TÜVRheinland®

VALIDATION REPORT

AKBÜK 31.5 MW WIND FARM PROJECT

TURKEY

FINAL
REPORT NO. 2008-9215
REVISION NO. 01

CDM Validation Report Template
Version 5.0, November 2006
This is a report template to be used for the validation of CDM projects. Guiding text is presented in italic letters, as here.

This document must be seen in conjunction with the Validation and Verification Guidelines

Date of first issue: 04/07/2008	Project No.: 01 999 2120 9215
DOE: TÜV Rheinland (CDM- E-0013 / JI- E-0012)	Organisational unit: TIE
Client: One Carbon	Client ref.: Mr. Ömer Akyürek

Project Name: Akbük 31.5 MW Wind Farm Project -Turkey
Country: Turkey
Methodology: ACM0002
Version: 7
GHG reducing Measure/Technology: Wind Power
ER estimate: 67,570 tCO2e per annum

Size
☒ Large Scale
☐ Small Scale

Validation Phases:
☐ Desk Review
☐ Follow up interviews
☒ Resolution of outstanding issues

Validation Status
☐ Corrective Actions Requested
☐ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is TÜV Rheinland's opinion that the Akbük 31.5 MW Wind Farm Project - Turkey, as described in the PDD of 1 September 2008, meets all main UNFCCC requirements for the CDM and all main host country criteria as well as requirements for Voluntary Offset Projects under the Gold Standard and correctly applies the baseline and monitoring methodology ACM0002, version 7. After all corrective action and clarification requests could be resolved TÜV Rheinland recommends to submit the request for registration for the project activity directly to Gold Standard Foundation (GS-TAC).

Report No.:	Date of this revision:	Rev. No.
2008-9215	18/12/2008	01
Report title: Akbük 31.5 MW Wind Farm Project –Turkey		
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Abbreviations

Explain any abbreviations that have been used in the report here.

ADSCR	Annual Debt Service Cover Ratio
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
DNA	Designated National Authority
FCAR	Forward Corrective Action Request
GHG	Greenhouse gas(es)
GJ	Giga joule
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal rate of return
LOA	Letter of Approval
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NGO	Non-governmental Organisation
NPV	Net Present Value
ODA	Official Development Assistance
O&M	Operation and maintenance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
GS	Gold Standard
TAC	Technical Advisory Committee
TR	TÜV Rheinland

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1 EXECUTIVE SUMMARY – VALIDATION OPINION

The DOE E-0013„TÜV Rheinland Japan Ltd. (TÜV Rheinland)" has performed a validation of the "Akbük 31.5 MW Wind Farm Project – Turkey". The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as the Gold Standard Validation & Verification Manual for Voluntary Offset Projects and criteria given to provide for consistent project operations, monitoring and reporting. The review of the project design documentation and the subsequent follow-up interviews have provided TÜV Rheinland (the verifier) with sufficient evidence to determine the fulfilment of stated criteria. After resolving of a few corrective action and clarification requests TÜV Rheinland has considered to submit the request for registration for the project activity to Gold Standard Foundation.

The host party is Turkey and the participating Annex I party is not yet identified at this stage of validation. Turkey was not a Party to the UNFCCC when the Kyoto Protocol was adopted in 1997. Hence, no quantified emissions limitation or reduction commitment was defined for Turkey in Annex-B of the Kyoto Protocol. Thus, Turkey is not a Party to the Kyoto Protocol yet. Turkey acceded as the 189th Party to the UNFCCC on 24 May 2004. Turkey is therefore now listed in Annex-I to the UNFCCC, but not listed in Annex-B to the Kyoto Protocol (no quantified emissions limitation or mitigation commitment yet), therefore, not a Party to the Kyoto Protocol yet! Because Turkey as host country fulfils currently not the participation criteria under the Kyoto Protocol for CDM-projects or JI-projects respectively, it can not officially approve the project and authorize the project participants of the host country. The Ministry of Environment and Forestry has designated REC Turkey as the National Focal Point on UNFCCC Article 6, covering education, training and public awareness.

The National Focal Point was asked to endorse the project and confirm that the project assists Turkey in achieving sustainable development. The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Turkey. The project correctly applies ACM0002,version 07:"Consolidated baseline methodology for grid-connected electricity generation from renewable sources".
By generating renewable energy the project will displace fossil fuel based grid electricity. The project results in reductions of CO2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 67,570 tCO2e per year over the first 7-year crediting period.

The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change. Adequate training and monitoring procedures have been implemented.

In summary, it is TÜV Rheinland's opinion that the "Akbük 31.5 MW Wind Farm Project – Turkey" as described in the PDD version 02 of 1 September 2008 meets all relevant requirements for Voluntary Offset Projects under the Gold Standard and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002,. version 07. After all corrective action and clarification requests could be resolved the verifier TÜV Rheinland recommends to submit the request registration for the project "Akbük 31.5 MW Wind Farm Project – Turkey" as a Gold Standard VER project activity directly to Gold Standard Foundation (GS-TAC).

2 INTRODUCTION

One Carbon International B.V. has commissioned TÜV Rheinland to perform a validation of the "Akbük 31.5 MW Wind Farm Project – Turkey" (hereafter called "the project"). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board and the requirements for Voluntary Offset Projects under the Gold Standard.

2.1 Objective

The purpose of a validation is to have an independent third party to assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects as well as Voluntary Offset projects under the Gold Standard and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified emission reductions (VERs).

2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the requirements for Voluntary Offset Projects under the Gold Standard and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of VERs.

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

3 METHODOLOGY

The validation consists of the following three phases:

I a desk review of the project design documents

II follow-up interviews with project stakeholders

III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

/1/ One Carbon International B.V., PDD "Akbük 31.5 MW Wind Farm Project – Turkey ", Version 01, 24 March 2008

/2/ One Carbon International B.V., PDD "Akbük 31.5 MW Wind Farm Project – Turkey", Version 02, 1 September 2008

/3/ Ayen Enerji A.S., Documentation of the First Round Consultation (Initial Stakeholder Consultation) of July 2008

/4/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/5/ ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 07 (EB 36 of 14 December 2007).

/6/ Methodological tool "Tool to calculate the emission factor for an electrical system" (EB 35, version 01.1 of 29 July 2008)

/7/ "Guidance on the Demonstration and Assessment of Prior Consideration of the CDM" (EB 41, version 01 of 2 August 2008)

/8/ TÜV Rheinland, First List of CARs and CLs of 04/07/2008

/9/ Official document from Istanbul Stock Exchange about financial closure of Ayen Enerji A.S.' "Akbük 31.5 MW Wind Farm Project", dated 6 February 2008

/10/ One Carbon International B.V., Response to CARs and CLs of TÜV Rheinland of 08/09/2008

/11/ Excel Sheet Baseline Calculation of 08/09/2008

/12/ Akbük Wind Farm Generation License of 18 January 2008

/13/ CD of Ayen Enerji A.S. for Main Stakeholder Consultation

/14/ Technical Specification of Windturbine SUZLON Multi Megawatt, Model S 88 / 2100

/15/ Wind Energy Yield Calculation of 10/10/2007

/16/ Ayen Enerji A.S., Report of Second Round Consultation (Main Stakeholder Consultation) of 30 June 2008

/17/ Audit Plan Akbük 31.5 MW Wind Farm Project of 28/03/2007

/18/ Board Resolution of Ayen Enerji A.S. on Consideration of VERs for Akbük 31.5 MW Wind Farm Project of 21/02/2008

/19/ Approval of EIA for Akbük 31.5 MW Wind Farm Project of 19/10/2007

/20/ Land use permit for Akbük 31.5 MW Wind Farm Project of 04/2008

/21/ Financial Feasibility Analysis for Akbük 31.5 MW Wind Farm Project and for Kadincik 20 MW Hydro Project

/22/ Transmission Line usage permit for Akbük 31.5 MW Wind Farm Project of 25 September 2007

/23/ Clean Development Mechanism Validation and Verification Manual, EB 44 meeting

/24/ SUZLON MULTI MEGAWATT SERIES, Product information

/25/ Layout and Design Documents

/26/ Non-binding best practice examples to demonstrate additionality for SSC project activities, EB 35 meeting

/27/ Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy (Law No. 5346) of 10 May 2005 and actual updates of 2007

/28/ GUIDELINES FOR COMPLETING THE PROJECT DESIGN DOCUMENT (CDM-PDD) AND THE FORM FOR PROPOSED NEW BASELINE AND MONITORING METHODOLOGIES (CDM-NM), Version 07, EB 41 meeting

/29/ Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities

/30/ CDM Executive Board: Tool for the demonstration and assessment of additionality, version 05, EB 39 meeting.

