°27’ 38.71” E

2.4 Technical Project Description

The technical key data are provided in table 2-4 below

Table 2-4: Technical data of the project activity

Parameter	Unit	Value
Total installed capacity	MW	103.5
Unit capacity	MW	2.3
Quantity		45
Model	-	SWT-2.3-101
Manufacturer	-	Siemens
Average Wind Speed	m/s	6.3

The proposed project is the implementation of 45 wind turbine generators with an installed capacity of 2.3 MW each. The total installed capacity is 103.5 MW which leads to a total net electricity generation of 232,500 MWh. The electricity is supplied to the Thai National Grid agreed in a power purchase agreement with the national grid operator EGAT.

3 METHODOLOGY AND VALIDATION SEQUENCE

3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- Desk review of the PDD and supporting documents
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation

The sequence of the validation is given in the table 3.1 below:

Table 3.1: Validation sequence

Topic	Time
Assignment of validation	2011-09-28
Submission of PDD for global stakeholder commenting process	2011-10-07
Commenting period	2011-10-07 to 2011-11-05
On-site visit	2011-10-25 to 2011-10-27
Draft reporting finalised	2011-11-15
Final reporting finalised	2012-10-05
Technical review on final reporting finalised	2012-10-22

3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,

- the necessary competences to carry out the validation can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities, a validation team, consisting of one team leader and 2 additional team members, as well as the Technical Review personnel were appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

	Name	Company	Function [1)]	Qualification Status [2)]	Scheme competence [3)]	Technical competence [4)]	Host country Competence	Team Leading Competence	On-site Visit
☒ Mr. ☐ Ms.	Martin Saalmann	TN Cert	TL	SA	☒	1.2	☐	☒	☒
☒ Mr. ☐ Ms.	Nattapon Vasasmith	TN Thailand	TM[A)]	A	☒		☒	☐	☒
☒ Mr. ☐ Ms.	Nicholas Cheong	TN Malaysia	TM[A)]	LA	☒	1.2	☐	☒	☒
☒ Mr. ☐ Ms.	Markus Knödlseder	TN Cert	TR[B)]	A	☒	-	☐	☐	-
☒ Mr. ☐ Ms.	Jochen Schubert	TN Cert	TR[B)]	SA	☒	1.2	☐	☒	-
☒ Mr. ☐ Ms.	Ingo Klein	TN Cert	FA[B)]	SA	☒	1.2	☐	☒	-

1) TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

2) GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; (E)TE: (External) Technical Expert

3) GHG auditor status (at least Assessor)

4) As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, …)

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical Experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above mentioned team members are enclosed in annex 6 of this report.

3.4 Consideration of Public Stakeholder Comments

Acc. to the modalities and procedures the draft PDD, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the validation activity commenced. Stakeholders have been invited to comment on the PDD within the 30 days public commenting period.

In case comments are received, they are taken into account during the validation process. The comments and the discussion of the same are documented in annex 5 of this report.

3.5 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the generic CDM requirements each CDM project has to meet as well as project specific issues as applicable. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements that a CDM project is expected to meet;
- It ensures a transparent validation process where the validating entity will document how a particular requirement has been validated and the result of the determination.

The validation protocol is described in Figure 1.

Validation Protocol Table A-1: Requirement checklist				
Checklist Item	***Validation Team Comment***	***Reference***	***Draft Conclusion***	***Final Conclusion***
The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.*	*Gives reference to the information source on which the assessment is based on*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft validation stage.*	*In case a corrective action or a clarification the final assessment at the final validation stage is given.*

Figure 1: Validation protocol table

The completed validation protocol is enclosed in Annex 1 to this report.

3.6 Review of Documents

The published PDD and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

3.7 Follow-up Interviews

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

Table 3-3: Interviewed persons and interview topics

Interviewed Persons / Entities	**Interview topics**

Interviewed Persons / Entities	Interview topics
Project proponent representatives Project consultant	- Chronological description of the project activity with documents of key steps of the implementation. - Current status of plant design - Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Host Government Approval - Approval procedures and status - Monitoring and measurement equipment and system. - Financial aspects - Crediting period - Project activity starting date - CER allocation / ownership - Baseline study assumptions - Additionality - Sustainable development issues - Monitoring - Analysis of local stakeholder consultation - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - National Legislation - Editorial issues of the PDD

A comprehensive list of all interviewed persons is part of section 7 ‘References’.

3.8 Project comparison

The validation team has compared the proposed CDM project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Reasons for reviews, requests for reviews and rejections within the CDM registration process.

3.9 Resolution of Clarification and Corrective Action Requests

3.9.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

3.9.2 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3.9.3 Final Validation

The final validation starts after issuance of the proposed corrective action (CA) of the CARs, CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are “closed out” by the validation team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

3.10 Technical review

Before submission of the final validation report a technical review of the whole validation procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the validation team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.11 Final approval

After successful technical review of the final report an overall (esp. procedural) assessment of the complete validation will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for registration can be started (in case of a positive validation opinion).

4 VALIDATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised**:**

Table 4-1: Summary of CARs, CLs and FARs issued

Validation topic [1)]	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project specification - Technical project description - Participation - Contribution to sustainable development - PDD editorial aspects - Technology to be employed	3	-	-
Project Baseline, Additionality and Monitoring Plan (B) - Application of the Methodology - Project Boundary - Baseline identification - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Additionality determination - Monitoring Methodology - Monitoring Plan - Project management planning	12	8	-
Duration of the Project / Crediting Period (C)	2	-	-
Environmental impacts (D)	-	-	-
Stakeholder Comments (E)	-	-	-
SUM	**17**	**8**	

[1)] The letters in brackets refer to the validation protocol

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).

The findings of validation process are summarized in the tables below.

Finding	**A1**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The letter of approvals from Thailand and France are pending.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The letter of approval for Thailand has been approved and will be issued by the 6th July. The Letter of approval for France is under process and is expected to be received by the 13th of July.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The Letter of Approval from Thailand has been provided as scanned version to the validation team./HCA/ The letter of approval was issued by Thailand Greenhouse Gas Management Organization which serves as the DNA. This has been cross-checked with the UNFCCC website. The validation team could verify that the letter of approval confirms that: 1. Thailand is a party to the KP. 2. The participation is voluntary. 3. The project will assist Thailand in achieving sustainable development. The project name is consistent to the PDD: West Huaybong 3 wind farm project. It is further confirmed that the approval is unconditional to any requirement. The company approved is First Korat Wind Company Limited. Since the name of the PP was not correctly indicated in the original approval a correction notification by the DNA has been attached to the approval letter providing the correct name. The HCA has been assessed as authentic and in line with the CDM requirements. It is duly signed and issued by authorized organisation. The approval is also confirmed by means of checking the DNA website. However LOA from Annex 1 party is still missing.		
Corrective Action #2	The LOA has been transferred.		
DOE Assessment #2	The LOA of the project activity of the Annex 1 party France has been forwarded as scanned version by the PP on 2012-10-05. It is dated 2012-10-04 and issued by the General Directorate for Energy and Climate Change of the Ministry of Ecology, Sustainable Development and Energy. In the LOA it is confirmed that this department is acting as the French DOE. The validation team confirmed this by means of checking the UNFCCC website./unfccc/ In the LOA it is confirmed that France ratified the KP on 2002-05-31 and that the participation is voluntary. The project name referenced in the LOA is: "West Huaybong 3 wind farm project". The name is in line with the PDD. Besides, the LOA is unconditional with regards to any CDM requirement. The company		

Finding	A1
	listed in the PDD and approved in the LOA is EDF Trading Limited. By means of interviews and checking the project documentation it could not be observed that there is any entity which is approved but not listed in the PDD.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	A2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In section A.2. a clear description of the scenario prior to the implementation of the project activity and the baseline scenario is not provided. The PDD guidance has not been followed.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section A.2 has been updated to follow the PDD guidance page 6, indicating the scenario existing prior to the start of the project, which is the same as the baseline scenario.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Section A.2. of the revised PDD has been checked and compared to the requirements as defined in EB41 Annex 12. During site visit it could be confirmed that the project is a Greenfield activity, i.e. no activity is existent prior to the proposed project. The baseline scenario is confirmed by means of checking the applied methodology and the PPA, which clearly states that the proposed project will deliver electricity to the grid. In addition it could be confirmed that about 90 % of the electricity supply through the national grid is provided by fossil fuel fired power plants (http://www.egat.co.th/images/stories/annual/reports/2553/annual2010/annual2010en/annual2010en_p100.pdf; access 2012-05-08) as shown in the Annual Yearbook 2010 of the Electricity Generation Authority of Thailand (EGAT). Therefore the validation team confirms the information provided in section A.2. The corrections are assessed as appropriate. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	A3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The plant load factor has not been provided in section A.4.3. The PDD guidance has not been followed.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section A.4.3 has been updated to indicate the plant load factor as 25.64%, calculated from the WYA Report from Garrad Hassan (net output MWh divided by the total installed MW capacity to get the operating hours as a percentage of the total hours in a year).		

Finding	A3
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Per definition the Plant Load Factor (PLF) is calculated as the gross electricity generation in MWh divided by the installed capacity divided by 8760 hours times 100. Thus, it is not clear why PLF has been calculated on basis of the net electricity generation. CAR cannot be considered as closed.
Corrective Action #2	The plant load factor is calculated as gross electricity generation in MWh divided by installed capacity. The statement above regarding net output relates to the loss factors of the turbine which are required to calculate gross electricity generation.
DOE Assessment #2	Ok, the response of the PP is assessed conclusive. Based on the gross energy output several loss factors like wake effect, availability and turbine performance are subtracted. This results in the electricity output of the wind turbine which is the basis for PLF calculation. The plant load factor was chosen in a conservative manner. This figure does not include subtraction of auxiliary consumption, electricity imports and grid losses. Hence, it is assessed to be appropriate as basis for the PLF calculation. The PLF calculated is 25.64 %. The value has been verified with the wind yield assessment provided by the engineering company Garrad Hassan Pacific Pty Ltd. This company is a well known actor in the field of wind yield consulting (http://www.gl-garradhassan.com/en/index.php; access: 2012-06-04). The PLF has been determined in line with paragraph 3 (b) of EB 48 Annex 11. Hence, the validation team concludes that the net electricity generation as well as the PLF are adequately determined. CAR is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.2. of the PDD does not include information whether the project is grid connected and large scale or not.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The introduction for Section B.2 has been revised to refer to the applicability of grid connection and a large scale project.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok, the revision has been conducted in line with the applied methodology. Key terms like “grid connection” and “large scale” are introduced to unambiguously show that the proposed project activity fits to the applied methodology. The scale of the project (103.5 MW) and the connection to the National Grid of Thailand could be confirmed by means of checking the turbine supply contract (TSC) and the wind yield assessment (WYA). The section B.2 of the PPD includes all information to show applicability of the methodology ACM0002. The PDD contains a verifiable description of the identified baseline scenario. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The Figure B.3.a. is not clear with regard to the grid connection.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Figure B.3.a. has been simplified to make it clear with regard to grid connection.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The figure B.3.a indicated in the revised PDD clearly shows the project boundary in line with the methodology. All power plants serving the National Grid of Thailand as well as the project activity is included. This is in compliance with the data provided by the Thai DNA about all power plants connected to the Thai National grid./tgo/ Besides the monitoring equipment is shown as well. As per the description in A.4.3. the measuring instrument is located at the grid connection point which is assessed as appropriate. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The raw data of emission reduction calculation is not provided in an xls-calculation sheet where the resulting emission factor can be re-calculated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The raw data emission reduction calculation is provided in xls-calculation sheet, file “WH3 PDD ER Calculation”		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The emission factor calculation has been provided in a xls-sheet. The raw data is derived from a file publicly available on the website of the Thai DNA “TGO”: http://www.tgo.or.th/english/index.php?option=com_content&view=article&id=165%3Athailand-grid-emission-2009-report&catid=50%3Atgos-research-projects&Itemid=40 (access: 2012-05-08). The raw data is provided in a pdf-document and has been transferred into a xls-calculation sheet. The validation team has re-calculated the emission factors. No mistakes have been observed. The combined margin emission factor is 0.598 tCO_2e/MWh. The raw data has been published on 29th June 2011 acc. to the website. This is the latest available data before publishing the PDD. Hence, the application of this basic data is in line with the applied tool to calculate the grid emission factor. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Formula in section B.7.2. "Monitoring Procedure" does not include a parameter which addresses the imports of a possible back-up line.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The formula in section B.7.2 has been updated to include a parameter addressing the imports of a possible back-up line as $EG_{facility,y} = EG_{facility,export,y} – EG_{facility,auxilary,y} – EG_{backupline,auxilary,y}$		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The formula provided covers all parameters which are necessary to monitor the net electricity generation. The content of the PDD ensures that monitoring is complete. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B5		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	With regard to the import of electricity, it is not clear how many lines are implemented for importing electricity and which of these lines do have a back-up meter.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The line exporting to the PEA will have a bi-directional meter which records both import and export of electricity. This line will also have a backup meter. In case a back-up line is brought in, this line will have a meter to monitor additional electricity imports. This line will have a meter but will not have a backup meter – if the meter fails, then the data for that month will be replaced with data from the month with the highest electricity consumption recorded during the monitoring period. The PDD has been updated to better clarify this.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok, the wiring diagram has been checked to confirm that a bi-directional meter will be installed to measure the electricity supplied to the grid./ECD/ In case of failure back-up metering will be available. In case the project is connected with the grid through an auxiliary line the imports will be taken into account. The approach of applying the highest electricity consumption for emission reduction calculation in case the meter is malfunction is deemed to be OK since it is conservative. It is expected that not much electricity will be delivered to the project via this line. CL is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B6

Finding	B6		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	With regard to the calibration frequency it is indicated that it is 3 years. However, in the next sentence it is indicated as maximum 2 years (page 19, page 21). That´s inconsistent.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	According to the PPA, the main and backup meters must be calibrated once a year. If a backup line is installed, then the backup line meter will also be calibrated once a year. Section B.7.1 has been updated. The PPA (page 5) states that the meter will be calibrated once per year. It is not specified that the meter must be calibrated once in a 12 month period. Therefore, in accordance with the local experience of electricity producers in Thailand, the meter will be calibrated once during the calendar year at a time dependant on the availability of maintenance personnel. Hence, the calibration period has a maximum of two years. This is based on local knowledge of the PEAs regular practices; therefore no documented evidence is available.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	OK, the PPA has been checked and the justification provided by the PP is reasonable. The PPA is a contract concluded between the PP and EGAT (the Thai electricity Authority). Hence, the validation team concluded that the defined frequency is in line with the regulations in Thailand. The PDD has been revised as following: “once during each calendar year (the maximum time between two calibration events is 24 months)”. This approach is accepted. CL is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B7		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In section B.7.1. the accuracy of the meters installed is defined. However, referring to section A.4.3. the following sentence is provided: “*In case of meter failure, replacement export meters may be installed and the error specified by the meter manufacturer will not exceed +/- 0.5%.*” This is in contradiction to the previous sentence where it is indicated that the accuracy for both meters is ±0.2 %. Further it is indicated: “*replacement export meters”.* It is not clear whether there are several back-up meters.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The PDD has been updated. The statement “In case of meter failure, replacement export meters may be installed and the error specified by the meter manufacturer will not exceed +/- 0.5%.” has been removed from the PDD. The PDD is now fully consistent with the SPP PPA page 5, which states that “Both Main Meter and Backup Meter shall not have default rate more than +0.2%”.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok, the PDD has been revised accordingly. The validation team could confirm by means of checking the PPA concluded with EGAT that the meters (main and back-up) will have the accuracy ±0.2 %. This is standard accuracy of electricity meters and hence accepted. CL is closed.		

Finding	B7
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B8		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The PP is requested to clarify whether electricity imports from other countries have been considered in step 1.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Electricity imports from other countries is included in the application of the "Tool to calculate the emission factor for an electricity system, version 2.2.1"		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The information provided is reflected in the data provided by the DNA of Thailand. However, the same has not been adequately shown in the PDD section B.6.1 step 1. Especially EB 63 Annex 19 page 4 shall be referred to and the information necessary to understand how the imports are considered shall be shown. CL is not closed.		
Corrective Action #2	The PDD section B.6.1 has been updated to clarify that: electricity imports from a connected electricity system are included and as per EB 63 Annex 19 page 4.		
DOE Assessment #2	OK, the PDD has been revised accordingly. The information presented is in line with the data provided by the Thai DNA. The combined margin emission factor is correctly calculated as 0.598 tCO_2/MWh. CL is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B9		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The indices of $EF_{grid,OM,y}$ OM and $EF_{grid,BM,y}$ under the $EF_{grid,CM,y}$ determination are wrong and need to be corrected (page 16).		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The indices of EF OM and EF BM under the CM determination have been corrected.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok, the correction is in line with the applied tool. This has been checked against the PDD and it is verified by the validation team. CAR is closed.		

