VALIDATION REPORT
CAMCO INTERNATIONAL LTD.

VALIDATION OF THE
CAKIRLAR 17.00 MW RUN-OFF RIVER HYDRO POWER PLANT

REPORT NO.BVC/TURKEY-VD/CER.1953.10.C45/2014
REVISION NO. 02

BUREAU VERITAS CERTIFICATION

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Client:	Client ref.:
Camco International Ltd.	Mr. Maxim KHAMAZA

Summary:

Bureau Veritas Certification has conducted the Uprgrade validation of Project from VCS 2007 to Gold Standard Cakirlar 17.00 MW Run-off River Hydro Power Plant, owned by Anadolu Elektrik Üretim ve Tic. A.Ş., which is located on the Eastern Black Sea Region near Egrisu, Soval, Kopurten and Suluduz brooks in Artvin, Turkey, on the basis of UNFCCC criteria for the CDM, as well as Gold Standard (GS) v.2.2 and criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design document and additional background documents; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification Requests, Corrective Actions Requests, and Forward Actions Requests (CLs, CARs and FARs), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology ACM0002 Version 11.0.0 and meets all relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests the registration of the project as a GS-VER project activity.

Crediting period type is renewable (7 years) which is planned to be renewed twice and expected start & end date of crediting period is 01/08/2009 – 01/08/2016. During the seven years of its first renewable crediting period, the project is likely to achieve the estimated annual emission reductions of 32,203.00 tCO_2e.

Report No.:	Subject Group:
BVC/TURKEY-VD/CER.1953.10.C45./2014	GS-VER

Project title:

Cakirlar 17.00 MW Run-off River Hydro Power Plant

Work carried out by:

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Work approved by:

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Abbreviations

BVCH	Bureau Veritas Certification Holding SAS
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification Request
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
FAR	Forward Action Request
GHG	Green House Gas(es)
MoV	Means of Verification
MP	Monitoring Plan
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Participant
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
TEIAS	Turkish Electricity Transmission Corporation
PMUM	Market Financial Settlement Center
HEPP	Hydroelectric Power Plant
EIA	Environmental Impact Assessment
FSR	Feasibility Study Report

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1. INTRODUCTION

Anadolu Elektrik Üretim ve Tic. A.Ş. has commissioned Bureau Veritas Certification to validate its C Upgrade validation of Project from VCS 2007 to Gold Standard Cakirlar 17.00 MW Run-off River Hydro Power Plant, Turkey (hereafter called "the Project") at Eastern Black Sea region, Artvin province.

This report summarizes the findings of the validation of the Project, performed on the basis of UNFCCC criteria, as well as GS v.2.2 and criteria given to provide for consistent project operations, monitoring and reporting.

1.1. Objective

The objective of a validation is to provide a through and independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC, GS v.2.2 and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the applicable GS-VER requirements and the identified criteria. Validation is a requirement for all GS-VER projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of voluntary emission reductions (VERs).

1.2. Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against the requirements of paragraph 37 of the CDM M&Ps, the applicability conditions of the selected methodology and guidance issued by the Board.

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

1.3. Validation Team

The assessment team and internal technical reviewer team consist of the following personnel:

FUNCTION	NAME	TA 1.2	TA 1.3	TASK PERFORMED*
Team Leader	Mrs. Burcu MUTMAN BORAN	☒	☐	☒**DR** ☒**SV** ☒**RI** ☐**TR**
Team Member	Mr. Mustafa UNAL	☒	☐	☐**DR** ☐**SV** ☒**RI** ☐**TR**
Technical Specialist	Mr. Murat GENCER	☐	☐	☒**DR** ☐**SV** ☐**RI** ☐**TR**
Internal Technical Reviewer (ITR)	Mr. Furkan SADIKOGLU	☒	☐	☐**DR** ☐**SV** ☐**RI** ☒**TR**

*DR = Document Review; SV = Site Visit; RI = Report issuance; TR = Internal Technical Review

2. METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the version 04.0 of the Clean Development Mechanism Validation and Verification Standard, issued by CDM Executive Board after its 74th meeting on 29/07/2013 (Ref-07). The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, 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 completed validation protocol is enclosed in Appendix A to this report.

2.1. Review of Documents

The Project Design Document (GS-VER-PDD) submitted by Camco International Ltd. & GAIA Carbon Finance and additional background documents related to the project design and baseline was reviewed.

Furthermore, cross checks were made between information provided in the GS-VER-PDD and information from sources other than those used, the DOE's sectorial or local expertise and, independent background investigations.

To address Bureau Veritas Certification corrective action and clarification requests, Camco International Ltd. revised the GS-VER-PDD and resubmitted it on 16/07/2014.

The validation conclusions presented in this report relate to the project as described in the GS-VER-PDD version 06.

2.2. Follow-up Interviews

On 20/01/2011, Bureau Veritas Certification performed a site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Camco International Ltd. & GAIA Carbon Finance, Anadolu Elektrik Uretim ve Ticaret A.S. and local stakeholders were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Anadolu Elektrik Uretim ve Ticaret A.S. (the Project Owner)	➢ Project background information and CDM consideration. ➢ Project technology, operation and maintenance. ➢ The planning and the construction phase of the project ➢ Project approval and implementation status. ➢ Project management and monitoring plan. ➢ Stakeholder consultation process. ➢ Design of the project activity

	➢ Government policies related to the project activity.
Local Stakeholder	➢ Project background in details ➢ Stakeholder comments ➢ Social and environmental impact of the project ➢ Sustainable development in the region
Camco International Ltd. & GAIA Carbon Finance (the Consultant)	➢ Applicability of selected methodology. ➢ Investment analysis ➢ Baseline determination. ➢ Emission reductions calculations. ➢ Emission reduction monitoring plan. ➢ Consideration of comments from stakeholders ➢ Local stakeholder consultation meeting

2.3. Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the validation is to resolve issues that require further elaboration, research or expansion prior to Bureau Veritas Certification's positive conclusion on the project design.

A Corrective Action Request (CAR) is raised, if one of the following situations occurs:

(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable, verifiable and additional emission reductions;

(b) The applicable GS-VER requirements have not been met;

(c) There is a risk that emission reductions cannot be monitored or calculated.

A Clarification Request (CL) is raised, if information is insufficient or not clear enough to determine whether the applicable GS-VER requirements have been met.

A Forward Action Request (FAR) may also be raised during validation, to identify issues related to project implementation that require review during the first verification of the project activity.

To guarantee the transparency of the validation process, the issues raised, the responses provided by the project participants, the means of validation of such responses and references to any resulting changes in the GS-VER-PDD or supporting annexes are documented in the Validation Protocol in Appendix A.

2.4. Internal Technical Review

The validation report underwent an Internal Technical Review (ITR) before requesting registration of the project activity.

The ITR is an independent process performed to examine thoroughly that the process of validation has been carried out in conformance with the requirements of the validation scheme as well as internal Bureau Veritas Certification procedures.

The Team Leader provides a copy of the validation report to the reviewer, including any necessary validation documentation. The reviewer reviews the submitted documentation for conformance with the validation scheme. This will be a comprehensive review of all documentation generated during the validation process.

When performing an Internal Technical Review, the reviewer ensures that:

- The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM and GS rules and requirements.
- The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs and CLs during the validation exercise, review of sample documents.

The reviewer may raise Clarification Requests to the validation team and will discuss these matters with the Team Leader.

After the agreement of the responses to the Clarification Requests from the validation team as well as the PP(s), the finalized validation report is accepted for further processing such as uploading via the UNFCCC interface.

3. VALIDATION CONCLUSIONS

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 15 CAR(s) and 09 CL(s).

The CARs and CLs were closed out based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

The number between brackets at the end of each section corresponds to the VVS paragraph.

3.1. Approval (43-44)

Approval is not applicable as the project is developed as a Gold Standard VER project.

3.2. Authorization (49)

Authorization is not applicable as the project is developed as a Gold Standard VER project.

3.3. Sustainable Development (52)

As the project is a GS-VER project it is not applicable for the host Part's DNA to confirm the contribution of the Project to the sustainable development of the host party. Please refer to section 3.1 of this report.

However, according to GS requirements as a sustainability monitoring plan is applicable and related parameters are available in detail in the project GS Passport (Ref-06). These parameters can also be seen in the monitoring plan, section 3.10 of this report.

3.4. Modalities of Communications (58,61)

N/A as the project is GS-VER.

3.5. Project Design Document (63)

Bureau Veritas Certification hereby confirms that the GS-VER-PDD complies with the latest forms of the guidance documents for completion of GS-VER-PDD.

3.6. Changes in the Project Activity (17)

Webhosting is not applicable as the project is GS-VER.

3.7. Project Description (69)

The Project is a run-off river hydroelectric power plant located on the Eastern Black Sea Region near Egrisu, Soval, Kopurten and Suluduz brooks in Artvin Province, Turkey. Geographical coordinates of the project are confirmed through the site visit control as follows;

Project Units	Geographical Coordinates	
Latitude (N)	41º 08´ 21´´	41º 09´ 23´´
Longitude (E)	41º 31´ 05´´	41º 33´ 54´´

Anadolu Elektrik Uretim ve Ticaret A.S. (ANADOLU, hereafter) has installed a 17.00 MW Run-off river hydropower plant (HEPP) near Murgul creek in Artvin province. The location of the project confirmed through the site visit and the plant location provided in the provisional acceptance. The project activity was started at May 1st 2007 with the Construction Agreement (Ref-20). The purpose of the project is to generate electricity and to feed it into the public grid.

CL01 *was raised by the validation team for how the starting date of the project activity determined in the project description. The proof document for the starting date of the project activity was indicated as a "The Subcontractor Agreement dated 01/05/2007" and the relevant definition was added under section A.2. of the GS-VER-PDD. As a result the clarification request is closed.*

Implementation of the project consisted of construction of the following main items:

- Four weirs, where water from the river is diverted into conveyance pipes;
- Total length of the conveyance pipes is 8,888 m.
- Power house with Pelton type turbines;

In the power house, two vertical shaft Pelton turbines were installed, each 8.309 MW (total capacity 16.618 MWe). The efficiency of the turbines is 90.5 % when 4 jets are in operation. There are two generators attached to the facility. Generators have power factor of 0.8309 d/d, a frequency of 50 Hz and an output of 7.6 MVA.

Equipment Agreement (Ref-16) was provided to the validation team to validate the indicated values. The technical details of the project were also confirmed through the site visit and the generation licence.

The estimated annual electricity generation is 59,928 MWh by the project activity which is constituted of different fuel sources, mainly fossil fuels. The project activity will reduce the GHG emission to mitigate the global warming trend by providing clean electric power. Total electricity generation is confirmed through the Cakirlar Feasibility Study Report (Ref-17).

According to electricity generation, the project will result in annual emission reductions of 32,203 tCO_2e during the seven years of its first renewable crediting period which was to start on 01/08/2009. This date is also the commissioning date of the project activity which is confirmed through the provisional acceptance document (Ref-19).

The expected lifetime of the Cakirlar HEPP project is 20 years which is the technical lifetime of the electromechanical equipment assumed in the feasibility study of the project. * According to EB50 Annex 15 “Tool to determine the remaining lifetime of equipment” Ver.01, Technical Lifetime of the hydro turbines is 150,000 hours.

The PLF is confirmed as % 41.2 by the validation team as follows; The PLF is calculated as;

(PLF** = Annual Gen / Installed Cap. x Working Hours**) which is complying with the Paragraph 3 (b) of “Guidelines for the Reporting and Validation of Plant Load Factors” version 01.

PLF = 59,928 MWh / 16.618 MWe x (365 day x 24 hrs/dy) = 41.2 %.

The above values are confirmed through the Cakirlar HEPP Feasibility Study Report (Ref-17).

The validation did not reveal any information indicating that the Project can be seen as a diversion of official development assistance (ODA) funding towards the host country.

The processes undertaken by the validation team to validate the accuracy and completeness of the project description include conducting a physical site inspection, sampling, reviewing available designs and feasibility studies, conducting comparison analysis with equivalent projects.

Bureau Veritas Certification hereby confirms that the project description in the final GS-VER-PDD is accurate and complete in all respects.

3.8. Baseline and Monitoring Methodology

3.8.1. Applicability of the selected Methodology (77)

The Project uses the approved consolidated baseline and monitoring methodology ACM0002 Version 11 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Ref-08).

The applicability of the selected methodology is justified and assessed as follows:

(1) Cakirlar 17.00 MW Runoff-River HEPP project is the installation of a grid connected renewable power generation project which adds electricity capacity to the grid from hydro power sources and which supplies electricity to a system that is supplied by at least one fossil fuel fired generating unit (Ref-12).

(2) The project involves construction of new units in a brand new plant, in other words the project does neither involve the addition of renewable energy generation units at an existing renewable power generation facility nor does it foresee to retrofit or modify an expired facility of renewable energy generation (Ref-12).

(3) The project activity is not implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m^2 (Ref-45).

(4) The project activity does not result in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m^2 (Ref-45).

(5) The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available (Ref-28).

(6) 5 years of historical data are available (Ref-17).

(7) The project does not involve switching from fossil fuels to renewable energy at the site of the project activity (Ref-12).

(8) The project is not a hydro power plant that results in a new reservoir or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m^2 (Ref-45).

The project site visit has been done and generation license has been provided. Since the project is upgraded from VCS, the applicability conditions have been confirmed during the VCS validation. The VCS Validation report has been provided to DOE.

Bureau Veritas Certification hereby confirms that the selected baseline and monitoring methodology, tool and other methodology component is previously approved by the CDM Executive Board, and is applicable to the Project, which, complies with all the applicability conditions therein.

3.8.2. Project Boundary (86-87)

The validation team has validated the project boundary by:

(a) Assessing the relevant documents including generation license (Ref-12) and EIA Exemption Certificate (Ref-18). Feasibility Study Report (Ref-17) and Water Usage Agreement (Ref-14) have been seen to confirm the project boundary.

(a) During the site visit it has been confirmed that the project is large scale project activity.

The spatial extent of the project boundary is clearly defined in line with ACM0002 Version 11 as the project power plant and all power plants connected physically to the electricity system that the CDM (GS-VER) project power plant is connected to.

The greenhouse gases and emission sources included in the project boundary are CO_2 emission from fossil fuel fired power plant that are displaced due to project activity was taken into account for baseline emissions. And regarding to the methodology and power density calculation there is no project emission source in the project.