/31/ Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories

/32/ Communique regarding the Meters to be used in the Electricity Market (TEIAS)

/33/ Electricity Market Balancing and Settlement Regulation (TEIAS)

/34/ TurkStat, Turkey's Statistical Yearbook, 2007

/35/ Turkish Electricity Generation – Transmission Statistics (TEIAS)

/36/ Wind Energy Guide for County Commissioners (US DOE)

/37/ Energy Policy of IEA Countries: Turkey 2005 Review (OECD/IEA 2005)

/38/ Global Wind 2007 Report (GWEC)

/39/ The Gold Standard Voluntary Emission Reductions (VERs) Manual for Project Developers, version 1

/40/ The Gold Standard Validation and Verification Manual for Voluntary Offset Projects, version 1

/41/ Gold Standard Rules and Procedures Updates and Clarifications

/42/ The International Bank for Reconstruction and Development / The World Bank "*Doing Business 2007/2008"*

3.2 Follow-up Interviews with Project Stakeholders

Identify any personnel who have been interviewed and/or provided additional information to the presented documentation.

	Date	**Name**	**Organization**	**Topic**
/a/	2008-04-14, 2008-04-15	Mr. Hakan DEMIR	Windfarm responsible manager AYEN ELELKTRIK	Project technology, Status of project preparation, monitoring

			TICARET A.S.	
/b/	2008-04-15	Mr. Yılmaz Öz	Akyenikoy Municipality, Mayor	Follow up stakeholder consultation process, community benefits (new bazaar)
/c/	2008-04-14, 2008-04-15	Mr. Murat CALISKAN	Deputy General Manager, AYEN ENERJI A.S.	Project background, financial issues, contractors and personnel, Local stakeholder process, on-site assessments, background information
/d/	2008-04-14 2008-04-15	Mr. Ömer Akyürek	One Carbon International B.V.	Baseline determination, emission reductions Calculation, emission reduction monitoring plan, monitoring plan of sustainable indicators, additionality, CARs and CLs
/e/	08/07/2008	Mr. Denis Yener	One Carbon International B.V.	Baseline determination, emission reductions Calculation

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to TÜV Rheinland's positive conclusion on the project design. In order to ensure transparency a validation protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of two tables. The different columns in these tables are described in the figure below. The completed validation protocol for the "Akbük 31.5 MW Wind Farm Project" in Turkey is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM or GS-VER criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

i) mistakes have been made with a direct influence on project results;
ii) CDM / GS-VER and/or methodology specific requirements have not been met; or
iii) there is a risk that the project would not be accepted as a GS-VER project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

Findings established during the validation may be that:
i) the validation is not able to obtain sufficient evidence for the predicted emission reductions or part of the reported emission reductions.
ii) the validation has identified material misstatements in the predicted emission reductions. Emission reductions with evident material misstatements shall be discounted in order to achieve a conservative and reliable result during the verification period.

A forward action requests (FAR) may be issued, where:
- the actual project monitoring and reporting practices require attention and /or adjustment for the next consecutive verification period, or
- an adjustment of the monitoring plan is recommended.

In the context of FARs, risks may be identified, which may endanger the delivery of emission reductions in the future, i.e. by deviations from good reporting or management procedures. As a consequence, such aspects should receive a special focus during the next verification.

Validation Protocol Table 1: Mandatory Requirements for CDM and GS-VER Project Activities		
Requirement	***Reference***	***Conclusion***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*

Validation Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **corrective action request (CAR)** due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Validation conclusion***
If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the CAR or CL is explained.*	*The responses given by the project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

3.4 Internal Quality Control

The draft validation report including the initial validation findings is based on the results of the desk-review, study of background information and the results of the on-site assessment. Comments from the global stakeholder consultation process were not received. The final validation report will undergo a technical review before submission to the project participants and subsequent requesting registration of the project activity with Gold Standard Foundation.

The technical review will be performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM and GS-VER validation and verification.

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
CDM validator, renewable energy and energy efficiency expert	Seidel	Kurt	Germany

The CV of each individual validation team member is available upon request.

4 VALIDATION FINDINGS

The main findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the complete list of results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

4.1 Participation Requirements

Referring to Part A, Annex 1 and 2 of the PDD.

The project participants in the host country are the Turkish private companies Ayen Enerji A.Ş. and Ayen Elektrik Ticaret A.Ş. The international carbon consultant for this project is One Carbon International B.V. from The Netherlands with its subsidiary in Turkey. No project participant from Annex I is currently announced. The host Party Turkey does not meet the requirements to participate in the CDM. Therefore no Designated National Authority exist, which can officially authorize the project participants. The Ministry of Environment and Forestry has designated REC Turkey as the National Focal Point on UNFCCC Article 6. A request for an official Letter of Endorsement for the Akbük project can only be issued after the adequate infrastructure of a DNA is established. It is deemed reasonable to close therefore FCAR1 and go ahead with the voluntary offset project "Akbük" as GS-VER project. In case the general framework will change a conversion into a CDM or JI project is intended by the project participants. Therefore it is obvious that a participating Annex I party could not yet be identified at this stage of validation. The DNA of the prospective Annex I country involved could therefore not yet officially authorize a project participant.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Turkey. The financial structure of the proposed project activity (financed by equity and commercial bank loan) has been reviewed accordingly.

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized below and under section 4.10.,e) and 4.10.i) for transparency reasons:

CL 8: It shall be clarified whether Suzlon Energy Ltd. or any subsidiary of Suzlon is a project participant?

Feedback: The turbines have been purchased from Suzlon Energy. Suzlon Energy LTD. or any subsidiary of Suzlon is not a project participant.

Conclusion: As stated in the PDD, Suzlon is not a project participant. This could be clarified and is subsequently closed.

4.2 Project Design

Referring to Part A and C of the PDD.

The project involves the development of a 31.5 MW onshore wind farm in the region of Aydın Province, Didim District in Turkey. The project will be constructed and operated by Ayen Enerji A.Ş. The project consists of 15 wind turbines with 2100 kW each (S88, design standard GL/IEC), which is advanced technology from Suzlon Energy Limited (SEL), the world's fifth biggest and India's largest wind turbine manufacturer, that is transferred from India to Turkey.

The wind turbines have a hub height of 79 m, an installed electricity output of 2100 kW and a rotor diameter of 88 m. The technical specifications could be verified during the on-site assessment. Wind turbines with a rated power of more than 2000 kW belong to the "First-Of-Its-Kind" in Turkey and are deemed to reflect current good practice.

The proposed project activity includes the construction of 2.7 km of new transmission line to establish a connection between the proposed project and the national grid. The project will be connected to the 154 kV high-voltage Turkish national grid from Akbük transformer station. The Akbük Wind Farm will generate approx. 105 GWh/year which is delivered to the Turkish national grid. The estimated emission reductions amount to approx. 67,570 tCO2-eq/year. Being a renewable electricity project, the project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO2 emissions from electricity generation by fossil fuel power plants.

Because of the significant contributions of the project activity to technology transfer from India to Turkey and to the region's sustainable development is the project activity designed as Voluntary Offset Project under the Gold Standard. The project's system boundaries are clearly defined as the Turkish national power grid. The project activity has started its operation in November 2008. The project construction work started on 30th of June 2008, after the financial closure has been achieved on 6th of February 2008 /9/, which is deemed the project activity starting date.

The project owner has seriously considered VERs in the decision to develop the project, which has been confirmed with relevant documents in the course of the validation process, see CL 1. An additional endorsement of the project activity as Voluntary Offset Project by the National Focal Point of Turkey (REC) has been asked for. The expected operational lifetime of the project activity is 49 years according to the generation license /12/, which is longer than the two times 7 years renewable crediting period of a total of 21 years.