Finding	B9
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B10		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.6.1., Step 5, Identification of power plants for BM: PP did not follow the step wise approach of identifying the appropriate number of power plants for BM calculation. The requirements of the tool to calculate the emission factor are not taken into account.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section B.6.1 has been updated to include the procedure in Step 5 of the "Tool to calculate the emission factor for an electricity system, version 2.2.1".		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The PP clarified that the option 1, the ex-ante approach, is chosen which is in line with the tool. The emission factor remains therefore fixed throughout the crediting period. The argumentation provided by the PP in the revised PDD is not conclusive. The following is written on page 17: *"Following this procedure, $AEG_{SET\ 5\text{-}units}$ is the same as $AEG_{SET\ >/20\%}$ and all of these power units started supplying electricity to the grid less than 10 years ago, therefore $AEG_{SET\ 5\text{-}units}$ is the same as $AEG_{SET\ >/20\%}$ is SET sample and is applied as power units m for the Build Margin. The details for these power units are included in Annex 3."* Referring to the Annex 3 six power plants are shown comprising to 26.38 %. Therefore it is not clear how the PP comes to the conclusion that $AEG_{SET\ 5\text{-}units}$ is equal to $AEG_{SET\ >/20\%}$. CAR is not closed.		
Corrective Action #2	The statement on page 17 has been corrected to "Following this procedure, AEGSET >/20% is larger than AEGSET 5-units and all of these power units started supplying electricity to the grid less than 10 years ago, therefore AEGSET >/20% is applied as power units m for the Build Margin. The details for these power units are included in Annex 3." This section has also been corrected to show Option A1 is applied and not Option A2 which is incorrect.		
DOE Assessment #2	OK, the information presented is in line with the figures provided by the Thai DNA. The revised PDD was checked against the information provided by the Thai DNA. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B11		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.5.: In line with EB 62 Annex 5 paragraph 6 the PDD does not provide a date or information and evidence when the investment decision was taken.		
Corrective Action #1	The investment decision date was made by the Board on 15th March		

Finding	B11
This section shall be filled by the PP. It shall address the corrective action taken in details.	2010. The minutes of the Board of Directors meeting is provided in the file "Board Minutes KR One"
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The information provided is in contradiction to the following sentence shown on page 11: *"All input values to the project IRR are taken at the time of investment decision which is prior to signing the first contracts associated with implementation of the project."* This statement implicates that the investment decision is the signature of the first contract/TSC1/ which is three days later on 18th March 2010. Ensuring consistency and accurateness the PP is requested to take additional action to close this CAR.
Corrective Action #2	The company boards "Considered and Approved the Company to obtain credit facilities from the lenders to develop, construct, own, operate and maintain the Project" and hence made the decision to enter into financing arrangements on 26/07/2011 for WH3. This date should therefore be defined as the investment decision in accordance with the CDM requirements as per the explanation below. On 15/03/2010 the board of WH3 project approved the proposed conditions of the Turbine Supply Contract (TSC) and subsequently signed the TSC on the 18/03/2010. The TSC contract contains a "Conditions Precedent" which defines the "Commencement Date" as being the date when the contractor receives the "Notice to Proceed". The "Notice to Proceed" (NTP) can only be issued after FKW has provided written confirmation that the Finance Documents have been executed as per the relevant clauses. In the context of a CDM project activity, the start date is defined as the "earliest date at which either the implementation or construction or real action of a CDM project activity begins". The signing of the TSC contract on 18/03/2010 does not fulfil the requirements of the CDM definition of start date because it does not signify the commencement of implementation or construction or real action. The CDM start date is 15/08/2011 for the WH3 project because this is the date when the NTP was issued for the TSC. Note the Balance of Plant (BOP) contract contains all site works, including road construction. The Notice to Proceed for the BOP contract was signed on the same date as the Turbine Supply Agreement (on 15/08/2011). Therefore, the NTP for the TSC is the earliest date of commencement of implementation or construction or real action. In addition, the TSC contract lapsed prior to issuing the NTP therefore the contract was restated and resigned on 14/07/2011.
DOE Assessment #2	The PP has delivered the following documents as scanned versions to the validation team:

Date	Document	Abbrev.
2010-03-15	Board decision to "negotiate execute, enter into, deliver and perform obligations" on project implementation with third parties.	/BD1/
2010-03-18	Turbine Supply Agreement between First Korat Wind Company Limited and Siemens	/TSC1/
2010-03-18	Construction Contract (Balance of Plant) between First Korat Wind Company Limited and DEMCO Publ. Co Ltd.	/BOP1/
2011-07-14	Restated contract agreement between Siemens and First Korat Wind Company Limited.	/TSC2/
2011-07-21	Restated Contract Agreement between First Korat Wind Company Limited and DEMCO Publ. Co Ltd.	/BOP2/

Finding	B11

2011-07-26	Board decision on obtaining credit facilities from lenders	/BD2/
2011-07-26	Financing Terms and Agreement between Kasikornbank Publ. Co. Ltd and First Korat Wind Company Limited.	/FTA/
2011-08-15	Notice to Proceed send by First Korat Wind Company Limited to Siemens	/NTPT/
2011-08-15	Notice to Proceed send by First Korat Wind Company Limited to DEMCO Publ. Co Ltd.	/NTPC/

On 2011-07-26 the decision to proceed with the project was taken by the board.
It could be validated that the contract with Siemens and DEMCO from 2010 include a clause “Conditions Precedent” which summarize different issues to be fulfilled before the contract becomes viable, inter alia that the financing is secured.
This condition was fulfilled on 2011-07-26 when the Financing Terms and Agreement was contracted with Kasikornbank (same date as the board decision). Based on this agreement First Korat Wind Company Limited issued the Notice to Proceed to Siemens and DEMCO on 2011-08-15. Both companies acknowledged the receipt so that First Korat Wind Company Limited entered into contracts with Siemens and DEMCO. The whole process is plausible and transparently shown with the documented evidence listed above. The authenticity is confirmed since all documents are duly signed by each party.
TÜV NORD agrees that the starting date of the project activity is 2011-08-15 since this is the date when the PP committed to spend a reasonable amount for project implementation. Earlier dates were not considered suitable since the pre-conditions of the “Conditions Precedent” were not fulfilled.
CDM involvement in the decision can be assessed as serious.
CAR is closed.

Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B12		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.5.: The abbreviation of the tariff “TOU” is not provided and it is not clarified why this tariff will most likely change as stated in the last sentence of page 11.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section B.5 has been updated to spell out the abbreviation of the tariff “TOU” to Time of Use. The TOU tariff was fixed in 2007 and up until the investment decision of the project, the TOU tariff hadn’t changed, therefore it was reasonable to assume it would not change in the period. The Ft is the aspect of the tariff that changes over time, and this has been escalated at 5%. In addition, changes in possibilities of tariff changes are addressed in the sensitivity analysis.		

<table>
<tr><th>Finding</th><th>B12</th></tr>
<tr><td>DOE Assessment #1
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</td><td>By means of checking the website http://www.eppo.go.th/power/pwc-tariff-E.html it could be confirmed that the abbreviation TOU means “time of use”.
However, documented evidence is not provided that the tariff will not change from 2007 to 2011. The websites (provided as footnotes 12 and 13) do not show this information. Hence, further action is requested.</td></tr>
<tr><td>Corrective Action #2</td><td>The TOU tariff is not escalated; it is a fixed tariff which may only be changed in accordance with changes in government policy through the Energy Policy & Planning Office of the Ministry of Energy. The EPPO Report "Electricity Tariff Restructuring Report: Resolution of the National Energy Policy Committee 2005" stated the tariff as 2.9278 peak and 1.1154 off-peak (see also extract of report translated). It has remained the same until July 2011. The website links for 2009, 2010 and 2011
http://www.ppa.egat.co.th/Sppx/timeofuse52.html;
http://www.ppa.egat.co.th/Sppx/timeofuse53.html;
http://www.ppa.egat.co.th/Sppx/timeofuse54.htm
show that the values stayed the same until the announcement on 11/08/2011 for the tariff of July 2011. A reasonably stable political regime is assumed for the life of the project and changes in government policy (i.e. political decisions) cannot be predicted over the life of the project.

Hence, each project applies the TOU tariff which was known at the time of investment decision. At the time of the West Huaybong 3 project investment decision on 26/07/2011 the tariff was 2.9278 peak and 1.1154 off-peak.</td></tr>
<tr><td>DOE Assessment #2</td><td>It could be confirmed that the TOU did not change from beginning of 2009 till July 2011. In August 2011 a new TOU was announced for July 2011. It was therefore not available to the PP before the investment decision.
Hence, it is assessed reasonable that the PP assumed a stable TOU. In August 2011 a new TOU has been published. Please refer to the comparison in the following table:
<table>
<tr><th></th><th>June 2011</th><th>July 2011</th></tr>
<tr><td>TOU peak</td><td>2.9278 THB/kWh</td><td>3.8548 THB/kWh</td></tr>
<tr><td>TOU off-peak</td><td>1.1154 THB/kWh</td><td>2.0424 THB/kWh</td></tr>
<tr><td>Ft</td><td>0.9490 THB/kWh</td><td>- 0.0572 THB/kWh</td></tr>
<tr><td>Tariff*</td><td>2.644368 THB/kWh</td><td>2.565168 THB/kWh</td></tr>
</table>
Source: http://www.ppa.egat.co.th/Sppx/timeofUse/2554/ft0654.pdf; http://www.ppa.egat.co.th/Sppx/timeofUse/2554/ft0754.pdf
*Weighted under consideration of peak time (32%) and off peak time (68%)
It shows that even the TOU has been increased the Ft tariff has been significantly reduced which leads to a lower tariff from July 2011 onwards. In estimating the financial viability of a project only the tariff development in total (TOU and Ft) shall be taken into account. The PP considered a 5 % escalation for the Ft tariff in the financial analysis which is conservative compared to the real development of the Ft tariff.
The publicly available and accessible websites have been checked to confirm the values applied in the investment analysis are correct and available at the time of investment decision.

CL is closed.</td></tr>
<tr><td>Conclusion
Tick the appropriate checkbox</td><td>☐ To be checked during the first periodic verification
☐ Additional action should be taken (finding remains open)
☒ The finding is closed</td></tr>
</table>

Finding	B13		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.5.: The footnote 12 does not provide the same figures which are included in the PDD. That´s inconsistent.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Footnote 12 of Section B.5 has been deleted to avoid confusion.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	In PDD version 2 the same footnote 12 with the corresponding link is provided. Hence, CL cannot be considered as closed out.		
Corrective Action #2	PDD version 3 now has deleted the footnote previously numbered 12.		
DOE Assessment #2	The PDD has been revised. The inconsistency has been corrected. CL is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B14		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.5. sub-step 2c: As per the Tool for the demonstration and assessment of additionality this part shall include all relevant costs, e. g. total investment and O&M costs which are missing.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section B.5. sub-step 2c has been updated to include the total investment cost and O&M cost and the references for these costs.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The total investment and the O&M costs are provided in the PDD. However, the values are derived from a document which is from July 2010, i.e. 4 month after the investment decision. As per paragraph 6 of EB 62 Annex 5 the input values to the IRR calculation must be applicable at the time of investment decision. This criterion is currently not fulfilled. Hence, CAR is not closed.		
Corrective Action #2	In accordance with CAR B11, the investment decision was made on 26/07/2011. Hence, the Preliminary Information Memorandum dated July 2010 was available at the time of investment decision. Any time-dependant parameters that may have changed between July 2010 and the investment decision have been updated in the Financial Analysis Spreadsheet to ensure they are applicable at the time of investment decision.		

Finding	B14
DOE Assessment #2	The IRR xls-sheet has been checked. Several references and figures in tab ”Data for Analysis” are wrong and could not be tracked. a. The source of the conversion rate is missing (Cell D20) b. The investment costs are shown without sunk costs (Feasibility Study and Pre-Operating Expenses) and VAT. In addition to the sunk costs it shall be clarified why “financing costs“ are included. Besides the amount of VAT could not be tracked. c. The O&M costs shown are wrong. The source provides different values. d. The “Advance Service Rate” includes also the rate for another wind project (West Huaybong 2). Revision is necessary.
Corrective Action #3	The IRR xls-sheet has been updated to correct references and figures in tab ”Data for Analysis” as follows: a. The source of the conversion rate is provided as follows: http://www.bot.or.th/english/statistics/financialmarkets/exchangerate/_layouts/Application/ExchangeRate/ExchangeRate.aspx b. The “financing Costs” are clarified as aggregate interest and fees of the facilities which are incurred during construction. They have been excluded from the cash flow analysis. The contract prices used to calculate the investment cost are exclusive of import duties, VAT, sales tax and other taxes. Please refer to the PIM, section 7.3.4 page 80. c. The O&M costs have been updated to correctly represent the costs as shown in Table 11-2 of the PIM page 112. It is noted that the summation of expenses in the PIM differs from the summation in the excel spreadsheet by 0.066% due to rounding errors. The value 152.2 shown in the spreadsheet is more conservative as the lower summation of operating expenses has the effect of increasing the IRR. d. The upfront advanced payment of the Service and Availability Agreement has been applied correctly as follows: the PIM page 111 states 39 million for 2 projects over 5 years. 39/2 = 19.5; 19.5/5 = 3.9; 3.9 million has been applied.
DOE Assessment #3	a. The VT checked the internet source on 2012-07-19. The figures provided in the xls-file for the conversion rates could be verified. The VT deemed the average of the recent three years before investment decision (July 2011), i.e. 2008 – 2010 sufficient to reflect a reasonable assumption for a possible exchange rate. b. OK, the relevant source has been checked and the values are confirmed. Revision has been done properly. c. OK, the values have been checked against the source./PIM/ The figures are now in line with this source. d. OK, the figure has been corrected leading to less cost. The value provided is now correct. The following has been observed while checking the benchmark: 1. Two companies are not referenced in the list of companies associated to sector “Energy and Utilities” namely DEMCO and SPCG. The PP is requested to clarify this. 2. It has been observed that the figures of Return on Equity for M.D.X and TOP are not correct. Clarification is requested. 3. Besides the minimum lending rate has been changed to calculate WACC.

Finding	B14
Corrective Action #4	The xls-file has been updated as follows: 1. DEMCO and SPCG have been added to the table as they are listed in the "Energy and Utilities" sector on the SET website, in link http://www.set.or.th/listedcompany/static/listedCompanies_en_US.xls. It should be noted that DEMCO is not a company that generate electricity, and therefore is not included in the calculation of the benchmark. SPCG has been included in the re-calculated benchmark. Summaries of the company activities of DEMCO and SPCG companies can be found from Bloomberg business week site: http://investing.businessweek.com/research/stocks/snapshot/snapshot_article.asp?ticker=DEMCO:TB http://investing.businessweek.com/research/stocks/snapshot/snapshot.asp?ticker=SPCG:TB&prmdo=1 2. The values of ROE for M.D.X and TOP for 2008 and 2009 have been corrected and the benchmark adjusted. 3. The data basis for the Minimum Lending Rate has been changed from 2007-2009 to 2008-2010 due to the adjusted investment decision date in 2011.
DOE Assessment #4	1. The inclusion of SPCG and the adjustments as per point 2 lead to a decrease of the overall cost of equity from 17.42 % to 16.03 %. Consequently the benchmark has been reduced to 11.26 %. The inclusion of the company in the benchmark calculation could also have an impacted on the debt/equity structure. However, the 50/50 share has not been changed, since SPCG applies a similar share. The information provided by the PP has been checked. The information is available in accessible domain of the Thai Stock Exchange. The figures presented have been correctly applied to calculate the cost of equity, debt/equity share and finally the benchmark. 2. The values of the return on equity for the two mentioned companies have been corrected. The validation team could verify that the correct values are applied by means of checking the publicly available domain of the Thai Stock Exchange. The revision leads to a reduction of the cost of equity figure of more than 1 % which also leads to a reduction of the benchmark. 3. Ok, the data basis taken into account is reasonable and the figure determined is correct. In summary, the PP has implemented the correction as requested by the validation team. CAR is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B15		
Classification	☐ CAR	☒ CL	☐ FAR

Finding	B15
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.5. sub-step 2c: The PP states that conversion rates and escalation rates derived from the Bank of Thailand have been taken into account. The PP is requested: 1. To explain the reason and application of such rates, 2. To provide the exact source of such rates, as the link shown in footnote 16 does not show the rates and 3. To identify addressed financial consultant.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	For the CPI, a 3 year historical average of CPI has been applied as a market based value rather than value used from the PIM. The historical CPI values have been sourced from public data available from the World Bank. Conversion rates have been taken into account to reflect the exchange from EUR and USD to Thai Baht for the turbine components imported. The footnote has been updated to reference the exact source of this value and the IRR has been updated to show the calculation of the 3 year average. For the exchange rate, a 3 year historical average has been applied, based on BOT exchange rate. The link to the relevant section of BOT website has been included in the PDD, and an excel spreadsheet showing the 3 year historical average has been applied.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	No response is provided to point 3. Hence, the CL is still open.
Corrective Action #2	Point 3 was not directly answered because point 1 applied a market based value for escalation/CPI, so the reference to the 'addressed financial consultant' was deleted in the PDD and was no longer relevant. The calculation has been updated to a 3 year average in accordance with the reference provided (Kitchin business cycle).
DOE Assessment #2	OK, the approach is accepted. The documentation has been revised accordingly. A three year average deemed sufficient to provide a representative figure. The PDD provides evidence that the project would not be the most economically or financially attractive alternative or economically / financially feasible without the revenues from the sale of CERs. CL is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B16		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Section B.5. sub-step 2d: The analysis of the sensitivity of different parameters is assessed insufficient. The results of an increase/ decrease of the different parameters shall be presented. In addition the PP shall clarify whether the analysis of the parameter “Total Electricity Revenues” includes the net electricity generation and/ or an increase of the tariff.		
Corrective Action #1 *This section shall be filled by*	Section B.5. sub-step 2d now presents a table showing the results of an increase/decrease of all the different parameters.		

Finding	B16
the PP. It shall address the corrective action taken in details.	Section B.5. sub-step 2d has also been updated to clarify that the parameter "Total Electricity Revenues" could be achieved by either a 10% increase in overall tariff or a 10% increase in net electricity sold to the grid.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok, the PDD has been updated with all necessary information. Parameters identified for the sensitivity analysis are the total investment, the O&M costs, the electricity supply as well as the different variations of the tariff. These parameters are usually taken to check the robustness of the financial analysis. The range taken into account is ±10 % which is assessed reasonable since the validation team could not observe that the input parameters would fluctuate more than this range. The ±10 % range did not result crossing the benchmark. However, it is not reasonable to consider the TOU peak and off-peak tariff separately as both tariffs are increased simultaneously. Hence, the revision of the PDD and IRR xls-sheet is necessary.
Corrective Action #2	The XLS file and PDD have been updated with the variation of TOU peak and off-peak tariff considered simultaneously.
DOE Assessment #2	The validation team could confirm that the PP corrected the sensitivity analysis in the PDD and the IRR xls-file. The two tariffs have now been combined. The IRR would increase to 8.06 % in case the off-peak and peak tariff increases by 10 % over the total project lifetime. The value is below the benchmark of 11.26 %. Thus it is concluded that the financial analysis is robust. Further the range of ±10 % has been assessed as suitable since it could not be observed that the tariffs have been increased annually by 10 %. The benchmark could only be reached if the tariffs are increased about 55 % with immediate effect which is highly unlikely. The sensitivity analysis has been conducted in line with the CDM requirements. All parameters necessary to consider have been taken into account by the PP. Only variables that constitute more than 20% of either total project costs or total project revenues subjected to reasonable variation. CAR is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B17		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	During the site visit it could be confirmed by means of document check that the board of the company decided to invest in the project on 2010-03-15/BD1/ and that the first contract has been signed on 2010-03-18./TSC1/ However, the validation team observed that most of the input values for the IRR calculation are based on either the preliminary information memorandum/PIM/ from July 2010 and the wind yield assessment/WYA/ from January 2011. In line with paragraph 6 of EB 62 Annex 5 the validation team could not check whether the input values were applicable at the time of investment decision. Clarification is requested.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	As discussed on site, the Managing Director prepared a pre-feasibility analysis which was the basis for the Board decision to proceed with the project on 18-03-2010. This pre-feasibility analysis was completed using RET Screen International Wind Energy Project Model analysis software (see files "RET Screen West Huaybong 3"). This pre-feasibility		

Finding	B17
	assessment was developed based on the Managing Directors knowledge of the sites and his experience of cost estimates for other wind projects he is involved in (Khao Kor, where the PIM was finalised in February 2010). A summary sheet comparing input values of the pre-feasibility study and the PIM/Wind yield assessment has been prepared to cross check the values at investment decision date (see files "WH3 First Korat Wind IRR comparing PIM vs Pre-feasibility Assessment"). This comparison indicates that all project specific values in the pre-feasibility assessment were more conservative than the final assessed values, except the Investment Cost after deducting pre-feasibility study, which is 2-3% lower. This is in contrast to the significantly lower MWh output (around 33% lower) or the O&M costs which were 20% higher for WH3. These values, combined with the slightly lower investment cost, result in a significantly lower IRR. Therefore, it is considered reasonable and conservative to use the values from the PIM/Wind yield assessment spreadsheet to calculate the IRR for the project.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The file "RET Screen West Huaybong 3" provides data which is not possible to check. Sources are missing and calculations are not traceable. The currently available RET Screen software is an updated version of the one applied by PP. Hence, the validation team cannot make an objective assessment of the input parameters. CL is open.
Corrective Action #2	In accordance with CAR B11, the investment decision was made on 26/07/2011 for WH3 project. Hence, the document dated July 2010 was available at the time of investment decision. Any time dependant parameters that may have changed between July 2010 and the investment decision have been updated in the Financial Analysis Spreadsheet to ensure they are applicable at the time of investment decision. The calculation of electricity MWh is traceable to the Energy Yield Analysis report provided by Gerrad Hassan.
DOE Assessment #2	As described and assessed in CAR B11 the investment decision date is sourced from the board decision to enter into a loan contract with Kasikornbank to fulfil the stipulations as provided in the Conditions Precedent of TSC and BOP. Hence, all available data till 2011-07-26 shall be taken into account to feed the financial analysis. The data is mainly sourced from the wind yield assessment from 2011-01-10 provided by Garrad Hassan a well known wind engineering consultant and the Preliminary Information Memorandum prepared by the Kasikornbank Public Limited Company in July 2010. This document serves as a feasibility report on the implementation of the proposed project. The input data to the financial analysis is mainly sourced from these two documents. Both documents were available before the management decision. A complete assessment on the financial input parameters is provided in Annex 3 to this report. However, since the management decision was taken on 2011-07-26 and the amended turbine supply agreement[/TSC2/] (dated 2011-07-14) was already available at that time corresponding contract value shall be taken into account. Hence, IRR xls-file and the PDD are not up-to-date.
Corrective Action #3	The new contract value from the turbine supply agreement dated 2011-07-14 has been taken account in the IRR xls-file and updated PDD.
DOE Assessment #3	Ok, the PP has included the contract volume of the turbines as the value was available at the time of investment decision. The shares of the cost components of the total investment are as following: • Turbines (68 %) • Construction, grid connection, electrical facilities (e.g.