Source		Gas	Included	Justification / Explanation
Baseline	Electricity generation by power plants in baseline	CO_2	Yes	**Main emission source**. CO_2 emission from fossil fuel fired power plant that are displaced due to project activity was taken into account.
		CH_4	No	Minor emission source- excluded for simplification
		N_2O	No	Minor emission source- excluded for simplification
Project Activity	Emission from the reservoir of the proposed project	CO_2	No	Minor emission source- excluded for simplification
		CH_4	Yes	**Main emission source**. However, since the project doesn't have a reservoir, no CO_2 emission is expected.
		N_2O	No	Minor emission source- excluded for simplification

The project boundary has been also confirmed during VCS Validation by the DOE and validation report has been provided.

Bureau Veritas Certification hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity. The validation team did not identify any emission sources that will be affected by the implementation of the proposed project activity and which are expected to contribute more than 1% of the overall expected average annual emissions reductions, and are not addressed by the selected approved methodology.

3.8.3.Baseline Identification (94-95)

The procedure contained in the methodology to identify the most reasonable baseline scenario has been correctly applied.

Validation team assessed the baseline identification by the project participant using the provisions of the applied methodology. As per the applied methodology ACM0002 Version 11 the baseline for a new grid connected renewable power plant/unit (Greenfield project) is defined as;

"Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by 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".

The project electricity system has been identified as the Turkish National Grid, justified by TEIAS data. Following the criterion set forth by the Tool has leaded the Project Participant to adopt the default national grid definition. Hence the calculation of Operation Margin (OM) and Build Margin (BM) has been based on the Turkish electricity Network as one single interconnected system. Again, in accordance with the availability of TEIAS data on subject, only grid power plant has been included.

In line with the requirements of the applied tool, the Simple Operating Margin Emission Factor ($EF_{grid,OM\ simple,y}$) has been calculated ex-ante, using TEIAS data for 2009-2011 period which is actual data during the investment decision date. The operating margin is calculated as ***0.659 tCO_2 /MWh.*** The operating margin calculation is checked and accepted by the validation team through the actual references for the project activity.

For BM factor calculation, since no official emission factors for different fuel types are available, lower confidence default values of IPCC Guidelines are applied.

The Build Margin Emission Factor ($EF_{grid,BM,y}$) has been determined as ***0.416 tCO_2 /MWh*** and has been found appropriate by the validation team.

In accordance with the methodology of the "Tool to calculate the emission factor for an electricity system Version 02", Project participant determined the Combined Margin Emission Factor ($EF_{grid,CM,y}$) as ***0.537 tCO_2 /MWh*** and this have been confirmed by the validation team with reviewing all baseline calculation sheet equations and confirming the parameters used for the calculations and their relevant sources.

It is noted that the selected baseline scenario is in line with the selected approved methodology. Validation team therefore confirms that the selected baseline scenario reasonably represents what would happen in the absence of the project activity.

Bureau Veritas Certification hereby confirms that:

(a) All the assumptions and data used by the project participants are listed in the GS-VER-PDD, including their references and sources;

(b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the GS-VER-PDD;

(c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;

(d) Relevant national and/or sectorial policies and circumstances are considered and listed in the GS-VER-PDD;

(e) The approved baseline methodology has been correctly applied to identify the most plausible baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed project activity.

3.8.4. Algorithms and/or Formulae used to determine Emission Reductions (99-100)

The steps taken and the equations and parameters applied in the GS-VER-PDD to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected methodology including applicable tool(s).

As per ACM0002 Version 11, the baseline for a new grid connected renewable power plant/unit is defined as;

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".

The project participant has calculated the baseline emissions by multiplication of the net electricity supplied by the project activity to the grid and the grid emission factor. The detailed algorithms are transparently described under section B.4 of GS-VER-PDD and baseline calculation sheet.

The emission reduction calculation has been done with the following equation,

Baseline Emissions (BE_y) = $EG_{BL,y}$ x $EF_{CO2,grid,y}$

Where:

$\mathbf{BE_y}$ = Baseline emissions in year y (tCO_2e)

$\mathbf{EG_{BLJ,y}}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the VER project activity in year y (MWh)

$\mathbf{EF_{CO2,Grid,y}}$ = CO_2 emission factor of the in year y (tCO_2/MWh)

Leakage Emissions (LE_y) for the project are not being considered, in line with the applied methodology ACM0002 Version 11. Hence leakage emissions are considered as zero.

Emission factor of Turkey is not defined by the government so the calculation has been done through the "Tool to calculate emission factor for an electricity system" and presented through the emission factor calculation excel file. The values used for the calculation are taken from the publicly available sourced (TEIAS) and annex of the tool for the Operating and Build Margin. The years considered for OM are 2009 and 2011.

According to "Tool to calculate the emission factor for an electricity system, Version 02" the given formula is applied in OM calculations.

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_y}$$

Through the given values and the formula OM Emission Factor for 2009-2011 is calculated as;

- OM 2009 = 0.653 tCO_2/MWh
- OM 2010 = 0.659 tCO_2/MWh
- OM 2011 = 0.664 tCO_2/MWh

According the methodology ex-ante calculation is used and the weighted average of the figures between 2009 and 2011 is calculated.

The OM Emission Factor is computed as: **0.659 tCO_2/MWh.**

The BM emission factor is calculated in 2010 and 2011. Turkey's capacity projection reports are determined by the validation team. Reports are published in years 2010 and 2011.

According to the Baseline methodology build margin emission factor is calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_{i,m} EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

The BM Emission Factor is computed as: **0.416 tCO_2/MWh.**

The project participant has applied weight average of the OM and BM as specified in the tool to arrive at the emission factor for the combined margin.

Combined margin emission factor is computed as follows regarding to the methodological tool "Tool to calculate the emission factor for an electricity system, Version 02".

$EF_{grid, CM, y}$ = $EF_{grid, OM, y}$ x w_{OM} + $EF_{grid, BM, y}$ x w_{BM}

$EF_{grid, CM, y}$ = 0.659 x 0.5 + 0.416 x 0.5 = **0.537 tCO_2/MWh**

Wom and Wbm for other than wind and solar power generation projects are 0.5 and 0.5.

Accordingly, the calculated emission factor has calculated as **0.537 tCO_2/MWh** that was confirmed by the validation team with reviewing all the baseline calculation sheet equations and confirming the used parameters for the calculations.

Project emissions are calculated according to "ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources, Version 11"

The details of the calculation of the project emissions are as follows:

Project Emissions (PE_y) = $PE_{FF,y}$ + $PE_{GP,y}$ + $PE_{HP,y}$

Where:

PE_y = Project emissions in year y (tCO_2e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (tCO_2/yr)

$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO_2e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO_2e/yr)

$PE_{FF,y}$ and $PE_{GP,y}$ are both irrelevant with the project activity and therefore assumed "0", as the proposed project activity is a new grid-connected hydro power plant.

1) *The Project emissions due to reservoir are calculated with the formula;*

$PE_{HP,y}$ = (EF_{Res} x TEG_y) / 1000
Where:

$PE_{HP,y}$ = Emission from reservoir expressed as tCO_2e/year

EF_{Res} = Default emission factor for emissions from reservoirs of hydro power plants in year y (CO_2e /MWh)

TEG_y = Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (MWh).

The Power Density is calculated as equation below:

PD = (Cap_{PJ} – Cap_{BL}) / (A_{PJ} – A_{BL})

Since there is no reservoir in the project, **Project Emissions (PE_y)** and **Leakage Emissions (LE_y)** are assumed as 0. Also, the project has four tyroll type regulator and this type regulators do not have regulation capacity. Therefore, **the power density** of project is not calculated.

2) *CO_2 emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion".*

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (tCO_2/year) is calculated according to the UNFCCC tool "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (Version 02).

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$$

Where:

$PE_{Fc,j,y}$ = Are the CO_2 emissions from fossil fuel combustion in process j during the year y (tCO_2/year);

$FC_{i,j,y}$ = Is the quantity of fuel type i combusted in process j during the year y (mass or volume unit/year);

$COEF_{i,y}$ = Is the CO_2 emission coefficient of fuel type i in year y (tCO_2/mass or volume unit)

i = Are the fuel types combusted in process j during the year y

Since the proposed project is a hydro electrical power plant there is no use of any fuel type. Therefore $FC_{i,j,y} = 0$.

Hence the Project Emissions from fossil fuel consumption in year y for all years of the proposed project is zero;

$PE_{FF,y}$ = 0

Project being based on hydro energy, none of the PE parameters are applicable according to ACM0002 Version 11 and the **project emissions are (PE_y) 0**.

Baseline Emissions of the project has been evaluated as:

BE_y = (EG_y - $EG_{baseline}$) x $EF_{grid,CM,y}$

Where:

BE_y = Baseline emissions in year y (tCO_2/year).

EG_y = Electricity supplied by the project activity to the grid (MWh).

$EG_{baseline}$ = Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh). For new power plants this value is taken as zero.

$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y

Project involves the installation of a Greenfield plant and therefore $EG_{baseline}$ is assumed zero, and baseline emission for a year of operation is:

BE_y = 59,928 MWh/year X 0.537 tCO_2/MWh = **32,203 tCO_2e** and since no project emissions are considered,

Emission Reductions of the project in a typical year has been evaluated as follows;

ER_y = BE_y - PE_y - LE_y

Where:

ER_y = Emission reductions in year y (tCO_2e/year).

BE_y = Baseline emissions in year y (tCO_2/year).

PE_y = Project emissions in year y (tCO_2e/year).

LE_y = Leakage emissions in year y (tCO_2e/year).

Therefore;

ER_y = BE_y - 0 - 0 = 32,203 - 0 - 0 **= 32,203 tCO_2e/year**

The formulas and factors used in the calculation of GHG emissions are found to be transparent and correct by the validation team.

Bureau Veritas Certification hereby confirms that:

(a) All assumptions and data used by the project participants are listed in the GS-VER-PDD, including their references and sources;

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

(c) All values used in the GS-VER-PDD are considered reasonable in the context of the proposed project activity;

(d) The baseline methodology and corresponding tool(s) have been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;

(e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the GS-VER-PDD.

3.9. Additionality (104)

As required by the selected methodology, the additionality of the Project has been demonstrated by applying "Tool for the demonstration and assessment of additionality", Version 05.2. Under demonstration of additionality first of all alternative projects have been identified for define the alternative realistic scenarios instead of the project activity. However consistency with mandatory laws and regulations has been demonstrated.

The Investment Analysis and Common Practice Analysis have been done for the project activity. The input values have been confirmed through the feasibility of the project activity and other sectorial data's has been confirmed by the financial specialist through the sectorial knowledge. Common Practice analysis data's has been checked from TEIAS Statistics.

3.9.1.Prior consideration of the Clean Development Mechanism (112)

The timeline of the Project has been validated as in Table 2 below:

Table 2 Timeline of the Project

Date	Events	Reference
March 2006	Feasibility Report Submission (First)	Ref-15
November 2006	Approved Revised Feasibility Study Report by DSI	Ref-17
08/01/2007	EIA not Required Certificate	Ref-18
13/02/2007	Water Usage Agreement with DSI	Ref-14
15/03/2007	Electricity Generation License by EMRA	Ref-12
30/04/2007	Prior Consideration of CDM (Board Decision)	Ref-13

01/05/2007	Construction Agreement with the Contractor Company *This is also the investment decision date as well as the starting date of the project activity*	Ref-20
31/08/2007	Equipment Supply Agreement	Ref-16
November 2007	Agreement with PDD Consultant	Ref-27
25/12/2007	Loan Agreement	Ref-22
28/02/2008	Installed Capacity Changes Additional Agreement	Ref-44
September 2008	VER Validation Process Start Date for VCS	Ref-23
01/08/2009	Commissioning Date of the Project Activity *This is also the provisional acceptance date as well as the starting date of the first crediting period*	Ref-19
14/08/2009	Completion of VCS Validation Process (VCS validation report date)	Ref-24
25/05/2011 29/07/2011	Stakeholder Feedback Round Process	Ref-26
04/03/2013	Environmental Due Diligence Report prepared by TÇT	Ref-28

From the table above, the validation team is able to verify that the investment decision date as 01/05/2007 (Construction Agreement) and this date also determined as project activity start date in the GS-VER-PDD is appropriate and is the earliest of the dates at which either the implementation or construction or real action of the Project began. This is in accordance with the latest CDM glossary. All events are checked by the validation team through the provided references. All references are checked and stored by the validation team during the validation activity.

It is a project activity with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation. The validation team has assessed board decision of the Anadolu Elektrik Üretim dd. 30/04/2007 (Meeting number 28 Decision No:1) and confirms that the project participants had an awareness of the CDM prior to the project activity start date, and the benefits of the CDM were a decisive factor in the decision to proceed with the project.

CAR12 *was raised by the validation team for how the VER revenues have been considered before the project start date. The board decision document dated 30/04/2007 is provided to the validation team before the starting date of the project activity. It is confirmed through the construction agreement dated 01/05/2007. As a result the corrective action request is closed.*

The validation team has also checked that the validation of the project has been started in 2008 under VCS and is able to verify that all documents are reliable and authentic. There is less than two years of a gap between the documented evidence.

Therefore the project participants demonstrated that real and continuing actions were taken to secure CDM status for the project in parallel with its implementation.

Bureau Veritas Certification hereby confirms that the proposed project activity complies with the requirements related to the prior consideration of the CDM.

3.9.2.Identification of Alternatives (116)

The plausible and credible alternatives to the Project were identified as per "Tool for the Demonstration and Assessment of Additionality", Version 05.2.

(1) Alternative 1: Building a new thermal power plant with the same installed capacity or equivalent electricity output.

Although the coal and natural gas reserves in Turkey is very limited, there are many thermal power plants that have been being commissioned in recent years and Turkey's grid mainly consists of thermal power plants. As they have become common practice in the energy sector due to off-take agreements provided by the government, these projects face easier circumstances in terms of financing and realization. In addition, these projects use imported coal, so they can be realized regardless of their geographic proximity to coal supply. Therefore, construction of a thermal plant with the same annual electricity output is a realistic alternative.

(2) Alternative 2: The proposed project activity undertaken without being registered as a GS - VER project activity.

Alternative 2 has been discussed under investment analysis. This alternative is not feasible but it still will be compared to the proposed project however the investment analysis shows that project is not feasible without VER revenues.