A renewable crediting period of 7 years has been chosen for the project, starting from 7 November 2008. The emission reductions are estimated to be 67,570 tCO2e per year and 472,988 tCO2e over the first seven-year crediting period.

The project activity is a renewable energy project with an output capacity of more than fifteen MW, which is the threshold for small-scale projects under CDM. Hence, the project qualifies as a large-scale CDM project activity according to scope category 1: Energy industries (renewable / non-renewable sources).

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized below and under section 4.10.,e) for transparency reasons:

FCAR2: The project sites need to be clearly demarked. The unique identification of each turbine needs to be provided to the verifier, based on micro-siting. Please provide also the installed turbine details for verification.

Feedback: Very detailed information on the turbine locations, turbine specs and technical aspects of the project has already been submitted to the DOE on 25.03.2008.

Conclusion: Micrositing for the project was not finalized yet at time of PDD design. Meanwhile the final coordinates of the single turbines and any minor corrections are determined. Therefore the final locations of the turbines will be confirmed in the course of the first verification of the project activity.

4.3 Baseline Determination

Referring to Part B and Annex 3 of the PDD.

The project applies the approved baseline methodology ACM0002 (version 07), titled "Consolidated methodology for grid-connected electricity generation from renewable sources" and the relevant methodology tool "Tool to calculate the emission factor for an electricity system".

The applied baseline methodology is justified as it has been demonstrated that the project activity ensures that:

- It is a grid connected zero emission renewable power generation activity from wind energy.
- The project does not involve switching from fossil fuel to renewable energy at the project site.

The spatial extent of the project boundary is clearly defined as the site of the project activity and all power plants connected physically to the Turkish national grid.

The defined project boundary is in line with ACM0002 (version 07). Emission sources and gases included in the project boundary are:

	GHGs involved	*Description*
Baseline emissions	*CO2*	*Turkish National Grid*
Project emissions	*N/A*	Project emission is regarded as zero as the project is a renewable energy (wind source) project.
Leakage	*N/A*	There are no leakages that need to be considered in applying this methodology.

In the baseline scenario the electricity delivered from the project activity to the grid would have been generated by fossil fuels grid-connected power plants and by the addition of new generation sources. This is reflected in the combined margin (CM) - the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor. The weighting is set to respectively 75% and 25%, the default values stipulated by ACM0002 version 07 for wind farm projects.

The Turkish National Grid is dominated by fossil fuel-fired power plants (coal, lignite, natural gas and fuel oil). It is deemed likely that these fossil fuel-fired power plants will continue to dominate the power sector due to the local availability of low-cost coal and lignite. It is expected that renewable capacity additions will not have significant effects on the mix of the Turkish National Grid during the first crediting period. The baseline determination is transparent and reasonable.

4.4 Additionality

Referring to Part B of the PDD.

The additionality of the project has been established using the "Tool for the demonstration and assessment of additionality" version 05 approved by the CDM-EB.

TÜV Rheinland was able to verify that the incentives from CDM were seriously considered prior to the start of the project activity as outlined below. Related open issues could be clarified, see CL1 below.

Step 1: Identification of the alternatives to the project activity consistent with the current laws and regulations.

The alternate baseline scenarios for the project activity have been suitably identified as,

a) The proposed project activity not undertaken as a VER project activity;
b) Construction of a power plant using other sources of renewable energy with equivalent amount of annual electricity generation
c) Same amount of electricity produced by other facilities not under the control of project proponent (no action from the investors), where the energy mix is dominated by fossil fuel fired power plants.

The proposed project activity not undertaken as a VER project activity is not a realistic and credible alternative, as discussed in the analysis below.

Alternative of another source of renewable energy refers to hydro energy as Ayen Enerji AS. is mainly involved with hydroelectric power plant investments. Ayen Enerji AS. has constructed several hydro plants in Turkey within a wide range of installed capacities; therefore hydroelectric power plant with equivalent amount of annual electricity generation is an alternative to the project participant.

The installed capacity of the Turkish National Grid for both the existing power plants and the power plants to be built in a foreseeable future makes it possible as an alternative to provide electricity from the grid.

The above alternatives to the project outlined are in compliance with the relevant applicable laws and regulations in Turkey, which are:

- Electricity Market Law [Law Number: 4628 Ratification Date: 20.02.2001 Enactment Date: 03.03.2001]
- Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy [Law Number: 5346 Ratification Date: 10.05.2005 Enactment Date: 18.05.2005]
- Environment Law [Law Number: 2872 Ratification Date: 09.08.1983 Enactment Date: 11.08.1983]

Step 2: Investment analysis

An investment comparison analyses will be applied through demonstrating the IRR's of the proposed 31.5 MW wind farm project and an alternative hydro-electric project that Ayen Enerji A.S. has have developed in the past, named ''Kadıncık HES'' , a 20 MW Run-off-River Hydro Project. Based on the calculated IRRs of the projects, it can be concluded that the hydroelectric power plant alternative to the proposed project activity is significantly much more profitable investment compared to a wind farm project:

	IRR (%)		
	10 years	**15 years**	**25 year**
Akbük 31.5 MW Wind Farm	n.a.	-0.36	11.43
Kadıncık HES 20 MW	-13.11	13.57	18.20

Only with consideration of an additional VER revenue of at least 10 €/t CO2eq the IRR can be improved to a similar financial performance like the 20 MW Run-off-River Hydro Project, mainly because of the higher project-specific investment cost per kW installed capacity and the lower full load hours of the 31.5 MW Wind Power Project.

	IRR (%)		
	10 years	**15 years**	**25 year**
Akbük 31.5 MW Wind Farm 5 €/t CO2eq	-10.83	4.67	13.77
Akbük 31.5 MW Wind Farm 10 €/t CO2eq	-2.13	9.30	16.28

The project proponent has decided to proceed in addition to *Step 3 (Barrier analysis).*

Step 3: Barrier analysis.

A barrier analysis has been conducted, describing different barriers in a comprehensive way, that would prevent the implementation of the project, but would not prevent the implementation of at least one of the alternatives:

Investment barriers

It could be verified and hence confirmed by the validator, that no similar wind energy projects has been taken into operation without VER credits in Turkey.

An investor in Turkey will find it impossible to borrow long-term in the Turkish market. Firstly, there is no domestic supply of long term commercial credit. Secondly, it would be prohibitively expensive. The current real interest rate on short term debt is more than 12%, 20 - 25% for short term borrowing, inflation close to 10%. These points to a discount rate for long term credit in excess of 12% in real terms in YTL. Also supply of long term international commercial credit to Turkish debtors is limited. It has also been verified that Turkey has been placed under number 68 of 178 economies worldwide with regard to the economic indicator "Getting Credit" and under number 112 regarding the indicator "Closing a Business" in the Doing Business 2008 Report, a copublication of the World Bank and the International Finance Corporation /42/. Under such conditions, investing in any type of project in such a country is risky for any investor.

The investment cost has been higher than originally planned because of an increase of the cost of the equipment, additional cost for the grid connection. The high initial investment cost leads to higher investment risk and more difficulties in project financing.

The prospect of generating tradeable Verified Emission Reductions (VERs) and the expected revenues from carbon credits was basis for the positive loan decision of the bank.

The arguments provided, which are explaining the difficulties to getting access to finance have been checked by the validator and are accepted as substantial. It can be confirmed that the annual debt service cover ratio (ADSCR) was the main concern of the bank which is providing the loan and has led to the statement of the creditor bank, that VER revenues have been taken into account for the loan decision for the Akbük wind power project.

It is also correct, that the project faces project-specific risks because of the long payback period compared to other investment options, the high country risk with unpredictable interest rates, the additional investment costs of the transmission line to be financed by the project proponent (approx. 500,000 €) and the high transmission line fee (10,333.23 €/MW/year), which is higher than in other zones of Turkey.

Technological barriers

The imported 2100 kW wind turbines of type Suzlon S 88 with a rotor diameter of 88 meters and their specific features and their advantages of high reliability were in 2008 the "First-of-its-Kind" in Turkey of this size > 2000 KW rated power output and lacked operation experience in Turkey, because there are no domestic manufacturers of wind turbines available.

The project owner lacked skilled labour to operate and maintain the technology, which will lead to a high risk of equipment disrepair and malfunctioning and other under- performance. Thus training on required technology for the staffs was carried out during implementation of the proposed project.