Finding	B17
	transformers) etc: (26 %) • Pre-operation costs (excl. sunk costs, VAT and financing expenditures): 6 % These figures are assessed reasonable as they are in line with common shares of total costs for installing wind farms./wef/ The costs of financing expenditures are excluded from the calculation of the project IRR. CL is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B18		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The additionality tool version 05.2.1 referenced in section B.1. and followed in section B.5. for common practice is not valid anymore.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The PDD has been corrected following the step wise approach form common practice analysis as defined in the respective toll version 6.0.0.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The additionality tool has been updated to version 6.0. The PP identified the national boundaries of Thailand and therefore the national grid of Thailand as boundary for the analysis. The defined region for the common practice analysis is appropriate. A capacity range of ± 50% (51.75 MW – 155.25 MW) has been further identified. In addition all projects before the start of the project are considered as well. None did apply CDM so far. The PP identified 25 projects. However, none of the projects are wind power plants. Therefore, the PP came to the conclusion that F = 0 and $N_{all} - N_{diff} = 0$ and that the project is not common practice. The project is a type listed in paragraph 6 (b) in the Additionality Tool. Hence, the PP correctly follows the step-wise approach as per paragraph 47 of the above cited tool. The boundary chosen is the Thai National Grid which is accepted since project implemented in Thailand refer to the same investment environment and regulatory framework. Also the time frame (all projects considered before 2011-08-15) is in line with the referred tool (paragraph 47 step 2). The range identified is following the stipulations as per the methodology and hence correct as well. TÜV NORD could confirm by means of checking the official websites of EPPO and EGAT (both national authorities) indicated in the PDD that • the N_{all} power plants are commissioning before the starting date of the project activity; • the N_{all} power plants are in the designed capacity range 51.75 MW - 155.25 MW • $N_{all} = N_{diff}$: The essential distinction is that no project is a wind power plant. It should be noted that this information is confirmed through the expertise		

Finding	B18
	of the validation team. There are some projects with a similar size in planning phase but not yet commercially operational. Therefore, TÜV NORD confirms the conclusion of the PP that the project is not common practice. All applicability criteria in the applied tool are fulfilled. CAR is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	B19		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In the PDD it could not be identified how the WACC has been calculated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The PDD has been updated providing the formula to calculate the before tax benchmark: WACC = (debt percentage x cost of debt) + (equity percentage x cost of equity)		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok, the formula to calculate the benchmark Weighted Average Cost of Capital (WACC) has been incorporated in the PDD. The formula is correct. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	B20		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The version of the applied methodology is outdated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The version has been changed from 12.1.0 to 12.3.0.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok, relevant corrections have been provided in the PDD. It should be noted that the revision of the methodology version only refers to editorial aspects. Correspondingly wording of applicability and formulae have been adjusted. The methodology is correctly applied and suitable to the proposed project activity.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	C1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The PDD provides different start dates 18/03/2010 (section C.1.1.) vs. 24/02/2011 (section B.5. sub-step 4 a)). It has been also not described on which basis the starting date is determined including evidence.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section C.1.1 of the PDD has been updated to describe how the start date is determined (i.e. 15/08/2011 (Date of notice to proceed of the Turbine Supply Agreement with Siemens Wind Power A/S)). The DOE was given this Notice to Proceed of the Turbine Supply Agreement as documented evidence. In addition, please refer to the CAR B11 in this report for further information.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	During the site visit the validation team checked the construction contract/BOP1/ and the Turbine Supply Contract/TSC1/. Both are signed at 2010-03-18. However, both contracts include a clause "Conditions Precedent" which defines circumstances under which the contracts became valid. Some conditions like financing of the project were not secured at the date of signing the contract. Therefore, the contracts were not valid at this time. After the credit facility was granted on 2011-07-26 the notice to proceed was send to Siemens and DEMCO on 2011-08-15 to announce that the conditions of the contract were in place. The validation team considers this date (2011-08-15) suitable as starting date and in line with the CDM Glossary of Terms. Hence, the validation team concluded that the corrected starting date is appropriately chosen in line with the CDM regulations. In addition, the starting date is clearly after 2008-08-02. Hence, the paragraphs 2 – 5 of EB 62 Annex 13 apply. The PP could substantiate that the UNFCCC as well as the DNA have been informed in time by means of official letters, e-mail communication and information posted on the UNFCCC website./PC/ The evidence have been checked during the site visit and prior consideration could be confirmed. CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	C2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The start of crediting period is not reasonable.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Section C.2.1.1 has been updated to include a more reasonable start date of the crediting period as 01/12/2012.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok, the starting date of the crediting period was revised to 2012-12-01. It is deemed to be appropriate. The PDD has been revised accordingly. CAR is closed.		

Finding	C2
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

5 VALIDATION ASSESSMENT SUMMARY

5.1 General Description of the Project Activity

5.1.1 Participation

LOA

The Host Country Approval has been issued by the DNA of Thailand, Thailand Greenhouse Gas Management Organization (TGO). The document has been provided as scanned version by the PP. The authenticity has been confirmed by means of checking the publicly available list of all approved Thai CDM projects: http://www.tgo.or.th/english/index.php?option=com_content&view=article&id=2%3Aapproved-projects&catid=32%3Athailand-cdm-projects&Itemid=72&limitstart=5. In addition the document is signed. The approval clearly indicates that the project supports Thailand in achieving the sustainability targets.

The letter of approval from Annex I country is issued by the DNA of France, i. e. the General Directorate for Energy and Climate Change of the Ministry of Ecology, Sustainable Development and Energy. The document has been provided as scanned version by the PP. The authenticity has been confirmed since the document is signed.

The precise title of the project indicated in both approvals is: West Huaybong 3 wind farm project.

Project Participants

The entity approved for the non Annex 1 country is First Korat Wind Company Limited, for France it is EDF Trading Limited.

The information provided in the PDD, LOA and MOC are consistent/HCA/, /LOA/, /MOC/.

5.1.2 Contribution to Sustainable Development

The approval from Thailand clearly indicates that the project supports the country in achieving sustainability targets. Several sustainability targets have been defined in the PDD and could be confirmed by the validation team during on-site visit and document check.

5.1.3 PDD editorial Aspects

The PDD of the project is based on the latest PDD Template (Version 03) and complies with the Guidelines for Completing the PDD (Version 07).

5.1.4 Technology to be employed

The proposed project is the implementation of 45 wind turbine generators with an installed capacity of 2.3 MW each. The total installed capacity is 103.5 MW which leads to a total net electricity generation of 232,500 MWh annually. The electricity is supplied to the Thai National Grid agreed in a power purchase agreement with the national grid operator EGAT. The description in the PDD is complete and accurate. The turbines installed are state of the art and environmentally safe and sound. During the site visit the validation team could confirm the location of the project activity as provided in the PDD.

5.1.5 Small Scale Projects

The installed capacity of the proposed project is 103.5 MW/TSC2/, /PIM/ and is therefore not of small scale type.

5.2 Project Baseline, Additionality and Monitoring Plan

5.2.1 Application of the Methodology

The project applies the consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.3.0) which is approved by the CDM Executive Board.

The valid versions of methodological tools, “Tool to calculate the emission factor for an electricity system” (Version 2.2.1)/TEF/ and “Tool for the demonstration and assessment of additionality” (version 6.0)/TA/ are applied and referenced in accordance with ACM0002.

The applied methodology and methodological tools are available at UNFCCC website of http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html.

All the applicability conditions of the methodology ACM0002 are met, and the project activity is not expected to result in any other significant emissions not addressed by the applied methodology. All stipulations are followed. The validation team checked the methodology and tools and compared it to the content of the final PDD.

5.2.2 Project Boundary

According to applied methodology ACM0002, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. The project boundary and the selected sources and gases which are justified for the project activity are identified in B.3 of the PDD and are in line with the publicly available data provided by the Thai government.

5.2.3 Baseline Identification

The DOE confirms that the procedure contained in the methodology to identify the most reasonable baseline scenario has been correctly applied, and the description of baseline identification in the PDD is transparent and verifiable.

According to applied methodology ACM0002, the baseline scenario for new grid-connected renewable power plants/units is: *Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system"*.

According to paragraph 105 of the VVM[/VVM/], the applied methodology ACM0002 prescribes the baseline scenario and no further analysis is required in identification of alternatives.

5.2.4 Calculation of GHG Emission Reductions

The emission reduction calculation is conducted as per applied methodology ACM0002 and the methodological tool "Tool to calculate the emission factor for an electricity system"[/TEF/] and correct equations and parameters have been used accordingly.

The emission reductions (ER_y) of the project activity are the difference between the baseline emissions (BE_y), project emissions (PE_y) as follows:

$ER_y = BE_y - PE_y$

Baseline emission:

BE_y is calculated by multiplying the net electricity supplied to the Thai grid ($EG_{Pj,y} = EG_{facility,y}$) with combined margin emission factor ($EF_{grid,CM,y}$):

$BE_y = EG_{Pj,y} \times EF_{grid,CM,y}$

The emission factor ($EF_{grid,CM,y}$) is calculated by using a valid version of the "Tool to calculate the emission factor for an electricity system". It is determined ex-ante and consists of the weighted average factors of operating margin ($EF_{grid,OM,y}$) and build margin ($EF_{grid,BM,y}$).

The data source and process of calculation $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ are based on the data that is available at the time of submission of the CDM-PDD to the DOE for validation. It is derived from data published on the website of Thai DNA. [/XLS/, /tgo/] The data vintages and calculations have been checked and were assessed as correct.

$EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ are calculated as 0.615 tCO_2e/MWh and 0.548 tCO_2e/MWh. In accordance with ACM0002 that weight factors of $w_{OM} = 0.75$ and $w_{BM} = 0.25$ have been used to calculate the grid emission factor $EF_{grid,CM,y}$ (0.598 tCO_2e/MWh).

Project emissions:

As per the applied methodologies project emissions are not applicable.

Leakage:

According to the applied ACM0002, leakage is considered as zero.

Emission reductions:

The annual net generated electricity of the project is estimated to be 232,500 MWh (based on calculations from the WYA data). According to above information, the annual emission reductions of the project is calculated as following:

$ER_y = BE_y - PE_y$
$= BE_y$
$= EG_{facility,y} \times EF_{grid,CM,}$
$= 232{,}500\ MWh \times 0.598\ tCO_2e/MWh$
$= 139{,}035\ tCO_2e$

The GHG emission reductions covering the renewable crediting period (7 years) are estimated ex-ante as 973,245 tCO_2e.

It is confirmed by the DOE by cross-checking the whole calculation process/XLS/ against all referenced data sources and the requirements of applied methodology and methodological tools that:

a) All data sources and assumptions used are listed and referenced in the PDD and are appropriate. They are derived from Thai DNA and default values from IPCC. Calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimation of the emission reductions;

b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;

c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;

d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

5.2.5 Additionality Determination

Consideration of CDM in decision making (if project start before validation)

The timeline with documented evidence as well as comments is provided in the table below:

Date	Document	Reference	Comment
2010-03-15	Board decision to “negotiate execute, enter into, deliver and perform obligations” on	/BD1/	The validation team accepted that this document cannot be considered as investment decision and starting date as the

Date	Document	Reference	Comment
	project implementation with third parties.		PP did not enter into financial obligations.
2010-03-18	Turbine Supply Agreement between First Korat Wind Company Limited and Siemens	/TSC1/	Even though a contract has been signed, the validation team could validate that it was not valid due to the clause "Conditions Precedent" summarizing several topics which need to be fulfilled before the contract becomes valid inter alia the credit facilities granting.
2010-03-18	Construction Contract (Balance of Plant) between First Korat Wind Company Limited and DEMCO Publ. Co Ltd.	/BOP1/	Even though a contract has been signed, the validation team could validate that it was not valid due to the clause "Conditions Precedent" summarizing several topics which need to be fulfilled before the contract becomes valid inter alia the credit facilities granting.
2011-07-14	Restated contract agreement between Siemens and First Korat Wind Company Limited	/TSC2/	After more than 1 year with no significant progress in entering into a valid contractual agreement Siemens restated the contract with the same clause of "Conditions Precedent".
2011-07-21	Restated Contract Agreement between First Korat Wind Company Limited and DEMCO Publ. Co Ltd.	/BOP2/	Also DEMCO restated the contract conditions from March 2010 with the same clauses of "Conditions Precedent".
2011-07-26	Board decision on obtaining credit facilities from lenders	/BD2/	The board representative Mr. Nopporn Suppipat provides authorization to enter into credit facilities with KasikornBank. This is deemed as the decision to invest in the project since it is a precondition that with valid credit facilities the "Conditions Precedent" is fulfilled.
2011-07-26	Financing Terms and Agreement between Kasikornbank Publ. Co. Ltd and First Korat Wind Company Limited.	/FTA/	The project operator First Korat Wind Company Limited entered into a financing agreement with the Kasikorn Bank. This is considered as the event which allows fulfilling the important clause in the "Conditions Precedent". Bank loan was granted for financing the project activity.
2011-08-15	Notice to Proceed sent by First Korat Wind Company Limited to Siemens	/NTPT/	Based on the loan facilities the PP send a Notice to Proceed to Siemens, which makes the TSC2 valid. This is the starting date of the project activity.
2011-08-15	Notice to Proceed send by First Korat Wind Company Limited to DEMCO Publ. Co Ltd.	/NTPC/	Based on the loan facilities the PP send a Notice to Proceed to DEMCO, which makes the BOP2 valid.

The project starting date is defined as 2011-08-15, the earliest date on which the project owner committed expenditures./NTPT/

This is in accordance to the CDM Glossary of Terms. According to EB 62 Annex 13 the proposed project is defined as a new activity since it is started after 2008-08-02. The PP informed the UNFCCC as well as the Thai DNA in timely manner. The

notifications and e-mail communications have been checked to confirm this./PC/ In addition the UNFCCC website has been checked to confirm prior consideration notification./unfccc/

Hence, the DOE confirms that the proposed project activity meets all stipulations as set out in EB62, Annex 13, paragraph 2 to 5.

Additionality Justification

The additionality of the project activity was demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality" Version 06.0 according to the applied methodology ACM0002.

Alternatives

The PDD contains a complete list of all realistic alternatives to the project scenario. There are two plausible alternatives been identified for the project:

- P1: The proposed project activity not undertaken as CDM project;
- P2: The equivalent electricity supplied by the Thai grid (current situation).

P1 is excluded through investment analysis;

P2 is in compliance with relevant laws and regulations of Thailand and it does not face financial barriers. Therefore, it is a realistic and credible alternative scenario to the project activity.

Therefore, the credible alternatives selected are P1 and P2.

Investment analysis

The latest version of the Guidance on the Assessment of Investment Analysis/GAI/ was applied.

Since the proposed project generates economic benefits (from sales of electricity) other than CDM related income simple cost analysis (Option I) is not applicable. As alternative 2 cannot be considered as comparable investment, option II was also not applied. Therefore, the benchmark analysis (Option III) is chosen to conduct the investment analysis. This is appropriate.

Benchmark

The benchmark calculated is weighted average cost of capital (WACC) determined based on values at the time on management decision. This benchmark is compared to the project IRR before tax of the proposed project activity. The WACC does also not take the tax into account. Hence, the two figures are comparable and in line with EB 62 Annex 5 paragraph 12. Thus the WACC formula applied is:

$$WACC = \left(\frac{E}{V}\right) x\ k^{E} + \left(\frac{D}{V}\right) x\ k^{D}$$

V: Total Investment
D: Share of Debt
E: Share of Equity
k^D: Cost of Debt

k^E: Cost of Equity

The benchmark has been derived by taking into account values which are standard in the market, since the project can theoretically also be implemented by another entity. The share of debt and equity is 50/50 which is standard in the market and in line with paragraph 18 of EB 62 Annex 5. The cost of debt has been derived from publicly available data from the Bank of Thailand (6.49 %). The cost of equity has been determined considering the return on equity of similar entities active in the Thai market (16.03 %). An average of the last three years prior to the investment decision has been utilized based on the publicly available data from the stock exchange of Thailand.

The WACC (11.26%) has been calculated in line with the stipulations set out in EB 62 Annex 5 paragraph 13.

As outlined above the validation team considers the benchmark calculated suitable for the type of financial indicator presented and thus in line with VVM 112 (a). The benchmark is correctly calculated taking into account relevant risks for private companies in the electricity generating sector in Thailand which is expressed in considering the return on investment of those companies listed in the stock exchange (VVM, paragraph 112 (b)). It is further assessed as reasonable to assume that no investment would be made at the identified IRR (VVM, paragraph 112 (c)).

Internal Rate of Return

The project IRR is calculated as before tax figure. The raw data is mainly derived from the Preliminary Information Memorandum/PIM/ issued in July 2010 by Kasikorn Bank for the purpose to find potential investors. Proposals available before the investment decision which was taken on 2011-07-26/BD2/ have been taken into account and were considered in the investment analysis. The validation team could confirm that the figures in the IRR calculation are reasonable based on cross-checking possibilities with contract volumes and revenue streams with third party evidence (e.g. manufacturer contracts) or publicly available sources (for tariffs). 3 weeks after the investment decision on 2011-08-15 the turbine supply agreement and the balance of plant became valid which is the starting date of the project activity./NTPT/, /NTPC/ The validation team could confirm that input values of the investment analysis are reasonably chosen and valid as they have been cross-checked or sourced from actual proposals or publicly available data and hence, would not materially changed. The validation team thoroughly checked the memorandum, proposals, publicly available sources and the underlying IRR calculation to confirm that the figures presented are consistent and that they are all available at the time of the investment decision. Therefore, TÜV NORD confirms that the project matches with VVM paragraph 113 (a) – (c).

In conclusion, TÜV NORD confirms that the assumptions taken and calculations provided are correct (VVM 114 (c)). It should be noted that a detailed assessment of the financial parameters has been conducted in Annex 3 to this report to meet the requirements of VVM paragraph 111 and 114 (a) to (b).

Sensitivity Analysis

Four parameters are selected for sensitivity analysis: Total Costs, Total Electricity Revenues (net electricity supply), tariff (both tariffs: TOU (on-peak, off-peak) and Ft Tariff) and Operations and Maintenance Costs. The information and justification provided in the PDD were assessed and validated by the validation team. It can be confirmed that the arguments provided, that the benchmark will most likely not be crossed, are reasonable and substantiated with documented evidence.

As per EB 62 Annex 5 paragraph 20 the validation team confirms that the initial investment costs have been considered and the other common parameters like O&M costs and electricity revenues due to higher grid supply or higher tariff availability. Due to the reason that the tariff is split into 2 parts (Ft and TOU (peak or off-peak)) as mentioned above, the PP has correctly considered them independently.

Further the commonly applied range of ± 10 % has been chosen to check the range of the IRR. This is assessed as acceptable since a higher range of deviation is not expected. The assumed investment costs have been compared to the actual contracted services, the O&M costs are assessed as comparable low (between 2 – 4 % during the project lifetime) and the tariffs are fixed by the grid operator already (TOU tariff) or including an escalation (Ft tariff). Thus, also EB 62 Annex 5 paragraph 21 has been appropriately considered for the sensitivity analysis.

TÜV NORD concluded that the sensitivity analysis is in line with the CDM requirements. It could not be observed that the benchmark is crossed with a range of ± 10 % of the above mentioned parameters. The correct calculation is confirmed. It clearly shows that the parameters are not close to the benchmark. Hence, the robustness of additionality is ensured.