(3) Alternative 3: Building a power plant using other renewable sources with the same installed capacity or equivalent electricity output.

The Black Sea region is not very rich of wind and the high forest density combined with very steep terrain does not allow for wind power plants. It can be seen in the REPA (Wind Energy Potential Map) of Giresun, the areas which have enough potential for economically feasible wind farm investments are not very evident in the region. As for the geothermal energy, this renewable energy source exists in west side of the country. Therefore, at the project area, there is no geothermal source either. As a result, Alternative 3 for the region is eliminated.

(4) Alternative 4: Same amount of electricity produced by the existing power plants connected to Turkish National Grid.

This alternative is a realistic and valid scenario. The grid electricity mix contains fossil fuel fired plants which is dominated by natural gas, coal and lignite. Given those facts it would appropriate to set this scenario as the baseline scenario. Therefore hydroelectric power plant projects should be constructed in order to generate clean energy where applicable.

According to the circumstances above, Scenarios 1, 2 and 4 are the realistic alternatives. Analyzing these three alternatives, it is seen that all scenarios are consistent with the baseline definition of ACM0002 Version 11.

Bureau Veritas Certification considers the listed alternatives to be credible and complete.

3.9.3. Investment Analysis (123)

Analysis method

[Option I] Simple Cost Analysis: The proposed project generates financial and economic benefits via the sales of electricity other than carbon revenues. Option A cannot be used.

[Option II] Investment comparison analysis: This option is only applicable to projects where alternatives should be similar investment projects in terms of generation capacity. Due to the lack of the data specified this method cannot be applied so Option B is not used.

[Option III] Benchmark Analysis: A benchmark analysis is applied and considered to be appropriate and the equity IRR is selected as the financial indicator for the demonstration of the additionality of the project.

Benchmark

Benchmark of the project activity has been calculated through the "Tool for the demonstration and assessment of additionality", Version 05.2. As tool suggests the government bond rates, increased by a suitable risk premium has been calculated to describe the benchmark. CAPM Model has been used as defined in the following equation;

Capital Asset Pricing Model (CAPM);

$$E(R_i) = R_f + \beta_i(E(R_m) - R_f)$$

where:

- $E(R_i)$ is the expected return on the capital asset
- R_f is the risk-free rate of interest such as interest arising from government bonds
- β_i (the beta coefficient) is the sensitivity of the asset returns to market returns, or also $\beta_i = \frac{\mathrm{Cov}(R_i, R_m)}{\mathrm{Var}(R_m)}$,

- $E(R_m)$ is the expected return of the market
- $E(R_m) - R_f$ is sometimes known as the market premium or risk premium (the difference between the expected market rate of return and the risk-free rate of return).

Market risk premium ($E(R_m) - R_f$)

The equation correctly applied and to estimate market risk premium "Market risk premium" of Turkey, the independent study of Aswath Damodaran – Stern School of Business (New York University) has been used. For Turkey is **9.29 %,** calculated on the basis of the credit rating Ba3 with positive perspective given to Turkey by Moody's (Ref-37).

Risk Free Rate (R_f)

The 30 year Eurobond which was issued by Treasury of Republic of Turkey was used as the proxy for the risk free rate in the country.
The relevant interest at the date of investment decision of the facility which is assumed as the feasibility study of the facility completion date yield for this bond was **7.084 %** as of 30th of March 2007 (Ref-44).

The Beta Coefficient (β_i)

The Beta coefficient of securities with values close to 1 determines the company securities as being of average risk. There are four power generating and trading companies under trade in the Istanbul Stock Exchange (ISE). The average Beta for these four companies can be calculated based the index created from these four stocks which is called as "Electricity Index" of ISE. The β_i for the Electricity Index is calculated as **0.922** by Bloomberg which is one of the prominent data suppliers in financial markets.

Regarding to the values applied which is found acceptable by the validation team and the financial analysis, **the benchmark** calculated as follows,

7.084% + 9.29%* 0.922 **= 15.65 %**

The validation team considers that the type of benchmark applied is suitable for the type of financial indicator presented; the risk premiums applied in determining the benchmark reflect the risks associated with the project type; it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark.

As a conservative approach, calculated 15.65 % value is accepted as the benchmark for the proposed project.

Data source

The input values are taken from Feasibility Study Report (Ref-17), which was carried out for Cakirlar 17.00 MW Run-off River Hydro Power Plant. The revised feasibility report is also approved by the national authority DSI.

The validation team confirms that the values used in the GS-VER-PDD and associated annexes are fully consistent with the Feasibility Study Report. Also the equipment supply agreement dd. 31/08/2007 has been provided to the validation team. It is around 28.26 % of the total project cost.

The project's other investment items as diversion weir, penstock, power house and transmission line costs are main items of the investment which contain 63.06 % and the other costs (construction site, forebay, energy transmission line and access roads) which contain 8.68 % of the total investment are confirmed through the Feasibility Study Report (Ref-17).

Based on the conclusion of the Approved Revised Feasibility Study Report (Ref-17), the PP decided to proceed with the Project on 30/04/2007 with the consideration of VER revenues (Ref-13).

Input value

The validation team has reviewed the IRR calculation sheet and cross-checked the major input values using local knowledge as well as sectorial and financial expertise and confirms that:

Table 3 Data and indicators for financial analysis

Parameter	Unit	Value	Data Source
Annual Gross Electricity Production	MWh/y	59,928	Generation License (Ref-12)
Installed Capacity	MWe	16.618	Generation License (Ref-12)
Capital Investment	€	18,752,248	Revised Feasibility Report (Ref-17)
Income Tax Rate	%	20	Turkish Tax Laws
Expected Tariff	€/kWh	0.05	Law on Utilization of Renewable Resources for the Purpose of Generating Electrical Energy (Ref-35)
Expected VER Price	€/ tCO_2e	5-7	Assumption by the Consultant
General Production Expenses	€/year	865,710	Revised Feasibility Report (Ref-17)
Project Lifetime	Year	20	Local Accounting regulations
Technical Lifetime of Electromechanical Equipment	Hours	150,000	"Tool to determine the remaining lifetime of equipment" Ver.01
Crediting period	Year	7	GS Regulations
Annual Emission Reductions	tCO_2e	32,203	PDD B.6
Emission Factor	tCO_2e/MWh	0.537	PDD B.6
Benchmark Rate	%	15.65	PDD B.6

IRR inputs are also cross-checked from the Approved Revised Feasibility Study Report (Ref-17). Feasibility Study Report includes the actual values where the total investment cost is calculated as **18.752.248 €** excluding VAT.

Indicator Calculation

Based on the input values from the Feasibility Study Report that are valid and applicable at the time of investment decision, the equity IRR of the Project without VER revenues is 14.88 %, lower than the benchmark, which shows that the Project is not financially attractive in the absence of VER benefits.

The validation team has reviewed the IRR calculation spreadsheet (Ref-06) and confirms that the calculation and presentation are consistent with the "Guidelines on the Assessment of Investment Analysis" version 05. The data sources as well as the analysis approach is reliable and in accordance with local accounting regulations or international best practice.

Sensitivity Analysis

Variables including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues were taken as uncertainty factors for sensitive analysis to determine under what conditions variations in the result would occur, and the likelihood of these condition:

- Investment Cost

The variable is determined between 10 % increasing and 10 % decreasing. Even when the cost is reduced by 10%, the equity IRR reached **16.26%** without VER and when the cost is increased by 10% the equity IRR becomes to 13.61 %. The sensitivity analysis on investment cost shows that, when the investment cost decreased 5 % the equity IRR (15.55 %) is still much lower than the benchmark (15.65 %).

	IRR Sensitivity with Investment Cost				
Change in %	**-10.0%**	**-5.0%**	**0.0%**	**5.0%**	**10.0%**
Without VER	**16.26%**	15.55%	14.88%	14.23%	13.61%
IRR @5 €/ton VER	17.54%	16.79%	16.07%	15.38%	14.72%
IRR @6 €/ton VER	17.80%	17.04%	16.32%	15.62%	14.95%
IRR @7 €/ton VER	18.07%	17.30%	16.57%	15.86%	15.18%

The total fixed asset investment of the project was estimated € 18,752,248 excluding VAT. In case of a 5% and 10% decrease in the investment amount makes the investment financially attractive and the equity IRR with or without future VER revenues approaches or exceeds the benchmark rate. However, since the project investment has already been made and the project is in operation, such cut back is improbable.

- Electricity Production

The variable is determined between %10 increasing and %10 decreasing. Even when the electric generation is increased by 10%, the equity IRR reaches to **18.39%** without VER and when the electric generation is reduced by 10% the equity IRR becomes to 11.54 %.

	IRR Sensitivity with Electricity Production				
Change in %	**-10.0%**	**-5.0%**	**0.0%**	**5.0%**	**10.0%**
Without VER	11.54%	13.19%	14.88%	**16.61%**	**18.39%**
IRR @5 €/ton VER	12.59%	14.31%	16.07%	17.88%	19.73%
IRR @6 €/ton VER	12.81%	14.54%	16.32%	18.14%	20.00%
IRR @7 €/ton VER	13.03%	14.78%	16.57%	18.40%	20.28%

In the feasibility report, the annual electricity generation is considered as 59.928 MWh with 16.618 MWe installed capacity. According to the electricity generation license, proposed project had already promised to generate that much electricity with 16.618 MWe installed capacity.

For this reason, an additional increase in installed capacity of the project is not expected and it is impossible to increase the annual electricity generation without an increase at the installed capacity of the project.

- Electricity Selling Price

The variable is determined between %10 increasing and %10 decreasing. Even when the electricity selling price is increased by 10%, the equity IRR reaches to **18.39%** without VER and when the electricity selling price is reduced by 10% the equity IRR becomes to 11.54 %.

	IRR Sensitivity with Electricity Selling Price				
Change in %	**-10.0%**	**-5.0%**	**0.0%**	**5.0%**	**10.0%**
Without VER	11.54%	13.19%	14.88%	**16.61%**	**18.39%**
IRR @5 €/ton VER	12.61%	14.32%	16.07%	17.87%	19.71%
IRR @6 €/ton VER	12.83%	14.55%	16.32%	18.13%	19.98%
IRR @7 €n VER	13.05%	14.79%	16.57%	18.39%	20.26%

The Renewable Energy Law enacted in 2005 with the number of 25956, states that the price of the electricity to be purchased under the Renewable Energy Law should be the country average of the electricity wholesale price of the previous year to be determined by the EMRA. In any case, the price cannot be less than the Turkish Lira equivalent of 5 Euro Cent/kWh and more than 5.5 Euro Cent/kWh. The law also provides a purchase guarantee of maximum 10 years. In 2010, an Amending Law to the Renewable Energy Law was enacted, and this new amendment did not change the electricity price for hydropower plants. It rather converted the unit price of electricity from Euro to USD, which is determined as 7.3 Cent/kWh. Therefore, change in the electricity price was not expected by the time of the investment decision.

- Operation Expenses

The variable is determined between 10% increasing and 10% decreasing. Even when the operating cost is reduced by 10%, the equity IRR reached 15.19% without VER and when the cost is increased by 10% the equity IRR becomes to 14.57%. The sensitivity analysis on production expenses shows that, when the production expenses decreased 10% the equity IRR is still much lower than the benchmark (15.65 %).

	IRR Sensitivity with Annual Operational Costs				
Change in %	**-10.0%**	**-5.0%**	**0.0%**	**5.0%**	**10.0%**
Without VER	15.19%	15.03%	14.88%	14.73%	14.57%
IRR @5 €/ton VER	16.39%	16.23%	16.07%	15.91%	15.75%
IRR @6 €/ton VER	16.64%	16.48%	16.32%	16.16%	16.00%
IRR @7 €/ton VER	16.89%	16.73%	16.57%	16.40%	16.24%

The annual O&M costs do not have a significant impact to the project IRR. Even the annual O&M costs; decrease 10%, the project IRR will be 15.19% without VER revenues and operational cost approaches the benchmark rate but cannot exceed the 15.65%.

The validation team considers that the range of variations is reasonable in the project context. The analysis provided a cross-check on the suitability of the assumptions used in the development of the investment analysis. The conclusion that the project activity is unlikely to be financially/economically attractive is robust to reasonable variations in the critical assumptions.

Bureau Veritas Certification hereby confirms that the underlying assumptions regarding investment analysis are appropriate and the financial calculations are correct.

3.9.4. Barrier Analysis (127)

The validation team confirms that issues that have a direct impact on the financial returns of the project activity are not considered barriers and have an assessed by investment analysis. Barrier analyses have not been used.

3.9.5. Common Practice Analysis (130)

The common practice analysis has been done and the geographical area defined as all the Turkish National Grid. PP elected non complied projects from the hydro power plants listed in the TEIAS and then privately owned ones defined separately.

The additional electricity generation from private hydro projects is only 3% of the total additional capacity and only, 0.1% of Turkey's total electricity generation in 2007. Also, the total electricity production of private hydro projects has a rate of 2.5% in Turkey's total electricity generation.

There is no information accessible for the similar projects if they benefit from carbon revenues or not, since there is no registration authority in the host country to apply for this information.

As a conclusion, the low rate of completion of the projects, the low contribution privately held hydro projects and also the implementation of the same type of projects in the same region with VER revenues confirm the barriers elaborated above and also proves that the electricity generation from HEPP business is not a common practice.

Bureau Veritas Certification hereby confirms that the proposed CDM project activity is not common practice.

In conclusion, as demonstrated in accordance with Tool for the demonstration and assessment of additionality, Version 05.2, the proposed CDM project activity is additional.

3.10. Monitoring Plan (133)

The Project uses the approved consolidated monitoring methodology ACM0002 Version 11 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

Applicability of this methodology is justified in GS-VER-PDD as the project activity is run-off river HEPP renewable energy project, the project involves construction of new units in a brand new plant, the project is not a hydro power plant that results in a new reservoir or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m^2 and the project didn't involve switching from fossil fuels to renewable energy at the site of the project activity under section B.2 of the GS-VER-PDD.

Referring to the discussions on the applicability of the methodology in section 3.8.1 above, the validation team considers that the selected monitoring methodology is applicable to the Project.

Data and Parameters Monitored

The data and parameters defined in line with the selected methodology. The electricity generation, installed capacity and the reservoir area will be monitored in each year and combined margin will be monitored once in a crediting period.