The other claims for technology barriers with regard to technology transfer, the transmission system, lack of infrastructure and skilled labour are justified.

Prevailing practice

It is also justified, that the transport and construction of the wind park with local sub-contractors with no experiences and references in this sector, provides on one hand temporary additional jobs in the region (between 40 to 140 jobs per 100 MW of installed capacity /36/) but bears on the other hand additional risks and might increase subsequently the investment costs.

Because of the further predicted increase in energy demand in Turkey it is assumed that this demand will be met with a further increase of energy generation by mainly thermal power plants, the long term share of wind energy remaining insignificant within the long-term projections for Turkey's energy supply. Hence the stated limited experience in construction and operation of wind farms in 2007 with only 50.95 MW installed until end of 2006 and newly installed wind power capacity in 2007 of 95.3 MW is justified.

Other barriers

Other barriers consist of *bureaucratic and legislative barriers* with regard to the previous changes in the structure of the Turkish energy market and to uncertainties in the market in connection with the implementation of the "Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy", which includes the issuance of a generation license and other related necessary permits; *government policies in favour of nuclear and fossil fuel-fired power plant investments* ("Law on Installation, Operation and Sales of Nuclear Power Plants"), and also project specific *licensing barriers regarding time restrictions* for the implementation time frame and logistic barriers with need of additional roads for transportation of the equipment with heavy trucks, which are seriously affecting the implementation of alternative a).

Turkish government has not set renewable energy target yet but in 2005 first renewable energy law was accepted. Licence applications for a total capacity of 4,800 MW (November 2004) have been submitted to the Turkish Electricity Market Regulatory Authority (EMRA) by private developers after the beginning of the electricity market reform. The law was updated in 2006 and purchase guarantee for clean electricity is extended to 10 years. The kWh price for renewable energy is between 5 and 5.5 Euro cent. Despite a good progress after amendments of the law, EMRA has stopped receiving new license application till further notice. There were many small companies bought licenses of the best wind areas and made no progress in project implementation and obviously are looking for real investors to sell it with a better price. As a result, many licensed projects saw no progress. Some issues related with investing in the market are: Country risk, weak financial system, credit risk and grid capacity limitations.

EMRA is now looking for ways to solve this problem and probably they may ask for assurances from companies. In total, licensed wind farm projects make 2,918 MW of installed capacity however by June 2008, installed capacity for wind energy reached only 249 MW.

In summary it can be concluded that the claims presented by the project participant could be verified by evidences in the course of the validation and are found to be substantial for the justification of the additionality of the project activity.

Hence, none of the barriers mentioned above would prevent the alternative equivalent capacity or electricity service provided by the Turkish National Power Grid from implementation (alternative b).

Step 4: Common practice analysis.

Existing wind farms in Turkey are listed in the common practice analysis. It shows that earlier wind farms enjoyed a very favourable electricity tariff (8.54 $cents/kWh until 2001) that is impossible for nowadays wind farm projects. Other similar wind farms have all applied for VER projects due to the same financial unattractiveness and investment barrier as the proposed project activity. The penetration rate of the installed wind energy electrical capacity in relation to the total installed capacity in Turkey is 0.60 %. According to Turkey Wind Atlas, Turkey's technical wind energy technical potential is 88 000 MW and its economic potential is 10 000 MW. The penetration rate of the installed wind energy electrical capacity compared to these figures currently only 0.28 % or 2.49 % respectively. Therefore wind energy utilization can currently in Turkey not considered as business as usual and the project activity cannot be said to represent common practice.

In summary, it is sufficiently demonstrated that the project is not a likely a baseline scenario and that emission reductions occurring from this will hence be additional.

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized below for transparency reasons:

CAR 1: Barriers described

Please provide re-traceable explanations to clearly show how the VER-project activity under consideration is affected by the prescribed barriers and provide evidence to support the relevance of the barriers, applying non-binding best practice examples.

Provide transparent and documented evidence making specific link to the actual project activity to carry out the barrier analysis and use evidence such as national/international statistics, national/provincial policy and legislation, studies/surveys by independent agencies, industrial associations of renewable energy industry, etc.

More wind project specific barriers, especially in Turkey and especially for Ayen Enerji A.S. with no references of wind power projects from the past, and the selected project location should be described. It has to be taken into account that Turkey meanwhile attracts all wind turbine producers and service providers linked to the wind power industry worldwide. Additional project barriers for grid connection throughout erection of the transmission line, road construction and also the previous revision of the Renewable Energy Law in Turkey (18th of April, 2007) and risks associated with investments in foreign exchange terms have to be considered too.

Feedback: The barriers described are further elaborated providing documented evidence and references where applicable. The construction of the grid connection has been already evaluated as an external investment barrier in addition to the barrier related with the transmission line fees in the PDD. The Enactment Date of the "Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy" is mentioned as 18.05.2005 in the PDD, which is the formal expression to refer to a Law. However, the newest amendments to the law have been taken into account in the PDD, which reflects the actual and up-to-date legislative structure with regards to renewable energy business.

Although the list of barriers that hinder the development of the Akbük Wind Farm can be extended, we do believe that the barriers presented in the PDD are the most relevant and major barriers faced by the project participant.

Conclusion: The described barriers are plausible and could be verified and are in line with similar experiences of the validator with similar wind power projects in Turkey.

CAR 2: Common practise analysis: The similar activities implemented without VER benefits shall be analysed in detail with evidence and focus on projects that are operational or will be in the near future operational.

Feedback: The non-VER project activities have been explained in the PDD (please see the related sections of the revised PDD).

Conclusion: Since these projects are not comparable in terms of size and feasibility figures, wind power projects of this size and features cannot be considered as common practice or as similar.

CAR 4: The Methodological Tool "Tool for the demonstration and assessment of additionality" (Version 05) and the relevant Guidance on the Assessment of Investment Analysis (EB 39, Annex 35) should be applied for chapter B.5. of the PDD.

Feedback: The PDD has been revised accordingly (please see the related sections of the revised PDD).

Conclusion: The CAR is resolved and closed.

CAR 5: Please correct the values in table A.4.4. and table B.6.4. (especially for 2008 and 2015) according to the actual project preparation status.

Feedback: The PDD has been revised accordingly (please see the related sections of the revised PDD.

Conclusion: The PDD was updated accordingly.

CL 1: Starting date of the project (see also CL 9)

Clarify by relevant documents the date of

- Real action
- Construction
- Implementation

of the VER project activity.

The starting date of a VER project activity is the date at which the implementation or construction or real action of a project activity begins (*CDM Glossary of Terms* Version 03).

Therefore, the starting date of a CDM project is the date at which the project activity commences.

The whole project implementation schedule has to be described and justified in detail, like date of financial closure, start of construction of roads and site preparations, erection of turbines, operational start, including

- Date of issuance of electricity production license and predetermined maximum timeframe for project completion.
- Date of issuance of land use permit, date of application
- Date of issuance of transmission line usage permit, date of application
- Date of issuance of urban improvement permits, date of application
- Date of issuance of construction permit, date of application

The project participants shall further demonstrate the additionality of the VER project activity taking into account also further evidence of VER consideration.

Feedback: Date of financial closure is 06.02.2008, which is the signature date of the loan agreement with the crediting bank.[1)]
[1)]Reference: Official Website of Istanbul Stock Exchange:
http://www.imkb.gov.tr/bultenler.htm

- Date of start of construction is 30.06.2008. The starting date of the project activity can also be confirmed from the progress payments for construction provided to the DOE.
- Date of issuance of electricity production license: The Generation License was issued on 18.01.2007. The Generation Licence is available for the DOE.
- Date of issuance of land use permit is 30.04.2008. The permit is available for the DOE.
- Date of issuance of transmission line usage permit is 25.09.2007. The permit is available for the DOE.
- The project is not in an urban area hence no permit is necessary with regards to Akbük WF Project. However, the permit from the forestry department can be the equivalent permit to the "urban improvement permit. This permit has been issued on 28.04.2008 and available for the DOE.
- Date of issuance of construction permit is 03.01.2008 and available for the DOE.
- The date of the contract with regards to consultancy on development of the proposed project as a GS VER project, between OneCarbon International and Ayen Enerji A.S. is 03.9.2007. The contract between OneCarbon and Ayen Enerji demonstrates that the project participant has taken into account the VER credits from a very early stage.

