



Voluntary Carbon Standard 2007.1
Validation Report

19 November 2007

Validation Report:

Name of Verification company:	Date of the issue:
Bureau Veritas Certification Holding SAS	26.07.2010
Report Title:	Approved by:
Validation Report for 78 MW AKOCAK Hydroelectric Power Plant "	Burcu Mutman 
Client:	Project Title:
Global Tan Enerji A.S	"78 MW AKOCAK Hydroelectric Power Plant "
Summary:	
Bureau Veritas Certification has made the validation of "78 MW AKOCAK Hydroelectric Power Plant ". The project activity involves the installation of a 78 MW hydro electric power plant (HEPP) project located on Karadere River, in Trabzon province, in East Black sea region of Turkey. The purpose of the project is to generate energy from the running waters of Karadere River. The project comes under Type-I Renewable Energy Project as per Appendix B of the procedures for CDM project activities. The expected annual emission reduction is 144,681 tonnes of CO₂e (tCO₂e). Renewable crediting period is chosen for the project activity. The validation scope is defined as an independent and objective review of the VCS project description, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following five phases: i) desk review of the project design and the baseline and monitoring plan; ii) Review of the baseline methodology by the specialist and the validator; iii) Review of the investment analysis by the specialist and the validator iv) follow-up interviews and on site visit; v) 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 and Corrective Actions Requests (CL and CAR), presented in Annex II in the Validation Protocol. Taking into account this output, the project proponent revised its VCS project description. In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology ACM0002, version 10 and meets the relevant VCS 2007.1 requirements and local legislation.	
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TABLE OF CONTENTS:

1	INTRODUCTION.....	4
1.1	Objective.....	4
1.2	Scope and Criteria.....	4
1.3	VCS Project Description.....	4
1.4	Level of assurance.....	4
2	METHODOLOGY.....	5
2.1	Review of Document	5
2.2	Follow-up Interviews	5
2.3	Resolution of any material discrepancy.....	5
3	VALIDATION FINDINGS.....	5
3.1	Project Design.....	5
3.2	Baseline	8
3.3	Monitoring Plan	12
3.4	Calculation of GHG Emissions	14
3.5	Environmental Impact.....	16
3.6	Comments by stakeholders	16
4	VALIDATION CONCLUSION.....	17
5	REFERENCES.....	18
5.1.	Documents	18
5.2.	Persons Interviewed	19
	ANNEX I – Validators’ Competence	20
	ANNEX II - Validation Protocol.....	22

Abbreviations List:

HEPP	: Hydro Electric Power Plant
CL	: Clarification
CAR	: Corrective Action Request
MP	: Monitoring Plan
VCS	: Voluntary Carbon Standard
VCU	: Voluntary Carbon Unit
VER	: Voluntary Emissions Reductions / Verified Emissions Reductions
PD	: Project Description
EMRA	: Electricity Market Regulatory Authority (EPDK)
EPDK	: Elektrik Piyasasi Duzenleme Kurulu (EMRA)
TEIAS	: Turkiye Elektrik Iletim A.S. (Turkish Electricity Transmission Company)
DSI	: Devlet Su Isleri (State Hydraulic Works)
PP	: Project Participant
CDM	: Clean Development Mechanism
HES	: Hidro Elektrik Santrali (Hydro Electric Power Plant)

1 INTRODUCTION

This report summarizes the findings of the validation of the "Akocak 78MW Hydroelectric Power Plant" project, performed on the basis of VCS 2007.1 criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The validation serves as project design verification and is a requirement of all voluntary emission reduction projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant VCS criteria which are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the VCS project description, the project's baseline study and monitoring plan, the project's investment analysis and other relevant documents. The information in these documents is reviewed against the methodologies and tools that are given under the Clean Development Mechanism of Kyoto Protocol, VCS 2007.1 rules and associated interpretations. The validation is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 VCS Project Description

The project activity involves the installation of a 78 MW hydro electric power plant (HEPP) project located on Karadere River, in Trabzon province, in East Black sea region of Turkey. The purpose of the project is to generate energy from the running waters of Karadere River. The project comes under Type-I Renewable Energy Project as per Appendix B of the procedures for CDM project activities.

The main purpose of the project is to generate approximately 257.440 GWh/year of electricity to supply the national grid using a renewable resource. The generated electrical energy shall be connected to Arsin TM grid substation through a double circuit 2 x 477 MCM, 32 km long 154 kV transmission line. The project activity reduces greenhouse gas (GHG) emissions that would have otherwise occurred in the absence of the project activity by avoiding electricity generation from fossil fuel sources. The expected average annual emission reduction is 144,681 tonnes of CO₂e (tCO₂e). Renewable crediting period is chosen for the project activity.

1.4 Level of assurance

The Level of assurance of the validation report is defined as high.

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. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements of a VCS 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.

2.1 Review of Document

The Project Description (PD) submitted by Global Tan Enerji A.S and additional background documents related to the project design and baseline, i.e. CountryLaw, VCS Project Description Template, Approved Methodology and tools under the CDM of Kyoto Protocol, Clarifications (CL) and Corrective Action Requests (CAR) on validation requirements were reviewed.

To address Bureau Veritas Certification corrective action requests and clarification requests, Global Tan Enerji A.S revised the PD several times, PD version 03 being the last version which was submitted to the validation team on 20.07.2010. All corrective action requests and clarification requests were closed in 21.07.2010.

All documents were reviewed under the requirements of the CDM Methodologies as these methodologies are approved under the VCS.

2.2 Follow-up Interviews

Between October 2009 and July 2010 Bureau Veritas Certification performed interviews with Global Tan Enerji A.S and local stakeholders regarding the Grid emission factor, Investment Analysis, project specific questions and Clarification and Corrective Actions Requests documented in the validation protocol. A list of the persons interviewed is given under section 5.2 of this report. After the discussions, the validation team closed on 20.07.2010 all documented CL and CAR in the validation protocol.

2.3 Resolution of any material discrepancy

During the validation there were no material discrepancies that were identified.

3 VALIDATION FINDINGS

3.1 Project Design

Bureau Veritas Certification recognizes that Global Tan Enerji A.S which is the project proponent helping the country in fulfilling its goals of promoting sustainable development with this project. The project is in line with host-country specific requirements. In addition, the project highly supports the sustainable economic development in the region.

The conclusions of the validation team are as follows:

- The technology used:

The project includes two weirs. The first weir called Erikli weir shall be built on Alcak Brook, a branch of Karadere, on 1,339 meters riverbed elevation. A sediment pool of 41 meters long and 2.3 meters wide shall be built along the riverbed. The other weir called Akocak weir shall be built on Karadere branch of the river, on 1,328 meter riverbed elevation. The sediment pool of Akocak weir shall be 41 meters long and 4.3 meters wide. The powerhouse shall be located on Karadere River, at 570 meters riverbed elevation. The UTM ED coordinates for Erikli weir is 580 500 E, 4 495 600 N; Akocak weir: 577 425 E, 4 496 300 N; powerhouse: 576 375E, 4 502 625 N.

The waters collected at the Erikli weir shall be connected with a 3 meter diameter, circular section, derivation tunnel of 3,250 meters long to the upstream of Akocak weir. The Akocak weir shall transmit the collected waters to a surge tank through a 6,150 meters long transmission tunnel of 3 meters cross section. The penstock extending from the surge tank to the powerhouse is 1,842 meters long, with an average diameter of 1.82 meters.

The power house shall include two turbines of vertical pelton type, each 39 MW. The design flow rate is 12.30 m³/sec. Net head is 744 meters. There shall be two generators, each 48.75 MVA. The installed capacity of Akocak HEPP shall be 78 MWe. The generated electrical energy shall be connected to Arsin TM grid substation through a double circuit 2 x 477 MCM, 32 km long 154 kV transmission line. The annual estimated electrical energy generation is 257.440 GWh. Characteristics of the project has been presented below:

LOCATION:	ON KARADERE RIVER, IN ARIKLI DISTRICT OF TRABZON PROVINCE
DESIGN FLOW RATE:	12.30 M ³ /SEC
LENGTH OF DERIVATION TUNNEL:	3.284 KM
DIAMETER OF TUNNEL:	3.00 M
LENGTH OF ENERGY TUNNEL:	6.170 KM
NET HEAD:	744 M
TOTAL INSTALLED CAPACITY:	78 Mwe
NUMBER OF UNITS:	2 EACH
TURBINE TYPE:	PELTON TYPE – VERTICAL AXIS - 41.23 MW
TURBINE MANUFACTURER:	VOITH SIEMENS HYDRO POWER
GENERATOR:	46 MVA, 0.9 POWER, FACTOR, 13.8 kV, 750 RPM
GENERATOR MANUFACTURER:	VOITH SIEMENS HYDRO POWER
ENERGY TRANSMISSION LINE:	32.00 KM, 2 x 477 MCM, 154 kV

LENGTH OF PENSTOCK:	1842 M
DIAMETER OF PENSTOCK:	1.82 M
AVERAGE ANNUAL POWER GENERATION:	257.440 GWH
TYPE OF METERING DEVICES	To be determined later according to local regulations of Energy Market Regulatory Authority (EMRA) of Turkey ¹ .