- **$EG_{facility,y}$:** The first data should be monitored is the amount of electricity that is annually fed into the grid by the plant. There will two calibrated meters will act as backup for each other. The data will be obtained from the PMUM records. The quantity of net electricity delivered to the grid has been cross checked with the meter reading records (OSF forms) provided to the company by TEIAS.

- **Cap_{PJ}:** The second data to be monitored is the installed capacity of the hydropower plant after the implementation of the project activity. This information will be checked from the supplier information on the related equipment and the existence of the equipment.

- **A_{PJ}:** The third data to be monitored is the reservoir area of the project activity. The reservoir area will be monitored through technical drawing of the pond. Topographical Survey results and information regarding the weir structure (drawings) will be transferred to a computer program and the surface area, when the reservoir is full, will be simulated and calculated. However, the project does not include a reservoir area.

- **$EF_{grid,CM,y}$:** The emission factors are calculated ex-ante for the period of ten years. The combined margin will be recalculated through ACM0002 Version 11, any time the crediting period is renewed. The project is a zero emission generating activity and no particularly sensitive or critical sustainable development indicator was identified.

The validation team considers that the description of the monitoring plan contains all necessary parameters, that they are described and that the means of monitoring described in the plan complies with the requirements of the methodology including applicable tool(s).

Sustainability Monitoring Plan

Air Quality

Turkey's grid is mainly depends on fossil fuel fired power plants. CO_2 Emission from Electricity Production (Announced By Turkish Statistical Institute) is 100.661.511 tonnes for year 2007. Run off river plants are zero emission projects. The emission from the projects is negligible. The project will reduce the emission of greenhouse gases generated by the National Grid. The reduction is estimated to be around 32,203 tons CO_2 per year. It will be monitored by Project Developer and Verifier.

Water Quality and Quantity

The project activity guarantees to release the "minimum water" with respect to regulations. The quantity of water is conserved by government approved "Water Usage Rights Agreement" (Ref-14). The flow rates are recorded by monitoring stations which are named as "AGI" in Turkey. These stations are connected with General Directorate of State Hydraulic Works with an online system.

Water quality and quantity parameter will be monitored by State Hydraulic Works (DSI) by flow monitoring stations continuously. Minimum water future target is chosen as 40 lt/sec (0.04 m^3/s) which is defined by DSI.

In addition, the project owner donates resources in cash and in kind to improve water supply and sanitation in the project district. As discussed in the unofficial stakeholder meetings, the local government requested construction equipment to replace the drinking pipes in the region.

Quality of Employment

The project will have a positive impact on employment creation and building human capacity. The project owner will follow necessary procedures for construction safety at international standards (OHSAS and ISO 18001) and also the project owner is willing to ensure safety at the site and is committed to prioritize local labour force in selecting construction workers.

Future target is chosen as number of employees to be trained for the construction and operation of the plant. All the workers will be trained on health and safety. It will be monitored through the training records and interviewing with the employees by Project Developer and Verifier.

Livelihood of the Poor

Social projects and amount of financial aid to projects will continue in the region. Project owner will visit various households in the project area to comprehend their needs and to identify how the project could assist in meeting the social and economic needs of the community. It will be monitored through the bills of the financial aids and interviewing with the locals by Project Developer and Verifier.

Access to Affordable and Clean Energy Technologies

In Turkey, 45% of percent of electricity is produced from natural gas according to TEIAS (http://www.teias.gov.tr/KapasiteProjeksiyonuARALIK2012.pdf). The proposed project activity will provide clean energy to the national grid of Turkey. 59,928 MWh/year electricity will be supplied from Cakirlar to the national grid of Turkey. It will be monitored through the monthly invoices by Project Developer and Verifier.

Human and Institutional Capacity

The project owner has been providing some financial aids and some contributions in kind to the public institutions in the region. The company is willing to provide contributions to the local people and institution as much as possible. It will be monitored through the monthly invoices by Project Developer and Verifier. The bills of the financial aids will be reviewed and interviews will be made with the authorised people from the related local institutions thus this parameter will be monitored by Project Developer and Verifier.

Quantitative Employment and Income Generation

The proposed project activity will create job opportunities and as a result increase income generation. The company is planning to hire 200 workers for the construction of the power plant. Furthermore, 13 people will be employed during operation of the project. People in the region will be given priority in employment.

The number of local employment will be monitored through the social insurance registry receipts of the employees. Project Developer and Verifier will be responsible for monitoring.

Balance of Payments and Investments

Turkey's national electricity grid is mainly depends on fossil fuel fired power plants. The company makes a huge amount of investment in the region so the project will decrease imported fossil fuel dependency of Turkey and will result in foreign currency savings every year depending on its electricity production figures. The currency savings will be calculated based on the fossil fuel consumption amount of Turkey and electricity production figure of the plant. Project Developer and Verifier will be responsible for monitoring.

Technology Transfer and Technological Self-Reliance

According to the electromechanical equipment agreement, the plant staff will be trained by the supplier company. It will be monitored through the electromechanical equipment agreement, training records and interviews with the plant staff by Project Developer and Verifier.

No turbine technology exists in Turkey so pelton type two turbines with vertical axis will be imported from Vatech Bouvier Hydro SAS Company from France. It will be monitored through the site visit by Project Developer and Verifier.

"Do No Harm" Assessment

SP 1: It is confirmed that the project aspects internationally proclaimed human rights including dignity, cultural property and uniqueness of indigenous people. The project activities are not complicit in Human Rights abuses. Turkey has ratified European Convention on Human Right in 10/03/1954. (http://tr.wikipedia.org/wiki/Avrupa_İnsan_Hakları_Sözleşmesi)

SP 2: The project doesn't involve any settlement areas. All land acquisition was executed compliance with the Turkish Energy Sector regulations as well as the Expropriation Law of Turkey, published in Official Gazette number 18215 on the date of 08/11/1983 (Revised Feasibility Study Report).

SP 3: During the construction and operation of the project will not be any damage, alteration or removal to the critical cultural heritage because the project area doesn't depend on any cultural heritage. It is confirmed through the EIA Report of Cakirlar HEPP (Ref-18).

SP 4: Regarding to this principle it is confirmed that being part of an association and collective bargaining is a legal right of all employees in Turkey. Turkey has ratified ILO 87 Freedom of Association and 98 Right to Organize and Collective Bargaining Convention. (http://webfusion.ilo.org/public/db/standards/normes/appl/appl-byCtry.cfm?lang=en&CTYCHOICE=0660)

SP 5: The project does not involve and is not complicit in any form of forced or compulsory labor. It is confirmed through ILO Convention 29 and 105 on forced and compulsory labour. (http://webfusion.ilo.org/public/db/standards/normes/appl/appl-byCtry.cfm?lang=en&CTYCHOICE=0660)

SP 6: According to Worst Forms of Child Labor Convention, the project does not employ and is not complicit in any form of child labor. Turkey is a party of IPEC since 1992 and has ratified ILO Convention138 (Minimum Age) and Convention 182 (Worst Form of Child Labor).

(http://webfusion.ilo.org/public/db/standards/normes/appl/appl-byCtry.cfm?lang=en&CTYCHOICE=0660)

SP 7: The project does not involve and is not complicit in any form of discrimination based on gender, race, religion, sexual orientation, or any other basis through the ILO 100 Equal Remuneration Convention and 111 Discrimination (Employment and Occupation) Convention. (http://webfusion.ilo.org/public/db/standards/normes/appl/appl-byCtry.cfm?lang=en&CTYCHOICE=0660)

SP 8: The project provides workers with safe and healthy working conditions and is not complicit in exposing workers to unsafe or unhealthy work environments. The workers are trained in respect to the construction safety.

Also, the project owner will follow necessary regulations during construction and operational phase of the project. The company will provide a safe and healthy working environment. This issue is protected by Labour Law Legislation (number 4857) and Regulation on Occupational Health and Safety.
(http://www.mevzuat.adalet.gov.tr/html/1243.html)

SP 9: The project takes a precautionary approach in regard to environmental challenges and isn't complicit in practices contrary to the precautionary principle. EIA not required document dd. 08/01/2007 (Ref-18) has also provided to the validation team. Regulations which entered into force with Environmental Law Numbered 2872 will be followed. The project design is approved by State Hydraulic Works and Ministry of Environment and Forestry. Therefore, its procedures and standards are followed.
(http://www2.cevreorman.gov.tr/yasa/k/ 2872.doc)

SP 10: The project activity doesn't involve and isn't complicity in significant conversion or degradation of critical natural habitats. The project owner guarantees to comply with the 'minimum water rule". The amount of minimum water to sustain the fauna, flora and the agriculture in the basin is estimated by the State Water Works (DSI). The minimum water is defined as at least 10% of the average water flow in the last decade. Also, all the precautions defined in the feasibility study will be taken (Ref-17).
http://www.dsi.gov.tr/ska/yonetmelik_tamami.htm

SP 11: The project doesn't involve and isn't complicit in any kind of corruption regarding to Turkey is a party to UN Convention against Corruption and the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions.
(http://www.oecd.org/infobycountry/0,3380,en_2649_34859_1_1_1_1_1,00.html)

The Sustainable Development has been discussed in the GS Passport of the project activity. It is confirmed that project does not cause any negative impact on the sustainable development.

Indicators and scores are confirmed by the validation team as;

Indicator	Score
Air Quality	+
Water Quality and Quantity	0
Soil Condition	0
Other Pollutants	0

Biodiversity	0
Quality of Employment	+
Livelihood of the Poor	+
Access to Affordable and Clean Energy Services	+
Human and Institutional Capacity	+
Quantitative Employment and Income Generation	+
Balance of Payments and Investment	+
Technology Transfer and Technological Self-Reliance	0

1. **Air Quality "+":** Run off river plants are zero emission projects. The emission from the projects is negligible. The Cakirlar HEPP produces electricity from hydropower and does not result in any emissions. Therefore, the project leads to positive impact on air quality. The emission reductions are estimated to be around 36,796 tons CO_2 per year. Future target is chosen to integrate the principles of sustainable development into country policies and programs, and reverse the loss of environmental resources. This parameter is also discussed under sustainability monitoring plan section of the validation report.

2. **Water Quality and Quantity "0":** The project owner guarantees to comply with the 'minimum water rule". The amount of minimum water to sustain the fauna, flora and the agriculture in the basin is estimated by the State Water Works (DSI). Minimum water flow is reported by hydrobıology expert on Cakirlar Run-Off River HEPP Environmental Due Diligence Report (Ref-28). This parameter is also discussed under sustainability monitoring plan section of the validation report.

3. **Soil Condition "0":** The project owner pursues a detailed landscaping plan for the excavation work to control soil erosion. The project owner is committed to minimize deforestation and commit to reforestation. Future target is chosen to reduce biodiversity loss, achieving a significant reduction in the rate of loss. The Project Developer will replace the trees cut during the construction of the Project. It is confirmed through the Cakirlar Run-Off River HEPP Environmental Due Diligence Report (Ref-28).

4. **Other Pollutants "0":** There will be no negative nose impact on the settlement areas in this project because the project is far from any settlement. The noise during construction will be lower than the allowed limits so this indicator is scored neutral. It is confirmed through the Cakirlar Run-Off River HEPP Environmental Due Diligence Report (Ref-28). The background noise levels are below the limits set by Turkish Regulation on Assessment and Management of Environmental Noise (Ref-29).

5. **Biodiversity "0":** It is seen that by the experts which are reported their comments on Environmental Due Diligence Report that there is no any fish passes built on the regulator. This situation is not important for the fish species inhabited in the area. Besides, no other HEPP construction is found upstream of the weirs/regulator, therefore these area are also suitable for the maintenance of aquatic organisms living in the area (Ref-28). Therefore, this indicator is scored neutral.

6. **Quality of Employment "+"**: The project owner will follow necessary procedures for construction safety at international standards. The project will train all employees on health and safety. The project owner is willing to ensure safety at the site and is committed to prioritize local labour force in selecting construction workers.

Future target is chosen to achieve full and productive employment and decent work for all, including women and young people. This parameter is also discussed under sustainability monitoring plan section of the validation report.

7. **Livelihood of the poor "+":** The project positively contributes in providing enhanced income and a systematic salary procedure in accordance to the social security system. The project owner is committed to various projects with significant socio economic benefits.
   Future target is chosen to achieve full and productive employment and decent work for all, including women and young people. This parameter is also discussed under sustainability monitoring plan section of the validation report.

8. **Access to affordable and clean energy services "+":** The project activity will generate renewable energy and supply it to the Turkish national grid. Turkey's national grid is mainly depends on fossil fuel fired power plants. Project will decrease dependency on import fossil fuels (natural gas, coal and petroleum). Future target is chosen to integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources. This parameter is also discussed under sustainability monitoring plan section of the validation report.

9. **Human and institutional capacity "+":** The project owner is willing to improve the human and institutional capacity by providing financial aid and contributions in kind to the local people and institutions. This will help in building human capacity by acquiring know how of modern technology and equipment. Therefore; a positive score has been given to this indicator. This parameter is also discussed under sustainability monitoring plan section of the validation report.

10. **Quantitative employment and income generation "+":** The project owner is committed to prioritize local labour force in selecting construction workers as well as hiring during operation. The project is expected to create employment for approximately 200 unskilled workers for the construction of the power plant and approximately 13 people for the operation of project. Therefore, this indicator has been marked with a positive score. This parameter is also discussed under sustainability monitoring plan section of the validation report.

11. **Balance of payments and investment "+":** The Company makes a huge amount of investment in the region and as a result saves net foreign currency by replacing renewable energy in place of electricity generation from imported fossil fuels. Future target is chosen to develop further an open, rule based, predictable, non-discriminatory trading and financial system and deal comprehensively with developing countries' debt. This parameter is also discussed under sustainability monitoring plan section of the validation report.

12. **Technology transfer and technological self-reliance "0":** The new hydro plant machinery will be imported there by resulting in technology transfer in the area. In order to generate better opportunities, the technicians and engineers will be trained for turbine operation and maintenance in the workshops. Future target is chosen that in cooperation with the private sector, make available benefits of new technologies, especially information and communications. This parameter is also discussed under sustainability monitoring plan section of the validation report.

Implementation of the Monitoring Plan

The approved baseline and monitoring methodology, ACM0002 Version 11 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" is applied.

- **EGfacility,y:**

  The first one is the amount of electricity fed into the grid. There will be two metering devices (main and control meter). In all calculations, the main meter's measurement will be used. The generated electricity will be measured continuously and reported in a monthly basis. The plant manager of Cakirlar HEPP will be responsible for providing the measurement records which show the monthly electricity generation of the company.