Conclusion: see under CL 9.

CL 9 (see also CL 1)**:** Please clarify the date of the Board Decisions of Ayen Enerji AS or other Project Participants (e.g. One Carbon B.V.) on Consideration of VERs for the Akbük 31.5 MW Wind Farm-Project. Please provide documental evidence of the whole decision process of Ayen Enerji AS and other project participants from site selection, wind speed measurement, application of license (31.5 MW; transmission line), feasibility study to final loan application, taking into account of VERs for co-project financing.

The effects of changes of the Renewable Energy Law and changes of the currency exchange rates and interest rates for long-term loans have to be further elaborated. It has to be certified by a chartered financial auditor in Turkey, that no ODA was used for project financing and at which stage VER was considered for the investment decision.

Feedback: As stated under the CL1, the financial closure (the agreement between the creditor bank and the project participant) was on 06.02.2008 and the contract between OneCarbon and the project participant was on 03.09.2007. The financial closure dates can be also checked from the official website of Istanbul Stock Exchange. As Ayen Enerji is a private company open to public (listed under the stock exchange market) the financial closure dates as well as the financial structure of the project can be tracked very transparently.

Conclusion (to CL 9 and CL 1):

The official documents showing the real action, construction and implementation of the project have been submitted to TÜV Rheinland. According to this document the following sequence of events are set:

Date	Event
18/01/2007	Electricity Production License EÜ/1062-6/786
04/07/2007 & 05/07/2007	Initial stakeholder Consultation Meeting in Akbük Town and in Kazıklı Village as part of Environmental Impact Assessment
03/09/2007	Contract between Ayen Enerji and One Carbon with regard to consulting on development of the project as GS-VER project
25/09/2007	Transmission line usage permit
19/10/2007	Approval of EIA by Ministry of Enviropnment and Forestry, General Directorate of Environmental Impact and Planning
06/02/2008	Financial closure through signature of the loan agreement with the crediting bank, as announced in the official document from Istanbul Stock Exchange
21/02/2008	Board decision of Ayen Enerji A.S. regarding consideration of VER
26/03/2008	Begin of main stakeholder consultation with sending out of documents, CDs and questionnaires, concluded with a publication on the official webpage of Ayen Enerji A.S. and additional on the DOE webpage
14/04/2008 & 15/04/2008	On-site assessment by DOE TÜV Rheinland
28/04/2008	Permit of forestry department
30/04/2008	Land use permit
30/06/2008	Construction start date

In addition the official document of the board resolution /18/ and the document of concession of land from the Ministry of Environment and Forestry have been made available.

Thus it is demonstrated that the incentive from VER was seriously considered prior to the start of the project activity. It can be confirmed that the annual debt service cover ratio (ADSCR) was the main concern of the bank which is providing the loan and has led to the statement of the creditor bank, that VER revenues have been taken into account for the loan decision for the Akbük wind power project. The relevant evidences supporting this information have been provided and verified by TÜV Rheinland.

4.5 Monitoring

Referring to Part B and Annex 4 of the PDD.

The project applies the approved monitoring methodology ACM0002, version 07 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". The selected monitoring methodology is applicable for the project activity as it involves grid-connected renewable power generation using wind energy, with the installed capacity of 31.5 MW, which is higher than the qualifying threshold of 15 MW for Type I small scale projects and therefore a large-scale project.

The net electricity generated from the wind farm will be measured continuously and recorded monthly. Monitoring of project emissions is not required as per ACM0002 for wind power projects and therefore has not been considered for the project. Since the proposed project does not result in transfer of generation equipment to the project site nor from the project site to any other location, leakage is not in place.

The application of the monitoring methodology is transparent and correctly applied.

4.5.1 Parameters determined ex-ante

The combined margin emission factor is determined ex-ante based on the most recent information available. More detailed information is provided below.

4.5.2 Parameters monitored ex-post

This section shall include an evaluation of the data and parameters that need to be monitored.

The methodology requires monitoring of the following for wind farm projects:
• Electricity generation from the proposed project activity;
• Data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources";
• Data needed to recalculate the build margin emission factor, if needed, consistent with ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

The operating margin and build margin emission factor are determined ex-ante, therefore the parameter monitored ex-post is the electricity generation from the proposed project activity.

The amount of total gross electricity generated by the project and the amount of electricity consumption as well as the amount of electricity fed into the Turkish national grid (net electricity production) are monitored continuously. There a two main electricity meters, owned and sealed by TEİAŞ: a primary meter and a secondary or back-up meter.

For the VER project monitoring the main parameter is the net electricity production generated from the project, which will be recorded monthly. The net electricity generation, which is to be monitored and to be used for baseline emissions, is the net electricity generation, which is read by TEİAŞ for invoicing. On the last day of each month, the TEİAŞ staff performs the reading at the switchgear station, where the measurement instruments are installed, which will be the basis for the invoicing.

This data will be cross verified against the sales receipt from the grid. A cross-check during the on-site assessment showed, that the measured and recorded electricity values are correct and traceable by verifiers. The net electricity generated and delivered to the grid can be monitored from TEİAŞ invoices, from the Market Financial Settlement Centre (MFSC) website or for control reasons also the SCADA system, which is monitoring every single wind turbine, but does not include transmission losses.

It could be checked during on-site assessment, that the TEİAŞ invoices are conform with the own records of the wind farm. Relevant data storage procedures as required are in place. The meters were sealed by TEİAŞ. The electricity meter's specifications are in line with the relevant Turkish standard /32/.

At the end of each monitoring period, the data from the monthly meter readings will be added up to obtain the total monitoring period net electricity generation. This figure will be multiplied with the combined margin, which has been calculated ex-ante. For verification, a monitoring report will be prepared by the project participants with the support of the carbon consultants using the electricity generation data acquired from the measurement devices. Moreover, the monitoring report will contain information on the QA/QC procedures followed to assure a certain accuracy of the monitoring data.

Other data to be monitored ex-post are the following sustainable development indicators, which have been scored with +2:

Employment (Quality):
based on Certificates of specific training provided.

Employment (Quantity):
based on the registration of the employees at the Social Security Institution throughout web portal SSK.

Livelyhood of the poor (Access to essential services):
based on the construction of a new bazaar in Akyeniköy district as an additional community project.

These indicators are further described in the PDD, section A.2.

During the on-site assessment the verifier came to the conclusion, that the project activity has resulted in more positive effects for sustainable development in the region of the wind power projects than described in the PDD.

Such samples are the high local content of sub-contracts during operation and also the mainly employment of local residents and their further professional education throughout Ayen Enerji As with support and long-term commitment of the manufacturer Suzlon and the carbon consultant One Carbon.

Further information to the assessment and elaboration of environmental impacts with regard to Gold Standard is summarized for transparency reasons under chapter 4.10 g,h).

4.5.3 Management system and quality assurance

The project's operation and maintenance manual needs to include:

- A description of the responsibilities and authorities for project management,
- Procedures for monitoring and reporting, and QA/QC procedures,
- A description of the installation of metering equipment,
- Procedures for the calibration of metering equipment,
- A description of training and maintenance needs,
- Procedures for day-to-day recording and storage.

During on-site assessment it was confirmed by the project owner, that these procedures will be maintained and implemented to enable subsequent verification of emission reductions.

CL 5: It has to be clarified, if detailed procedures have been elaborated and are in place and if a CO2 consultant will be subcontracted to ensure the data preparation for a smooth verification execution.

Feedback: The scope of services of OneCarbon also covers the verification process for the crediting period and is secured with a contract between OneCarbon and the project participant. OneCarbon will assist the project participant during monitoring and verification of the project activity.

Conclusion: CL 5 is resolved and closed.

CL 10: It has to be clarified, which procedures and responsibilities are in place for the execution of the monitoring and reporting and calibration as well as verification preparation.

Feedback: The PDD has been revised accordingly. Please refer to the related section(s) in the revised PDD.

Conclusion: CL 10 is resolved and closed.

4.6 Estimate of GHG Emissions

Referring to part B and Annex 3 of the PDD.