The technology used in the plant is a state-of-the-art technology with extensive automatization. The equipment to be provided is brand new according to the electromechanical equipment agreement. There is no new technology which is expected to replace the plant's technology in the short run. The project does not need extensive initial training and maintenance efforts in order to work as presumed during the project planning period. Necessary trainings to the plant staff will be delivered by the supplier in line with the agreement between the project owner and the supplier. The agreement between the supplier and AKENERJI Elektrik Uretim AS (Project Owner) has been reviewed by the validation team. The related training records shall be verified during the first verification of the project activity.

As a result, validation team approves that the technology used in the project activity is state of the art and all the equipment used in the project are new.

- Project duration, crediting time and project start date

Expected starting date of the project activity is 01/07/2010 when the plant commences electricity generation. The carbon crediting period and therefore the monitoring starts when the plant commences electricity generation. Renewable crediting period is chosen for the project activity and first crediting period will be valid for ten years.

The expected life time of the project starting from 23/11/2005 is 49 years according to duration of the license obtained from EMRA. The indicated project duration corresponds to 44 years starting from the expected starting date of the project activity as given in the PD. However, the equipments may be renewed (as recommended) during the lifetime of the project activity according to the conditions of the equipments.

- Ownership

The generation license belongs to AKENERJI Elektrik Uretim AS . A copy of the generation license is given in Annex 6 of the PD.

The project did not participate in any other GHG emission reduction program. The validation team approves that there is no double counting involved in this project activity during this validation.

- Eligibility of the project activity under VCS

The project comes under Type I – Renewable Energy Project as per Appendix B of the procedures for CDM project activities. The project is a 78 MW HEPP and it uses renewable sources to produce electricity. Since the installed capacity of the planned HEPP is larger than 15 MW; it is a large scale renewable energy project activity according to the Decision 17/ CP.7 Article 6. As per the justifications given above, the project activity is eligible under VCS.

¹ <http://www.epdk.gov.tr/english/regulations/electric/meters.doc>

The project is not a grouped project.

3.2 Baseline

- Approval of the baseline methodology:

The baseline for "Akocak 78 MW Hydroelectric Power Plant" project is established by using the UNFCCC official methodology ACM0002, version 10, namely "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

For the calculation of the grid emission factor, UNFCCC Methodological Tool "Tool to Calculate Emission Factor of an Electricity System" version 02 is used.

For the assessment and demonstration of additionality, UNFCCC Methodological Tool "Tool for the Demonstration and Assessment of Additionality", Version 05.2 is used.

Both of the tools are referred in the applied methodology.

Both the tools and the methodology are the latest available versions at the time of PD submission to the DOE, and are found appropriate by the validation team. Clean Development Mechanism Methodologies are approved under the VCS program.

- Correct application and justification of baseline methodology:

The choice of methodology **ACM0002 / Version 10**, is justified as the proposed project activity meets relevant applicability criteria:

Applicability condition in the ACM0002/Version 10	Compliance of the condition
This methodology is applicable when the project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.	The project activity is a Greenfield grid connected hydropower project with a run-of river reservoir.
In the case of capacity additions, retrofits or replacements: the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	This condition is not applicable to the project activity as it involves the installation of a new hydroelectric power plant.

In case of hydro power plants, one of the following conditions must apply: - The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or - The project activity is 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/m²; or - The project activity results 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/m².	The project activity results 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/m² The power density (PD) for this reservoir is calculated as follows: $PD = 78000000 \text{ W} / 32120 \text{ m}^2$ $PD = 2478 \text{ W/m}^2$ $PD > 4 \text{ W/m}^2$ $PD > 10 \text{ W/m}^2$, therefore, according to the methodology, there will be no emissions from the reservoir.
This methodology is not applicable to project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the base line may be the continued use of fossil fuels at the site.	This condition is not applicable to the project activity as it does not involve switching from fossil fuel to renewable energy at the site of the project activity.
This methodology is not applicable to biomass fired power plants.	This condition is not applicable to the project activity as it does not involve the installation of a biomass fired power plant.
In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	This condition is not applicable to the project activity as it does not involve a capacity addition, retrofit or replacement of existing grid-connected renewable power plant/unit(s).

The baseline scenario was applied correctly and the justification for the choice of the baseline methodology is found appropriate by the validation team

- Appropriate setting of baseline scenario

The baseline scenario is defined as follows:

"Electricity delivered to the grid by the project 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 emission factor for an electricity system"

The defined baseline scenario is in line with the methodology as the project activity is the installation of a new grid-connected renewable power plant.

As the project activity is not a retrofit or replacement of existing grid-connected renewable power plant, the step-wise procedure to identify the baseline given in ACM 0002 version 10 is not used for this project activity.

The above setting of the baseline scenario is found appropriate by the validation team.

- Assessment and demonstration of additionality:

The assessment and demonstration of additionality of the project is done by using UNFCCC Methodological Tool "Tool for the Demonstration and Assessment of Additionality", Version 05.2. In applying this tool under Step 1a, the following four alternatives are identified as the alternative scenarios that are likely to happen in the absence of the project activity:

Alternative 1: Proposed project not undertaken as a VER project activity

Alternative 2: Continuation of the current situation-supply of equal amount of electricity by the grid connected power plants.

Alternative 3: Construction of a thermal power plant with the same installed capacity or the same annual power output.

All three alternatives have been defined as realistic in the PD. Analyzing the alternatives that are defined as realistic, it is seen that all scenarios are consistent with the baseline definition of ACM0002 / Version 10. All of the alternatives are in compliance with legal requirements as they are practices currently present in the country.

The project proponent used Step 2 'Investment Analysis' for the demonstration of the additionality of the project activity.

Under Step 2-Investment Analysis there are four sub-steps.

Under sub-step 2a, Benchmark Analysis (Option III) is chosen and the other options are eliminated because, the proposed Project generates financial and economic benefits through the sales of electricity other than Voluntary Emissions Reduction (VCS-VER) related income. Therefore the simple cost analysis (Option I) cannot be taken. Investment comparison analysis (Option II) is only applicable to projects where alternatives should be similar investment projects. Since the baseline of the project is generation of electricity by the grid and there exist no publicly available data for comparison with alternative investment types, no alternative investment is considered for comparison. This method is also assessed to be appropriate by the validation team.

Under sub-step 2b, Equity IRR is selected as a financial indicator. As a benchmark, Turkish Eurobond rate increased by a suitable risk premium is used. The Turkish Eurobond rate has been selected as 7.32% for the date November 2006 with a maturity date of 2025. The Eurobond rate at the time of investment decision which is the date of turbine purchase agreement (November 2006) is taken. The maturity date of the Eurobond rate is also convenient for the investment analysis period which is selected as 20 years. The country risk premium is taken from the study of Prof. Aswath Damodara (9.41 %). Hence the benchmark is assessed to be appropriate by the validation team and the financial expert.

Under sub-step 2c, the Equity IRR is calculated. Project proponents have also submitted an excel sheet showing the details of the calculations. Some revisions have been made to these calculations until the latest version which was submitted to the validation team together with the final VCS PD. The final approved version of the IRR calculation sheet is dated 10.07.2007. Majority of the data used in the IRR calculations are taken from the form the turbine purchase agreement and the cost estimate reports for the construction. Other data has been referred to the feasibility report. The projected costs have been checked from the cost estimate reports and the feasibility report.

The electricity sales price is taken as 5.5 € Cents/kWh which is the minimum purchase guarantee offered by the State as an incentive to renewable energy investments. Hence this sales price is accepted by the validation team.

The depreciation periods of machinery, equipment and other fixed assets are taken as per the local rules and regulations.

The IRR of the project activity is around 8.60 % without the VER revenues and around 9.59 % with VER revenues at USD 7 /tCO₂ for 20 years both of which are under the benchmark expectation of 16.24%.