A detailed assessment of the financial parameters is provided in Annex 3 to this report.

Barrier analysis

N/A

Common practice analysis

The spatial boundary considered for the common practice analysis is the national boundary of Thailand, which is considered to be acceptable since projects are implemented in a comparable regulatory framework and investment climate.

The step wise approach as stipulated in the Additionality Tool Version 6.0 is followed.

It could be confirmed by means of official source that 25 projects are identified which started commercial operation before the starting date and which are in a range of ± 50 % of the installed capacity 103.5 MW.[/eppo/, /egat/] None did apply CDM so far. It could further be confirmed that all identified projects are not similar, i.e. no wind power plants, to the proposed project activity. In addition, it is confirmed that CDM projects or projects applying CDM are excluded.

Hence, it is concluded that the proposed project is not common practice.

Summary

The validation team came to the conclusion that the project is additional since it faces an investment barrier and is not common practice.

5.2.6 Monitoring Methodology

The monitoring methodology ACM0002 Version 12.3.0 is applicable. The monitoring plan provided in section 7 of the PDD is in compliance as per the defined stipulations in the methodology.

5.2.7 Monitoring Plan

The DOE applied a two-step process to assessing compliance with the requirements of monitoring plan, as follows:

a) Compliance of the monitoring plan with the approved methodology:
   (i) Identified the list of parameters required by the selected approved methodology by means of document review;
   (ii) Confirmed that the monitoring plan contains all necessary parameters, that they are clearly described and that the means of monitoring described in the plan complies with the requirements of the applied methodology ACM0002 and subscribed tools;

b) Implementation of the plan:
   (i) The monitoring arrangements described in the monitoring plan are feasible within the project design;
   (ii) The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

The assessment has been conducted by the DOE by means of reviewing of the documented procedures, interviewing with relevant personnel, project plans and physical inspections of the proposed CDM project activity site.

5.2.8 Project Management Planning

The operational and management structure that the project operator will implement in order to monitor emission reductions is described in the PDD. It clearly indicates the responsibilities and institutional arrangements for data collection and archiving.

In conclusion, the monitoring plan sufficiently prescribes monitoring measures to ensure an accurate and complete approach to derive the emission reductions.

5.2.9 Crediting Period

The starting date of the renewable crediting period is 01st December 2012. The starting date as mentioned in the PDD has been confirmed during site visit. The starting date is deemed to be appropriate.

5.2.10 Environmental Impacts

For wind energy projects an EIA is not required by the host country. An Initial Environmental Evaluation (IEE) is required for all projects that apply for the letter of approval. The IEE was checked during the site visit./IEE/ No significant impacts are defined.

5.2.11 Comments by Local Stakeholders

An official stakeholder consultation has been held on 2011-09-15. Relevant stakeholders like local people, local governmental officials and teachers were invited. The venue of the meeting was publicly notified through posting. The relevant documents for the stakeholder consultation like minutes of meeting, attendance list and photos were reviewed./SHCP/ In addition local stakeholder/IM04/ confirmed by means of interview that the participants raised no concerns regarding the project activity and questions regarding the project activity were answered sufficiently. Therefore, TÜV NORD concluded that the stakeholder consultation has been conducted in line with the CDM requirements.

6 VALIDATION OPINION

EDF Trading Ltd has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: “West Huaybong 3 wind farm project” with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board

In the course of the pre-validation 17 Corrective Action Requests (CARs) and 8 Clarification Requests (CLs) were raised and successfully closed.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (Thailand) and all relevant UNFCCC requirements for CDM. Project activity approvals have been obtained from DNA of Thailand vide the Letter of Approval (HCA) dated 2012-04-05 and the DNA of France dated 2012-10-04.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 973,245 tCO2e are most likely to be achieved within the (1st renewable) crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Essen, 2012-10-22

Martin Saalmann

TÜV NORD JI/CDM CP

Validation Team Leader

Essen, 2012-10-22

Ingo Klein

TÜV NORD JI/CDM CP

Final Approval

7 REFERENCES

Table 7-1: Documents provided by the project participant

Reference	Document
/BD1/	Minutes of Board Meeting, 2010-03-15
/BD2/	Board decision on obtaining credit facilities from lenders, 2011-07-26
/BL/	Business License of First Korat Wind Company Limited
/BOP1/	Construction Contract (Balance of Plant) between First Korat Wind Company Limited and DEMCO Publ. Co Ltd., dated 2010-03-18
/BOP2/	Restated Contract Agreement between First Korat Wind Company Limited and DEMCO Publ. Co Ltd., dated 2011-07-21
/CL/	Construction License/ Permission
/ECD/	Electricity Connection Diagram
/ERPA/	Emission Reduction Purchase Agreement between EDF and First Korat Wind Company Limited dated 2010-11-18
/FTA/	Financing Terms and Agreement between Kasikornbank Publ. Co. Ltd and First Korat Wind Company Limited, dated 2011-07-26
/GP/	Grid Connection Permission
/HCA/	Host Country Approval from Thai DNA dated 2012-04-05 and correction thereof dated 2012-08-01
/IEE/	Initial Environmental Evaluation prepared by Environment Research Institute, Chulalongkorn University, Thailand dated April 2010
/IRR/	IRR calculation sheet
/LOA/	Letter of Approval from France DNA dated 2012-10-04
/MOC/	Modalities of Communication
/NTPC/	Notice to Proceed of the construction contract, dated 2011-08-15
/NTPT/	Notice to Proceed of the TSA, dated 2011-08-15

Reference	Document
/PC/	Prior Consideration Evidence: 1. UNFCCC website: http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html, dated 2010-04-16 2. Letter of Intent to apply for CDM to TGO, dated 2010-03-15 3. Prior Consideration Confirmation, TGO, dated 2010-03-25
/PDD/	Draft Project Design Document named "West Huaybong 3 wind farm project" (Version 01)
	Project Design Document named "West Huaybong 3 wind farm project" (Version 3.4)
/PIM/	Preliminary Information Memorandum, July 2010
/PPA/	Power purchase Agreement between First Korat Wind Company Limited and EGAT, dated 2010-12-03
/PS/	Project Implementation Schedule
/SA/	Service agreement as part of the TSC
/SHCP/	Photos Attendance list Minutes of Meeting
/TD/	Technical Drawing/ Site Layout
/TSC1/	Turbine Supply Contract between First Korat Wind Company Limited and Siemens Wind Power A/S, dated 2010-03-18
/TSC2/	Restated Turbine Supply Contract between First Korat Wind Company Limited and Siemens Wind Power A/S, dated 2011-07-14
/WYA/	Wind Yield Assessment provided by Garrad Hassan, dated 2011-01-10
/XLS/	Emission reduction calculation spreadsheet

Table 7-2: Background investigation and assessment documents

Reference	Document
/ACM2/	ACM0002: Consolidated baseline methodology for grid-connected electricity

Reference	Document
	generation from renewable sources (Version 12.3.0)
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GAI/	Guidelines on the assessment of investment analysis
/GPC/	Guidelines on the Demonstration and Assessment of Prior Consideration of CDM
/IPCC/	• IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000 • Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7))
/PDD-G/	Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM), EB 41, Annex 12
/PDD-T/	Project Design Document Form (CDM PDD) – Version 03
/TA/	Tool for the demonstration and assessment of additionality (Ver. 6.0).
/TDS/	Technical Data Sheet of the turbine model SWT-2.3-101
/TEF/	Tool to calculate the emission factor for an electricity system (Version 2.2.1)
/VVM/	Validation and Verification Manual (Version 01.2, Annex 1, EB 55)
/WWEA/	Wind Energy International 2011/2012, World Wind Energy Association, 2011

Table 7-3: Websites used

Reference	Link	Organisation
/cd4cdm/	www.cd4cdm.org	UNEP Riso Centre
/both/	http://www.bot.or.th/english/statistics/financialmarkets/exchangerate/_layouts/Application/ExchangeRate/ExchangeRate.aspx	Bank of Thailand
/dna-f/	http://www.developpement-durable.gouv.fr/	Ministry of Ecology, Sustainable Development, Transports and Housing
/egat/	http://www.egat.co.th/en/	Electricity Generation Authority of Thailand
/eppo/	http://www.eppo.go.th/power/data/index.html, http://www.eppo.go.th/info/5electricity_stat.htm	Power Policy Bureau Energy Policy and Planning Office Ministry of Energy, Thailand
/ewea/	http://www.ewea.org/fileadmin/ewea_documents/documents/publications/WETF/Facts_Volume_2.pdf	European Wind Energy Association
/ft/	http://www.pea.co.th/vspp/vspp/vspp_rate.pdf	EGAT – Electricity Generation Authority of Thailand
/gh/	http://www.gl-garradhassan.com/en/index.php	Wind consulting company Garrad Hassan
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/sie/	http://www.energy.siemens.com/hq/en/power-generation/renewables/wind-power/	Siemens (wind turbine supplier)
/tgo/	http://www.tgo.or.th/english/	Thailand Greenhouse Gas Management Organisation (TGO)
/unfccc/	http://cdm.unfccc.int	UNFCCC
/wef/	http://www.wind-energy-the-facts.org/en/part-3-economics-of-wind-power/chapter-1-cost-of-on-land-wind-power/cost-and-investment-structures/	European Union and European Wind Energy Association

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Frank Hojerslev	Wind Energy Holding Co., Ltd./CEO
		☒ Mr. ☐ Ms	Nopporn Suppipat	Wind Energy Holding Co., Ltd./Director
		☐ Mr. ☒ Ms	Yodying Sakjaroenchaikul	Wind Energy Holding Co., Ltd./Senior Community Affairs Officer
		☒ Mr. ☐ Ms	Chanipa Kulvanich	Wind Energy Holding Co., Ltd./Ass. To Chief Executive Officer
/IM02/	V	☒ Mr. ☐ Ms.	Paul Corletto	Carbon Bridge/CDM Consultant
	T	☐ Mr. ☒ Ms.	Bridget McIntosh	Carbon Bridge/CDM Consultant
/IM03/	V	☐ Mr. ☒ Ms.	Suchai Lertpichet	EDF Trading
/IM04/	V	☒ Mr. ☐ Ms	Hor Kitcer	Member of Village 14
	V	☒ Mr. ☐ Ms	Jarun Tubekhunthod	Member of Sub District Huaybong
	V	☒ Mr. ☐ Ms	Kere Cherdchungnern	Member of Village 25
	V	☒ Mr. ☐ Ms	Saerm Krutumsoun	Member of Village 14
	V	☒ Mr. ☐ Ms	Pud Changtar	Villager
	V	☒ Mr. ☐ Ms	Tanong Tounkuntod	Villager

[1)] Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

ANNEX

A1: Validation Protocol

A2: Assessment of Baseline Identification

A3: Assessment of Financial Parameters

A4: Assessment of Barrier analysis

A5: Outcome of the GSCP

A6: Appointment certificates of the team members

ANNEX 1: VALIDATION PROTOCOL

Table A-1: Requirements Checklist

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Ref.**	**Draft Concl.**	**Final Concl.**
A. General Description of Project Activity				
A.1. Approval *The written approval of the parties involved is a mandatory requirement*				
A.1.1. Has the project provided written approvals of all parties involved? (EB 55 Annex 1, § 44) *Indicate whether a letter of approval has been received, with a clear reference to the supporting documentation.* *Indicate whether this letter was provided to the DOE by the project participants or directly by the DNA*	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	/PDD/	~~CAR A1~~	OK
A.1.2. Are the approvals issued from orgainsations listed as DNAs on the UNFCCC CDM website? (EB 55 Annex 1, §§ 44, 47, 48, 49 (b), 49 (c), 53) *Indicate the means of validation employed to assess the authenticity, i.e. in case of doubt whether LoA has been verified with the DNA. Further describe which entity*	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	/unfccc/ /tgo/ /dna-f/	~~CAR A1~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
submitted the LoA for validation.				
A.1.3. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol? (EB 55 Annex 1, § 45(a))	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	-	~~CAR A1~~	OK
A.1.4. Do the written approvals confirm that the participation is voluntary? (EB 55 Annex 1, § 45(b))	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	-	~~CAR A1~~	OK
A.1.5. Does the written approval from the host country confirm that the project contributes to the sustainable development in the country? (EB 55 Annex 1, § 45(c))	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	-	~~CAR A1~~	OK
A.1.6. Do the written approvals refer to the precise project title in the PDD submitted for registration or an additional specification of the project activity, e.g. PDD version number? (EB 55 Annex 1, §§ 45(d), 50)	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	-	~~CAR A1~~	OK
A.1.7. Are the written approvals unconditional with regard to A.1.3 to A.1.6? (EB 55 Annex 1, § 46)	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	-	~~CAR A1~~	OK
A.1.8. Is the information regarding the project participants listed in section A3 and in Annex 1	*Description:* The PP from Thailand as listed in PDD section A.3. is First Korat Wind Company Limited and from France is EDF Trading	/PDD/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
of the PDD internally consistent to each other? (EB 55 Annex 1, § 51)	Limited. The Annex 1 of the PDD provides the same names. *Justification of evidence:* The content of the two sections in the PDD have been compared. *Conclusion:* The sections in the PDD are internally consistent			
A.1.9. Are all project participants listed in the PDD approved at least by one Party involved? (EB 55 Annex 1, § 51) *Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol.* *Describe the means of validation employed to draw this conclusion.*	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	-	~~CAR A1~~	OK
A.1.10. Are any other project participants approved but not listed in the PDD? (EB 55 Annex 1, § 52)	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	-	~~CAR A1~~	OK
A.1.11. Does the DoE have a direct contractual relationship with the PP? (EB 55 Annex 1, § 51; EB 50 Annex 48, §§ 7–9) *Check whether the PPs listed in the published PDD are still listed in the PDD going to be submitted to request for registration.*	A direct contractual relation is existent with one of the PPs provided in the PDD which is submitted for registration.	-	OK	OK
A.2. Contribution to Sustainable Development *The project's contribution to sustainable development*				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
is assessed.				
A.2.1. Has the host country confirmed that the project assists it in achieving sustainable development? (EB 55 Annex 1, §§ 125–127) *Contains a statement confirming whether the letter of approval by the DNA of the host party confirmed the contribution of the project to the sustainable development of the Host Party.*	*Description:* LOAs are not available at this stage. *Justification of evidence:* - *Conclusion:* CAR A1 has been raised.	-	~~CAR A1~~	OK
A.2.2. Will the project create other environmental or social benefits than GHG emission reductions? (EB 55 Annex 1, §§ 125–127) *Describe the other positive aspects not related to GHG emission reduction on the environment.*	*Description:* As per the description in the PDD section A.2. the proposed project will create jobs and will lead to technology and know-how transfer. *Justification of evidence:* The wind power utilization is a new business sector in Thailand since no large scale projects are commercially operating. Hence, the creation of new job opportunities is logic. It is also reasonable that know-how for construction and operation of this technology is transferred, if a business sector is new. This is substantiated with the service agreement where trainings for staffs are offered. The technology transfer has been substantiated by means of checking the equipment purchase contract and the website of the manufacturer. The turbines will be imported this has been further confirmed by interview. *Conclusion:* Sustainable development results of the projects have been presented in the PDD.	/PDD/ /TSC1/ /SA/ /IM01/	OK	OK
A.3. PDD editorial aspects				

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Ref.**	**Draft Concl.**	**Final Concl.**
The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.				
A.3.1. Has the latest version of the PDD form been applied? (EB 55 Annex 1, § 55)	*Description:* The CDM PDD Version 3 has been applied. *Justification of evidence:* The applied version has been compared to the form available on the UNFCCC website. *Conclusion:* The latest version is applied.	/PDD/ /PDD-T/ /unfccc/	OK	OK
A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)? (EB 55 Annex 1, §§ 56–57)	*Description:* All sections in the PDD have been filled. *Justification of evidence:* The content of the PDD has been compared to the applicable guidelines for completing a PDD version 7. *Conclusion:* In general, the PDD has been filled in accordance to the guidelines. However the validation team has observed several non conformities as addressed below: CAR A2: In section A.2. a clear description of the scenario prior to the implementation of the project activity and the baseline scenario shall be provided. If both are the same a statement shall be included addressing this. It should be referred to the PDD guidance page 6. CAR A3: The plant load factor has not been provided in section A.4.3. (refer to the PDD guidelines, page 8).	/PDD/ /PDD-G/	~~CAR A2~~ ~~CAR A3~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
A.4. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The DOE should ensure that environmentally safe and sound technology and know-how is used.*				
A.4.1. Does the PDD contain a clear, accurate and complete project description? (EB 55 Annex 1, §§ 58–59, 64) *The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.* *Pl. consider esp.* chapters *A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.* *§64 (a) Describe the process undertaken to validate the accuracy and completeness of the project description.* *§64 (b) Contain the DOE's opinion on the accuracy and completeness of the project description.*	*Description:* The project is the installation of 45 wind turbines each with a capacity of 2.3 MW resulting in a total installed capacity of 103.5 MW. The type of the turbines is SWT-2.3-101 provided by the manufacturer Siemens. The electricity generated is supplied to the national grid of Thailand. *Justification of evidence:* The content of the PDD has been compared with the feasibility study and the equipment purchase contract. The feasibility study has been conducted by the wind energy consulting company Garrad Hassan. According to the company website Garrad Hassan is an independent consulting company which has broad experience in wind yield assessments. In addition the original signed equipment purchase contract has been checked. *Conclusion:* The PDD provides a clear, precise and complete description of the technology to be implemented.	/PDD/ /WYA/ /TSC/ /gh/	OK	OK
A.4.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description?	*Description:* During the on-site investigation it could be checked that the project is in an early stage of construction (foundation works). It is a Greenfield project. *Justification of evidence:* Hence, the assessment is based on underlying documents (WYA and TSC) and interview with the project owner representatives.	/PDD/ /IM01/ /TSC/ /WYA/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
	Conclusion: The project will be most likely implemented as described in the PDD.			
A.4.3. In case the project involves alteration of the existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation? (EB 55 Annex 1, §§ 63–64) *Describe the steps taken to validate this issue.*	*Description:* As per the description in the PDD the project is a completely new installation. *Justification of evidence:* During the on-site visit and by means of checking the equipment purchase contract and the wind yield assessment this could be confirmed. *Conclusion:* The project is no alteration of an existing installation or process.	/PDD/ /WYA/ /TSC/	OK	OK
A.4.4. Does the project design engineering reflect current good practices? *Consider the equipment specifications, literature (e.g. EU BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.*	*Description:* The project activity is the implementation of 2.3 MW wind turbines provided by the manufacturer Siemens. *Justification of evidence:* By means of checking the manufacturers' website, the technological specification and the expertise of the validation team it is confirmed that the engineering reflects current good practice. *Conclusion:* The design of the project reflects current good practice.	/TSC/ /sie/	OK	OK
A.4.5. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country? *Describe the process undertaken to assess the state of the art technology.*	*Description:* According to the information in the PDD, wind technology is not common practice in Thailand. Usually fossil fuel fired power plants are providing the electricity demand of the national grid. *Justification of evidence:* It could be confirmed by the validation team that electricity is mainly supplied by fossil fuel fired power plants (about 90 %). This has been validated by means of checking the raw data of EF calculation. Considering this the performance of the wind turbines in terms of emission reductions is advanced. The manufacturer is Siemens a well know supplier which is providing	/XLS/ /tgo/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
	state of the art technology. *Conclusion:* The technology provides a better performance than commonly used technologies.			
A.4.6. Does the project make provisions for meeting training and maintenance needs? *Describe the process undertaken to assess the maintenance and training needs.*	*Description:* Training will be provided by the wind turbine supplier. This is addressed in section A.2. of the PDD. *Justification of evidence:* The training is part of the contractual agreement between the turbine supplier and the project owner. The relevant document has been checked during the site visit. *Conclusion:* Training needs is identified and are properly addressed by the project owner and fixed in a contract with the turbine supplier.	/PDD/ /SA/	OK	OK
A.5. Small scale project activity *It is assessed whether the project qualifies as small-scale CDM project activity*				
A.5.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II? (EB 55 Annex 1, §§ 135–136 (a))	*Description:* The project has a capacity of 103.5 MW which does not qualify as small scale. *Justification of evidence:* *Conclusion:* N/A	/PDD/	N/A	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
A.5.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein? (EB 55 Annex 1, § 136 (b)) *Check, if applicable the expiry dates of the applied methodology. Further, take into consideration the general guidance to the methodologies[1], which provide guidance on equipment capacity, equipment performance, sampling and other monitoring related issues.*	*Description:* The project has a capacity of 103.5 MW which does not qualify as small scale. *Justification of evidence:* *Conclusion:* N/A	/PDD/	N/A	
A.5.3. Is the small scale project activity not a debundled component of a larger project activity? (EB 55 Annex 1, § 136 (c)) *Describe the steps taken to validate this issue. Pl refer to the Compendium of guidance on debundling (EB ~~36, Annex 27~~ 54, Annex 13).*	*Description:* The project has a capacity of 103.5 MW which does not qualify as small scale. *Justification of evidence:* *Conclusion:* N/A	/PDD/	N/A	
A.5.4. Is an assessment of the environmental impacts of the proposed SSC CDM project activity required by the host Party? (EB 55 Annex 1, § 136 (d))	*Description:* The project has a capacity of 103.5 MW which does not qualify as small scale. *Justification of evidence:* *Conclusion:* N/A	/PDD/	N/A	
B. Project Baseline, Additionality and Monitoring Plan				