The emission reduction ERy by the project activity during the crediting period is the difference between baseline emissions (BEy), project emissions (PEy) and emissions due to leakage (Ly), as follows:
1) Baseline emissions: baseline emissions (BEy in tCO2) are the product of the baseline emissions factor (EFy in tCO2/MWh) times the electricity supplied by the project activity to the grid (EGy in MWh).
2) Project emissions: there are no emissions from the project which is a renewable energy project.
3) Leakage: no leakage has to be considered for the proposed project activity.
4) Emission reduction: ERy= BEy- PEy- Ly= BEy.

For the calculation of the operating margin (OM) emission factor, the simple OM emission factor calculation method is selected because low cost must run projects constitute less than 50% of the total grid generation and data is not available for applying the dispatch data analysis.

The aggregated generation and fuel consumption data are used due to the fact that more disaggregated data are not available in the Turkish National Power Grid (TNPG).

Country specific data for net calorific value (NCVi) of each type of fossil fuel, the IPCC 2006 default values for the oxidation factor of each type of fossil fuel and the total electricity delivered to the TNPG are selected and are deemed reasonable.

Vintage data for the years 2004, 2005 and 2006 from the annual publication of TUIK (Turkish Statistical Institute) are used for operating margin calculation. The OM is calculated to be 0.652 tCO2/MWh as a generation-weighted average for the three years.

Because plant specific fuel consumption and electricity generation data is not public available in Turkey, the following approach approved by the CDM Executive Board for such cases deemed to be applicable for this project.
- Use of capacity additions for estimating the build margin emission factor for grid electricity.
- Use of weights estimated using installed capacity in place of annual electricity generation.
- Use the efficiency level of the best technology commercially available in the National grid of Turkey, as a conservative proxy, for each fuel type in estimating the fuel consumption to estimate the build margin (BM).
Following the EB's guidance the build margin is calculated as follows:
- The capacity additions from the years 2003 to 2006 is chosen, which comprise 20% of total system generation and that have been built most recently was established using public available data from the official website of the Turkish National Power Grid Company TEIAS.

- The average values of generation efficiencies of thermal power plant were obtained due to non-availabilty of data per power plant from the report "Environmental Map", published by the Ministry of Environment and Forestry.
- For the conversion into t CO2 / GWh were the default emission factors of 2006 IPCC National GHG inventory applied.

- The EFBM is calculated as 0.618 tCO2/MWh.

The weights ωOM and ωBM are selected as 0.75 and 0.25, respectively, as stipulated for wind project by ACM0002 (version 07). The combined margin of 0.644 tCO2/MWh is fixed exante for the entire first crediting period.

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized below for transparency reasons:

CL 3: Clarify, if latest public data from TEIAS, UNFCCC national GHG Emission Inventory of Turkey (2005, 2006) and/or latest Statistical Yearbook of Turkey (2006 with figures of 2004) were used respectively for the emission factor calculation and which source is recommended from the Turkish Focal Point of Turkey as official source for this purpose. It has to be clarified, if meanwhile more updated information is public available from the Turkish grid operator TEIAS or other more official sources in order to ensure, that the project activity, which is considered as Gold Standard Project applies the most conservative emission factor.

Feedback: Official data from TEIAS had been used in the calculations. The official source of the State Statistical Institute is the statistics of TEIAS. Furthermore relevant law and regulations refer to TEIAS as the official source of information for energy related issues (see section 2 on the official web page of State Statistical Institute: http://www.tuik.gov.tr/rip/temalar/4_3.html).

Conclusion: CL 3 is resolved and closed.

CL 4: Clarify and list the power plants, which have been modified, retrofitted, dismantled or are stand-alone, have been excluded from the build margin calculation as required by the relevant methodologies and tools in order to apply the most conservative combined margin emission factor for the project activity. Please provide a list of used sources for the different figures in order to re-trace the different steps of the calculation.

Feedback: Necessary adjustments have been made in the calculations and the emission factor section has been revised accordingly (please refer to the related section of the PDD).

Conclusion: CL 4 is resolved and closed.

It was confirmed, that official data from TEIAS had been used in the calculations. The official source of the State Statistical Institute is the statistics of TEIAS. Furthermore relevant law and regulations refer to TEIAS as the official source of information for energy related issues (see section 2 on the official web page of State Statistical Institute:
http://www.tuik.gov.tr/rip/temalar/4_3.html

Necessary adjustments have been made in the calculations and the emission factor section has been revised accordingly.

4.7 Environmental Impacts

Referring to Part D of the PDD.

An Environmental Impact Assessment (EIA) has been performed in 2007, which has been approved on 19th of October 2007 by the Ministry of Environment and Forestry of Turkey, General Directorate of Environmental Impact and Planning.

The potential environmental impacts have been sufficiently identified. No significant environmental impacts are expected from the project activity. The local authorities could confirm this issue during stakeholder consultations, the outcomes of the First Round Consultation did also not result in any negative comments on significant impacts of the proposed project on the environment.

As the Sustainable Indicator Matrix of the project does also not contain any negative scores, from the view of Gold Standard requirements no voluntary EIA was necessary to be conducted in addition, as the EIA contains all necessary mitigation measures during construction and operation of the project.

It was confirmed during on-site assessment, that the project proponent is committed to collaborate closely with the stakeholders, in the planning of the construction phase, in order to minimise impacts to the environment, ensure safety and minimise disturbance to activities present at the project site.

Further information to the assessment and elaboration of environmental impacts with regard to Gold Standard is summarized for transparency reasons under chapter 4.10 g,h).

4.8 Comments by Local Stakeholders

Referring to Part E of the PDD.

There is no mandatory requirement to conduct a local stakeholder consultation for wind projects in place in Turkey.

A voluntary initial stakeholder consultation process or first round consultation has been performed during the design phase through inviting local residents to comment on the project activity. The initial stakeholder (ISC) meeting announcement was published in local and national newspapers.

A report and a summary of the initial stakeholder meetings on 4th July 2007 in Akbük town and on 5th July 2007 in Kazikli village was submitted to the validation team. There were no adverse comments on the project activity and all comments are supportive of the project which has created new job opportunities in the region during construction and operation.

A summary of comments is provided and has been verified by TÜV Rheinland. Follow-up interviews were performed during the on-site assessments.

During the visit the discussion was focussed on the status of the project implementation and the appreciated addionally voluntary commitments of the project proponent to the nearby municipality of Akyeniköy throughout a CSR project concept, which contains the following voluntary measures for the advantage of the community:

Ayen Energy has now taken the responsibility to construct a semi closed bazaar area for Akyeniköy district. Ayen Enerji has contracted a sub-contractor for the construction of the new bazaar on 27/05/2008.

The output of the second round consultation or main stakeholder consultation with a overall duration of 60 days, which is a report including all written and oral comments given as well as the argumentation on whether or not the comments are taken into account, has been submitted to the validation team.

The report of the main consultation was completed on 30th of June 2008 and was reviewed by TÜV Rheinland and deemed adequate and transparent without concluding further corrective action or clarification requests.

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized for transparency reasons under chapter 4.10, i.

4.9 Comments by Parties, Stakeholders and NGOs

A short project description in German and English language and the PDD were made available under the web page of:

http://www.tuv.com/de/clean_development_mechanism_cdm_.html
http://www.tuv.com/de/en/clean_development_mechanism_cdm.html

and also of Ayen Enerji AS: www.ayen.com.tr

under the link: http://www.ayen.com.tr/tesislerimiz/tesislerimizakbuk.asp

for a voluntary second round global stakeholder consultation process.

Parties, stakeholders and NGOs were through these web sites invited to provide comments.

Comment by:
☐ Accredited NGO ☐ Party ☐ Stakeholder
Inserted on:
Subject:

Comment: No further comments were received during the above global stakeholder consultation process besides of the response to the main stakeholder consultation as summarized in the report of the main consultation of 30th of June 2008 .

How has considered the comment received in its validation:
A description of how the has taken due account of the comment received.

N/A

4.10 Gold Standard Requirements

The Gold Standard requests besides of the successful assessment against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the fulfilment of the requirements for Voluntary Offset Projects under the Gold Standard.