The above analysis shows that the project is not financially attractive without VER revenues for the investor.

Under Sub-step 2d, sensitivity analysis is applied to the following items:

- Total investment
- Electricity selling price
- Annual operational costs

For a range of $\pm 10\%$ fluctuations in investment and operating cost, and 30% fluctuation for electricity income, table below has been obtained.

	-10	-5	-2.5	0	2.5	5	10
Investment Cost	10.37	9.43	9.00	8.60	8.21	7.84	7.16
Operating Cost	8.75	8.67	8.64	8.60	8.56	8.52	8.44
	-30	-20	-10	0	10	20	30
Electricity Income	3.63	5.31	6.96	8.60	10.22	11.82	13.42

The above sensitivity analysis shows that the project is still not financially attractive due to the changes in total investment electricity selling price and annual operational cost.

The common practice analysis:

According to the "Tool for the demonstration and assessment of additionality" version 05.2, the common practice analysis shall be applied unless the proposed project activity has demonstrated to be first of its kind. Under the common practice analysis section of the PD, HEPP projects in the country is compared with the thermal power plants. Also an analysis of the HEPPs in Turkey is given.

It has been stated that share of HEPPs in total installed capacity of Turkey is about 32.8% whereas share of HEPPs in total generation is only 18.7%. Also, the distribution of hydro power capacity by utilities has been demonstrated and it has been concluded generation capacity of the hydroelectric power plants owned by generation companies is 1,503 GWh by end of 2007 which corresponds to 0.78% of the total generation capacity(191,558.1 GWh) of Turkey at that time.

The validation team has concluded that the proposed project activity is not common practice in the region due to the reasons that are explained above.

3.3 Monitoring Plan

- Approval of the monitoring methodology:

The consolidated monitoring methodology for grid connected generation from renewable sources named as "Approved Monitoring Methodology ACM0002 / Version 10 is applied. All the applicability conditions of the monitoring methodology are the same as the applicability conditions of the baseline methodology which are given under section 3.2 of this validation report. The data will be archived electronically and be kept at least for 2 years after the end of the last crediting period. All measurements will be conducted with calibrated measurement equipment according to relevant industry standards.

- Correct application and justification of the selected monitoring methodology:

The justification of the choice is explained in section 3.2 of this validation report. The monitoring methodology is applied correctly and appropriately.

- Information about monitoring plan is as follows:

The monitoring plan includes the monitoring of several parameters, the main parameter in the monitoring plan is the quantity of the net electricity that is delivered to the grid, this parameter will be the basis for the emission reduction calculations.

According to the methodology ACM0002 version 10, the parameters used to calculate the Power Density of HEPPs also need to be monitored. These parameters are also included in the monitoring plan.

The below table shows the parameters that are included in the monitoring plan together with their monitoring process.

Data /Parameter	Description	Source of Data	Data Unit	Monitoring Frequency	QA/QC Procedures to be Applied
$EG_{\text{facility},y}$	Quantity of net electricity generation supplied by the project to the grid in year y	Project activity site/electricity meters	MWh/y	Continuous measurement and at least monthly recording	Cross check measurement results with records for sold electricity. There will be two sets of meters one main meter and one check meter. If there is a measuring difference between these meters, then one of the parties may request calibration.
Cap_{PJ}	Installed capacity of the HEPP after implementation	Project site	MW	Yearly	Data will be determined based on recognized standards
A_{PJ}	Area of the regulation pond measured in the surface of the water after the implementation of the project activity when the reservoir is full	Project site	m ²	Yearly	Measured from topographical surveys, maps, satellite pictures, etc.

The monitoring will be performed in-house by the project proponent:

1. Plant Manager: Responsibility for running the HEPP plant and compliance with VER monitoring plan
2. Electrical Engineer: Responsible for day electrical operations and recording and monitoring of relevant data and periodic reporting
3. Accounting Manager: Responsible for keeping data about power sales, invoicing and purchasing.
4. Global Tan Energy: Responsible for emission reduction calculations, preparing monitoring report and periodical verification process.

Overall the monitoring methodology is found appropriate and suitable for this particular project activity.

3.4 Calculation of GHG Emissions

Anthropogenic emission reduction is a function of the expected net amount of electricity produced, for the given project, which amounts to 257.44 GWh per annum.. The annual baseline emissions amount is 144,681 tCO₂e. Over the period of ten years, the total amount of baseline emissions will reach 1,446,810 tCO₂e. For all calculations, the rounded value of the combined emission factor, 562 tCO₂/GWh is applied.

<i>2010 (01/07/2010-31/12/2010)</i>	72,340
<i>2011</i>	144,681
<i>2012</i>	144,681
<i>2013</i>	144,681
<i>2014</i>	144,681
<i>2015</i>	144,681
<i>2016</i>	144,681
<i>2017</i>	144,681
<i>2018</i>	144,681
<i>2019</i>	144,681
<i>2020 (01/01/2020-30/06/2020)</i>	72,341
Total emission reductions	1,446,810
<i>(Tones of CO₂ e)</i>	
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tones of CO₂e)	144,681

- *The appropriateness of the source, sink and reservoir:*

According to ACM0002/Version 10 if the power density (PD) of the hydro power plant is above 10 W/m², Project Emissions is 0. The following calculation of the PD and the assumptions for the Project Emissions and Leakage made afterwards, is found acceptable and suitable for the project activity by the validation team.

The power density of the project activity is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}}$$

Where:

- PD: Power density of the project activity, in W/m²
- Cap_{PJ}: Installed capacity of the hydro power plant after the implementation of the project activity (W)
- Cap_{BL}: Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero
- A_{PJ}: Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m²)
- A_{BL}: Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m²). For new reservoirs, this value is zero

For proposed project HEPP,

$$Cap_{PJ} = 78000000 \text{ W}$$

$$Cap_{BL} = 0.0 \text{ W}$$

$$A_{PJ} = 32120 \text{ (m}^2\text{)}$$

$$A_{BL} = 0.0 \text{ (m}^2\text{)}$$

Therefore PD is calculated as ;

$$PD = 2,428 \text{ W/m}^2$$

- *The correctness and transparency of formulas and factors used,*

The formulas and factors used in the calculation of GHG emissions are found to be transparent and correct by the validation team. The emission factors of fuels which are used in the calculations are taken from the IPCC default values at the lower limit of uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter 1 of Vol.2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories, as suggested by the methodology.

- *The assumptions made for estimating GHG emission reductions*

The only assumption is the one about project emissions which is assumed to be zero as per the methodology. Other unknown parameters like the emission factors of fuels are taken from the IPCC values as mentioned above.

- *Uncertainties*

There are no uncertainties in the calculations.

² Feke-I pre-EIA study, page 160

3.5 Environmental Impact

The EIA assessment for Akocak HEPP project has been prepared by PRD. as defined by the regulations. The Report was approved by the Ministry of Environment and Forestry (MoEF) on 17th October 2006.

The EIA Report prepared for the project covers all aspects of the project including capacity, interaction with other plants in the vicinity, natural resources used, waste management, social and economic impacts, technology and materials used, current land use in the region, any historical or protected site within the project boundaries, geological assessment of the project site and any communities affected by the project.

This Report has been evaluated by the relevant local government agencies and Ministry of Environment and Forestry (MoEF). After evaluation of the project and comments of the local agencies, the Ministry of Environment and Forestry has concluded that project does not have significant environmental effects and the EIA assessment is positive for the project activities. The agreement of the EIA report has been presented in annex 5 of the PD.

3.6 Comments by stakeholders

Initial Stakeholder meeting of the project was organized and held on October 27th, 2008 in Arakli District of Trabzon Province. The participants comprised representatives from the community, relevant municipalities, public institutions and inhabitants of the surrounding villages. All the aspects of the project including the socio-economic and environmental aspects were presented to the participants by a project developer representative and were discussed by the stakeholders. Clarifications were requested and the overall response to the project was encouraging and positive. All the hearings were held in Turkish.

4 VALIDATION CONCLUSION

Bureau Veritas Certification has made the validation of "Akocak 78 MW Hydroelectric Power Plant" The validation was performed on the basis of VCS criteria and countrycriteria and also on the 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 and the baseline and monitoring plan; (October 2009)
- ii) Review of the baseline methodology by the specialist and the validator (October 2010-June 2010)
- iii) Review of the investment analysis by the specialist and the validator (December 2009-July 2010)
- iv) Follow-up interviews and on site visit; (October 2009)
- v) Resolution of outstanding issues and the issuance of the final validation report and opinion (November 2009 – July 2010)

Project proponents used the latest tool for demonstration of the additionality. In line with this tool, the PD provides analysis of prevailing barriers to determine that the project activity itself is not the baseline scenario.