[1] http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
B.1. Application of the Methodology				
B.1.1. Does the project apply an approved and applicable CDM methodology and a valid version thereof? (EB 55 Annex 1, § 65) *Describe the steps taken to validate this issue.*	*Description:* The methodology applied is ACM0002, Version 12.1.0. *Justification of evidence:* The UNFCCC website has been checked to confirm that the methodology is the most recent. *Conclusion:* The methodology applied has changed its version to 12.3.0. Hence, CAR B20	/unfccc/ /ACM2/	~~CAR B20~~	OK
B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website? (EB 55 Annex 1, §§ 65, 70) *Describe the steps taken to validate this issue.*	*Description:* The methodology applied is ACM0002, Version 12.1.0. *Justification of evidence:* The content of the PDD and the methodology version on the UNFCCC website have been compared. *Conclusion:* The methodology is available on the UNFCCC website but needs to be changed to 12.3.0. Hence, CAR B20 was raised.	/unfccc/ /ACM2/ /PDD/	~~CAR B20~~	OK
B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled? (EB 55 Annex 1, §§ 66(a)–(b), 68, 71, 76) *Describe for <u>each</u> applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.*	*Description:* The project is a grid-connected renewable power generation facility (wind) which is newly implemented (Greenfield). *Justification of evidence:* The PDD content has been compared with the stipulations as defined in the methodology. Further the validation team has checked the plant layout, the feasibility study and conducted an interview with the project owner to confirm this. *Conclusion:* The applicability criteria are met. The project is eligible to apply ACM0002. However CAR B1 was raised.	/PDD/ /ACM2/ /WYA/ /IM01/	~~CAR B1~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
B.1.4. In case one or more applicability criteria have not been met, has the validation team requested clarification to, revision of or deviation from the methodology in accordance with the latest guidelines? (EB 55 Annex 1, §§ 72–75)	*Description:* All relevant applicability criteria are met. No deviation has been observed. *Justification of evidence:* The project layout has been checked and interview has been conducted with the project owner to confirm this. Grid connection and implemented technology have been checked with the electricity connection diagram and the equipment purchase contract with the manufacturer Siemens. *Conclusion:* Request for clarification or revision is not necessary.	/PDD/ /IM01/ /WYA/ /ECD/ /TSC/	OK	OK
B.1.5. Is the project in accordance with every other stipulation or requirement mentioned in all sections of the methodology and in guidances for approved methodologies provided by the CDM EB? (EB 55 Annex 1, § 69, 71) *Describe the steps taken to check whether the proposed project activity meets all the other possible stipulations and /or limitations mentioned in all sections of the approved methodology selected.*	*Description:* Stipulations or requirements other than not already addressed in the PDD have not been observed. *Justification of evidence:* The PDD, the methodology and relevant guidance have been checked to confirm this. *Conclusion:* The full project design is in accordance to the CDM requirements.	/PDD/ /ACM2/	OK	OK
B.2. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project*				
B.2.1. Are the project's spatial boundaries (geographical) clearly defined?	*Description:* The projects spatial boundary consists of the project site and the electricity grid of Thailand. *Justification of evidence:* The applied methodology has been	/PDD/ /ACM2/	~~CAR B2~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Ref.**	**Draft Concl.**	**Final Concl.**
(EB 55 Annex 1, §§ 67(a), 78–80) *Provide information on how the validation of the geographical boundary has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.*	checked to confirm that the project activity as well as the connected electricity grid (all power plants serving the grid) is part of the spatial boundary. The grid connection could be checked through the plant layout, power purchase agreement and on-site visit interview. *Conclusion:* The information provided in the PDD is in line with the requirements of the methodology. However CAR B2 was raised.	/WYA/ /IM01/ /PPA/		
B.2.2. Are all sources and GHGs included in the project boundary as required in the applied methodology? (EB 55 Annex 1, §§ 67(a), 78–80) *Provide information on how the validation of the GHGs and sources has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.*	*Description:* In section B.3. of the PDD a table is incorporated clearly defining CO_2 as the sole GHG from emissions associated to the grid connected fossil fuel fired power plants in the baseline scenario. The project activity itself does not result into emissions. *Justification of evidence:* The information provided in the PDD has been checked against the requirements of the methodology. It could be confirmed that the PDD is correct. No GHG emissions other than from fossil fuel fired sources serving the Thai grid shall be accounted for. *Conclusion:* All sources and GHGs are covered.	/PDD/ /ACM2/	OK	OK
B.2.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified? (EB 55 Annex 1, §§ 67(a), 78–80) *Confirm if the justification provided by the PPs is reasonable, based on assessment of supporting documented evidence provided by the PPs or by onsite observations.*	*Description:* The PDD only identifies CO_2 from fossil fuel fired power plants serving the Thai grid. *Justification of evidence:* This is in line with the applied methodology which has been checked by the validation team. *Conclusion:* The methodology does not allow choosing different sources of emissions or types of GHG. The requirement for wind power projects is clearly defined and applied in the PDD.	/PDD/ /ACM2/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
B.3. Baseline Identification *The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.*				
B.3.1. What possible baseline scenarios have been considered? (EB 55 Annex 1, §§ 67(b), 83) *Fill in all alternatives in table A-2.*	*Description:* The only baseline scenario identified is the pre-project scenario, i. e. same amount of electricity supplied by the wind project would have been provided by the grid connected fossil fuel fired power plants. *Justification of evidence:* The description in the PDD has been checked with the requirements in the methodology. *Conclusion:* The baseline scenario for Greenfield projects, like the proposed project, is prescribed in the methodology ACM0002.	/PDD/ /ACM2/	OK	OK
B.3.2. Is the list of alternatives complete? (EB 55 Annex 1, §§ 67(b), 83) *Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration*	☒ All plausible alternative scenarios listed in the approved methodology have been considered. In the course of document review and site visit, it has been validated that no other alternatives which supply comparable outputs and / or services are to be taken into consideration. Thus no plausible scenario has been omitted. ☐ The following alternative scenarios/options have been omitted. Corresponding CAR(s)/CL(s) has /have been issued Please also refer to the assessment in B.3.1.	/PDD/ /ACM2/	OK	OK
B.3.3. What has been identified as the baseline scenario?	*Description:* The baseline scenario identified is the pre-project scenario, i. e. same amount of electricity supplied by the wind	/PDD/ /ACM2/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, §§ 81–82, 86) *Describe the chosen BL scenario, taking into consideration the technology that would be employed and / or the activities that would take place in the absence of the proposed CDM project activity.*	project would have been provided by the grid connected fossil fuel fired power plants. *Justification of evidence:* The description in the PDD has been checked with the requirements in the methodology. *Conclusion:* The baseline scenario for Greenfield projects, like the proposed project, is prescribed in the methodology ACM0002.			
B.3.4. Has the baseline scenario been determined according to the methodology? (EB 55 Annex 1, §§ 82, 87(e)) *Describe how it is validated that the identification of the most plausible baseline scenario is carried out in accordance with the applied methodology and applied methodological tools. Please refer to table A-2.*	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2. ☒ The determination has been carried out as per the procedure contained in the applied methodology. ☐ The following CARs / CLs have been identified with respect to the selection of the baseline scenario:	/PDD/ /ACM2/	OK	OK
B.3.5. Has any plausible alternative scenario been excluded? (EB 55 Annex 1, § 83) *Describe how it is validated that no plausible alternative scenario has been excluded.*	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2. ☒ No plausible baseline scenario has been excluded. ☐ The following plausible baseline scenarios have been excluded though no adequate justification has been provided for elimination. The following CARs / CLs have been issued:	/PDD/ /ACM2/	OK	OK
B.3.6. Is the identified baseline scenario reasonable and has the baseline scenario been determined using conservative assumptions where possible, including relevant references and sources?	☒ The baseline scenario is reasonable and has been determined using conservative assumptions where possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5 above. ☐ The following CARs / CLs have been issued because assumptions used in the baseline determination have	/PDD/ /ACM2/ /tgo/ /WYA/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, §§ 84–86(a)–(c)) *Describe whether the choice of the identified baseline scenario is reasonable by validating the key assumptions, calculations and rationales used in the PDD. Describe whether these are listed, relevant and conservatively interpreted in the PDD.*	been assessed to be not conservative The baseline is the net electricity supplied by the proposed project, which would be supplied by fossil fuel fired power plants in the business as usual scenario. The value of net electricity supply is determined by a professional wind consulting company based on two year measurements at the site. Several scenarios have been taken into account. The economical best option resulting into the net amount of electricity has been considered. The wind yield assessment with the underlying data has been checked to confirm this. Therefore the net electricity amount is assessed as appropriate. In addition the emission factor of the Thai grid, which is the multiplier of the net electricity generation, resulting in the baseline emission has been taken from officially published data from the Thai DNA. Hence, TÜV NORD comes to the conclusion that the baseline values are correct and conservative.			
B.3.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations? (EB 55 Annex 1, §§ 85, 87(d)) *Describe whether the PP has shown that all relevant policies and circumstances have been identified and correctly considered in the PDD in accordance with the guidance by the Board. Pl. consider the guidance EB 22 annex 3 (regarding E+ and E- policies).*	*Description:* The baseline is defined as per the methodology ACM0002. The baseline is the net electricity supplied by the proposed project, which would be supplied by fossil fuel fired power plants in the business as usual scenario. The emission factor is based on data provided by the Thai DNA. *Justification of evidence:* The tool to calculate the grid emission factor stipulates that the applied emission factor is derived from the operating margin, which considers the overall power capacity in the grid and the built margin, which only considers the most efficient power plants built during the recent years. This approach is followed by the Thai DNA when calculating the emission factor. *Conclusion:* Even though the emission factor which is an important part of the baseline is provided by governmental sources the	/tgo/ /XLS/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
	validation team has observed that the Thai government provides a tariff adder to renewable energy projects. This adder has been taken into account when justifying the baseline/ additionality. It has been identified as an E- policy since it is only attributable to renewable energy projects (less carbon intensive as the common practice). However, this adder is introduced in September 2006, i.e. after 11th November 2001. Hence, it is not taken into account in line with EB 22, Annex 3, paragraph 7 (b), which is assessed as correct.			
B.3.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced? (EB 55 Annex 1, § 87(a)–(c)) *Describe whether the documents and sources referred to in the PDD are correctly quoted and clearly referenced.*	*Description:* The PDD describes the baseline in accordance to the methodology. The baseline is the net electricity supplied by the proposed project, which would be supplied by fossil fuel fired power plants in the business as usual scenario. *Justification of evidence:* The net electricity generation is sourced from the WYA which is provided to the validation team and could be confirmed. Further the source to the emission factor is referenced as information retrieved from the DNA website. The information is publicly available. The correctness could be confirmed by the validation team. The applied methodology has also been checked. *Conclusion:* The determination is compatible with available sources. However CAR B3 was raised.	/WYA/ /tgo/	~~CAR B3~~	OK
B.3.9. Does the PDD contain a *verifiable* description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity. (EB 55 Annex 1, § 86)	*Description:* The baseline is the net electricity supplied by the proposed project, which would be supplied by fossil fuel fired power plants in the business as usual scenario *Justification of evidence:* The sources (WYA and official data from the DNAs' website) could be confirmed by the validation team. Grid connection has been substantiated with the power purchase agreement and the grid connection diagram with documents provided during site visit. The PDD and the applied methodology have also been checked.	/WYA/ /tgo/ /PDD/ /ECD/ /PPA/	~~CAR B1~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
	Conclusion: CAR B1 was raised.			
B.4. Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*				
B.4.1. Methodology				
B.4.1.1. Does the PDD describe how the project is additional and does the additionality justification follow the requirements of the applied methodology and/or methodological tools? (EB 55 Annex 1, §§ 67(d), 94–95) *Describe how it is validated that additionality justification is carried out in accordance with the applied methodology and/or applied methodological tools. Further focus your assessment on the reliability and credibility of data, rationales and assumptions, justifications and documentations provided by the PP.*	*Description:* The additionality has been determined in line with the Tool for the demonstration and assessment of with a step-wise approach as stipulated by the tool. The PP justifies the additionality with low financial performance applying and investment analysis. *Justification of evidence:* The applied methodology has been checked to confirm that the tool is applicable. The step-wise approach to justify the additionality has been confirmed by means of checking the tool. The latest version thereof is applied. *Conclusion:* The PDD provides a clear description of how the project is additional in line with the applied methodology ACM0002 and the applied Additionality Tool.	/PDD/ /ACM2/ /TA/	OK	OK
B.4.2. Consideration of CDM before project start				
B.4.2.1. Is the project starting date reported in accordance with the CDM glossary of terms? (EB 55 Annex 1, § 104(a)) *Assess why the chosen starting date can be considered as*	*Description:* The project starting date as provided in section C.1.1. is 18/03/2010, while in section B.5. sub-step 4 a) it is defined as 24/02/2011. *Justification of evidence: -* *Conclusion:* CAR C1 was raised.	/PDD/	~~CAR C1~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
the earliest date at which either the implementation or construction or real action of a project has begun or will begin. *Check that no other activities related to the project that happened before the identified start date can be considered as start date. In this context please also take into consideration infrastructural expenses if they are relevant (in terms of costs and importance for the project implementation) in the specific context of the project activity.*				
B.4.2.2. In case the project start date is on or after 2nd August 2008 has the PP informed the DNA and UNFCCC about the intension to seek CDM status? (EB 55 Annex 1, §§ 99–101) *Describe whether such a notification has been provided by the project participants within six months of the project activity start date; if NOT it shall be determined that the CDM was not seriously considered.*	*Description:* In the draft PDD inconsistent information is provided regarding the start date. *Justification of evidence:* The PDD has been checked. In addition the validation team checked the UNFCCC website and the original confirmation letter from the Thai DNA (TGO) during the site visit. The authenticity of the TGO Letter is confirmed since it is duly signed and stamped. *Conclusion:* CAR C1 was raised.	/PDD/ /PC/	~~CAR C1~~	OK
B.4.2.3. In case the project start date is before commencing of validation and 2nd August 2008, was the incentive from the CDM seriously considered and are details given in the PDD? (EB 55 Annex 1, §§ 100, 102) *Describe whether the evidence to support such consideration is adequately and transparently described in*	*Description:* In the draft PDD inconsistent information is provided regarding the start date. *Justification of evidence:* - *Conclusion:* CAR C1 was raised.	-	~~CAR C1~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
the PDD.				
B.4.2.4. How and when was the decision to proceed with the project taken? *Describe the steps taken to validate the starting date.*	*Description:* The PDD does not provide a date or information and evidence when the investment decision was taken. *Justification of evidence:* - *Conclusion:* CAR B11 and B17 were raised.	-	~~CAR B11~~ ~~CAR B17~~	OK
B.4.2.5. Is the project start date consistent with the available evidence? (EB 55 Annex 1, § 102) *Describe the evidence assessed regarding the prior consideration of the CDM (if necessary). Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.*	*Description:* In the draft PDD inconsistent information is provided regarding the start date. *Justification of evidence:* - *Conclusion:* CAR C1 was raised.	-	~~CAR C1~~	OK
B.4.2.6. Was the decision to proceed with the project taken by a person which has the authority to do so? (EB 55 Annex 1, § 102(a) *Describe the steps taken to validate this issue.*	*Description:* The PDD does not provide a date or information and evidence when the investment decision was taken. *Justification of evidence:* - *Conclusion:* CAR B11 and B17 were raised.	-	~~CAR B11~~ ~~CAR B17~~	OK
B.4.2.7. How was the CDM involved in the decision making process? (EB 55 Annex 1, § 102) *Describe why CDM was a decisive factor in the decision making process.*	*Description:* The PDD does not provide a date or information and evidence when the investment decision was taken. *Justification of evidence:* - *Conclusion:* CAR B11 and B17 were raised.	-	~~CAR B11~~ ~~CAR B17~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
B.4.2.8. Do the evidence provided doubtlessly prove that continuous and real actions were taken in order to secure the CDM status? (EB 55 Annex 1, § 102; EB 62 Annex 13 § 7)	*Description:* The PDD does not provide a date or information and evidence when the investment decision was taken. *Justification of evidence:* - *Conclusion:* CAR B11 and B17 were raised.	-	~~CAR B11~~ ~~CAR B17~~	OK
B.4.2.9. Is the gap of documented evidence to secure the CDM status less than 3 years and are the evidence relevant for substantiating the action taken, credible, reliable and complete? (EB 62 Annex 13 § 8)	*Description:* The PDD does not provide a date or information and evidence when the investment decision was taken. *Justification of evidence:* - *Conclusion:* CAR B11 and B17 were raised.	-	~~CAR B11~~ ~~CAR B17~~	OK
B.4.2.10. Did implementation of the project ceased after its commencement and did implementation recommence after consideration of the CDM? (EB 62 Annex 5, § 7) *Describe the reasons for ceasing the project and explain why the incentive from CDM was necessary to recommence the implementation.*	*Description:* The PDD does not provide a date or information and evidence when the investment decision was taken. *Justification of evidence:* - *Conclusion:* CAR B11 and B17 were raised.	-	~~CAR B11~~ ~~CAR B17~~	OK
B.4.2.11. Can the CDM involvement in the decision assessed as serious? (EB 55 Annex 1, § 104(b)–(c)) *Describe whether or not the project would have been undertaken without the incentive of the CDM.*	*Description:* The PDD does not provide a date or information and evidence when the investment decision was taken. *Justification of evidence:* - *Conclusion:* CAR B11 and B17 were raised.	-	~~CAR B11~~ ~~CAR B17~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
B.4.3. Identification of alternatives Step 1 (in case of SSC projects pl. skip steps 1 and 2 if appropriate)				
B.4.3.1. Does the list of alternatives contain the status-quo situation, the project not undertaken as a CDM project as well as all other viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity? (EB 55 Annex 1, §§ 105–107) *Describe the steps taken to validate this issue on the basis of your local and sectoral knowledge.*	*Description:* The alternatives indicated are the project implemented without CDM or the continuation of electricity supply without the project activity. Other plausible alternatives are not considered. *Justification of evidence:* By means of on-site visit it could be confirmed by TÜV NORD that the only energy source at the project site with an installed capacity of 103.5 MW is wind. The project is located in a mountainous and rural area where wind sources identified to be sufficient to install a wind power project. In addition it should be noted that the baseline is predefined by the methodology in line with VVM 1.2 paragraph 105. *Conclusion:* The list of alternatives contains the status-quo situation, the project not undertaken as a CDM project. There are no other viable alternatives.	/PDD/ /IM01/ /WYA/	OK	OK
B.4.3.2. Have all realistic alternatives been identified to the project? (EB 55 Annex 1, §§ 105–107) *Describe whether the list of alternatives is credible and complete. Describe how it is validated that the alternatives are realistic.*	*Description:* All realistic alternatives have been identified. *Justification of evidence:* By means of checking the PDD and on-site visit. *Conclusion:* The list of alternatives contains the status-quo situation, the project not undertaken as a CDM project. There are no other viable alternatives.	/PDD/	OK	OK
B.4.3.3. Do all identified alternatives comply with enforced legislations? (EB 55 Annex 1, §§ 106(c)) *Describe the steps taken to validate this issue. Refer to the*	*Description:* All realistic alternatives have been identified. *Justification of evidence:* By means of checking the PDD and on-site visit. *Conclusion:* All identified alternatives comply with enforced	/PDD/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
legislations.	legislations.			
B.4.4. Investment analysis Step 2 *In case the investment analysis as per step 2 is chosen to justify the additionality Annex 2 "Assessment of Financial Parameters" has to be used to provide additonal details of the the calculation parameters..*				
B.4.4.1. Does the PDD provide evidence that the project would not be the most economically or financially attractive alternative or economically / financially feasable without the revenues from the sale of CERs? (EB 55 Annex 1, § 108)	*Description:* As per information provided in the PDD the project would not be implemented without the consideration of CDM benefits since the calculated project IRR (before tax) is below a benchmark (WACC). *Justification of evidence:* The PDD section B.5. has been checked and it is confirmed that this information is provided. *Conclusion:* It is indicated that CDM benefits are necessary to implement the project. However, several issues have been identified which are not clear. CL B12, CAR B13, CAR B14, CAR B15 and CAR B19 were raised.	/PDD/	~~CL B12~~ ~~CAR B13~~ ~~CAR B14~~ ~~CAR B15~~ ~~CAR B19~~	OK
B.4.4.2. Is an appropriate analysis method chosen for the project (simple cost analysis, investment comparison analysis or benchmark analysis)? (EB 55 Annex 1, § 108; EB 39 Annex 10) *Describe why the selected analysis method is appropriate under consideration of potential revenues and costs, potential project alternatives and potential available*	*Description:* The benchmark analysis (Option 3) under sub step 2 b of the additionality tool is applied. *Justification of evidence:* The content of the PDD has been compared to the requirements of the additionality tool. The validation team assessed the benchmark approach as acceptable, since the other two options, i.e. simple cost analysis and cost comparison analysis are not applicable to the proposed project. *Conclusion:* An appropriate analysis method is chosen.	/PDD/ /AT/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
benchmark values.				
B.4.4.3. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation? (EB 55 Annex 1, § 110; EB 51, Annex 58, §8) *Describe the steps taken to validate this issue.*	*Description:* The IRR calculation is provided in xls-format. *Justification of evidence:* The xls-file has been checked. *Conclusion:* Even though the file is appropriate in terms of transparency, the validation team could not make a proper assessment on the input value. Hence, CL B17 has been raised.	/IRR/ /WYA/ /PIM/ /BD/	~~CAR B17~~	OK
B.4.4.4. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 3 – 4) *Describe how the technical lifetime / period chosen for calculating financial parameter(s) is reviewed and which documents were utilised in the course of review. Describe furthermore the approach used to check the inclusion of a potential fair value.*	*Description:* The cash flow analysis of the IRR calculation takes into account an operation period of 23 years. *Justification of evidence:* As per the manufacturers specification the technical lifetime of the project is 20 years. The relevant document has been checked during the site visit. *Conclusion:* Since the cash flow analysis is longer than the expected lifetime of the proposed project, the validation team assessed that it is reasonable not to take into account a fair value or a scrap value.	/PDD/ /TSC/ /IRR/	OK	OK
B.4.4.5. Is the (remaining) technical lifetime of existing or project equipment defined in accordance with the guidance of the *Tool to determine the remaining lifetime of equipment*? (EB 50 Annex 15)	*Description:* The proposed project is a Greenfield activity. *Justification of evidence:* A site visit has been conducted and documents like contracts and WYA have been checked to confirm this. *Conclusion:* A remaining technical lifetime is not applicable.	/WYA/ /TSC/ /BOP/ /TSC/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
B.4.4.6. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 4) *State the accounting regulations applied for calculating the fair value and describe why these are applicable under the project specific circumstances. Describe potential mismatches between regulations and the approach applied for calculating the fair value.*	*Description:* The cash flow analysis of the IRR calculation takes into account an operation period of 23 years. *Justification of evidence:* As per the manufacturers specification the technical lifetime of the project is 20 years. The relevant document has been checked during the site visit. *Conclusion:* Since the cash flow analysis is longer than the expected lifetime of the proposed project, the validation team assessed that it is reasonable not to take into account a fair value or a scrap value.	/PDD/ /TSC/ /IRR/	OK	OK
B.4.4.7. Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 4)	*Description:* The cash flow analysis of the IRR calculation takes into account an operation period of 23 years. *Justification of evidence:* As per the manufacturers specification the technical lifetime of the project is 20 years. The relevant document has been checked during the site visit. *Conclusion:* Since the cash flow analysis is longer than the expected lifetime of the proposed project, the validation team assessed that it is reasonable not to take into account a fair value or a scrap value.	/PDD/ /TSC/ /IRR/	OK	OK
B.4.4.8. Are depreciation and other non-cash related items only considered in the tax calculation and not as cash outflow? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 5)	*Description:* The IRR is calculated as before tax figure. *Justification of evidence:* The IRR calculation has been checked. *Conclusion:* Hence, tax is not taken into account.	/IRR/	OK	OK
B.4.4.9. Is taxation excluded in the investment analysis or is the benchmark intended for post tax comparisons?	*Description:* Taxation is excluded since the IRR is calculated on before tax basis. *Justification of evidence:* The content of the PDD and the IRR	/IRR/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, § 109; EB 62 Annex 5, § 5)	calculation have been checked. *Conclusion:* The benchmark and the IRR are based on before tax figures.			
B.4.4.10. Were the input values used in the investment analysis valid and applicable at the time of the investment decision? (EB 55 Annex 1, § 109,112; EB 62 Annex 5, § 6) *In case the basis for input values is a Feasibility Study Report (WYA) describe how it has been ensured that the period in time between the finalisation of the WYA and the investment decision is sufficiently short so that it is unlikely that input values would have materially changed. Further confirm the consistency of values in WYA and PDD.*	*Description:* A date or information on the investment decision is not provided in the PDD. *Justification of evidence:* - *Conclusion:* CAR B11 and CAR B17 were raised.	/PDD/	~~CAR B11~~ ~~CAR B17~~	OK
B.4.4.11. Is the plant load factor (PLF) chosen in a conservative manner, taking into account that the PLF may be different in the framework of demonstrating additionality and calculating the ex-ante ER? (EB 48, Annex 11)	*Description:* The plant load factor has not been provided in the PDD. *Justification of evidence:* - *Conclusion:* The PLF could not be determined, since it is not addressed in the PDD. Hence, CAR A3 has been raised.	/PDD/	~~CAR A3~~	OK
B.4.4.12. In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 9)	*Description:* Certain unclear issues occurred in the IRR calculation. *Justification of evidence:* - *Conclusion:* CAR B17 was raised.	-	~~CAR B17~~	OK
B.4.4.13. In cases where a post-tax benchmark is applied please ensure that actual interest	*Description:* The benchmark is chosen on “before tax” basis. *Justification of evidence:* The benchmark determination and the	/PDD/	OK	OK