  PMUM records provides the exact electricity generation of the facility and the imports from the grid. The electricity meters have been controlled and maintained by the grid owner.

  The quantity of net electricity delivered to the grid has been cross checked with the Meter Reading Records (OSF forms) provided to the company by TEIAS (Ref-32).

  The project owner, ANADOLU has already signed an agreement with TEIAS that includes measuring the amount of electricity that goes to the system accurately. Based on this sales agreement, there is no need for an additional process or equipment to monitor the data.

  The company is not responsible for the calibration of the meters. Calibration will be made by TEIAS when inconsistency between two devices using a fixed template or upon request by either project owner or TEIAS System Usage Agreement, Art 3, B./2./b (Ref-34).

  The calibration shall be in line with "Electricity Market Balancing and Settlement Regulation (latest amendment, 18/09/2012). As per "Regulation on Measures and Inspection of Measuring Instruments" periodical calibration shall be every 10 years starting from the sealing after the first calibration (Ref-21). This calibration process is done by another third party (ELSTER) in 29/09/2008.

  The meters-ELSTER A 1500 will be used in the power house and is in line with the EMRA requirements for electricity meters. The serial numbers are 374150 and 374149. The accuracy class of the product production is 0.5s. The objective evidence (i.e. datasheet) for accuracy class of the meters has been provided (Ref-21).

  CAR15 *was raised by the validation team for the first calibrations date, the frequency of calibration and accuracy of the metering devices. All calibration, metering devices and the responsibilities of the monitoring information have been added under the section B.7.2. of the GS-VER-PDD. As a result the corrective action request is closed.*

- **Cap_{PJ}:** The second data to be monitored is the installed capacity of the hydropower plant after the implementation of the project activity. This information will be checked from the supplier information on the related equipment and the existence of the equipment.

The company will report the installed capacity changes in each monitoring period, if there is any and this information will be checked from EMRA website. The plant manager will be responsible to provide the data.

- **A_{PJ}:** The third data to be monitored is the reservoir area of the project activity. The reservoir area will be monitored through technical drawing of the pond.

  Topographical Survey results and information regarding the weir structure (drawings) will be transferred to a computer program and the surface area, when the reservoir is full, will be simulated and calculated. However, the project does not include a reservoir area.

- **$EF_{grid,CM,y}$:** The emission factors are calculated ex-ante for the period of ten years. The combined margin will be recalculated as per "Tool to calculate the emission factor of an electricity system", any time the crediting period is renewed. The project is a zero emission generating activity and no particularly sensitive or critical sustainable development indicator was identified.

The project owner is the responsible for the implementation and oversight of the monitoring plan as well as data management. The period of storage of monitoring data will not be less than 2 years after the end of crediting period or till the last issuance of VER's for the project activity, whichever occurs later. The Project Participant will be responsible for storage of data received from the measuring devices.

The validation team considers that 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 project activity can be reported ex post and verified.

Bureau Veritas Certification hereby confirms that the monitoring plan complies with the requirements of the methodology including applicable tool(s), the monitoring arrangements described in the monitoring plan are feasible within the project design and the project participants are able to implement the described monitoring plan.

3.11. Environmental Impacts (137)

The project participants conducted an analysis of the environmental impacts of the proposed project activity, including trans boundary impacts.

For the project activity these was no mandatory environmental impact assessment because the domestic laws and regulations in Turkey do not require an Environmental Impact Analysis for renewable energy projects with an installed capacity less than 25 MW however project participants asked for a specific environment report to a third party TCT prepared "The Çakirlar (Artvin) run-of-the-river hydroelectric power plant (17 MW) Environmental Due Diligence" (Ref-28).

'EIA not Required Letter' is obtained from the Ministry of Environment and Forestry on 08/01/2007 (Ref-18). Aspects of the project's possible environmental impacts were also assessed by GS procedures as detailed in the GS-VER-PDD and GS Passport for the project (Ref-06).

Due to project size and location almost no impact is expected which is found acceptable by BVC after on-site observations and assessment of the project characteristics.

Bureau Veritas Certification hereby confirms that the project participants have undertaken an analysis of environmental impacts and an environmental impact assessment in accordance with procedures as required by the host Party.

3.12. Local Stakeholder Consultation (140)

As the project is subject to retroactive project cycle, no Local Stakeholder Consultation Meetings had been organised in line with Gold Standard requirements until the date of application to Gold Standard Foundation.

However, the project owner contacted with the local people and the legal bodies to receive their requests and feedbacks for the project. The project owner used different channels to invite comments by stakeholders. Most of the meetings were held through the Mukhtar (village governors) and Council of Elderly (İhtiyar Heyeti; the village council) of Kabaca village, and the officials of Municipality of Murgul. The feedback from the stakeholders was reflected on the project design and implementation.

Also a stakeholder feedback round was realized in compliance with the GS procedures governing the issue between the dates 25/05/2011 - 29/07/2011 (Ref-26). All project documents were uploaded to Gaia Carbon Finance web site and Gold Standard Registry web site. In addition, all the documents were distributed to mukhtars to be discussed in their town hall meetings

During the Stakeholder Feedback Round, no comment was received from NGOs except local people. On the other hand, no e-mail, fax or phone calls were received. Only, the local stakeholders provided their feedbacks. They preferred to made comments about the project by writing on the comment pages of the Turkish summary document.

BVC conducted live interviews with Murgul Town and Kabaca Village residents as well as community leaders during the site visit dd. 20/01/2011. Interviewed people could be seen in Section 6 “Persons Interviewed” of this report.

During the site visit, possible negative and positive impacts of the project activity were discussed with the stakeholders. The major social concerns in the region were basically about the unemployment and weak economic activity and also the possible harm to be done to the environment of the region; mainly the vicinity of the construction site.

Some of the stakeholders have homes close to the project site so they raised some concerns about dust and noise. Most of the stakeholders asked for assistance for some social needs of Kabaca Village and repairing of the roads which are essential for transporting especially in winter. All this information was checked during the interviews conducted by the Validation Team.

One of the stakeholders named Erol PESTIL (Kabaca Mukhtar) declared that the proposed project activity is very useful for the local people’s employment and the sustainable development for the region. And the other stakeholder who is the Mayor of the Murgul (his name is Mehmet YILDIRIM) said that he told that he received payments for trees that had to be cut for towers.

Bureau Veritas Certification hereby confirms that comments that are relevant for the proposed project activity have been invited from local stakeholders, the summary of the comments received as provided in the GS-VER-PDD is complete, the project participants have taken due account of all comments received and have described this process in the GS-VER-PDD.

4. COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

Webhosting is not applicable since the project is GS-VER. However, GS regulated stakeholder process is summarized in section 3.12 of this report and is presented in detail in the project LSC Report and GS Passport.

In addition, all these documents have been made available under the GS registry webpage (www.markit.com) as required by GS.

5. VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Cakirlar 17.00 MW Run-off River Hydro Power Plant Plant which is located at Eastern Black Sea Region in the south of Murgul District of Artvin province. The validation was performed on the basis of UNFCCC criteria for the CDM, and host country criteria, as well as GS Requirements v2.2 and criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) desk review of the project design document and additional background documents; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion.

The project correctly applies the approved consolidated baseline and monitoring methodology ACM0002 Version 11 and uses the latest tool, guidelines for demonstration of the additionality.

By displacing fossil fuel powered generation sources in the national interconnected grid (hydroelectric power plant), the project is likely to result in reductions of GHG 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.

Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated annual emission reductions of 32,203 tCO_2e during the seven years of its first renewable crediting period.

The review of the project design documentation and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM Methodology, GS Requirements v2.2 and the relevant host country criteria. Bureau Veritas Certification thus requests registration of the project as a GS-VER project activity.

Mr. Furkan SADIKOGLU
Internal Technical Reviewer

Mrs. Burcu MUTMAN BORAN
Team Leader

6. REFERENCES

Category 1 Documents:

Documents provided by project participants that relate directly to the GHG components of the project.

/1/ *Cakirlar HEPP_PDD_v01_02.12.2010*
GS Passport _Cakirlar_v01_02.12.2010
Anadolu_Cakirlar_Baseline_08.10.2010
Cakirlar_IRR Calculation_08.10.2010

/2/ *Cakirlar HEPP_PDD_v02_10.12.2011*
GS Passport _Cakirlar_v02_10.12.2011
Anadolu_Cakirlar_Baseline_08.10.2010
Cakirlar_IRR Calculation_23.05.2011

/3/ *Cakirlar HEPP_PDD_v03_19.03.2013*
GS Passport _Cakirlar_v03_19.03.2013
Anadolu_Cakirlar_Baseline_08.10.2010
Cakirlar_IRR Calculation_23.05.2011

/4/ *Cakirlar HEPP_PDD_v04_17.05.2013*
GS Passport _Cakirlar_v04_17.05.2013
Anadolu_Cakirlar_Baseline_07.05.2013
Cakirlar_IRR Calculation_23.05.2011

/5/ *Cakirlar HEPP_PDD_v05_17.04.2014*
GS Passport _Cakirlar_v05_17.04.2014
Anadolu_Cakirlar_Baseline_07.05.2013
Cakirlar_IRR Calculation_17.04.2014

/6/ *Cakirlar HEPP_PDD_v06_16.07.2014*
GS Passport _Cakirlar_v06_16.07.2014
Anadolu_Cakirlar_Baseline_07.05.2013
Cakirlar_IRR Calculation_17.04.2014

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents used for cross-check.

/7/ *Clean Development Mechanism Validation and Verification Standard, Ver.04*

/8/ *UNFCCC Approved consolidated baseline and monitoring methodology ACM0002 Version 11.0.0 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"*

/9/ *UNFCCC's Methodological Tool: "Tool for the demonstration and assessment of additionality" Version 05.2*

/10/ *UNFFFC's Methodological Tool: "Tool to calculate the emission factor for an electricity system" Version 01*

/11/ *UNFCCC's Guidelines for the reporting and validation of plant load factors, version 01*

/12/ *Cakirlar Revised Energy Generation License Acceptance - 15/03/2007*

/13/ *Board decision for Prior CDM Consideration - 30/04/2007*

/14/ *Date of Water Usage Agreement with DSI - 13/02/2007*

/15/ *The First Feasibility Study Report (March 2006)*

/16/ *Equipment Supply Agreement - 31/08/2007*

Revised Feasibility Study Report (Approved by DSI) (November 2006)

/17/ *EIA Not Required Letter (by the Ministry of Environment and Forestry - 08/01/2007*

/18/ *Commissioning date of the power plant - 01/08/2009*

/19/ *Construction Agreement (Project Activity Start Date) - 01/05/2007*

/20/ *Test certificates of the Meters and First Index Protocol (İlk endeks tespit protokolü.pdf.)*

Loan Agreement - 25/12/2007

/21/ *VER validation process start date for VCS (September 2008)*

Completion of VCS validation process (VCS validation report date) - 14/08/2009

/22/ *MoU signed between the GS and Anadolu Elektik Üretim A.Ş - 10/10/2010*

/23/ *Stakeholder Feedback Round Process (25/07/2010 – 25/05/2011)*

/24/ *Signature with GAIA Carbon Finance for VER Development (November 2007)*

/25/ *Environmental Due Diligence Report prepared by TÇT - 04/03/2013*

/26/ *"Çevresel Gürültünün Değerlendirilmesi ve Yönetimi Yönetmeliği", Madde 23. (07.03.2008 Tarih ve*

/27/ *26809 Sayılı Resmi Gazete)*

/28/ http://tr.wikipedia.org/wiki/Avrupa_İnsan_Hakları_Sözleşmesi

/29/ http://www.dsi.gov.tr/ska/yonetmelik_tamami.htm

/30/ http://www.epdk.gov.tr/documents/elektrik/mevzuat/teblig/elektrik/sayaclar_hakkinda/Elk_Tblg_Sayaclar.doc

/31/ http://www.mevzuat.adalet.gov.tr/html/21179.html

/32/ www.teias.gov.tr/sistemkullanim1.doc

/33/ http://www.eie.gov.tr/yenilenebilir/document/yenilenebilir_enerji_kaynaklarinin_elektrik_enerjisi_uretimi_amacli_kullanimina_iliskin_kanun.pdf

/34/ http://www.teias.gov.tr/ist2007/index.htm

/35/ http://www.stern.nyu.edu/~adamodar/pc/archives/ctryprem07.xls

http://www.teias.gov.tr/istatistik2008/32(75-08).xls

/36/ http://www.teias.gov.tr/projeksiyon/KAPASITEPROJEKSIYONU2009.pdf

/37/ http://www.teias.gov.tr/TürkiyeElektrikİstatistikleri/istatistik2011/uretim%20tuketim(22-45)/23.xls

http://www.ipcc-nggip.iges.or.jp/EFDB/find_ef_s1.php
/38/ http://www.teias.gov.tr/projeksiyon/KAPASITEPROJEKSIYONU2011.pdf
/39/ http://www.teias.gov.tr/KapasiteProjeksiyonuARALIK2012.pdf
/40/ *Installed Capacity Changes Additional Agreement - 28/02/2008*
/41/ *Topographical Drawings and Map, Survey Results*
/42/ http://www.isyatirim.com.tr/report_download.aspx?file=4563
/43/
/44/

/45/

/46/

Persons interviewed:

Persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

	Anadolu Elektrik Üretim ve Ticaret A.Ş.	
/1/	Mert Demirayak	Project Manager
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/3/	Funda Ozdemir	Consultant - +90 212 224 04 50
	Local Stakeholder	
/4/	Cengiz Aydogdu	Governor of Artvin - +90 466 212 10 08
/5/	Faik Oktay Sozer	Governor of Murgul Town
/6/	Mehmet Yildirim	Mayor of Murgul - +90 536 731 29 92
/7/	Erol Pestil	Mukhtar of Kabaca Village - +90 532 590 80 63
/8/	Serkan Yigit	Kabaca Head of Council of Elderly
/9/	Ergin Toplu	Resident of Kabaca Village - +90 530 886 34 78

/10/ Mustafa Turhan Resident of Murgul Town - +90 538 941 22 25

7. CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Mrs. Burcu MUTMAN BORAN	Bureau Veritas Certification, Turkey	**Team Leader, Climate Change Lead Verifier.** Burcu Mutman is an auditor for environment, safety and quality management systems. Has participated various online trainings, seminars and personal trainings on Gold Standard also participated in the Gold Standard Academy in 2009 and 2010.