By generating electricity using renewable energy, the project is likely to result in reductions of GHG emissions partially displacing the electricity that would have been generated using fossil fuels. An analysis of the investment barrier and other barriers demonstrates that the proposed project activity 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 amount of emission reductions. The review of the Project Description (Version 01 dated 24 August 2009 until Version 02.2 dated 29.06 2010), the site visit and the subsequent follow-up interviews (please see the list of the "persons interviewed under section 5.2 of this report) have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. The Project Description was subsequently revised as Version 03 dated 20 July 2010 to resolve the issues that have risen during the interviews and subsequent interactions.

In our opinion, the project correctly applies and meets the relevant VCS requirements and the relevant countrycriteria. The validation is based on the information made available to us and the engagement conditions detailed in this report.

5 REFERENCES

5.1. Documents

Documents provided by Global Tan Energy that relates directly to the GHG components of the project and other reference documents are given below:

1. PD for "Akocak 78 MW Hydroelectric Power Plant"
Version 01 dated 24 August 2009
Version 02 dated 31 May 2010
Version 02.2 dated 29 June 2010
Version 03 dated 20 July 2010
2. Baseline Calculation Excel Sheet
Version 01 dated 20 October 2009
Version 02 dated 09 March 2010
Version 03 dated 10 June 2010
Version 04 dated 20 July 2010
3. Investment Analysis – IRR Calculation Excel Sheet
Version 01 dated 20 October 2009
Version 02 dated 08 March 2010
Version 03 dated 26 April 2010
(IRR Analysis for PD)
Version 04 dated 13 May 2010
(IRR Analysis for PD)
Version 05 dated 20 July 2010
4. The related pages of the electromechanical equipment purchase agreement with "East China Investigation and Design Institute"
5. The related pages of electric works contract with "Siemens Sanayi ve Ticaret A.S."
6. The insurance records of the regional employees.
7. Approved consolidated baseline and monitoring methodology ACM 0002 version 10.
8. UNFCCC's Methodological Tool: "Tool for the demonstration and assessment of additionality", version 05.2
9. UNFCCC's Methodological Tool: "Tool to calculate the emission factor for an electricity system", version 02
10. VCS PD Template – 19 November 2007
11. VCS Validation Report Template – 19 November 2007
12. Voluntary Carbon Standard 2007.1

5.2. Persons Interviewed

List persons interviewed during the validation and site visit, or persons that contributed with other information that are not included in the documents listed above.

M. Kemal Demirkol- Global Tan Energy

ANNEX I – Validators' Competence

Lead Verifier : Ashok Mammen - PhD (Oils & Lubricants)

Bureau Veritas Certification - Internal Technical Reviewer

Over 20 years of experience in chemical and petrochemical field. Dr. Mammen is a lead auditor for environment, safety and quality management systems. He is also a lead verifier and tutor for GHG projects and has been involved in the validation and verification processes of more than 100 CDM/JI/VCS and other GHG projects.

Verifier : Bade Cebeci– Environemtal Engineer

Bureau Veritas Certification SAS– Verifier

Bade Cebeci has over 10 years experience in environmental sciences and auditing. She is an auditor in EMS&QMS&OHS. She is a verifier for GHG Emission Reduction Projects.

Baseline Specialist : Mrs. Yildiz Arikan -(Assoc. Professor Dr)

Sabancı University, Faculty of Management, Orhanlı, Tuzla, 34956, Istanbul, Turkey.

Yıldız Arikan is an Electrical engineer and is working at Sabancı University . She has supported thesis related with energy . Also she has been conducting research studies on energy including "CO₂ Emission Research" Studies. Academically, Yıldız Arikan is working also on GHG project since 2005

Investment Analysis Specialists:

Mr. Murat Gençer – Master of Economics

RiskTürk Software Development and Consultancy – Head of Financial Analysis Team

Murat Gençer, consultant and a trainer, has over 11 years of experience in FMCG, software development and banking sectors. He is specialised in project finance, financial modelling, risk management and MS Excel applications.

Mr. Haluk Cengiz – Business Administration

Bureau Veritas Certification – Financial Controller

Haluk Cengiz is a financial controller of Bureau Veritas Turkey since 1999. He has been graduated from Marmara University, Business Administration.

Internal Technical Reviewer : Ms. Burcu Mutman – Environmental Engineer

Bureau Veritas Certification – Senior Technical Specialist

Burcu Mutman is an auditor for environment, safety and quality management systems.

She is also lead verifier for GHG projects. Bureau Veritas Certification Holding
SAS – Internal Technical Reviewer