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payable is taken into account in the calculation of income tax. (EB 62 Annex 5, § 11) *As per the guidance it is recommended to select a pre tax benchmark in order to Describe the steps taken in assessing this requirment.*	PDD content have been checked. *Conclusion:* Since income tax expenditures have not been taken into account due to pre-tax evaluation, interests have not been taken into account.	/XLS/		
B.4.4.14. In case of equity IRR: Is the part of the investment costs, which is financed by equity considered as net cash outflow and is the part financed by debt excluded in net cash outflow? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 10)	*Description:* The IRR is calculated on project basis. *Justification of evidence:* The PDD and the xls-calculation have been checked. *Conclusion:* N/A	/PDD/ /XLS/	N/A	
B.4.4.15. Is the type of benchmark chosen appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)? (EB 55 Annex 1, § 111; EB 62 Annex 5, §§12 – 15) *In case risk premiums are applied precisely describe its suitability to reflect the risks associated with the project activity, considering the project type and market situation.*	*Description:* The benchmark calculated is a weighted average cost of capital (WACC). This WACC which does not consider taxes is compared against a before tax project IRR. *Justification of evidence:* The IRR and benchmark calculation has been checked. *Conclusion:* The validation team concluded that the benchmark is correctly chosen.	/IRR/	OK	
B.4.4.16. Is the benchmark value suitable for the project activity and is it reasonable to assume that no investment would be made at a rate of a lower return than the	*Description:* The benchmark chosen is the weighted average cost of capital. The approach considers the debt rates and equity expectations in the market of similar companies at the time of the investment decision. The tax is excluded since the IRR is also	/GAI/ /XLS/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
benchmark? (EB 55 Annex 1, § 109; EB 62 Annex 5, §§13 – 15) *Describe whether it is reasonable to assume that a lower rate of return would consequently result in the baseline scenario.*	calculated on pre-tax basis. *Justification of evidence:* The WACC approach is a commonly known indicator which is utilized to evaluate whether a project is financially viable. The guidelines on the assessment of investment analysis have been checked by the validation team to confirm this. *Conclusion:* The benchmark approach as well as the value calculated is suitable.			
B.4.4.17. Is it ensured that the project cannot be developed by other developers than the PP? (EB 55 Annex 1 § 109; EB 62 Annex 5, §§ 13 – 14) *Describe why the benchmark does not include the subjective profitability expectations or risk profile of the project developer. If applicable assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects.*	*Description:* Since the WACC approach is utilized with input parameters which are publicly available and standard in the market, the benchmark is not associated to subjective profitability expectations. Hence this criterion is not applicable. *Justification of evidence:* *Conclusion: N/A*		N/A	
B.4.4.18. Was the benchmark consistently used in the past for similar projects with similar risks? (EB 55 Annex 1, § 112(c))	The WACC approach is a common indicator to assess the financial viability of a project activity. Many projects of similar type following this approach in CDM. Hence, the validation team accepted the benchmark.	/PDD/ /XLS/	OK	OK
B.4.4.19. Does the PDD and related spreadsheets contain a sensitivity analyis and does the same contain variation of parameters which may vary throughout the project lifetime (EB 55 Annex 1, §§ 109–110(e); EB 62 Annex 5, § 17–	*Description:* Several parameters have been identified, like total investment, O&M costs and tariff. The analysis of the sensitivity of different parameters is insufficient. *Justification of evidence:* The content of the PDD has been checked. *Conclusion:* CAR B16 is raised.	/PDD/	~~CAR B16~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Ref.**	**Draft Concl.**	**Final Concl.**
18) *Describe relevance of parameters used in the sensitivity analysis as well as their likeliness to vary during the project's lifetime. Parameters which are fixed on the basis of contracts, PPAs etc. may not be subject to variation and not adequate.*				
B.4.4.20. Were only variables that constitute more than 20% of either total project costs or total project revenues subjected to reasonable variation? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 17)	*Description:* The analysis of the sensitivity of different parameters is insufficient. *Justification of evidence:* The content of the PDD has been checked. *Conclusion:* CAR B16 is raised.	/PDD/	~~CAR B16~~	OK
B.4.4.21. Have parameters, constituting less than 20% of total project costs or revenues, been identified with potential material impact on the financial parameter? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 17) *Describe whether those parameters are considered in the sensitivity analysis?*	*Description:* The analysis of the sensitivity of different parameters is insufficient. *Justification of evidence:* The content of the PDD has been checked. *Conclusion:* CAR B16 is raised.	/PDD/	~~CAR B16~~	OK
B.4.4.22. Is the range of variation reasonable in the specific context of the project activity, taking into consideration historic trends in the business sector? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 18) *Describe whether the range of variation is appropriate with focus on historic developments, e.g. price of oil / labour etc., energy potential in the region in question.*	*Description:* The analysis of the sensitivity of different parameters is insufficient. *Justification of evidence:* The content of the PDD has been checked. *Conclusion:* CAR B16 is raised.	/PDD/	~~CAR B16~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
B.4.5. **Barrier analysis Step 3 or SSC additionality assessment**				
B.4.5.1. Are there any barriers given which have a clear and direct impact on the financial returns of the project? (EB 55 Annex 1, §§ 115, 134, 137) *In case of LSC projects those issues cannot be considered as barriers and shall be assessed in the investment analysis. In case of SSC projects the same fundamentals as for LSC projects shall apply, i.e. the assessment of the investment barrier according to EB 62 Annex 5.*	*Description:* The additionality justification is provided through the "Investment Analysis" path. *Justification of evidence:* *Conclusion:*		N/A	
B.4.5.2. Are the barriers described risk related (e.g technology failure, other performance related risks)? (EB 55 Annex 1, §§ 116, 134, 137) *Are there other barriers or barriers due to prevailing practice existent which would have led to higher emissions?*	*Description:* The additionality justification is provided through the "Investment Analysis" path. *Justification of evidence:* *Conclusion:*		N/A	
B.4.5.3. Has the unavailabilty of means of finance for the proejct been described and adequately substantiated? Do evidence doubtlessly prove that the financing of the project was assured only due to the benefit of the CDM? (EB 55 Annex 1, §§ 116, 137, EB 50 Annex 13, § 9)	*Description:* The additionality justification is provided through the "Investment Analysis" path. *Justification of evidence:* *Conclusion:*		N/A	
B.4.5.4. How is it justified and evidenced that the	*Description:* The additionality justification is provided through the		N/A	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
barriers given in the PDD are real? (EB 55 Annex 1, § 116(a))	"Investment Analysis" path. *Justification of evidence:* *Conclusion:*			
B.4.5.5. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity and do not prevent the implementation of at least one of the alternatives? (EB 55 Annex 1, § 116(b))	*Description:* The additionality justification is provided through the "Investment Analysis" path. *Justification of evidence:* *Conclusion:*		N/A	
B.4.5.6. Does the review of relevant background information on the nature of the company(ies) and entitiy(ies) involved in the financing and implementation of the project sufficiently justify that the barriers related to the lack of access to capital, technologies and skilled labour are real? (EB 50 Annex 13, § 4)	*Description:* The additionality justification is provided through the "Investment Analysis" path. *Justification of evidence:* *Conclusion:*		N/A	
B.4.5.7. Has it been demonstrated in an objective way how the CDM alleviates each of the identified barriers to a level that the project is not prevented anymore from occurring by any of the barriers? (EB 50 Annex 13, § 5)	*Description:* The additionality justification is provided through the "Investment Analysis" path. *Justification of evidence:* *Conclusion:*		N/A	
B.4.5.8. Would provision of additional financial	*Description:* The additionality justification is provided through the		N/A	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
means lead to the mitigation of the barrier(s) demonstrated? (EB 50 Annex 13, § 7) *Describe why provision of additional financial means would not lead to mitigation of the barrier(s) demonstrated and hence analysing the project's additionality within the framework of an investment analysis is inappropriate. .*	"Investment Analysis" path. *Justification of evidence:* *Conclusion:*			
B.4.6. Common practice analysis Step 4 (in case of SSC projects skip this step)				
B.4.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type? (EB 55 Annex 1, § 120(a)) *Describe why the project activity is not common practice in a transparent and unambiguous manner. If a region other than the entire host country is chosen, describe why this region is more appropriate.*	*Description:* The PP refers to the common practice approach as provided in Additionality Tool *Justification of evidence:* The validation team noted that the Version of the Tool is not valid anymore. *Conclusion:* CAR B18 was raised.	/PDD/	~~CAR B18~~	OK
B.4.6.2. To what extent similar projects have been undertaken in the relevant region? (EB 55 Annex 1, § 120(b))	*Description:* The PP refers to the common practice approach as provided in Additionality Tool *Justification of evidence:* The validation team noted that the Version of the Tool is not valid anymore. *Conclusion:* CAR B18 was raised..	/PDD/	~~CAR B18~~	OK
B.4.6.3. In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing	*Description:* The PP refers to the common practice approach as provided in Additionality Tool *Justification of evidence:* The validation team noted that the Version	/PDD/	~~CAR B18~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
projects and what kind of differences are observed? (EB 55 Annex 1, § 120(c))	of the Tool is not valid anymore. *Conclusion:* CAR B18 was raised.			
B.5. Ex-Ante Calculation of GHG Emission Reductions *It is assessed whether the ex-ante calculations of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.*				
B.5.1. Are the equations applied correctly according to the applied approved methodology? (EB 55 Annex 1, §§ 67(c), 89–90, 92) *Describe clearly the steps taken to assess whether the methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. Further take into consideration that all estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.*	☒ The equations applied for calculation are correctly applied according to the approved methodology. ☐ The following mistakes have been identified in this context: *Description:* The emission reduction calculation is based on the following formula: $ER_y = BE_y – PE_y$. Baseline emissions are calculated as net electricity generation ($EG_{facility,y}$) multiplied by the latest publicly available grid emission factor at the time of publishing the PDD for GSP. The emission factor is determined in accordance to the "Tool to calculate the emission factor for an electricity system" (Version 2.2.1) as combined margin emission factor. The PP applied the step wise approach as indicated in the applied tool. Leakage shall not be considered as per the methodology. Hence,	/ACM2/ /PDD/ /TEF/	~~CAR B3~~ ~~CL B8~~ ~~CAR B9~~ ~~CAR B10~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
	PP did not consider it. Also PE_y is 0, since project emissions shall not be taken into account as well. *Justification of evidence:* The methodology has been checked to confirm that the formula is correct. The emission factor calculation is based on data published by the Thai DNA. The DNA only provides the way of calculating the EF without giving a full picture of all the raw data. The document has been checked and the EF is confirmed. The way of calculating the EF is provided in the PDD and almost all parts are in line with the grid tool providing sufficient explanations and justifications. *Conclusion:* The formula provided for ER calculation is in line with the applied methodology. However, the calculation of the EF shall be further elaborated. CAR B3., CL B8, CAR B9 and CAR B10 were raised.			
B.5.2. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological choices (i.e. baseline identification)? (EB 55 Annex 1, §§ 90–91) *Assess the correct selection and application of methodological choices. Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.*	*Description:* The PDD shows that different formula to calculate the emission reductions cannot be applied. *Justification of evidence:* The correctness has been confirmed by means of checking the methodology. In addition the methodological tool for determination of emission factor has been consulted to confirm the approach taken by the Thai DNA. *Conclusion:* The methodology is unambiguous regarding the formula for ER calculation. The PDD includes the correct information. However, the determination of the emission factor is not transparently given. Hence, CAR B3 was raised.	/PDD/ /ACM2/ /TEF/ /tgo/	~~CAR B3~~	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.5.3. Have conservative assumptions been used when calculating the project emissions? (EB 55 Annex 1, §§ 90–91) *Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.*	*Description:* Project emissions are not to be taken into account in accordance to the methodology. *Justification of evidence:* - *Conclusion:* -	/ACM2/	N/A	
B.5.4. Does the implementation of the project activity lead to GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not addressed by the methodology? (EB 55 Annex 1, § 77)	*Description:* The PDD does not provide this information. *Justification of evidence:* Based on the expertise of the validation team GHG emission sources are not applicable to wind power projects. Auxiliary electricity supply is provided through the regular grid connection and taken into account in the net electricity generation calculation. *Conclusion:* No GHG emissions are observed resulting from the project implementation.	/ACM2/	OK	OK
B.5.4.1. Has a plant load factor (PLF) been defined ex-ante and considered for determination of baseline emissions? (EB 48 Annex 11, §§ 1, 3–4) *Describe why the PLF is conservative in the framework of calculating emissions reductions and whether the PLF is the same in the framework of demonstrating additionality by applying the investment analysis. Note, in order to be conservative in both cases the PLF may be different.*	*Description:* The PDD does not provide this information *Justification of evidence:* Evidence for the plant load factor have not been provided in the stage of the validation. *Conclusion:* The reader is kindly requested to refer to CAR A3.	/PDD/	~~CAR A3~~	OK
B.5.5. Are all data sources and assumptions appropriate and parameters which remain	*Description:* The PDD provides the relevant parameters for emission reduction calculation, i.e. the net electricity generation	/PDD/	OK	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Ref.**	**Draft Concl.**	**Final Concl.**
fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions? (EB 55 Annex 1, § 91) *Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.*	(232,500 MWh) and the combined margin emission factor (0.598 tCO_2/MWh). According to the PDD the emission factor is determined based on the ex-ante option as per the tool to calculate a grid emission factor. Therefore it is per definition fixed throughout the crediting period. *Justification of evidence:* The net electricity generation has been confirmed by means of checking the wind yield assessment report provided by a qualified and experienced consulting company, i.e. Garrad Hassan. TÜV NORD checked the qualification by means of internet research. The figure is based on 2.2 years on-site measurements and evaluated with the commonly applied software. The emission factor is derived from the publicly available notification of the Thai DNA TGO. TÜV NORD has checked the calculation at the DNA office during previous validations. Based on this check and re-calculation TÜV NORD confirms that the emission factor is correct. *Conclusion:* Data, sources and assumptions indicated in the PDD are assessed as correct and appropriate.	/WYA/ /tgo/ /gh/ /XLS/		
B.5.6. Are all ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) reasonable? (EB 55 Annex 1, § 91) *Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity*	☒ All "Values of data to be applied for the purpose of calculating expected emissions reductions" are considered to be reasonable, applicable and conservative. ☐ The following mistakes have been identified in this context:	/PDD/ /WYA/ /tgo/ /gh/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
B.5.7. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change. *Describe the steps taken to validate this issue.*	*Description:* Emission reductions are counted on the basis of the net electricity generation and the emission factor. *Justification of evidence:* The net electricity generation is measured by state of the art electricity meters under the observation of the grid operator EGAT and the project owner. The emission factor is fixed throughout the 7 year crediting period and determined by governmental authorities of Thailand. *Conclusion:* TÜV NORD therefore comes to the conclusion that the emission reductions are real, measurable and long-term.	/PDD/ /tgo/ /PPA/	OK	OK
B.6. Monitoring of Emission Reductions *It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.*				
B.6.1. Are all monitoring parameters required by the applied methodology contained in the monitoring plan? (EB 55 Annex 1, §§ 67(e), 121, 123(a), 124) *Assess whether all applicable parameters listed in the methodology are included in the monitoring plan.* *Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.* *In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.*	*Description:* The monitoring parameter indicated in section B.7.1. is the net electricity generation delivered to the grid ($EG_{facility,y}$). *Justification of evidence:* The applied methodology has been checked. *Conclusion:* The parameter which is required by the methodology is correctly addressed in the PDD.	/PDD/ /ACM2/	OK	OK