Projects which pass the screens listed in Box 1 are eligible for the Gold Standard.
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Box 1: Overview of The Assessment Framework and Its Three Screens

Project Type Eligibility Screen (see Ch.3.2)
- Project type check
- Host country eligibility check

Additionality Screen (see Ch.3.3)
- Previous public announcement check
- Additionality tool
- Conservative approach check
- Technology transfer and/or technology innovation

Sustainable Development Screen (see Ch.3.4)
- Sustainable development assessment
- Environmental Impact Assessment (EIA)
- Public consultation procedures

In the following sections these additional requirements are assessed and evaluated.

a) Eligibility of the project for Gold Standard

Project Type Check:

According to the Gold Standard all projects technologies included in the figure below are eligible.

Box 5: Eligible Project Types

Renewable Energy (see section A.1 below)

- PV
- Solar thermal
  - Electricity
  - Heat
- Ecologically sound biomass, biogas and liquid biofuels
  - Heat, electricity, cogeneration
  - Transport
- Wind
- Geothermal
- Small low-impact hydro, with a size limit of 15 MW, complying with WCD guidelines

End Use Energy Efficiency Improvement (see section A.2 below)

- Industrial energy efficiency
- Domestic energy efficiency
- Energy efficiency in the transport sector
- Energy efficiency in the public sector
- Energy efficiency in the agricultural sector
- Energy efficiency in the commercial sector

The assessed project uses a renewable energy technology namely wind energy. This project uses an ecologically sound electricity generation and the emission reductions due to replacement of electricity generated mainly by grid connected coal-fired power plants count towards the project's overall emission reductions. Hence the project is eligible under Gold Standard.

Host Country Check

The host country does not have a quantitative reduction target under the Kyoto Protocol. Turkey acceded as the 189th Party to the UNFCCC on 24 May 2004. Turkey is therefore now listed in Annex-I to the UNFCCC, but not listed in Annex-B to the Kyoto Protocol (no quantified emissions limitation or mitigation commitment yet), therefore, not a Party to the Kyoto Protocol yet! Conclusion: Turkey is eligible as host country for Gold Standard Voluntary Offset Projects.

Project Size Check

Table 4: Definitions of Micro-, Small- and Large-Scale Projects with the GS for Voluntary Offsets

Micro-scale	Small-scale	Large-scale
<5k tCO2e per year	>5k and <15k tCO2e per year	>15k tCO2e per year

The project activity is assumed to achieve annual emission reductions of 67,570 t CO2 e, which is belonging to the category of large-scale projects under GS for Voluntary Offsets.

Eligibility for Retroactive Registration

The project activity is not applying for retroactive registration. Anyhow, because of a delay within the validation process, the registration of the project with the Gold Standard might be later as planned**.**

b) Technological transfer

The project activity results in technology and knowledge transfer related to:
• Import of Multi Megawatt S88/2100 wind turbines from abroad (Suzlon Energy Ltd., India)
• Training of skilled labour in the region to operate and maintain the power plant

c) Sustainable development screen

The project has used the sustainable development indicators matrix as required by the Gold Standard. The total score obtained is a +8 where:

- Local/regional/global environment has a subtotal of +1
- Social sustainability and development has a subtotal of +4
- Economic and technological development has a subtotal of +3

For none of the indicators a negative score has been given. All the assumptions used to define the score values have been revised by the validator, based on submitted documentation and the on-site visit made during the validation of the project. Hence these criteria have been correctly demonstrated by the project proponents in a very conservative way without any overestimation of any of the indicators.

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized below for transparency reasons:

CL 2: It has to be clarified, how the described sustainable indicators can be monitored in practice (more details on procedures and forms of reporting) in order to prevent any misuse and ensure the integrity of the Gold Standard. How will be critical parameters like noise level in residential areas and influence on birds be monitored ex-post? Please provide relevant manufacturer technical specifications. Will there be any noise level tests performed by the manufacturer? Will legal noise requirements be monitored by the Turkish Ministry of Energy and Natural Resources or their local bodies, in order to ensure that neighbourhoods are not affected adversely?

Feedback: The monitoring plan has been detailed in the PDD including the sustainable indicators which scores +2 in the sustainable development Matrix. Taking into account the findings of the Environmental Impact, the outcomes of the Initial Stakeholders Consultation and the Main Stakeholders Consultation;
- Employment (Quality)
- Employment (Quantity)
- Access to Essential Services

have been added to the monitoring plan (please see the relevant sections of the revised PDD). As elaborately investigated through the Environmental Impact Assessment, ISC and MSC process, neither the noise level nor the affect to birds are considered to have any negative effects, therefore not included in the monitoring plan. Furthermore, the project participant shall comply with the "Regulation on Assessment and Management of Noise"[2)] which The Ministry of Environment and Forestry is the regulatory body.

[2)] Reference: http://www.cevreorman.gov.tr/yasa/y/26809.doc

Conclusion: The response to CL 2 is sufficiently, CL 2 is hense resolved and closed.

d) Use of the additionality tool

The project follows in a correct form every step of the approved additionality tool.

- The guidance of Gold Standard Foundation for retro-active crediting is not applicable as the project is not a retroactive project
- Step 1 defines correctly all the alternative scenarios and the consistence with the laws and regulations.
- Step 2 (investment analysis method) was applied, even the project activity with these features and scale is considered as one of the "First-Of-Its-Kind" for the project developer but also in Turkey for wind power projects with > 2000 KW rated power output per wind turbine.

- The barriers and related documentation presented in Step 3 have been checked and found plausible and appropriate for this specific project activity. They have been accepted by the validator.
- Step 4 shows that there is no similar project. After the Turkish Parliament took its decision in 2005 on a new Law on Utilisation of Renewable Energy Resources for Electricity Production, all new projects installed had to compete economically. Because the tariff is much below the average remuneration in the leading European wind markets it means that especially for small and medium-sized investors there are still only limited perspectives. There are no other projects not applying for VER after 2005. From the view of the validator only private entities are investing so far in wind farms in Turkey with high risks.

Hence the project has demonstrated the additionality correctly using the tool approved by the CDM Executive Board of UNFCCC with special focus on the early consideration of VER and the demonstration and justification of barriers and following also the relevant guidance from Gold Standard Foundation.

Further information on the detailed assessment and evaluation on the identified barriers and prevailing practice is provided under chapter 4.4.

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized below for transparency reasons:

The excel spreadsheet of the cash flows are provided to the DOE. The sensitivity analysis of the effect of changing VER prices to project IRR is done and has been made available to TÜV Rheinland.

TÜV Rheinland is of the opinion that the proposed project is unlikely to be the most financially attractive option. The assessment of the arguments and evidences presented above is deemed to sufficiently demonstrate that the project is not a likely baseline scenario, and that emission reductions resulting from the project are deemed to be additional.

e) ODA Additionality screen

The chapter A.4.4 clearly shows that ODA funding has not been included to realise any step of the process and even the bank's funds do not include any ODA funding. Hence the project complies with the requirements.

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized below for transparency reasons:

The project investment has been financed by 15% equity and 85% loan from a commercial private bank. The details of the financial structure of the project has been made available to the DOE. The validation did not reveal any information that indicates that the project can be seen as a diversion of official developing assistance (ODA) funding towards Turkey.

f) Use of conservativeness

The PDD has been prepared in a professional way. All the assumptions and parameters used for in the PDD comply with the conservativeness criteria.

This applies for the following criteria:

- Deduction of 14.3 % from annual energy yield prediction
- Plant load factor
- Combined margin emission factor
- Sustainable development indicators

Moreover the following conservative approaches have been applied:

- For imports from connected electricity systems located in another host country(ies), the emission factor is 0 tons CO_2 per MWh.
- Capacity additions from retrofits of power plants should not be included in the calculation of the build margin emission factor.
- Power plants registered as VER project activities should be **e**xcluded from the sample group m.

Hence it is clear that the project proponent was aware of the necessity of such an approach and has applied it in every item where possible, in order to avoid any artificial inflating of the number of VERs resulted for the project activity.

g) Monitoring of sustainable development parameters

The PDD shows all the parameters to be monitored. The monitoring process of every parameter is clearly explained in the PDD. Hence the monitoring plan is plausible and verifiable if implemented as stated in the PDD. As there is no critical parameter according to the Sustainable Development Assessment Matrix no further monitoring regarding sustainability is necessary. The data to be monitored ex-post are the following sustainable development indicators, which have been scored with +2:

Employment (Quality):
based on Certificates of specific training provided.