ANNEX II - Validation Protocol**TABLE 1 VALIDATION REQUIREMENTS BASED ON THE VOLUNTARY CARBON STANDARD 2007.1**

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
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CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
1. VCS Program specific issues					
a. Have the project(s) created another form of environmental credit (for example renewable energy certificates)?	VCS	3.1	The project is not eligible for GS crediting as it is a large scale HEPP.	OK	OK
b. If yes, have the project participants provided a letter from the program operator that the credit has not been used and has been cancelled from the relevant program?	VCS	3.1	N/A	OK	OK
c. Are the VCS PD, monitoring reports, and other documents required under the VCS Program in English?	VCS	3.2	PD version 1 and the monitoring plan, financial model and the EF calculation sheet have been presented in English.	OK	OK
2. Project level requirements					
a. General requirements					
a. Have the project proponent applied an approved VCS Program methodology or a methodology from an approved GHG Program based on the list of current VCS Program approved GHG Programs and methodologies as set out on www.v-c-s.org ?	VCS	5.2	The project proponent has applied CDM approved Methodology ACM0002 version 10 and tools that are referred in ACM0002.	OK	OK
b. Is the Project Start Date before 1 January 2002? (If yes, a CAR shall be raised as the Project Start Date for non-AFOLU projects for the VCS 2007.1 shall not be before 1 January 2002)	VCS	5.2.1	Project start date has been estimated as 01.07.2010 as stated in C.1.1. of the PD version 01. The project start date is after January 2002.	OK	OK
c. Will this validation be completed within two years of the Project Start Date? If not, was this validation contracted before 19 November 2008? (If yes validation shall be completed by	VCS	5.2.1	The checklist question is N/A as the project start date is estimated as 01.07.2010 as indicated in section C.1.2 of the PD version 01. .	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
19 November 2009 and proof of contracting prior to 19 November 2008 shall be provided)					
d. Is the earliest Project Crediting Period Start Date under the VCS 2007.1 28 March 2006 for non-AFOLU projects and 1 January 2002 for AFOLU projects ?	VCS	5.2.1	The checklist question is N/A as the Project Crediting Period starts on 01.07.2010 as indicated in section C.1.2 of the PD version 1.	OK	OK
e. Does the project reduce GHG emissions from activities that are included in an emissions trading program; or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?	VCS	5.2.2	The project does not reduce GHG emissions from activities that are included in an emissions trading program; or take place in a jurisdiction or sector in which binding limits are established on GHG emissions. Turkey is not involved in any emission trading program other than the voluntary market and does not have any limits until 2012. In addition there is no binding legal limits established in Turkey related to HEPPs.	OK	OK
f. If yes, have the project proponents provided evidence that the reductions or removals generated by the project have or will not be used in the emissions trading program or for the purpose of demonstrating compliance with the binding limits that are in place in that jurisdiction or sector? [Such evidence could include: a letter from the program operator or designated national authority that emissions allowances (or other GHG credits used in the program) equivalent to the reductions or removals generated by the project have been cancelled from the program; or national cap as applicable or; purchase and cancellation of GHG allowances equivalent to the GHG emissions reductions or removals generated by the project related to the program or national cap]	VCS	5.2.2	N/A	OK	OK
g. Have project proponents claimed GHG credits	VCS	5.2.1	The project proponents have not claimed GHG	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
from one project under more than one GHG Program? (If yes, a CAR shall be raised, as Project proponents shall not claim GHG credits from one project under more than one GHG Program)			credits from one project under more than one GHG Program. The project is not eligible for GS crediting as it is a large scale HEPP. The project is not eligible for any of the compliance markets because of the position of the host country.		
h. Was this project rejected by other GHG Programs?	VCS	5.2.2	The project was not rejected by any other GHG program. Please refer to the above question.	OK	OK
i. If yes, have project proponents:	VCS	5.2.2		OK	OK
i. clearly stated in its VCS PD all GHG Programs for which the project has applied for credits and why the project was rejected? (Such information shall not be deemed commercially sensitive information)	VCS	5.2.2	N/A	OK	OK
ii. provided the VCS Program validator and verifier, VCS Program project database and VCS Program Registry with the actual rejection document(s) including any additional explanations?	VCS	5.2.2	N/A	OK	OK
j. Is this a renewal of the Project Crediting Period?	VCS	5.2.3	N/A	OK	OK
k. If yes have a VCS Program approved validator determined that the original project baseline scenario(s) and additionality is still valid or has been updated taking account of new data and changed VCS Program requirements where applicable?	VCS	5.2.3	N/A	OK	OK
b. Standards and factors					
Do standards and factors used to derive GHG emission data as well as any supporting data for additionality and baseline scenario(s) meet the following requirements:	VCS	5.5		OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
i. be publicly available from a reputable and recognised source (e.g. IPCC, published Government data etc)?	VCS	5.5	The standards and factors used to derive GHG emission data as well as any supporting data are taken from the IPCC and TEIAS which are both publicly available.	OK	OK
ii. be reviewed as part of its publication by a recognised competent organization?			TEIAS and IPCC are both reputable sources, and their publication processes are deemed reliable.	OK	OK
c. Project grouping					
1. Is this a grouped project?	VCS	5.6	The project is not a grouped project as validated through the site visit.	OK	OK
2. If yes , was this grouped project described in one VCS PD?	VCS	5.6	This is not a grouped project. The checklist question is N/A.	OK	OK
3. Does this PD include a description of the central GHG information system and controls associated with the project and its monitoring?	VCS	5.6	This is not a grouped project. The checklist question is N/A.	OK	OK
4. What is the sampling carried out by the VCS verifier?	VCS	5.6	This is not a grouped project. The checklist question is N/A.	OK	OK
5. Have the sampling of a grouped project taken account of any sub groups and associated activities within each sub group?	VCS	5.6	This is not a grouped project. The checklist question is N/A.	OK	OK
6. Do this project, which intends to apply for the VCS Program VCUs as part of a grouped project also comply with the VCS Program requirements for grouped projects, detailed in the most recent version of the Program Guidelines 2007.1 on www.v-c-s.org ?	VCS	5.6	This is not a grouped project. The checklist question is N/A.	OK	OK
d. Content of the VCS PD					
b. Is the PDD used as a basis for validation prepared in accordance with the latest template	VCS	5.7	The VCS PD template given in the web address v-c-s-org.tr has not been used. The PDD format	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
and guidance from the VCS?			given in the UNFCCC website has been used.		
c. Is there a project title?	PD temp	1.1.	The project title is "Akocak power plant as stated under section A.2.of the PD. The date of the document is 25.08.2009 Version of the document is version 01.	OK	OK
d. Type/Category of the project	PD temp	1.2			
i. Is it defined whether the project category is part of a GHG program that has been approved by the VCS Board?	PD temp	1.2	The Project fits in: Sectoral Scope Number: 1 Sectoral Scope: Energy Industries – Renewable Energy	OK	OK
ii. Is it specified if the project is a Grouped project?	PD temp	1.2	It is not specified if the project is a grouped project . Please specify if the project is a grouped project.	CL1	OK
e. Is the amount of emission reductions over the crediting period estimated, including project size? (Micro project: Less than 5,000 tonnes CO ₂ equivalent emissions reductions per year; Mega Project: More than 1,000,000 tonnes CO ₂ equivalent emissions reductions per year)	PD temp	1.3	Please state the project size in the PD (Micro project: Less than 5,000 tonnes CO ₂ equivalent emissions reductions per year; Mega Project: More than 1,000,000 tonnes CO ₂ equivalent emissions reductions per year)	CL2	OK
f. Is a brief description of the project provided?	PD temp	1.4	The brief description of the project activity is provided under section A.2. of the PD rev01.	OK	OK
g. Is the project location, including geographic and physical information allowing the unique identification and delineation of the specific extent of the project, and including GPS project boundaries, provided?	PD temp	1.5	The project location of the project has been presented in section A.4.1.3&A.4.1.4&A.4.1.5 of the PDD version01 as the following; Location of the proposed project: East Black Sea Region, Trabzon Province , Kayaici Village, Arakli District, Karadere Region GPS coordinates of the weirs and powerhouse is	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			given below. Erikli Weir (E 39° 57' 5.4" / N 40° 36' 23.8") Akocak Weir (E 39° 54' 54.9" / N 40° 36' 47.5") Powerhouse (E 39° 54' 12.9" / N 40° 40' 13")		
h. Duration of the project activity/crediting period	PD temp	1.6			
i. Is the project start date, i.e., the date on which a financial commitment was made to the project and the project reached financial closure, provided?	PD temp	1.6	The project start date has been indicated as the date on which the emission reductions start.	OK	OK
ii. Is the crediting period start date, i.e., the date the first monitoring period commenced, provided? (VCS project crediting period: A maximum of ten years which may be renewed at most two times)	PD temp	1.6	The crediting period has been provided in section C.2. of the PDD as Renewable crediting period which may be renewed at most two times.	OK	OK
i. Are the conditions prior to project initiation provided?	PD temp	1.7	Please include the conditions prior to the project initiation in the PD.	CL3	OK
j. Is a description of how the project will achieve GHG emission reductions and/or removal enhancements provided?	PD temp	1.8	In Section B.5. of the PDD version 01; it has been stated that the project is expected to generate about 257.440 GWh electricity and reduce about 160,128 tCO ₂ emissions through replacing the electricity that would need to be supplied via the National grid in the absence of the project activity.	OK	OK
k. Are project technologies, products, services and the expected level of activity described?	PD temp	1.9	The technology of the proposed project has been presented in section A.4.3 of the PDD. The technology presented has been validated from the feasibility report approved by State o Hydraulic Works.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
l. Does the VCS PD include identification of relevant local laws and regulations related to the project and demonstration of compliance with them?	PD temp	1.10	The relevant local laws and related to the project and the alternatives to the proposed project has been listed under substep1 b in section B.5 of the PD version 1.	OK	OK
			Demonstration of compliance to local laws and regulations have not been included in the PDD	CAR01	OK
m. Are risks that may substantially affect the project's GHG emission reductions or removal enhancements identified?	PD temp	1.11	<i>Please clearly state in the PD; if there are any risks that may substantially affect the project's GHG emission reductions</i>	CL4	OK
n. Is confirmation that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction demonstrated?	PD temp	1.12	Confirmation that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction has been demonstrated in the VCS PD section F.1. of the PD version 01.	OK	OK
o. Has the project created another form of environmental credit (for example renewable energy certificates)?	PD temp	1.13	It has been stated in section F.2. of the VCS PD that the project owner confirms that the project activity does not create any other form of environmental credits.	OK	OK
p. If yes, has the proponent provided a letter from the program operator that the credit has not been used and has been cancelled from the relevant program?	PD temp	1.13	Since the project has not created another form of environmental credit as stated above this checklist question is N/A.	OK	OK
q. Was the project rejected under other GHG programs (if applicable)	PD temp	1.14	Please clarify if the project has been rejected under other VCS programs	CL5	OK
r. If yes, does the project:	PD temp	1.14	N/A	OK	OK
i. Clearly state in its VCS PD all GHG programs for which the project has applied for credits and why the project was rejected? (Such information shall not be deemed	PD temp	1.14	N/A	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
commercially sensitive information)					
ii. provide the VCS verifier and Registry with the actual rejection document(s) including explanation?	PD temp	1.14	N/A	OK	OK
s. Are project proponents roles and responsibilities, including contact information of the project proponent, other project participants provided?	PD temp	1.15	Please clarify the project proponents roles and responsibilities, including contact information of the project proponent, other project participants	CL6	OK
t. Is any information relevant for the eligibility of the project and quantification of emission reductions or removal enhancements, including legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and temporal information provided?	PD temp	1.16	Please supply economic, sectoral, social, environmental, geographic, site-specific information in the PD	CAR02	OK
u. Is there any commercially sensitive information that has been excluded from the public version of the VCS PD that will be displayed on the VCS Project Database?	PD temp	1.17	Please clarify in the PD if there is any commercial sensitive information that has been excluded from the public version of the PD that will be displayed on the VCS Project Data Base.	CL7	OK
v. If yes, was it listed?	PD temp	1.17	N/A	OK	OK
w. Are title and reference of the VCS methodology applied to the project activity and explanation of methodology choices provided?	PD temp	2.1	Under section B.1. of the VCS PD, the title and the reference of the methodology are given as follows: <i>"The United Nations approved consolidated baseline methodology applicable to this project is ACM0002 Consolidated methodology for grid-connected electricity generation from renewable sources , Version 10.</i> <i>ACM0002 refers to the following tools:</i>	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			• <i>Tool for the demonstration and</i>		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			assessment of additionality”, Version 05.2, 2and Tool to calculate the emission factor for an electricity system, Version 01.13.”		
x. Does the project use one of the VCS program approved project methodologies and provide information relevant to methodology deviations or methodology revisions?	PD temp	2.1	The project uses a Clean Development Mechanism approved methodology without any deviations or revisions to the existing methodology.	OK	OK
y. Are the choice of the methodology and its applicability to the project activity justified?	PD temp	2.2	For the justification of the choice of the methodology and its applicability to the project, it is stated in section B.2. of the PD rev01 that; the project does not involve switching from fossil fuel use to renewable energy at the site of the project activity. The statement has also been validated by the DOE through the site visit.	OK	OK