Mr. Mustafa UNAL	Bureau Veritas Certification, Turkey	**Team Member, Climate Change Verifier.** Mustafa Unal is a Metallurgical and Materials Engineer and an auditor for environment, safety and quality management systems. He has experience in automotive and civil aviation industries. He has participated online seminars in the Gold Standard Academy in 2011, 2012.

Mr. Furkan SADIKOGLU	Bureau Veritas Certification, Turkey	**Technical Reviewer, Climate Change Lead Verifier.** Furkan Sadıkoğlu is an Electrical & Electronics engineer. He has an experience in renewable energy and LED lightning sectors and he has over 2 years' experience in energy sectors. He has participated online seminars in the Gold Standard Academy in 2012 and 2013 and is a lead verifier for GHG emission reduction projects.

TABLE 1 – Validation requirements based on the Gold Standard Passport Requirements (version 2.1)

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
A. Project Title				
a. Is the Project title given in the Passport the same as in the PDD?	T-1.6	The name of the PDD and the GS Passport is not same. Please correct. PDD: Grid-connected electricity generation from renewable sources:Cakirlar 17.00 MW Run-off-River Hydro Power Plant Passport: Cakirlar 17.00 MW Run-off-River Hydro Power Plant	**CAR1**	**OK**
B. Project Description				
a. Is the Project description given in the Passport consistent with the one given in the PDD?	T-1.6	Yes, project description in PDD and the passport is in line.	**OK**	**OK**
b. Has the estimated start date of construction been given under the Project description?		Please give the project start date in the project description.	**CL1**	**OK**
C. Proof of project eligibility				
C.1. Scale of Project				
a. Has the scale of the Project activity been defined as per Gold Standard Toolkit Section 1.2.1?	T-1.2.1	The project is 17 MW hydro power project. Since it is under 20 MW project scale defined as small scale in section C.1.	**OK**	**OK**
b. Does the project proponent have a written statement (e.g. in the PDD) against de-bundling of the project? (De-bundling of small and large-scale projects to create micro-scale projects is not allowed.	T-3.5.1	The project is small scale project activity and in the pdd it is stated that project is not a debundled.	**OK**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
C.2. Host Country				
a. Does the host country have cap on its GHG emissions?	T-1.2.2	No, there is no cap in the project country.	**OK**	**OK**
b. If the answer to the above question is yes, then has the Project proponent provided an official approval from the relevant local authorities stating that an equivalent amount of allowances will be retired to back-up the GS VERs issued?	T-1.2.2	n.a.	**OK**	**OK**
c. If the host country does not have a cap on its GHG emissions, has it been stated in the Passport?	T-1.2.2	Yes, it has been stated in the passport.	**OK**	**OK**
C.3. Project Type				
a. Is the Project a Renewable Energy Supply Project or an End-use Energy Efficiency Improvement Project? (If not, the validation has to be aborted)	T-1.2.3	The project is a renewable project activity.	**OK**	**OK**
b. Has the Project type and eligibility of the Project activity been defined as per Annex C of Gold Standard Toolkit?	T-1.2.3	Yes, the project type and the eligibility of the project activity been defined as per Annex C.	**OK**	**OK**
c. Has a previous announcement of the project going ahead without the revenues from carbon credits been made?	T-1.2.3	No, previous announcement not done for the project activity.	**OK**	**OK**
d. If the answer to the above question is yes, has the project subsequently been cancelled or the design has been significantly revised?	T-1.2.3	n.a.	**OK**	**OK**
e. If the answer to question (c) is no, have the Project	T-	Yes, it has been stated in section C.3 of the passport	**OK**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
Proponents provided a pre-announcement statement under section C.3 in the Gold Standard Passport, attesting that no such previous announcement has been made?	1.2.3	that "There has been no pre-announcement statement regarding the execution of the project without the inclusion of carbon revenues."		
C.4. Greenhouse Gas				
a. Does the project reduce emissions of one or more of the following an GHG? Carbon dioxide, methane, nitrous oxide?	T-1.2.4	The project reduces CO2 emissions.	**OK**	**OK**
C.5. Project registration type				
a. Does the project apply the correct project cycle (regular vs. pre-feasibility assessment)?	T-3.5.1	The project is retroactive project cycle. The project has been validated under VCS but the emission reductions not issued. This is an upgrade from VCS to GS.	**OK**	**OK**
b. Is the Project activity a regular registration?	T-1.2.5	No, the project is retroactive registration.	**OK**	**OK**
c. Is the Project activity a retroactive registration?	T-1.2.5	Yes, the project is retroactive registration.	**OK**	**OK**
d. If the answer to the above question is yes, has the Project proponents applied to the Gold Standard for the pre-feasibility assessment?	T-1.2.5	PFA is not submitted.	**CL2**	**OK**
e. If the answer to the above question is yes, then has the Project proponent provided the Gold Standard pre-feasibility assessment feedback to the DOE?	T-1.2.5	PFA not provided in the project registry and not provided to DOE.	**CL2**	**OK**
f. Does the Project activity need preliminary evaluation? (Large hydro or palm-oil related project)	T-1.2.5	No, the project is 17 mw. Preliminary evaluation is not needed.	**OK**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
g. If the answer to the above question is yes, has the Project proponents applied to the Gold Standard for the pre-feasibility assessment?	T-1.2.5	n.a.	**OK**	**OK**
h. If the answer to the above question is yes, then has the Project proponent provided the Gold Standard pre-feasibility assessment feedback to the DOE?	T-1.2.5	n.a.	**OK**	**OK**
i. Has the Project activity been rejected by UNFCCC?	T-1.2.5	No, the project is not rejected by UNFCCC.	**OK**	**OK**
j. If the answer to the above question is yes, has the Project proponents applied to the Gold Standard for the pre-feasibility assessment?	T-1.2.5	n.a.	**OK**	**OK**
k. If the answer to the above question is yes, then has the Project proponent provided the Gold Standard pre-feasibility assessment feedback to the DOE?	T-1.2.5	n.a.	**OK**	**OK**
l. Are there any double counting occurring with other certification schemes?	T-3.5.1	The project is validated under VCS but verification and issuance not occurred.	**OK**	**OK**
D. Unique project identification				
D.1. GPS-coordinates of Project location				
a. Has the Project proponent stated the exact GPS coordinates of Project location for point source activities and the boundaries for projects spread over a broader area?	T-1.6	Yes, the exact GPS coordinates of the project location has been given for the project activity.	**OK**	**OK**
b. For Programme of Activity projects have the Project Proponent explained the reasoning behind the	T-1.6	n.a.	**OK**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
definition of the project location and coordinates carefully?				
D.2. Map				
a. Have the coordinates been illustrated with a map? (Optional)	T-1.6	Yes, the project area has been pointed in the map.	**OK**	**OK**
E. Outcome stakeholder consultation process				
E.1. Assessment of stakeholder comments				
a. Has the Project proponent inserted the "Table ii-Assessment of Stakeholder Comments" in section B5 of the Stakeholder Consultation Report?	Annex R, E.1	Local stakeholder not done for the project activity. It is stated that unofficial stakeholder meetings have been organized by the project owner. Please provide an objective evidence for the meeting.	**CAR2**	**OK**
b. Has the Project proponent inserted a summary of alterations based on stakeholders comments?	Annex R, E.1	No, stakeholder consultation not done since the project is not regular project activity.	**OK**	**OK**
c. Has an invitation tracking table been filled out?	T-3.5.1	No, stakeholder consultation not done since the project is not regular project activity.	**OK**	**OK**
d. Are copies of invitations published/sent out available?	T-3.5.1	n.a.	**OK**	**OK**
e. Has a non-technical summary in local languate been included in the Local Stakehlder Consultation report, as well as an English summary?	T-3.5.1	n.a.	**OK**	**OK**
f. Is a participant list presented?	T-3.5.1	n.a.	**OK**	**OK**
g. Are stakeholder evaluation forms available?	T-	n.a.	**OK**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
	3.5.1			
h. Are minutes of the meeting(s) available?	T-3.5.1	n.a.	**OK**	**OK**
i. Has due account been made on comments received?	T-3.5.1	n.a.	**OK**	**OK**
j. If stakeholders required a revisit fo the sustainable development assessment, has this been done?	T-3.5.1	n.a.	**OK**	**OK**
k. Is the consolidated sustainable development matrix presented based on own 'preliminary' scoring and the matrix from the outcome of the blind stakeholder exercise.	T-3.5.1	n.a.	**OK**	**OK**
l. Were comments accepted and received by email or other means actually considered?	T-3.5.1	Please clarify if comments accepted and received by email or other means were actually considered	**CL3**	**OK**
E.2. Stakeholder Feedback Round (Can be performed in parallel to the validation process)				
a. Has the Project proponent organized a stakeholder feedback round to give feedback to the stakeholders on how their comments have been taken into account?	T-2.11	No, stakeholder meeting not organized.	**OK**	**OK**
b. Did the stakeholder feedback round include a physical meeting? (optional)	T-2.11	Since the project activity is retro active registration on site meeting is not required. However the project area is very sensitive, please clarify how the local stakeholder comments collected for the project activity.	**CL4**	**OK**
c. Have all the stakeholders invited for participation in	T-2.11	n.a.	**OK**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
the Local Stakeholder Consultation been included in the Stakeholder Feedback Round?				
d. Have all of the following documents been made available to the public for a period of at least two months prior to completion of the validation: a. The Latest version of the complete PDD (including the EIA, if applicable); b. A non-technical summary of the project (in appropriate local language(s)); and English summary. c. The (revised) Passport d. if applicable, supporting documentation such as an environmental impact assessment (EIA) (if available, in appropriate local language(s)); in the case of an EIA, at least a one-page English summary is required e. Additional, non-translated information must be made available as well and shall be translated to the local language upon any justified request of a stakeholder.	T-3.5.1	No, the feedback round not concluded yet.	**CAR3**	**OK**
e. Did the Project proponent also prepare hard copies to be publicly displayed at local places like the post Office, municipality, etc?	T-2.11	Please clarify if hard copies to be publicly displayed at local places like the post Office, municipality, etc	**CL5**	**OK**
f. If the Project is a retroactive Project, did the stakeholder feedback round include a site visit by the stakeholders participating in the process?	T-2.11	Please refer to CL3.	**CL4**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
g. If the Project is a retroactive Project, did the Project proponent follow the guidance provided by the Gold Standard in the pre-feasibility assessment?	T-2.11	PFA	**OK**	**OK**
h. Does the stakeholder feedback round report given in the Passport include the following information: a. How the feedback round was organized (A description of the procedure followed to invite comments, including addressing all the details of the oral hearing such as place, date, participants, language, local or national Gold Standard NGO supporters, etc.), b. What the outcomes of the feedback round are (All written or oral comments received.) c. How did the Project proponents followed up on the feedbacks. (The argumentation on whether or not comments are taken into account and the respective changes to the project design.)	T-3.5.1	Please refer CL3	**CL4**	**OK**
F. Outcome Sustainability assessment				
F.1. 'Do no harm' Assessment				
a. Has the Project proponents considered the critical issues for their Project type that are listed in Annex C of Gold Standard?	T-2.4.1	Annex C has been discussed in PDD section D.1. Please do the discussion in section F.1 of the Passport instead of PDD. Regarding to the Annex C table please explain the followings, Management Domain:	**CAR4**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
		1-Minimum flow on the river and minimum water depth for fish mitigation: During site visit project manager explain that since there is pores on the ground %10 of the water could not measured by DSI so they have build a cannel to the out put of the reservoir to measure the min. water flow that left to the river. This can be applicable by DSI however the implementation is not in line with the GS Requirements for minimum water depth for fish mitigation and flow which guarantees habitat quality and prevents critical oxygen and chemical concentrations. 2- Provides sufficient transport capacity for sediments: The reservoir area dived to 2 parts with a step and the water comes from a pipe to the reservoir and then from a channel to the tunnel. Please provide evidence how sediments can pass through the power plant. 3- Hydropeaking: Please refer to above number 1. 4- No isolation of fish and benthic organisms when water level decreases: During site visit it is seen that there is no fish pass in the project. Please correct the statement in the table and clarify how fish can pass through the project. It is also informed that turbines will protect the fishes from injury. Please provide an objective evidence that fishes can pass from the turbines. 5- Sediment Pass: Please provide objective evidence		