Checklist Item (incl. guidance for the validation team)	**Validation Team Comments** (justification and substantiation of information, data and evidence)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.6.2. Are the means of monitoring of all parameters contained in the monitoring plan feasible and in accordance with the requirements of the applied methodology? (EB 55 Annex 1, § 123(a)–(b), 124) *Assess whether the provided information for all parameters w.r.t.* *a) Label (name of the data / parameter)* *b) data unit* c) *description* d) *source of data* e) *measurement equipment / method / procedure* f) *monitoring frequency* g) *QA/QC procedures* *are appropriately described and in compliance with the requirements of the methodology..*	*Description:* The monitoring parameter is labelled $EG_{facility,y}$. It will be provided in MWh. It is described as net electricity generation. It will be monitored at the site by electricity meters on a continuously basis. A back-up meter will ensure that data is available in case the main meter fails. *Justification of evidence:* The description has been compared to the requirements in the applied methodology. *Conclusion:* All requirements as defined in the monitoring methodology applied are provided in the monitoring plan.	/PDD/ /ACM2/	OK	OK
B.6.3. Have all means of implementing the monitoring plan, e.g. equations necessary for ex-post emission reduction calculation, been described clearly and in line with the methodology? (EB 55 Annex 1, §§ 123(b), 124) *Check whether all necessary equations have been provided*	*Description:* The net electricity is necessary to derive the emission reductions. In PDD section B.7.2. the PP provided a formula how the net generation is derived: $EG_{facility,y,}= EG_{facility,export, y} - EG_{facility,auxiliary,y}$ *Justification of evidence:* It is common practice that auxiliary electricity is utilized for wind projects in case the turbines are not operating or in case of emergency. *Conclusion:* Hence, the formula is generally acceptable. However, it	/PDD/	~~CAR B4~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
in the PDD. Pl. consider that ex-post and ex-ante calculations might be different. *Please consider that additional equations might be necessary to calculate auxiliary parameters.*	is also described in the PDD that imports will be provided through two lines, i.e. the main line which is also utilized to supply electricity to the grid and through a back-up line. But this is not transparently shown. CAR B4 has been raised.			
B.6.4. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity? (EB 55 Annex 1, § 124(c)) *Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.*	*Description:* The monitoring consists of measuring the electricity supplied and imported to/from the national grid of Thailand. Procedures and responsibilities are identified. Two parties are involved in measuring the electricity, i.e. the national grid operator purchasing the electricity and the project owner. Both parties do have an interest of retrieving accurate and complete figures. *Justification of evidence/ Conclusion:* The content of the PDD has been checked and compared to the requirements of the methodology. In addition interview has been conducted with the operator. Also based on the experience of the validation team it is concluded that the monitoring arrangements are sufficiently defined in the stage of project implementation. They are in line with the methodology. The certainty of utilizing wrong data for ER calculation is assessed as low. The monitoring plan is feasible.	/ACM2/ /IM01/	OK	OK
B.6.5. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activit can be reported ex-post and verified? (EB 55 Annex 1, § 124(b)) *Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review*	*Description:* One measure for quality assurance is the implementation of a back-up meter in case the main meter is malfunction. As per description in section B.7.1. a back-up meter is solely implemented for the electricity exports. In case the meter at the import line is malfunction the PP utilizes the highest electricity consumption recorded during the monitoring period. A second QA measure is the calibration of the meters. It is indicated that this is conducted every three years in line with the power purchase agreement. The accuracy of the main meter has been determined as ±0.2 %	/ACM2/ /PPA/ /IM01/	~~CL B5~~ ~~CL B6~~ ~~CL B7~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
procedures.	while the back-up meter is ±0.5 % or higher. *Justification of evidence:* The PDD has been checked, interviews have been conducted and the PPA has been checked. *Conclusion:* QA/QC provisions have been described in the PDD and they are generally assessed as appropriate. However, the following findings have been raised: CL B5, CL B6 and CL B7 were raised.			
B.6.6. Are procedures identified for data management? (EB 55 Annex 1, § 124(b)) *Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process performance documentation* *Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.*	*Description:* Data from measurements will be stored in electronic form at the head office. A person will be defined who is responsible for this. The data will be stored 2 years after the end of the crediting period. *Justification of evidence:* The PDD has been checked and content has been confirmed by means of interview with the project owner. *Conclusion:* Procedures and responsibilities are roughly identified in the monitoring section. It is in line with the methodology and assessed as sufficient in this stage of project implementation.	/PDD/ /ACM2/ /IM01/	OK	OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*				
C.1. Is the project's starting date clearly defined and evidenced? (EB 55 Annex 1, § 99) *Check whether the starting date is correct. Apply the*	*Description:* The project starting date as provided in section C.1.1. is 18/03/2010, while in section B.5. sub-step 4 a) it is defined as 24/02/2011. *Justification of evidence:* -	/PDD/	~~CAR C1~~	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
definition of the project starting date as per the "Glossary of CDM terms".	*Conclusion:* CAR C1 was raised			
C.2. Is the project's operational lifetime clearly defined and evidenced? *Check whether the project lifetime is correctly defined. Consider the guidance on the assessment of investment analysis (annex to the additionality tool).* *Check in case of phased implementation this has been reflected throughout the whole PDD incl. the financial assessment, if applicable.*	*Description:* In section C.1.2. the operational lifetime is defined as 23 years. *Justification of evidence:* The information in the PDD has been cross-checked with the technical specifications of the manufacturer. *Conclusion:* The project lifetime is clearly defined and substantiated.	/PDD/ /TSC/	OK	OK
C.3. Is the start of the crediting period clearly defined and reasonable? *Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed for validation and registration.*	*Description:* The starting date of the crediting period is 01/01/2012. *Justification of evidence:* The PDD section C.2.1.1. has been checked. In addition the progress of the project implementation schedule has been checked and interview has been conducted with the PO. *Conclusion:* CAR C2 was raised	/PDD/ /TSC/ /BOP/ /TSC/	~~CAR C2~~	OK
D. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the DOE.*				
D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)?	*Description:* According to the information provided in the PDD an EIA is not required by law for this type of project.	/PDD/	OK	OK

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(EB 55 Annex 1, §§ 131–133) *Check the host party regulations, regarding EIA.*	*Justification of evidence:* Based on local expertise of the validation team this can be confirmed. *Conclusion:* No EIA is required.			
D.1.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applcable duly approved? (EB 55 Annex 1, §§ 131–133) *Check the EIA and its approval, if applicable.*	*Description:* Please refer to D.1.1. An EIA is not required. Hence this criterion is not required. *Justification of evidence:* *Conclusion:*	/PDD/	OK	OK
D.1.3. Has an analysis of the environmental impacts of the project activity been sufficiently described and in line with the host party environmental legislation? (EB 55 Annex 1, §§ 130–132) *Check the PDD (section D). Check whether the project will create any adverse environmental effects.* *Check the relevant national environmental legislation.*	*Description:* For the LOA application the Thai DNA TGO requires an Initial Environmental Evaluation (IEE). This has be conducted by the project owner and forwarded to the DNA for LOA application. Environmental impacts are considered to be not significant. *Justification of evidence:* The IEE has been checked during the site visit. It is prepared by Chulalongkorn University. *Conclusion:* TÜV NORD confirms that environmental impacts are considered to be not significant based on the report provided.	/PDD/ /IEE/ /tgo/	OK	OK
D.1.4. Are transboundary environmental impacts considered in the analysis? (EB 55 Annex 1, §§ 131–133) *Check the documents and local official sources / expertise regarding transboundary environmental impacts.*	*Description:* No transboundary impacts are described in the PDD. *Justification of evidence:* The IEE has been checked to confirm this. Furthermore, during site visit it could be confirmed that the project activity is not close to a national boundary. *Conclusion:* TÜV NORD confirms that there are no transboundary impacts.	/PDD/ /IEE/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
E. Stakeholder Comments *The DOE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*				
E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD? (EB 55 Annex 1, § 128) *Check by means of document review and interviews with local stakeholders if and when a local stakeholder consultation process has been carried out.*	*Description:* Stakeholder consultation meeting was held on 2011-09-15. The invitation has been conducted by means of invitation letters, public notifications to local stakeholders like representatives of residents, local press, teachers and governmental authorities. Further a person has been appointed who shall ensure that comments can also be provided during the implementation phase and afterwards (public relation co-ordinator). *Justification of evidence:* TÜV NORD could confirm the information provided by means of document check and on-site visit. Stakeholders have been interviewed by the validation team and confirmation was provided regarding the meeting and the appointed focal point. Further the project owner provided photos from the stakeholder meeting. *Conclusion:* The stakeholder meeting was conducted before the PDD was published on the UNFCCC website.	/SHCP/ /IM03/	OK	OK
E.2. Can the local stakeholder consultation process be assessed as adequate? (EB 55 Annex 1, § 129(a)–(c)) *Describe what assessment steps have been undertaken to assess the adequacy of the stakeholder consultation process. Give a final opinion on the adequacy.*	*Description:* During the meeting and also afterwards comments can be provided and have been provided. The PO took them into accounted. *Justification of evidence:* TÜV NORD could confirm this through following: - Interview with stakeholders has been conducted and confirmation was provided that they have been adequately	/SHCP/ /IM03/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidence)	Ref.	Draft Concl.	Final Concl.
Please consider the following requirements in this context: *(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;* *(b) The summary of the comments received as provided in the PDD is complete;* *(c) The project participants have taken due account of any comments received and have described this process in the PDD.*	informed. In addition compensation is paid for occupied farmland. This has also been confirmed. - Additional stakeholder documents like minutes of meeting and attendance list could evidence the comments given. *Conclusion:* TÜV NORD concluded that the stakeholder process was conducted appropriately and in line with the CDM requirements.			

ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

Table A-2: Assessment of Baseline Identification (EB 55 Annex 1 §§83 – 86)

☐	Baseline is not identified
☒	Baseline is prescribed as per the applied methodology ACM0002
☐	Assessment of baseline see below

Baseline Alternatives identified	In line with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evidence used	DOE Assessment	
					Appropriateness of elimination	Assessment of validation team (results and means of assessment)
Net electricity supply of the proposed project which would be supplied by the fossil fuel fired power plants in the business as usual scenario.	☒	☐	The baseline is predefined in ACM0002	/ACM2/	☐	The validation team could confirm that the proposed project is substituting electricity which is in the baseline scenario provided by fossil fuels. The technology is wind power plant which is connected to the grid. The applied methodology has also been checked.

ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

Table A-3: Assessment of Financial Parameters (EB 55 Annex 1, §§ 111, 112, 114/ in case financial parameters stem from FSR §113,)

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
Installed Generation Capacity	103.5	MW	Wind Yield Assessment, page 17	/WYA/ /TSC2/ /PIM/	☒	The value is derived from the wind yield assessment. The PP contracted 45 numbers of 2.3 MW wind turbines from the manufacturer Siemens. The value in the WYA has been cross-checked by the validation team with the amendment of the turbine supply contract and the preliminary information memorandum issued by Kasikornbank. The value is confirmed as correct.
Yearly Net Energy Output	232,500	MWh	Wind Yield Assessment, page 21	/WYA/	☒	The value is retrieved from the wind yield assessment. The wind availability at the site has been assessed by Garrad Hassan, a skilled globally acting company in the respective sector. The assessment has been conducted based on 2.2 years measurement at the site. The value reflects the net output over 20 years at a probability of 50 %. Compared to higher probabilities this value is even higher and hence, conservative. The expertise of the wind consultant company has been checked by means of referring to the companies' website/gh/. Based on this TÜV NORD comes to the conclusion that the consulting company is experienced enough to determine the most likely achievable amount of generated electricity. The value is also the basis for the financial analysis as validated in

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						the preliminary information memorandum./PIM/ The value is reasonable.
Plant Load Factor	25.64	%	Wind Yield Assessment, page 17 and 21; calculated	/WYA/ /PIM/	☒	The plant load factor is calculated based on the data provided in the wind yield assessment. TÜV NORD assessed the value as acceptable since the requirements of EB 48 Annex 11 paragraph 3 (a) and (b) are met: The preliminary information memorandum (PIM)/PIM/ is utilized to acquire lenders for the proposed project. The PIM has been prepared by Kasikorn Bank. Further the wind yield assessment has been prepared by an independent engineering company which is contracted by the project owner. This ensures that the PLF is correctly determined.
Base Electricity Tariff (On-peak)	2.9278	THB/kWh	Electricity Generation Authority of Thailand	/egat/ /WYA/ /eppo/	☒	The value is derived from the Electricity Generation Authority of Thailand. The tariff was announced on 12 July 2011, i.e. before the investment decision on 26 July 2011. The value is provided on a publicly available domain: http://www.ppa.egat.co.th/Sppx/timeofUse/2554/ft0654.pdf As per wind availability patterns 32 % of the total electricity generation will be available in peak times, i.e. 9:00 to 22:00. These patterns are derived from the wind yield assessment. The load times are confirmed with the National Energy Policy Office: http://www.eppo.go.th/index-E.html As mentioned above the wind availability is determined based on 2.2 years wind measurements at the site. Following the argumentation above for PLF assessment, the validation team assessed the 32 % as reasonable. Considering that the information of peak tariff and peak and off-peak times is sourced from national authorities and publicly available and further bearing in mind that the wind availability has been determined by a qualified engineering company TÜV NORD

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						concluded that all values are reasonably chosen.
Base Electricity Tariff (Off-peak)	1.1154	THB/kWh	Electricity Generation Authority of Thailand	/egat/ /WYA/ /eppo/	☒	The value is derived from the Electricity Generation Authority of Thailand. The tariff was announced on 12 July 2011, i.e. before the investment decision on 26 July 2011. The value is provided on a publicly available domain: http://www.ppa.egat.co.th/Sppx/timeofUse/2554/ft0654.pdf As per wind availability patterns 68 % of the total electricity generation will be available in off-peak times, i.e. 22:00 to 9:00 and during Saturdays, Sundays and public holidays. These patterns are derived from the wind yield assessment. The load times are confirmed with the National Energy Policy Office: http://www.eppo.go.th/index-E.html. As mentioned above the wind availability is determined based on 2.2 years wind measurements at the site. Following the argumentation above for PLF assessment, the validation team assessed the 68 % as reasonable. Considering that the information of peak tariff and peak and off-peak times is sourced from national authorities and publicly available and further bearing in mind that the wind availability has been determined by a qualified engineering company TÜV NORD concluded that all values are reasonably chosen.
Ft Tariff (On and off-peak)	0,949	Baht/kWh	Electricity Generation Authority of Thailand	/egat/	☒	The fuel transfer rate (FT) is based on an announcement from the Electricity Generating Authority of Thailand (EGAT) every month; it is depended on the price of the oil and petroleum in the world market: http://www.ppa.egat.co.th/Sppx/timeofUse/2554/ft0754.pdf In 2005 the Electricity Generation Authority of Thailand determined the value as 0.949 THB/kWh and it is escalated 5 % every year. The trend of this tariff is difficult to predict. Since, the escalation of

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						5 % has been determined by an independent financial institution, i.e. the Kasikorn Bank, TÜV NORD accepted the figure. Thus, the assumption for the electricity tariff is suitable. Besides the ft Tariff the Thai government grants an adder for renewable energy projects. The adder (3.5 THB/kWh) is granted for 10 years from operation start. The CDM EB provided guidance in EB 22, Annex 3 on how to take into account such additional benefits. As per the guidance the adder to the tariff is an E- policy since it provides comparative advantage to less emission intensive fuels. It has been further verified that the policy came into effect in 2006 which is later than the CDM M&P in November 2001. Hence, the validation team concluded that this adder shall not be taken into account when determining the baseline or additionality of the proposed project.
Investment Costs	6,279	10^6 THB	Preliminary Information Memorandum, page 13; Construction Contract; Restated Turbine Supply Contract	/PIM/ /BOP2/ /TSC2/	☒	The investment costs as indicated in the balance of plant /BOP2/, turbine supply contract /TSC2/ and preliminary information memorandum /PIM/ include the following positions: Technical Equipment: 4,268 Mio THB Balance of Plant: 1,650 Mio THB Other costs (total): 361 Mio THB The validation team checked all documents which were available at the time of investment decision and afterwards during the validation process. It could be confirmed that the investment for the turbines is derived from a proposal made by Siemens. This proposal is duly signed hence it is assessed authentic. The validation team could further validate that this proposal has been accepted after the investment decision was taken and the credit

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						facility was granted. Hence, the validation team concluded that the value for the turbines is reasonable. The figure from the Balance of Plant is sourced from the proposal of DEMCO which was available at the time of the investment decision/BOP2/. It consists of construction costs, transformers etc (1,422 Mio THB) and 16 % contingency (228 Mio THB). It is close to the value indicated in the PIM (1,562 Mio THB) and a proposal made by DEMCO in March 2010 (1,622 Mio THB)./PIM/ The other costs mainly consist of upfront costs for land acquisition, insurance during construction etc. It is sourced from the preliminary information memorandum and has been accepted since the document is provided by an independent company, the Kasikorn Bank. It should be noted that sunk costs from feasibility study as well as financing expenditures have been excluded. In addition the validation team checked the unit investment costs. The currency exchange from Thai Baht to EUR (46.2292 THB/ EUR) provided by the Bank of Thailand is the average of the last three years before the investment decision (2008 – 2010)./both/ This value has been taken into account resulting in unit investment costs (EUR/kW) of about 1312 EUR/kW. This figure has been compared to information published on an internet domain from the European Wind Energy Association./ewea/ It shows that the unit investment costs for large wind turbines from German providers can sum up to 1500 EUR/kW. Taking into account that the turbine is from a German manufacturer, imported to Thailand and of comparable large size, the validation team concluded that the investment is reasonable. In addition the shares of the cost components have been

<table>
<tr><th rowspan="2">Parameter</th><th rowspan="2">Value applied</th><th rowspan="2">Unit</th><th rowspan="2">Source of Information (please indicate document and page)</th><th rowspan="2">Reference</th><th colspan="2">DOE ASSESSMENT</th></tr>
<tr><th>Correctness of value applied</th><th>Comment</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>calculated and compared to publicly available data to further check the plausibility of the total investment resulting in the following figures:
<table><tr><th>Components</th><th>Proposed Project (%)</th><th>/wef/</th></tr><tr><td>Turbine Equipment</td><td>68</td><td>75</td></tr><tr><td>Foundation, Electric installation, grid connection etc.</td><td>26</td><td>18</td></tr><tr><td>Other costs</td><td>6</td><td>7</td></tr></table>
It should be noted that the values sourced from /wef/ are based on European conditions. However, even though there are slight differences, the validation team concluded that the shares are plausible.