			For the justification of the choice of the methodology and its applicability to the project, it is stated in section B.2. of the PD rev01 that; the geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available. Please clarify the sources for identification and the characteristics of the grid in the PD.	CL8	OK
			For the justification of the choice of the methodology and its applicability to the project, it is stated in section B.2. of the PD rev01 that; the project is a run off river project and does not result in reservoir.	CL9	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			Please clarify which applicability criteria is applied to the project (new reservoir, existing reservoir with no change volume or existing reservoir with a change in the volume). Please justify the applicability criteria selected. Please clearly present how the power density has been calculated by also giving references for the data used in calculation.		
z. Are GHG sources, sinks and reservoirs identified for the baseline scenario and for the project?	PD temp	2.3	There are no GHG sinks and reservoirs defined in ACM 002 version 10.	OK	OK
			Under section B.3 of the PD version 01, the GHG sources are identified for the baseline scenario. The definition given in the PD is in line with the tabular format given in ACM 002 version 10.	OK	OK
			Under section B.3 of the PD version 01, the GHG sources are identified for the project in the tabular format. 1. CO₂ emissions have been identified as a minor emission source in the tabular format and excluded for simplification; however in section B.6 of the PD version 01 it has been defined that that use of diesel generator is the only project emission source; please clarify. 2. CH₄ emissions has been identified as major emission sources for hydroelectric projects according to ACM 002 version 10. Please reassess the emissions sources and the justifications in the PD section B.3.	CL10	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
aa. Is it described how the baseline scenario is identified and the identified baseline scenario?	PD temp	2.4	Under section B .4 of the VCS PD version 01, it is stated that the baseline scenario is identified according to the methodology ACM0002 which is as follows: <i>"Electricity delivered to the grid by the project 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".</i> It is also approved by the validation team that the selected baseline scenario is in line with the methodology.	OK	OK
bb. Has the project proponent selected the most reasonable baseline scenario for the project?	PD temp	2.4	Yes. The project proponent has selected the most reasonable baseline scenario for the project activity.	OK	OK
cc. Does it reflect what most likely would have occurred in the absence of the project?	PD temp	2.4	It has been stated in section B.4. of PD version 01 that "In the absence of the proposed project activity, same amount of electricity is required to be supplied via either the current power plants or by an increased number of thermal power plants, thus increasing GHG emissions." The statement has been justified by indicating that <i>"Turkish electricity generation is composed mainly of thermal power plants. The share of hydroelectric power plants has decreased significantly in recent years, due to the reduction of the economically feasible hydraulic resources."</i>	CL11	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			<i>Please supply a reference for the above justification.</i>		
dd. Is it described how the emissions of GHG by source in baseline scenario are reduced below those that would have occurred in the absence of the project activity (assessment and demonstration of additionality)?	PD temp	2.5	In Section B.5. of the PDD version 01; it has been stated that the project is expected to generate about 257.440 GWh electricity and reduce about 160,128 tCO ₂ emissions through replacing the electricity that would need to be supplied via the National grid in the absence of the project activity.	OK	OK
ee. Has the project proponent demonstrated, in the VCS PD, in addition to describing how the project meets the VCS methodology, that the project is additional based on one of the tests, the project test, the performance test, and technology test?	PD temp	2.5	The project proponents have used the UNFCCC Approved consolidated baseline and monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" and the additionality tool referred in this methodology. Therefore the checklist question is N/A.	OK	OK
ff. Are title and reference of the VCS methodology (which includes the monitoring requirements) applied to the project activity and explanation of methodology choices provided?	PD temp	3.1	In section B.4 of the PD version 01; the title and the reference of the VCS methodology applied to the project has been given as the following; <i>"This project follows the methodology described in the ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". Selected methodology has been applied together with the "tool to calculate the emission factor for an electricity system, version 01.1" and "tool for assessment and demonstration of additionality, version 5.2".</i>	OK	OK
gg. Is monitoring, including estimation, modelling,	PD	3.2	<i>Pls see below</i>	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
measurement or calculation approaches described including:	temp				
i. Purpose of monitoring?	PD temp	3.2	It has been stated in section B.7.2. that monitoring plan has been established to guarantee the proposed project's real, measurable and long-term GHG emission reductions	OK	OK
ii. Types of data and information to be reported, including units of measurement?	PD temp	3.2	Types of data and information to be reported including the units of measurement has been given in section B.7. of the VCS PD version 01 . The tabular format used is checked from the tool applied which is " Tool to calculate the emission factor of an electricity system" in this project.	OK	OK
iii. Origin of the data?	PD temp	3.2	Origin of data for net electricity generated and delivered to the grid by Ulubat HEPP is given in section B.7. of the PD version 01 as Metering devices used in power plants and the monthly records signed by TEİAŞ & plant manager. The definition is line with the legislation in Turkey.	OK	OK
			Origin of data for quantity of fuel combusted in diesel power generator is given in section B.7. of the PD version 01 as; on site measurements from equipment working hours.	OK	OK
			In section B.7. of the PD version 01 the parameters EGy have been presented for monitoring in the tabular format. However, the parameters which are included in ACM 002 version 10 namely EG Facility, Cappj, Apj, and Fci,j,y (ALTOUGH REFERRED IN SECTION b.6. of the PD) are not included in the tabular format. The tabular format shall include data unit,	CL12	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
iv.			description, source of data to be used, measurement procedures, monitoring frequency, QA/QC procedures. Please include the relevant parameters in the monitoring as required by the methodology.		
v. Monitoring, including estimation, modelling, measurement or calculation approaches?	PD temp	3.2	The monitoring plan includes the measurement of electricity generation	OK	OK
vi. Monitoring times and periods, considering the needs of intended users?	PD temp	3.2	Monitoring times and periods have been included in section B.7. of the PDD. The monitoring times have been validated from ACM 0002 version 10.	OK	OK
vii. Monitoring roles and responsibilities ?	PD temp	3.2	Monitoring roles and responsibilities have been defined in section B.7.2 of the PD version 01. Monitoring roles have been defined for plant manager, electrical engineer, accounting manager, and Global Tan Energy. The information given in the PD has been validated during the site visit.	OK	OK
viii. Managing data quality?	PD temp	3.2	Calibration procedures have been defined as the following in section B.7 of the PD version 01 <i>"Calibration of the metering devices will be made by TEIAS and sealed before the commissioning of the power plant. The meters will be calibrated by TEIAS when there is an inconsistency between two devices."</i> Since the procedure is in line with the TEIAS (Turkish State of Electrical Works) regulations, it has been accepted by the DOE.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ix. Managing data quality?	PD temp	3.2	Calibration procedures have been defined as the following in section B.7 of the PD version 01 <i>"Calibration of the metering devices will be made by TEIAS and sealed before the commissioning of the power plant. The meters will be calibrated by TEIAS when there is an inconsistency between two devices."</i> Since the procedure is in line with the TEIAS (Turkish State of Electrical Works) regulations, it has been accepted by the DOE.	OK	OK
			According to ACM 002 version 10, All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period. Please include the archiving methodology in the PD.	CAR03	OK
hh. Are data and parameters monitored/selecting relevant GHG sources, sinks and reservoirs for monitoring or estimating GHG emissions and removals described in the tabular form including:	PD temp	3.3	EGy, EGY, total EF CO ₂ , FCI,y, GE, NCV ara Data and parameters selected for estimating GHG emissions and removals. The selected parameters have been presented using the tabular format in section B.6.2. of the PD version 01. The parameters selected have been checked from the ACM002 version 10.	OK	OK
i. Data unit?	PD temp	3.3	In section B.7 of the PD version 01; the data unit for FCI,y is mass or volume unit per year. The data unit selected is in line with the methodology as conservative.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ii. Description?	PD temp	3.3	The description of the parameter EGY does not match with the description in the ACM002 version 10. Please clarify	CL13	OK
iii. Source of data to be used?	PD temp	3.3	TEIAS Web page which refers to national average default values has been referenced for NCV values in B.6.2 of the PD version 01.	OK	OK
iv. Value of data applied for the purpose of calculating expected emissions reductions?	PD temp	3.3	Value of data applied for the purpose of calculating emission reductions have been presented in section B.6.2 of the PDD version 01.	OK	OK
v. Description of measurement methods and procedures to be applied?	PD temp	3.3	Description of sources have been presented in B.6.2. of the PDD version 01.	OK	OK
vi. QA/QC procedures to be applied?	PD temp PD temp	3.3	N/A	OK	OK
vii. Any comment?	PD temp	3.3	N/A	OK	OK
ii. Is the monitoring plan described?	PD temp	3.4	The monitoring plan has been defined in section B.7.2 of the PD version 01.	OK	OK
jj. Are methodological choices explained?	PD temp	4.1	N/A	OK	OK
kk. Are GHG emissions and/or removals for the baseline scenario quantified?	PD temp	4.2	The GHG emissions have been quantified for the baseline scenario according to ACM002 version 10.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ll. Are GHG emissions and/or removals for the project quantified?	PD temp	4.3	In section B.6.3 of the PD version 01, it has been stated that the only emission source for the project is the diesel generator which is used as a auxiliary power. The calculation methodology has been transparently presented in the PD.	OK	OK
mm. Are GHG emission reductions and removal enhancements for the GHG project quantified?	PD temp	4.4	The emission reductions for the GHG project has been quantified in section B.6.4. of the PD version01.	OK	OK
			In section B.6.4 of the PD version 01, the annual emission reductions have been presented in the tabular format for 10 years. However, total numbers of crediting years have been defined as 7 years please clarify.	CL14	
nn.Was a summary of environmental impact assessment, when such an assessment is required by applicable legislation or regulation, provided? ISO14064-2, 5.2.k	ISO 1406 4-2	5.2.k	The EIA assessment for Akocak HEPP project has been prepared by PRD. as defined by the regulations. The Report was approved by the Ministry of Environment and Forestry (MoEF) on 17th October 2006.	OK	OK
oo.Were relevant outcomes from stakeholder consultations and mechanisms for on-going communication provided?	PD temp	6	Initial stakeholders' consultation meeting has been organised and held on October 27th, 2008 in Arakli District of Trabzon Province. In general stakeholders' comments were positive about the Project. Three main issues raised by the participants during the SC meeting were: Are there lands still not expropriated?	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			- When will the costs of the land be paid? - The number of fishes in the brook seems to have decreased. - Will the project provide employment opportunities? The relevant outcomes were validated during the site tour.		
pp. Were chronological plan for the date of initiating project activities, date of terminating the project, frequency of monitoring and reporting and the project period, including relevant project activities in each step of the GHG project cycle provided?	PD temp	7	Please clarify the chronological plan for the date of initiating project activities, date of terminating the project, frequency of monitoring and reporting in the PD	CL15	OK
qq. Was evidence of proof of title provided through one of the following:	PD temp	8.1	Please clarify the evidence of proof of title	CL16	OK
i. a legislative right?	PD temp	8.1	N/A	OK	OK
ii. a right under local common law?	PD temp	8.1	N/A	OK	OK
iii. ownership of the plant, equipment and/or process generating the reductions/removals?	PD temp	8.1	N/A	OK	OK
iv. a contractual arrangement with the owner of the plant, equipment or process that grants all reductions/removals to the proponent?	PD temp	8.1	N/A	OK	OK
rr. Does the project reduce GHG emissions from activities that participate in an emissions trading program, or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?	PD temp	8.2	N/A	OK	OK
ss. If yes, have project proponents provided evidence that the reductions or removals generated by the project have or will not be	PD temp	8.2	N/A	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
used in the Program or jurisdiction for the purpose of demonstrating compliance, such as:					
i. a letter from the Program operator or designated national authority that emissions allowances (or other GHG credits used in the Program) equivalent to the reductions/removals generated by the project have been cancelled from the Program; or national cap as applicable?	PD temp	8.2	N/A	OK	OK
ii. purchase and cancellation of GHG allowances equivalent to the reductions/removals generated by the project related to the Program or national cap?	PD temp	8.2	N/A	OK	OK
e. Additionality					
a. Has the project proponent demonstrated that the project is additional using one of the following tests: Test 1 - The project test; Test 2 - Performance test; Test 3 - Technology test?	VCS	5.8	The project proponents have used the UNFCCC Approved consolidated baseline and monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" and the additionality tool referred in this methodology. According to Frequently Asked Questions sections on the VCS website, the VCS additionality guidance is not a substitute for the additionality requirements set out in the methodology being used. Therefore the checklist question is N/A. The additionality of the project activity is assessed using "Table 3: Checklist based on Methodological tool for assessment of additionality (version 05.2 - EB 39 report Annex 10)" of this protocol.	OK	OK
b. If the project proponent used Test 1:	VCS	5.8			