Employment (Quantity):
based on the registration of the employees at the Social Security Institution throughout web portal SSK.

Livelyhood of the poor (Access to essential services):
based on the construction of a new bazaar in Akyeniköy district as an additional community project.

These indicators are further described in the PDD, section A.2.

No further Corrective Action Requests (CARs) or Clarification Requests (CLs) have been addressed in addition.

Any future negative impacts during the operation of the wind farm should be reported and evaluated in preparation of the first verification of the project.

h) Environmental Impacts

All the possible impacts caused by the project activities have been clearly explained in the PDD, the relevant EIA and during the on-site assessment and follow-up.
The assessment includes all the relevant environmental issues as land use, noise, waste water and sewage, dust and air quality, ecological environment and interference with communication. Every of these aspects have been clearly elaborated in the PDD and the relevant documents. The complete information has been submitted to the validator. Hence the project is considered to comply with the environmental impact criterion.

i) Stakeholder consultation requirements

The project proponent has carried out two stakeholder consultations as required by the Gold Standards. All relevant stakeholders have been invited through the project consultant's websites and through local newspaper announcements and written and personal invitations one week before the initial stakeholder meeting. As required by the GS a list of the consulted stakeholders has been submitted to the validator.

The initial stakeholder process included a questionnaire to determine the environmental impacts caused by the project. Moreover, the GS-supporting NGO´s WWF, Greenpeace and REEEP have been invited to participate. No one of them could participate due to unavailability.

The presentation has been held in Turkish and has contained a non-technical summary of the project, the explanation of the sustainable development impacts and a checklist on environmental and social impacts.

Questions raised during the meeting were answered by the representatives of Ayen Enerji AS and One Carbon.

For the second round stakeholder consultation a summary of the first round consultation and a questionnaire have been submitted to all the relevant stakeholders along with the PDD, and a non-technical summary.

The National Focal Point of Turkey, the Ministry of Environment and Forestry was also invited and informed about the project activity.

No further comments were received.

Hence the requirements for local stakeholder process for Gold Standard projects have been fulfilled.

Relevant Corrective Action Requests (CARs) and Clarification Requests (CLs) could be successfully resolved and are summarized below for transparency reasons:

CL 6: It has to be clarified, which other publications (on websites, etc.) and media (newspapers, etc.) were used in Turkey during the main stakeholder consultation and global stakeholder consultation period. Please provide additional information about articles, presentations, which have introduced the project or have reported about the project.

Feedback: The relevant documents with regards to the proposed project have been published on-line on the official web page of Ayen Enerji A.S. (www.ayen.com.tr). The documents were published under the link http://www.ayen.com.tr/tesislerimiz/tesislerimizakbuk.asp and were available for comments starting from 01/05/2008 till 27/06/2008. The MSC process has been elaborately detailed in the MSC report.

Conclusion: CL 6 is resolved and closed.

CL 7: It has to be clarified, which additional community benefits were offered to the neighbouring municipalities and residents of neighbouring villages and if during the main stakeholder consultation and global stakeholder consultation period further comments have been received. Is the bazaar construction as an additional CSR activity confirmed and should be publicly announced in the final PDD?

Feedback: Besides, the positive contribution to the employment in numbers and quality, Ayen Enerji has started the construction of a bazaar area in the district of Akyeniköy as a part of the social responsibility and sustainable development programme of the company. Although the issue was under discussion for a couple of months, it was decided during the MSC process to go ahead with construction of a new bazaar area. The details are described in the MSC report as well as in the PDD.

Conclusion: CL 7 is resolved and closed.

CAR 3: The comments (if possible in written form) of invited Gold Standard NGO supporters from a list of meanwhile 51 NGOs/charitable organizations during the main stakeholder consultation process has to be submitted to the validation team.

Feedback: Although Greenpeace Turkey and WWF Turkey was pro-actively invited to comment on the proposed project and the project documents, the project participant was unable to provide a written comment from the mentioned GS supporters. Furthermore WWF have stated that they are not responding to these kind of requests (GS-VER projects) in principle.

Also, Mr. Hayrullah Oğuz and Mr Ferhat Taze from TEMA Foundation (Suppression of Erosion, Forestation and Protection of Wild Life / National Level NGO) was also kindly asked via mail to comment on the project in addition to the invitation during the MSC. The project participant was unable to receive a comment so far. However, written feedbacks/comments have been received from:
Mr. Đbrahim Sam / Akbük Municipality Mayor
Prof. Dr. Muhammed Eltez / Mugla University / Acting dean of faculty of engineering
Ms. Mine Dinc / ÇEKUL Foundation (Promotion and Protection of Environmental and Cultural Assets) / Representative of Aydın Province – Architect
Mr. Yılmaz Oz / Akyeniköy Municipality / Mayor
Mr. Fatih Abban / ÇEKUL Foundation (Promotion and Protection of Environmental and Cultural Assets) / Representative of Milas Province

The written comments are described in the MSC report in detail.

Conclusion: The project proponent have done, what is possible. Hopefully TEMA Foundation will join the Gold Standard Foundation as new GS-supporting NGO.

FCAR1: A copy of the letter of endorsement of the national focal point of Turkey, which confirms that the project is voluntary and contributes to the sustainable development has to be submitted to the validation team. It has to taken into account that the Commission on Environment of the Turkish Grand National Assembly has approved in June 2008 a draft law that enables Turkey's accession to the Kyoto Protocol. In this context it is recommendable to approach also the following Turkish Climate Change experts of UNFCCC Roster of Experts for Turkey:

Expert	Expertise	Tasks
Yunus ARIKAN Deputy Programme Manager Ministry of Environment and Foresty and UNDP	• 1. GHG inventory • 2. Policies and measures and analysis of GHG abatement issues • 3. GHG projections and analysis of GHG abatement options • 4. Vulnerability assessment, climate change impacts, and adaptation	• Technical review of GHG inventories • In-depth review of Annex I Party national communications

Ali CAN Chief State Institute of Statistics	• 1. GHG inventory • 3. GHG projections and analysis of GHG abatement options	• Technical review of GHG inventories
Mustafa COSKUN Researcher Turkish State Meteorological Service	• 7. Research and systematic observation	• In-depth review of Annex I Party national communications
Mehrali ECER Environmental Engineer Ministry of Environment nad Forestry	• 1. GHG inventory • 6. Mechanisms • 6A. Clean Development Mechanism (CDM), Joint Implementation (JI) and Activities Implemented Jointly (AIJ) • 6B. Emissions trading	• Technical review of GHG inventories
Tugba ICMELI Assistant Expert Ministry of Environment and Forestry	• 2. Policies and measures and analysis of GHG abatement issues • 4. Vulnerability assessment, climate change impacts, and adaptation • 6A. Clean Development Mechanism (CDM), Joint Implementation (JI) and Activities Implemented Jointly (AIJ) • 6B. Emissions trading	• Technical review of GHG inventories • Review of methodologies and tools to assess impacts and adaptation • Review of information related to technologies, financial resources, development, and transfer of technologies
Evren TURKMENOGLU Deputy Expert Ministry of Environment and Forestry	• 1. GHG inventory • 6. Mechanisms • 6A. Clean Development Mechanism (CDM), Joint Implementation (JI) and Activities Implemented Jointly (AIJ) • 6B. Emissions trading	• Technical review of GHG inventories

Feedback: According to Gold Standard Voluntary Emission Reductions Manual for Project Developers LoA is not requested for Voluntary Emission Reduction Projects, however as a part of the consultation process, project developers has to send a letter to the DNA, if existent, to inform about the project. If no DNA exists, a letter should be send to the National Focal point or any other relevant national governmental institution.

With regards to Akbük Wind Farm Project, Mr. Yunus Arıkan from REC Turkey (Regional Environmental Centre), who is the Focal Point of Article 6 of UNFCCC has been identified as one of the stakeholders for the stakeholders process and received relative documentation during the MSC. Furthermore high level representatives were involved during the stakeholders consultation process including the Ministry of Environment and Forestry and Ministry of Energy and Natural Resources.

Conclusion: FCAR 1 is sufficiently addressed, FCAR 1 is closed for the time being.

j) Others

N/A