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
		that sediments can pass through the project activity. Please refer to CAR for number 4. 6- Power Plant Design: Please refer to CAR for number 4. 7- Social Impacts: Please clarify how it is ensured that stakeholders can contact the company. Is any information meeting organized or etc. ? 8- Please provide the reference that there is no cultural landscape to be affected by the project activity.		
b. Have the Project participants discussed all of the safeguarding principles with the stakeholders?	T-2.4.1	Since the project is retroactive, the parameters not discussed with the stakeholders.	**OK**	**OK**
c. Have the Project participants introduced mitigation measures for the safeguarding principles with a medium to high risk?	T-2.4.1	Yes, Medium risk defined for environmental protection: the project takes a precautionary approach in regard to environmental challenges and is not complicit in practices contrary to the precautionary principle. It is defined that this will be monitored by the procedures regarding to international and national standards. Please provide the applicable standards and procedures. High Risk defined for "project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments. Please provide the evidences for defined precautions.	**CL6**	**OK**
d. Does the 'Do No Harm' Assessment base on accurate	T-	Yes, sources has been included for do not harm	**OK**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
information and have the reference sources been included?	3.5.1	assessment.		
F.2. Sustainable Development matrix				
a. Has the Sustainable Development Matrix table been inserted in the Passport?	Annex R, F.2	Yes, SD matrix included to the passport section f.2.	**OK**	**OK**
b. Has the project been scored on the following indicators?: a. Environmental b. Social c. Technological d. Economic	T-2.4.2	Yes, all environmental, social, technological and economic indicators scored.	**OK**	**OK**
c. Have the corresponding parameters to represent the status of each of the indicators been selected?	T-2.4.2	Yes, corresponding parameters has been selected to represent the status of the indicators.	**OK**	**OK**
d. Is the baseline situation and the situation aimed for the project described for each parameter?	T-2.4.2	Please define the baseline situation for each parameter.	**CAR5**	**OK**
e. Are the indicators connected to the localized MDG's (Milenium Development Goals) when possible?	T-2.4.2	Yes, parameters connected to MDG's.	**OK**	**OK**
f. Was the reason for choice of the parameters described?	T-2.4.2	Yes, the choice of the parameters explained.	**OK**	**OK**
g. Have all of the indicators been scored 'negative', 'positive' or 'neutral' in comparison with the baseline situation?	T-2.4.2	Yes, all parameters defined as +,- or neutral.	**OK**	**OK**
h. If there are any 'negative' indicators, are there any mitigation measures for these indicators?	T-2.4.2	No negative score defined in the SD Matrix.	**OK**	**OK**
i. Has the matrix been filled by the stakeholders during	T-	n.a. Since the project is retroactive.	**OK**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
the Local Stakeholder Consultation?	2.4.2,			
j. Were there any negative scores duing the stakeholder consultation?	T-2.4.2	n.a.	**OK**	**OK**
k. If the answer to the above question is yes, has the sustainability assessment been revisited?	T-2.4.2	n.a.	**OK**	**OK**
l. Have the project indicators been classified in three categories namely "environment", "social development" and "economic and technological development" under the sustainable development matrix?		The parameters defined for three categories.	**OK**	**OK**
m. Does the project contribute positively to least at two of the three categories and neutral to the third category?	T-2.4.2,	Yes, 3 of the categories scored as positive.	**OK**	**OK**
n. Is the matrix based on existing sources of information? (can include data from existing reports, results from stakeholder consultations, and experiences with similar projects in similar situations, etc. Where data are unavailable or are of poor quality, or severely outdated, independent opinions and expert judgments can also be used.)	T-3.5.1	-Please provide the sources of the information used in the SD Matrix for all parameters. -It is defined that ISO 14001 procedures will be followed. Please provide the certificate which also covers the Cakirlar Hydro Power Plant. -During site visit it is defined that %10 of the water can not be measured in some parts of the river because of the ground type. Please clarify how it can be ensured that min. water quantity will be released for the river. - Please provide the ISO 18001 certificate for Cakirlar Power Plant. Please provide the noise measurement results during construction phase as stated under other pollutants.	**CAR6**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
		-During site visit is seen and confirmed by the project manager that there is no fish pass in the project activity. Please clarify how biodiversity will be protected and correct the given information under biodiversity. -The technology for the project activity is not a new technology please clarify how it is scored as +.		
o. Are the data or expert opinions presented in a sufficient degree of detail and transparency?	T-3.5.1	No, Please give references for datas and expert opinions under SD Matrix.	**CL7**	**OK**
p. Are the data uncertainties clearly stated, if possible with associated margins of error?	T-3.5.1	No, uncertainties are not defined.	**OK**	**OK**
q. Is the scoring reproducible and verifiable?	T-3.5.1	Since the references and baseline scenarios are not defined the scoring is not reproducible and verifiable.	**CL8**	**OK**
r. Does the project demonstrate clear benefits in terms of sustainable development?	T-2.4.2	It will be decided after needed corrections have been done under SD Matrix.		
G. Sustainability Monitoring Plan				
a. Are the mitigation actions included in the monitoring plan?	T-2.4.3	Yes, mitigation actions included in the monitoring plan.	**OK**	**OK**
b. Are all the non-neutral indicators included in the monitoring plan?	T-2.4.3	All non neutral indicators shall be added to the monitoring plan. (etc. Livelihood of the poor.)	**CAR7**	**OK**
c. Is the current status (or expected status under the baseline) of the parameters, the future status and the way they will be monitored described in the monitoring plan?	T-2.4.3	Please provide current status for all of the parameters.	**CAR8**	**OK**
d. Have the project proponents identified parameters	T-	For the water quantitiy it is defined that monitoring will	**CAR9**	**OK**

CHECKLIST QUESTION	GS Ref.	COMMENTS	Draft Concl	Final Concl
that can be used to properly monitor each non-neutral Sustainable Development Indicator according Annex I of the Toolkit?	2.4.3	be done by DSI. However during site visit is seen that DSI does not consider the minimum water depth and flow for all river bed. Please clarify how these will be monitored.		
e. Are chosen parameters relevant to the indicators?	T-3.5.1	Yes, choosen parameters are relevant to the indicators.	**OK**	**OK**
f. Are these parameters planned to be monitored over the crediting period and on a recurrent basis?	T-2.4.3	The parameters will be monitored during crediting period.	**OK**	**OK**
g. Are all mitigation measures put in place to prevent violation or the risk of violating a safeguarding principle of the 'Do No Harm' Assessment or to 'neutralize' a Sustainable Development Indicator included in the monitoring plan?	T-2.4.3	Yes, it is included in the monitoring plan.	**OK**	**OK**
h. Is the sustainability monitoring plan clear about who will monitor with what frequency?	T-3.5.1	Yes, frequencies and the responsibles has been defined in the SD Matrix.	**OK**	**OK**
i. Is the monitoring plan feasible?	T-3.5.1	It will be decided after needed corrections has been done.	**OK**	**OK**
ANNEX 1 ODA declaration				
a. Does the project receive ODA under the condition that the credits coming out of the project are transferred to the donor country?	T-3.5.1	n.a.	**OK**	**OK**
b. Is a scanned copy of the Official Development Assistance Declaration statement signed by the project owner given in Annex 1?	Annex D	n.a.	**OK**	**OK**

Table 2 Resolution of Corrective Action / Forward Action / Clarification Requests

Draft report clarifications and corrective action requests by validation team	***Ref. to checklist question in table 1 and 2***	***Summary of project owner response***	***Validation team conclusion***
CAR1 - The name of the PDD and the GS Passport is not same. Please correct. PDD: Grid-connected electricity generation from renewable sources:Cakirlar 17.00 MW Run-off-River Hydro Power Plant Passport: Cakirlar 17.00 MW Run-off-River Hydro Power Plant	Table 1 – A.a.	Corrected **Response to Review 1:** The name of the project is corrected as indicated in the GS Passport. (***Cakirlar 17.00 MW Run-off-River Hydro Power Plant***)	Review 1: The title is not in line in the PDD and GS Passport still. The corrective action request is still open. **Review 2:** The correction has been done. **The corrective action request is closed.**
CL1 - Please give the project start date in the project description.	Table 1- B.b	PDD was corrected accordingly. The proof document for the project start date was subimitted; "The Subcontractor Agreement" **Response to Review 1:** The start date of the construction has been provided under Section B of the GS Passport.	Review 1: The start date of construction shall be given under section B of the GS Passport. Please clarify. The clarification request is still open. **Review 2:** The constraction start date has been stated in the passport. **The clarification request is closed.**
CL2 - PFA not provided in the project registry and not provided to DOE.	Table 1 -C.5.d - e	A MoU was signed between The Gold Standard Foundation and the Project Owner enabling the project proponent to by-pass the	It was justified that the project is applied to fast-track process. The MoU between GS and project owner dated 10 October 2010 was provided to the

		retroactive registration PFA (see "MoU signed for GS").	DOE. **The clarification request is closed.**
CAR2 - Local stakeholder not done for the project activity. It is stated that unofficial stakeholder meetings have been organized by the project owner. Please provide an objective evidence for the meeting.	Table 1- E.1.a	As mentioned in the PDD, although the domestic laws and regulations do not require any stakeholders' participation, both in the project planning and construction phase, the project owner managed to conduct various unofficial and unstructured touches with stakeholders in the project area. The feedback from the stakeholders was reflected on the project design and implementation. The feedbacks happened through conversation rather than e-mail or alike correspondence. Some of the contributions of the Project Company to the stakeholders were given below (the documents related to these contributions were submitted in the attachment): • In September 2009, some stationery items were supplied to students in the village upon the request of Mukhtar. • Upon the request of	Review 1: The provided evidences are related to the supporting to the villagers and do not proof that a local stakeholder meeting has been organized. The corrective action request is still open. Review 2: **Regarding to the GS Toolkit :** The stakeholder feedback round for retro-active projects will possibly need to include a site visit by the stakeholders participating in the process. In addition to this site-visit the Gold Standard guidance provided in the pre-feasibility assessment needs to be followed. Regarding to the third party report prepared by TÇT some actions are recommended. Pl. İnform what actions has been taken by the project owner after the environmental report has been prepared. TCT Report pg.27; Establish a grievance mechanism for

		Village, a donation was given to be used in road construction works in July 2010. • Upon the request of Mukhtar, a donation was given to be used in building , and furniture of the village mosque in October 2010. • Upon the request of Mukhtar, a donation was given to Murgul Sports Club in October 2010. • A container used during the construction phase of the project was donated to the village upon the request of mukhtar. • In many instances, construction machines were provided to the service of the village for the works to be done in the village **Response to Review 1:** The company have not organised a stakeholder meeting up to now.	community and the work-force, - Hire a security guard for the community health and safety, - Take action for the repair of the damaged village roads, - Monitor environmental flow on the river and take necessary measures when environmental flow is insufficient based on local community grievances. The corrective action request is still open. **Review3;** In the revised environmental report, TCT stated how the grivence mechanism will be done. Pl. Clarify if it is TCT reponsibility. Because in the report it is stated as follows, "Numerous channels will be used for stakeholders to submit any complaints and requests: Telephone – All incoming calls will be registered and information summarized daily and sent to the relevant department for processing and action will be undertaken in accordance with the grievance procedure outlined

		However, the site manager of the project was always in touch with the individuals and institutions in the region and tried to receive comments from the stakeholders and have done his best to meet their requests. The requests from the stakeholders and actions taken by the company to meet the needs of the stakeholders have been provided under Section E.2 and E.3 of the PDD. Please also see Section E.1 of the GS Passport. Also, Please see Environmental Due Diligence Report pg. 24-27. **Response to Review 2:** Please see pg-27 of the Revised Environmental Due Diligence Report which is prepared by TCT under the attachments folder. **Response to Review 3:** The project participant is responsible for the grivence mechanism not TCT. All additional informations relating with grivence mechanism has been added on PDD (pg-62) and monitoring plan of GS passport.	above. Electronic channels – .....” These are only stated in TCT report and missing in the passport and the PDD. The corrective action request is still open. **Review 3:** **The corrective action request is closed.**

CL3 - Please clarify if comments accepted and received by email or other means were actually considered	Table 1- E.1.l	Please refer to the answer for CAR 2 **Response to Review 1:** Please refer to the answer for CAR 2 Steakholder has written their comments. Comments is found steakholder feedback as a Turkısh document on GS Passport Annex 2. Most of them supported this project because of its economic and social additions. A steakholder touched the forest desctruction, but he have been pleased after the project finished. Because the project owner have done lots of forestation and landscaping studies. Shortly, as generally they have thought that all investments which have been made in this area have provide to devolopment of every aspects such as education, health, life conditions etc. Other answers are found CAR2. ın pdd ıncludes all of the receıved comments in section E2. **Response to review 2:** Please see CAR2 response.	Review 1: It is not justified that local stakeholder meeting has been organized. Please provide an objective evidence for the meeting. The clarification request is still open. Review 2: This CL will be closed after CAR02 closed. **Review3:** SFR has been done through website but also summary of the project has been distributed to the locals. **The clarification request is closed.**

CL4 - Since the project activity is retroactive registration on site meeting is not required. However the project area is very sensitive, please clarify how the local stakeholder comments collected for the project activity and how stakeholders participated to the project activity.	Table 1- E.2.b-h-f	Please refer to the answer for CAR 2 **Response to Review 1:** Original feedback forms was given village's muktar . Stakeholders preferred to made comments about the project by writing on the comment pages of the Turkish summary document. The SFR was initiated in April 2011 and all feedbacks were collected in July 2011. Please see on section E.2. of GS Passport and Environmental Due Diligence Report pg. 24-27 **Response to Review 2:** Please see CAR 2 response.	Review 1: It is not justified that local stakeholder meeting has been organized. Please provide an objective evidence for the meeting. The clarification request is still open. Review 2: This CL will be closed after CAR02 closed. **Review 3:** Pl. refer to CAR 02 and CL4. Since the project activity is retro active registration on site meeting is not required. SFR has been done through website but also summary of the project has been distributed to the locals. **The clarification request is closed.**
CAR3 - No, the feedback round not concluded yet.	Table 1- E.2.d	**Response to Review 1:** Please see on section E.2.Stakeholder Feedback Round of GS Passport. **Response to Review 2:** The relevant explanation has	Review 1: The corrective action request is not responded by the PP. The corrective action request is still open. Review2: In section E2 it is stated that "The stakeholder feedback round will be organized in the upcoming weeks to

		been revised in section E2 of GS Passport.	apply to the comments of all stakeholders about….” Pl revise if it is concluded between April-July 2011. **Review3:** In section E.2 of the report SFR comments has been listed. and the actions taken for the comments listed in section E.3. **The corrective action request is closed.**
CL5 - Please clarify if hard copies to be publicly displayed at local places like the post Office, municipality, etc	Table 1- E.2.e	Feedback round process will be started before 27th May of 2011 **Response to Review 1:** Please see on section E.2.Stakeholder Feedback Round of GS Passport. Evidence documents has been added on attachments folder.	Review 1: This clarification request will be evaluated at the next round. The clarification request is still open. **Review2:** The objective evidances that the hard copies displayed at local places has been provided with photos. **The clarification request is closed.**
CAR4 - Annex C has been discussed in PDD section D.1. Please do the discussion in section F.1 of the Passport instead of PDD. Regarding to the Annex C table please explain the followings, Management Domain:	Table 1- F.1.a	1....There are AGI (Akım Gözlem İstasyonları-flow measuring devices) in the upstream and downstream of regulators which are monitored and maintained by the third parties.	Review 1: Annex C has been removed from the PDD, however, not provided in the GS Passport. This corrective action request will be evaluated after Annex C is considered in the GS Passport.