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
i. Step 1 – Regulatory Surplus - Is the project be mandated by any enforced law, statute or other regulatory framework? (If yes a CAR shall be issued and the project shall be deemed non additional).	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
ii. Step 2 – Implementation Barriers – Does the project face one (or more) distinct barrier(s) compared with barriers faced by alternative projects?	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
i. Investment Barrier – Does the project face capital or investment return constraints that can be overcome by the additional revenues associated with the generation of VCUs?	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
ii. Technological Barriers – Does the project face technology-related barriers to its implementation?	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
iii. Institutional barriers – Does the project face financial, organizational, cultural or social barriers that the VCU revenue stream can help overcome?	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
iii. Step 3 – Common Practice	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
i. Is project type common practice in sector/region, compared with projects that have received no carbon finance?	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
ii. if it is common practice, have the project proponents	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
identified barriers faced compared with existing projects?			activity is assessed using Table 3 of this protocol.		
iii. Is the demonstration that the project is not common practice based on guidance in the GHG Protocol for Project Accounting, Chapter 7?	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
a. Was data on all baseline candidates within the geographic area collected?	GHG PROT OCO L	7.4.2 AND 7.6	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
b. Was a relative percentage for each different technology or practice calculated? (Common practice refers to the predominant technologies or practices in a given market, as determined by the degree to which those technologies or practices have penetrated the market (defined by a specified geographic area). This percentage could be based on the number of plants or sites using each technology or practice, or could be weighted by the proportion of the total output for the market that is attributed to each	GHG PROT OCO L	7.4.2 AND 7.6	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
technology or practice.)					
c. If the project proponent used Test 2:	VCS	5.8			
i. Step 1 – Regulatory Surplus - Is the project be mandated by any enforced law, statute or other regulatory framework? (If yes a CAR shall be issued and the project shall be deemed non additional).	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
ii. Step 2: Performance Standard	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
i. Are the emissions generated per unit output by the project below the level that has been approved by the VCS Program for the product, service, sector or industry, as the level defined to ensure that the project is not business-as-usual?	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
ii. Are performance standard based additionality tests approved through the double approval process and by the VCS Board? (The list of approved performance standards is on www.v-c-s.org)	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
d. If the project proponent used Test 3:	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
i. Step 1: Regulatory Surplus - Is the project be mandated by any enforced law, statute or other regulatory framework? (If yes a CAR shall be issued and the project shall be deemed non additional).	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
ii. Step 2: Technology Additionality – Are the project and its location contained in the list of project types and applicable areas approved as being additional by the VCS Program? (The approved list is available on www.v-c-s.org)	VCS	5.8	Please refer to question a above. The checklist question is N/A. The additionality of the project activity is assessed using Table 3 of this protocol.	OK	OK
f. Identifying GHG sources, sinks and reservoirs relevant to the project					
a. Refer to Clause 6, under Methodologies.	VCS	5.9	Refer to Clause 6, under Methodologies.	-	-
g. Determining the baseline scenario					
a. Has the project proponent selected the most conservative baseline scenario for the project, based on the requirements in the applicable VCS methodology?	VCS	5.10	The project proponent has used ACM0002 Methodology. According to ACM0002 for greenfield renewable power plants the only applicable baseline scenario is as follows: <i>"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"</i> Under section 2.4 of the VCS PD version 01, the project proponent has stated that the above mentioned baseline scenario for the project.	OK	OK
b. Does the baseline scenario set out the geographic scope as applicable to the project?	VCS	5.10	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
c. Has the project proponent selected or established criteria and procedures for identifying and assessing potential baseline scenarios considering the following:	ISO 1406 4-2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK
i. The project description, including identified GHG sources, sinks and reservoirs;	ISO 1406 4.2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK
ii. Existing and alternative project types, activities and technologies providing equivalent type and level of activity of products or services to the project;	ISO 1406 4-2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK
iii. Data availability, reliability and limitations;	ISO 1406 4-2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK
iv. Other relevant information concerning present or future conditions, such as legislative, technical, economic, sociocultural, environmental, geographic, site-specific and temporal	ISO 1406 4-2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2:	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
assumptions or projections.			Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.		
d. Has the project proponent demonstrated equivalence in type and level of activity of products or services provided between the project and the baseline scenario and has explained, as appropriate, any significant differences between the project and the baseline scenario ?	ISO 1406 4.2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK
e. Has the project proponent selected or established, explained and applied criteria and procedures for identifying and justifying the baseline scenario?	ISO 1406 4.2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK
f. In developing the baseline scenario, has the project proponent selected the assumptions, values and procedures that help ensure that GHG emissions reductions or removal enhancements are not over-estimated?	ISO 1406 4.2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK
g. Has the project proponent selected or established, justified and applied criteria and procedures for demonstrating that the project results in GHG emissions reductions or removal enhancements that are additional to what would occur in the baseline scenario?	ISO 1406 4.2	5.4	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A. The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.	OK	OK
h. Has the project participant demonstrated that the project has met all relevant regulations, legislation and project approvals (e.g.	VCS	5.10	The baseline scenario is determined according to the methodology ACM0002 therefore the checklist question is N/A.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
environmental permits)?			The appropriateness of the baseline scenario and the calculations are assessed using "Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10" of this protocol.		
<i>h. Monitoring the GHG project</i>					
Has the project proponent shall established and maintained criteria and procedures for obtaining, recording, compiling and analysing data and information important for quantifying and reporting GHG emissions and/or removals relevant for the project and baseline scenario (i.e. GHG information system)?	VCS	5.11	The project proponent has established criteria and procedures for obtaining, recording, compiling and analysing data and information important for quantifying and reporting GHG emission reductions relevant for the project and baseline scenario in line with the ACM 002 version. For detailed information system please see Table 2: Baseline and Monitoring Methodologies: ACM0002 Version 10"	OK	OK
Do the monitoring procedures include?	VCS	5.11	Please refer to question ff-i of this checklist.	OK	OK
i. purpose of monitoring?	VCS	5.11	Please refer to question ff-i of this checklist.	OK	OK
ii. types of data and information to be reported, including units of measurement?	VCS	5.11	Please refer to question ff-i of this checklist.	OK	OK
iii. origin of the data?	VCS	5.11	Please refer to question ff-i of this checklist.	OK	OK
iv. monitoring methodologies, including estimation, modelling, measurement or calculation approaches?	VCS	5.11	Please refer to question ff-i of this checklist.	OK	OK
v. monitoring times and periods, considering the needs of intended users?	VCS	5.11	Please refer to question ff-i of this checklist.	OK	OK
vi. monitoring roles and responsibilities?	VCS	5.11	Please refer to question ff-i of this checklist.	OK	OK
vii. GHG information management systems, including the location and retention of stored data?	VCS	5.11	Please refer to question ff-i of this checklist	OK	OK
Where measurement and monitoring equipment is used, does the project proponent ensure the equipment is calibrated according to current good practice?	VCS	5.11	In section B.7.2 of the PD, it has been stated that the calibration of the metering devices will be made by TEIAS and sealed before the commissioning of the plant. The explanation has been accepted since it is in compliance with the	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			legal requirements.		
Does the project proponent apply GHG monitoring criteria and procedures on a regular basis during project implementation?	VCS	5.11	The project is at validation stage therefore the checklist question is N/A.	OK	OK
<i>i. Monitoring reports for the GHG project</i>					
a. Do monitoring reports include all the monitoring data, calculations, estimations, conversion factors and others standard factors as defined in the monitoring clause of the applied VCS Program methodology and set out in the VCS PD? (A list of VCS approved methodologies is available on www.v-c-s.org)	VCS	5.12	The project is at validation stage therefore the checklist question is N/A.	OK	OK
<i>j. Records relating to the project</i>					
a. Has the project proponent kept all documents and records in a secure and retrievable manner for at least two years after the end of the project crediting period.?	VCS	5.13	The project is at validation stage therefore the checklist question is N/A.	OK	OK
<i>k. Information to validator and verifier</i>					
a. Has the project proponent made available to the validator the VCS PD, proof of title and any requested supporting information and data needed to evidence statements and data in the VCS PD and proof of title?	VCS	5.14	The revised generation license was sent to the validation team as a proof of title, and please also present the generation license taken from EMRA as an attachment to the VCS PD. Please clarify the evidence of proof of title	CL16	OK
b. Has the project proponent made the VCS PD and validation report available to the verifiers as well as a monitoring report applicable to the period of monitoring and any requested supporting information and data needed to evidence statements and data in the monitoring report?	VCS	5.14	N/A	OK	OK