In conclusion the validation team could validate the total investment based on contracts which have been duly signed between the operator and the manufacturer/ service provider. The authenticity and validity is confirmed through signatures of involved personnel. In addition, the plausibility of the figures could be confirmed by means of comparing the unit investment costs of the project with technical literature as well as the shares of the cost components. Therefore, the total investment figure is accepted.</td></tr>
<tr><td>Operation and Maintenance Cost</td><td>152,200</td><td>10^3 THB</td><td>Preliminary Information Memorandum, page 112</td><td>/PIM/ /ewea/</td><td>☒</td><td>The O&M costs consist of
Land Lease: 31.5 Mio THB;
Insurance premium: 16.0 Mio THB;
Selling, General, Administrative: 21.7 Mio THB;</td></tr>
</table>

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						Crane Lease: 4.5 Mio THB; Unscheduled Minor Work: 3.8 Mio THB; BOP O&M: 3.3 Mio THB Service and Availability Cost: 57.6 Mio THB Contingency during operation: 13.8 Mio THB The Crane lease and the Unscheduled Minor Work is not taken into account during the first two years. The parameters are escalating 2.6 % each year due to inflation impact. The inflation rate is a 3 years average derived from the World Bank publicly domain http://data.worldbank.org/indicator/FP.CPI.TOTL.ZG (access: 2012-09-06). Hence, it is assessed as appropriate. Furthermore the plausibility has been cross-checked with the following internet source providing a CPI in average of 2.58 % over the last 12 years (http://www.indexmundi.com/g/g.aspx?c=th&v=71&l=de). The O&M costs are 2.2 % of the total investment in the first year and 4 % after a lifetime of 23 years. This is considerably low based on the technical expertise of the validation team and referring to the above cited wind report /ewea/ where O&M costs are defined as 2-3 % of the total investment costs within the first years and about 5 % from the 6th year. Even though the figures are based on European experiences the validation team took them into account to check the plausibility of the costs. Assuming that the impact of O&M costs in Europe might be higher due to the higher price level, the proposed project might have higher service and availability costs due to the import of technology. Besides the O&M costs have almost no impact on the financial viability. Based on the above the validation team is confident that the O&M costs are not overestimated but appropriately determined.

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
Depreciation	23	years	Preliminary Information Memorandum, page 113	/PIM/ /TDS/	☒	The fixed asset has been depreciated over a period of 23 years with the straight line method. This value is in accordance to the preliminary information memorandum./PIM/ It has been checked and is confirmed. As per type specification the lifetime is designed for 20 years./TDS/ This results in a residual value of 0. TÜV NORD assessed this as plausible due to the higher consideration of lifetime in the cash flow analysis compared to the technical design.
Operational lifetime	23	years	Preliminary Information Memorandum, page 34	/PIM/ /TDS/	☒	In accordance to the assessment above the 23 years operational lifetime is accepted by the validation team since it is higher than the expected technical lifetime as per the technical specification./TDS/ Furthermore the additional 3 years have a more conservative impact on the IRR, i. e. it is higher compared to considering 20 years. The value applied is correctly sourced from the preliminary information memorandum. This has been validated by the validation team.
Benchmark	11.26	%	Investment Analysis Spreadsheet	/IRR/ /BEN/	☒	The benchmark calculated is a weighted average cost of capital (WACC) determined based on values at the time of investment decision. This benchmark is compared to the project IRR before tax of the proposed project activity. The WACC is also calculated based on before tax basis. Hence, the two figures are comparable and in line with EB 62 Annex 5 paragraph 12. The WACC formula applied is: $WACC = \left(\frac{E}{V}\right) x\, k^{E} + \left(\frac{D}{V}\right) x\, k^{D}$ V: Total Investment D: Share of Debt E: Share of Equity k^{D}: Cost of Debt

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						k^E: Cost of Equity The benchmark has been derived by taking into account values which are standard in the market, since the project can theoretically also be implemented by another entity. The share of debt and equity is 50/50 which is standard market approach. The PP has checked the debt/equity ratio of all companies listed in the stock exchange of Thailand which are operating power plants in Thailand. From the listed companies in the Thai Stock Exchange the PP chose those which are associated to "Energy and Utilities". Out of these companies PP chose only those which are producing electricity. The choice of the companies has been confirmed by means of checking the website of the Thai Stock Exchange (http://www.set.or.th/en/company/companylist.html; access: 2012-07-31). The companies taken into account for the expected return on equity and debt/equity ratio are as following: Banpu Public Company Limited is a company acting in the Thai market as well as in other SEA countries and China. Besides other businesses they are investing in greenfield private power plants in Thailand. Electricity Generating Public Company Limited is operating power plants in the Thai market. M.D.X. Public Company Limited is operating power plants besides other businesses. Ratchaburi Electricity Generating Holding Public Co., Ltd. is investing in and operating power plants.

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						Sahacogen (Chonburi) Public Company Limited is producing electricity and heat. Thai Oil Public Company Limited is producing power besides other business in the oil sector. According to the official company website of Glow Energy Public Company Limited one of the core businesses is generating electricity. Hence, it qualifies as possible source for determining the debt/equity ratio and the cost of equity. SPCG Public Company Limited is mainly engaged in solar power sector. The validation team checked the websites of these companies and could confirm that all companies listed are operating power plants. In addition, it could be confirmed that the figures for Return on Equity as well as the debt/equity ratio are derived from the financial statements for the years 2008 to 2010 are correct. The sources provided by the PP are derived from the Thai Stock Exchange and are therefore publicly available. It could be confirmed that a 50/50 debt/equity ratio is standard in the market (paragraph 18 EB62). It could be further confirmed that the Return on Equity is 16.03 %. The figures are calculated taking into account the recent 3 years (2008 – 2010) before the investment decision in 2011. The values are also derived from the publicly available financial statements of the above mentioned companies. TÜV NORD concluded that paragraph 13 of EB62 has been sufficiently taken into account. Further also paragraph 15 has

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						been taken into account as the cost of equity figures are traceable (publicly available domain) and based on figures provided in financial statements in line with international accounting principles. The cost of debt has been derived from average of the minimum lending rate of the recent three years before the investment decision. The value calculated is 6.49 %. The figures are sourced from the publicly available domain of the Bank of Thailand and therefore accepted. The WACC has been calculated in line with the stipulations set out in EB 62 Annex 5 paragraph 13. As outlined above the validation team considers the benchmark calculated suitable for the type of financial indicator presented and thus in line with VVM 112 (a). The benchmark is correctly calculated taking into account relevant risks for private companies in the electricity generating sector in Thailand which is expressed in considering the return on investment of those companies listed in the stock exchange (VVM, paragraph 112 (b)). It is further assessed as reasonable to assume that no investment would be made at the identified low IRR (VVM, paragraph 112 (c)).

ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

Table A-4: Assessment of Barrier Analysis (EB 55 Annex 1, §118)

☒	No barrier parameters are used for additionality justification
☐	Assessment of barriers see below

Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of validation team	
			Appropriateness of information source	Explanation of final result
			☒	

ANNEX 5: OUTCOME OF THE GSCP

Table A-5: Outcome of the Global Stakeholder Consultation Process

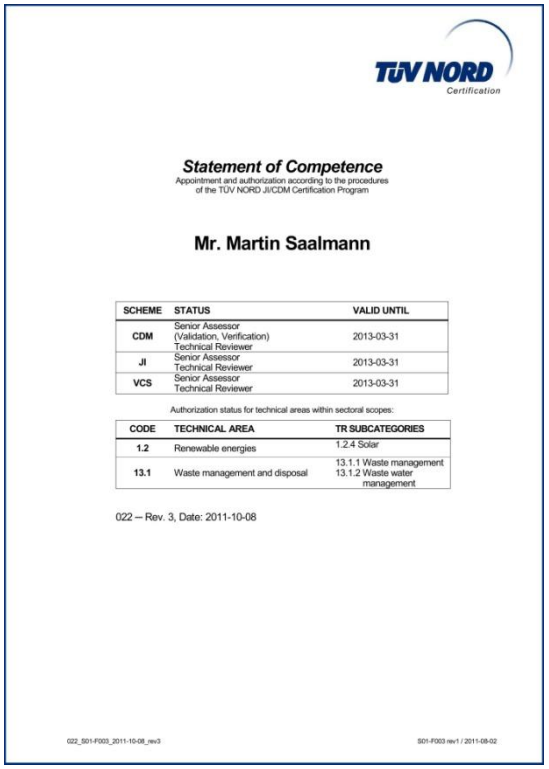
(§§ 40-42, VVM Version 1.2)

☒	No comments were received during the global stakeholder consultation period
☐	Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the validation team are presented below:

Comment No.:	Comment by:	Inserted on:	Subject	Comment *)	Action taken by the validation team to take due account on the comment *)	Conclusion (incl. CARs CLs or FARs)

*) In case clarifications have been requested by the validation team corresponding rows shall be added

ANNEX 6: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Martin Saalmann

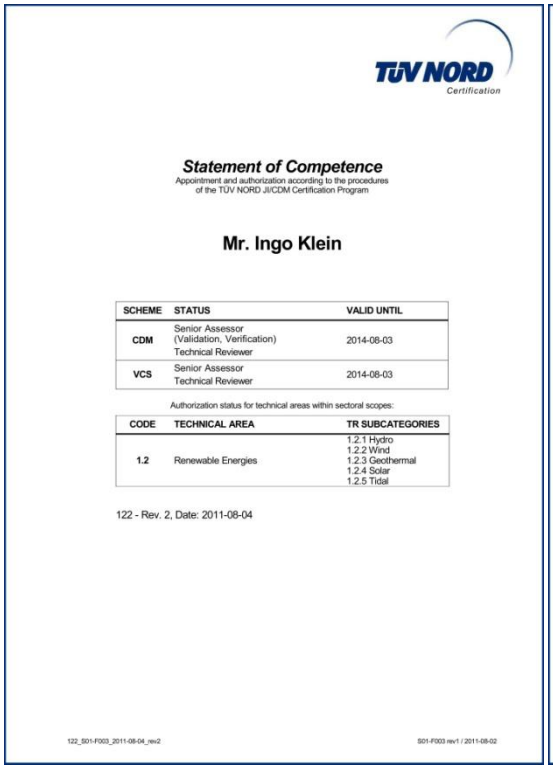
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2013-03-31
JI	Senior Assessor Technical Reviewer	2013-03-31
VCS	Senior Assessor Technical Reviewer	2013-03-31

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable energies	1.2.4 Solar
13.1	Waste management and disposal	13.1.1 Waste management 13.1.2 Waste water management

022 – Rev. 3, Date: 2011-10-08

022_S01-F003_2011-10-08_rev3 S01-F003 rev1 / 2011-08-02



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Ingo Klein

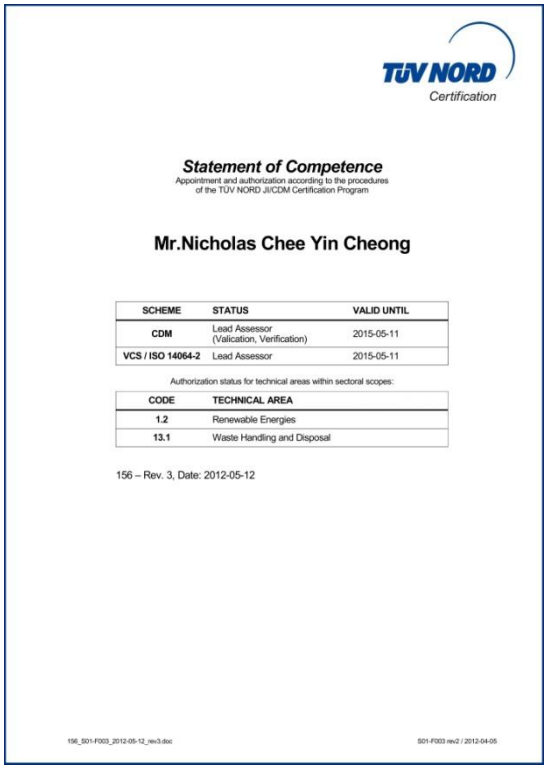
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2014-08-03
VCS	Senior Assessor Technical Reviewer	2014-08-03

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal

122 - Rev. 2, Date: 2011-08-04

122_S01-F003_2011-08-04_rev2 S01-F003 rev1 / 2011-08-02



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr.Nicholas Chee Yin Cheong

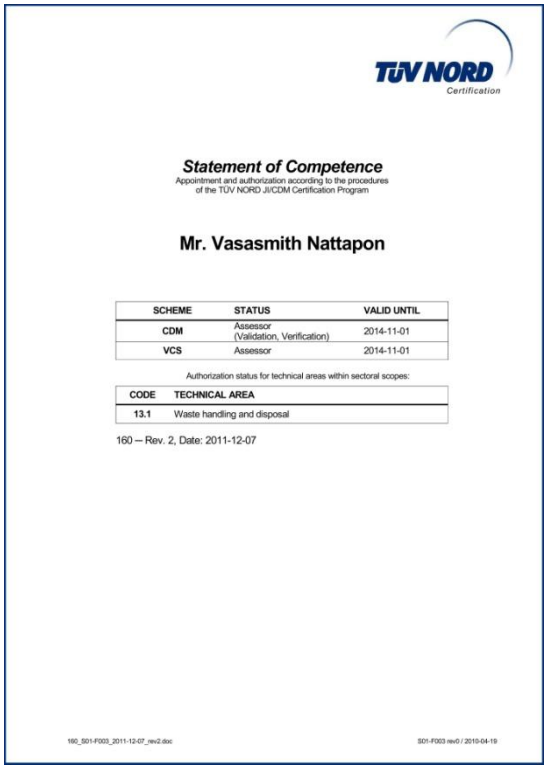
SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Valication, Verification)	2015-05-11
VCS / ISO 14064-2	Lead Assessor	2015-05-11

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies
13.1	Waste Handling and Disposal

156 – Rev. 3, Date: 2012-05-12

156_S01-F003_2012-05-12_rev3.doc S01-F003 rev2 / 2012-04-05



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Vasasmith Nattapon

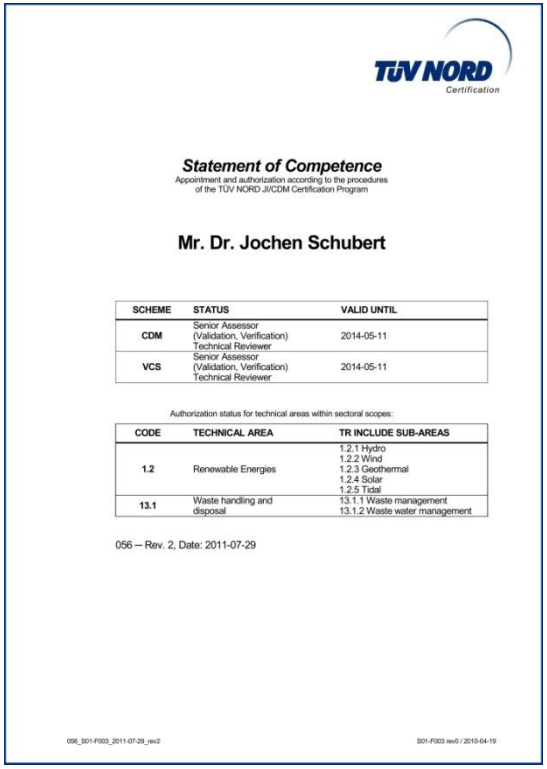
SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification)	2014-11-01
VCS	Assessor	2014-11-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
13.1	Waste handling and disposal

160 – Rev. 2, Date: 2011-12-07

160_S01-F003_2011-12-07_rev2.doc S01-F003 rev0 / 2010-04-19



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Dr. Jochen Schubert

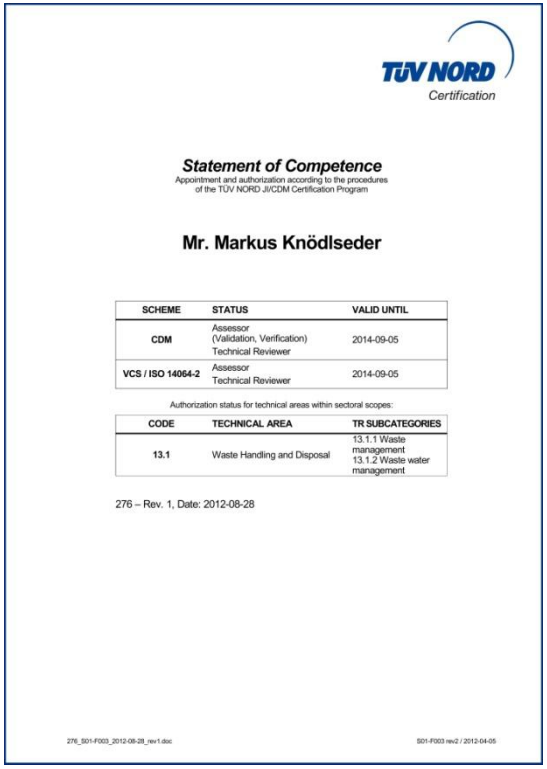
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2014-05-11
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2014-05-11

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR INCLUDE SUB-AREAS
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
13.1	Waste handling and disposal	13.1.1 Waste management 13.1.2 Waste water management

056 – Rev. 2, Date: 2011-07-29

056_S01-F003_2011-07-29_rev2 S01-F003 rev0 / 2010-04-19



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Markus Knödlseder

SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification) Technical Reviewer	2014-09-05
VCS / ISO 14064-2	Assessor Technical Reviewer	2014-09-05

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
13.1	Waste Handling and Disposal	13.1.1 Waste management 13.1.2 Waste water management

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