1-Minimum flow on the river and minimum water depth for fish mitigation: During site visit project manager explain that since there is pores on the ground %10 of the water could not measured by DSI so they have build a cannel to the out put of the reservoir to measure the min. water flow that left to the river. This can be applicable by DSI however the implementation is not in line with the GS Requirements for minimum water depth for fish mitigation and flow which guarantees habitat quality and prevents critical oxygen and chemical concentrations. 2- Provides sufficient transport capacity for sediments: The reservoir area dived to 2 parts with a step and the water comes from a pipe to the reservoir and then from a channel to the tunnel. Please provide evidence how sediments can pass through the power plant. 3- Hydropeaking: Please refer to above number 1. 4- No isolation of fish and benthic organisms when water level decreases: During site visit it is seen that there is no fish pass in the project. Please correct the statement in the table and clarify how fish can pass through the project. It is also informed that turbines will protect the fishes from injury. Please provide an objective evidence that fishes can pass from the		2. Cakirlar HEPP has not a tunnel. The Project Owner did not want sediments in water to block the filters and damage the turbine runners. There are settlement tanks on the way of transmission system to keep sediments. 3. Refer to above (1) 4. .The right definition for the type of the Project is Tyrol Type Regulator. In this type, the river is not cut or diverted to take the water which can be seen Run-off River type regulators. Since the there are 4 Tyrol Type regulators used to take water, there is no need to build a fish pass which is not a part of tyrol type regulators. Due to this fact, the project did not face any difficulties during many phases of the process. First, The Ministry of Energy and other related regulatory and official bodies did approve the project despite the lack of fish pass because they know very well that Tyrol Type regulators do not put the ecological environment of fishes in danger. Second,upon the completion of the construction, the officials from the Ministry of	The corrective action request is still open. **Review 2:** Regarding to the environmental assessment report prepared by third party (TÇT) it is confirmed that power plant is in-line with Annex C requirements. **The corrective action request is closed.**

turbines. 5- Sediment Pass: Please provide objective evidence that sediments can pass through the project activity. Please refer to CAR for number 4. 6- Power Plant Design: Please refer to CAR for number 4. 7- Social Impacts: Please clarify how it is ensured that stakeholders can contact the company. Is any information meeting organized or etc. ? 8- Please provide the reference that there is no cultural landscape to be affected by the project activity.		Energy, the Ministry of Environment, Governorship of Artvin scrutinized the project and granted the permission for temporary admission to the project. The related explanations about the Tyrol Type regulator were given in the PDD with pictures in Section A.2.Description of the project activity: 5. Pls. see answer #2 6. Pls see answer #4 7. Since the construction site is very close to the Village, stakeholders have contacted to the site manager anytime they need. Although there is not any official/regulatory obligation, many meetings occurred between the project officials on site and the v,llage mukhtar and the other locals. 8. OK **Response to Review 1:** Annex C has been added in section F.1 of GS Passport.	
CL6 - Yes, Medium risk defined for environmental	Table 1- F.1.c	**Response to Review 1:** **T**he project owner company is an	Review 1: The clarification request is not

protection: the project takes a precautionary approach in regard to environmental challenges and is not complicit in practices contrary to the precautionary principle. It is defined that this will be monitored by the procedures regarding to international and national standards. Please provide the applicable standards and procedures. High Risk defined for "project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments. Please provide the evidences for defined precautions.		internationally acclaimed construction undertaker with dedication to standards such ISO 9001 and ISO 14001 as well as ISO 18001 (OHSAS) that ensures strict procedures of health and safety regulations for the construction industry. The project owner is committed to apply all relevant procedures of those standards mentioned above on Cakirlar HEPP project site. The project owner followed necessary procedures for construction safety at international and standards. All precatutions has been followed under the OHSAS 18001 procedures.	responded by the PP. The clarification request is still open. **Review2:** The precautions defined, **the clarification request is closed.**
CAR5 - Please define the baseline situation for each parameter.	Table 1- F.2.d	Response to Review 1: The baseline situation for each parameter has been defined.	Review 1: The corrective action request is not responded by the PP. The corrective action request is still open. **Review2:** The baseline situations have been defined for the parameters. **The corrective action request is closed.**
CAR6 -	Table 1- F.2.n	1. The sources of the information	Review 1:

-Please provide the sources of the information used in the SD Matrix for all parameters. -It is defined that ISO 14001 procedures will be followed. Please provide the certificate which also covers the Cakirlar Hydro Power Plant. -During site visit it is defined that %10 of the water can not be measured in some parts of the river because of the ground type. Please clarify how it can be ensured that min. water quantity will be released for the river. - Please provide the ISO 18001 certificate for Cakirlar Power Plant. Please provide the noise measurement results during construction phase as stated under other pollutants. -During site visit is seen and confirmed by the project manager that there is no fish pass in the project activity. Please clarify how biodiversity will be protected and correct the given information under biodiversity. -The technology for the project activity is not a new technology please clarify how it is scored as +.		used in SD matrix has been provided. 2. ISO 14001 certificate has been provided. Please see on attachments folder. 3. There are AGI (Akım Gözlem İstasyonları-flow measuring devices) in the upstream and downstream of regulators which are monitored and maintained by the third parties. Also, audit results of provincial environmental forestry manager include that information minimum flow rate which is needed by habitats is enough for Eğrisu, Köpürten, Kunsu and Suludüz streams. DSI has installed monitoring equipments after the weirs and publish a report every 3 months on the water flow. Audit findings and DSI document has been added to attachmens folder. In addition, please see Envıronmental due diligence report which includes supportive information.	- There is no change in the GS Passport. Also, the references referred to the Kıran HEPP. - The ISO 14001 certificate is not provided. - The ISO 18001 certificate is not provided. - The minimum water flow is not related to the fish pass. Please clarify how biodiversity will be protected since the project does not include a fish pass and correct the given information under biodiversity. - It is still scored 4 in the SD matrix. The corrective action request is still open. **Review2:** Sources has been provided, Certificates has been provided. Regarding to the environmental assessment report prepared by a third party it is confirmed that tenant model is suitable for the project activity. Ohsas certificate has been provided

		4. OHSAS 18001 certificate has been added to attachments folder. The construction followed strict noise and dust standards (ISO 9613-2 and ISO 8134) to prevent any inconvenience to communities. Same standards will be followed during the operation of the plant. 5. Please see Environmental Due Diligence report which is reported by third party experts on attachments folder. 6. It is scored as 0 in the matrix.	which also covers the project site. Regarding to the environmental report prepared by TÇT the fish pass is not required for the project activity. Technology scoring has been corrected. **The corrective action request is closed**.
CL7 - No, Please give references for datas and expert opinions under SD Matrix.	Table 1- F.2.o	Corrected in the GS Passport **Response to Review 1:** The references for datas and expert opinions has been given on the GS Passport.	Review 1: There is no change in the SD matrix. The corrective action request is still open. **Review2:** The references for datas and expert opinions has been provided. **The clarification request is closed.**
CL8 - Since the references and baseline scenarios are not defined the scoring is not reproducible and verifiable.	Table 1- F.2.q	Corrected in the GS Passport **Response to Review 1:** The references and Baseline scenarios has been defined on the GS Passport.	Review 1: There is no change in the SD matrix. The corrective action request is still open.

			Review2: Scoring is reproducible and verifiable. **The clarification request is closed.**
CAR7 - All non neutral indicators shall be added to the monitoring plan. (etc. Livelihood of the poor.)	Table 1- G.b	Corrected in the GS Passport **Response to Review 1:** It has been added to Monitoring plan.	Review 1: There is no change in the SD matrix. The corrective action request is still open. **Review2:** All non-neutral parameters have been added to the monitoring plan. **The corrective action request is closed.**
CAR8 - Please provide current status for all of the parameters.	Table 1- G.c	Corrected in the GS Passport **Response to Review 1:** The current status for all parameters has been provided on Monitoring Plan of GS Passport.	Review 1: There is no change in the SD matrix. The corrective action request is still open. **Review2:** Current status of the parameters has been added. **The corrective action request is closed.**
CAR9 - For the water quantitiy it is defined that monitoring will be done by DSI. However during site visit is seen that DSI does not consider the minimum water depth and flow for all river bed. Please clarify how these will be monitored.	Table 1- G.d	**Response to Review 1:** Please see 3# CAR 6.	Review 1: The corrective action request is not responded by the PP. The corrective action request is still open.

			Review2: Regarding to the environmental report prepared by TÇT it is confirmed that %10 water is enough for the river bed. **The corrective action request is closed.**
CAR10 - 1. The operation is effective for 8 months in 2009. However, please explain why the depreciation values in 2009 are multiplied by ¾ to obtain the values in 2010. 2. Please add the fair value (asset value – total depreciated value of assets) as a cash inflo at the end of analysis period. Please also apply income tax to the fair value income. 3. Please give reference for the loan interest rate. Please give information whether the rates are floated or fixed. 4. Please indicate if there are some additional costs in the loan agreement such as commission etc. 5. In the IRR analysis in which VER revenue included, VER revenue is directly added as a cash inflow. In fact, there must be a corporate tax applied to the revenue items. So, please apply corporate tax to the VER revenues. 6. It is seen that the interest expense in 2007 is added to the loan usage. Please add the		1. The mistake was corrected 2. Corrected 3. The rates are fixed as mentioned in ctedit agreement 4. All additional cost are included in the interest payments 5. Corporate Tax was applied 6. OK 7. The VAT is included in the figures for the project investment items which are bought in Turkey. 8. Energy Transmission line investment was deducted from the yearly transmission expenses 9. OK 10. OK	Review 1: 1- The correction is acceptable. Closed 2- In the fair value calculation insurance costs are taken into consideration by mistake. However, this is not a significant value so it can be disregarded. Closed 3- Closed 4- The clarification is acceptable. Closed 5- Corporate tax is applied to the VER revenues. Closed 6- There is nothing corrected here. In financing sheet Cell “d10” there is an interest expense figure:534,413. Please use this value in the calculations i.e. the loan balance figure must be effected by this value. Not closed

interest expense occured in 2008 to the loan usage as well. Please add the interest expenses during construction to the asset value to be depreciated. 7. Please give information for the project investment items if they are bought in Turkey so that VAT is applied to the investment amounts. 8. Please clarify if Energy Transmission line investment to be deducted from the yearly transmission expenses 9. Please add the IRR figures in which VER revenues are not included in the sensitivity table. I would like to see the IRR figures in case of 10% of investment decrease scenario w/o VER revenue. 10. Please provide reffarence for 6% of energy loss.		**Response to Review 1:** 6.The interest expense in 2008 has been added to loan balance figure. 10.Energy loss rate has been accepted as %3 to be on the conservative side. **Response to Review 2**: 11.The sensivity calculation has been revised in IRR calculation exel sheet. PDD has been revised accordingly.	7- Ok 8- Ok 9- 6% of energy loss seems higher. Please give reference for the energy loss figure. Not closed **Review2:** 6. There is no roblem in interest expense calculations. Closed. 10.Energy loss ratios is reduced to 3%. Closed. 11. Pl. Revise the sensitivity calculation regarding to the revised calculations. The corrective action request is still open. Review3: The sensitivity analysis has been corrected. **The corrective action request is closed**.
CAR11 - 1. There is a unit error in the interim calculations in Excel: in the worksheet 'OM calculations' emission factors are referred as t/GJ which is not true. The unit is kg/TJ. Although the units of the calculated emission factor is correct at the end, the interim unit should be corrected for consistency.		1. The unit for CO2 Emission factors given in cells B38:H44 shall be kg CO2/TJ. Corrected accordingly. 2. The PDD does not include any explanation on calculation of efficiency	Review2: Please update the emission factor calculation regarding to the latest available data (with 2011 datas) The corrective action request is still open. **Review 3:**

2. The efficiency factor for naphta based power generation is used as 32.5%. The PDD says that this value is calculated based on TEIAS data. However, the calculation details are not given (neither in the Excel nor in the PDD) and need to be added. 3. The case of the efficiency factor for LPG is similar to the case of naphta, the difference being that the LPG efficiency factor is not used as there is no plant using LPG as a single fuel. So why is LPG included in Table 21 (Efficiency Factors used for BM Emission Factor Calculation) ? 4. Evidence is required for the calculation of the efficiencies for naphta based power generation and LPG based power generation, as they have been quoted in the PDD.		factor for naphta based power plants. In the Baseline excel sheet, the expression is corrected as "*Energy efficiency figures of fuel types are taken from the Annex 1 of the methodology ("Tool to calculate the emission factor for an electricity system"/Version 02. However, as defauld efficiency factors for LPG and Naphta are not available in the tool. the efficiency factors of these fuel types are assumed as 60% (equal to the highest efficiency figure / Efficiency figure for Natural Gas-Combined Cycle)*." 3. The table is corrected. Lpg is excluded from the table. 4. The PDD does not include any statement about calculation of efficiencies for Lpg and naphta based power plants. Efficiency figures for these type of power plants are assumed as 60% to be on the	The needed correction has been done. **The corrective action request is closed.**

		conservative side. **Response to Review 2:** Baseline emissions calculation exel sheet has been revised using the latest available data. Also, PDD has been revised accordingly.	
CAR12: Pl. clarly show how the VER revenues has been considered before the project start date.		5. There is a board decision about carbon revenues. Please see Board decision doc.pdf on attachments folder	The board decision has been provided and it is dd. 30.04.2007. The first contract is construction agreement and it is dd. 1st may 2007. The Eurobond rates which are the latest available data has been used for the investment analysis. **The corrective action request is closed.**
CAR13: ACM0002. Version 11 is not valid. Pl. revise.		6.	Since the project GS, it is allowed to use the meth. Version at the time of submission of the documents. **The corrective action request is closed.**
CAR14: Provided barriers are related to the investment of the project activity which can be considered in investment analysis. Defined barriers are not acceptable.		7. The barrier analysis has been removed from the PDD. Response: All barrier analysis refers has been removed in section B.3, step	Barrier analysis has been removed however section B.3, step 2, step 4a,step 4b still refers to barrier analysis. The corrective action request is still open.

		2, step 4a and step 4b.	**Review 3:** **The corrective action request is closed.**
CAR15: Pl. revise the monitoring section in line with the methodology. Pl. give the roles and responsibilities for the monitoring. Pl. define the first calibration date ,the frequency of calibration and accuracy of the metering devices.		8. The roles and responsibilities has given under the section B.7.2. All calibration and metering devices information has been added under the section B.7.2. Please also see for supporting documents under the attachments folder. Response: Please see on page 58 and 59 for monitoring tables. They have already been added on PDD.	The calibration information has been defined. The roles and responsibilities has been defined. The data /parameter tables for the monitoring plan are missing in the PDD. Pl. revise it. The corrective action request is still open. **Review3**: **The corrective action request is closed.**
CL09: Pl. give the exact start date of the project activity in the PDD.		9. The exact start date of project activity has been corrected as May 1st ,2007 which is the construction agreement date. (Please also see the subcontractor agreement doc. and other agreements doc. on attachments folder.)	The start date of the project activity has been corrected as the construction start date. **The clarification request is closed.**