TABLE 2 BASELINE AND MONITORING METHODOLOGIES: ACM 0002 VERSION 10

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1. Baseline Methodology					
1. 1. Applicability					
1.1.1. Does the project activity generate electricity from a renewable source?	PD ver01 B.1.	DR	Yes the project activity generates electricity from a renewable source.	OK	OK
1.1.2. Is the power connected to the grid?	PD ver01 B.1.	DR	The power is connected to grid as validated through the feasibility report.	OK	OK
1.1.3 If answer to question above is 'No', whether it displaces the electricity generated in grid ?	PD ver01	DR	N/A	OK	OK
1.1.4 Is the baseline methodology used in conjunction with the approved monitoring methodology ACM0002	PD ver01 B.1.	DR	The project activity is not a capacity addition to an existing plant therefore the checklist question is N/A.	OK	OK
1.1.5 Does the project activity relate to electricity capacity additions from renewable sources?	PD ver01	DR	The project is related to electricity capacity additions from renewable sources as which has validated during the site visit.	OK	OK
1.1.6 Does proposed project activity falls in either of the categories – Green filed Power Project, Power capacity expansion, Energy efficiency Improvement / Fuel Switch	PD ver01	DR	The project falls under the category of Green Field project as it involves the construction of a new hydro electric power plant which has been validated during the site visit.	OK	OK
1.1.7 Can the geographic and system boundaries for the relevant electricity grid be clearly identified?	PD ver01	DR	The geographic and system boundaries for the relevant electricity grid be clearly identified	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1.1.8 Is the information on the characteristics of the grid available?	PD ver01	DR	The information on the characteristics of the grid is available	OK	OK
1.1.9 Will the Project activity consume in-house biomass or will it be purchased from outside?	PD ver01	DR	Project will not consume biomass in any stage, as it is a hydropower plant.	OK	OK
1.1. 10 Will implementation of Project result in increase in processing capacity of raw input?	PD ver01	DR	Implementation of the Project will not result in increase in processing capacity of raw input.	OK	OK
1.1.12 Will biomass to be used by Project activity be stored for more than one year?	PD ver01	DR	N/A	OK	OK
1.1.13 Will biomass require significant energies (like Processing) other than transportation?	PD ver01	DR	N/A	OK	OK
1.1.14 Is material and energy balance (heat and steam requirements for the processes) information available and assessed Old plants Proposed plants	PD ver01	DR	N/A	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1. 2. Project boundary					
1.2.1. Did the project participant account for the CO ₂ emission from electricity generation in fossil fuel fired power that is displaced due to project activity?	PD ver01	DR	There is no electricity generation fossil fuel fired power that s displaced due to project activity. Hence this the checklist question is N/A	OK	OK
1.2.2 Did the project participant account for the CO ₂ emission from Heat generation in fossil fuel based power that is displaced due to project activity?	PD ver01	DR	N/A	OK	OK
1.2.2. Does the spatial extent of the project boundary include the power plant at project site, means of transportation of biomass and all power plants connected physically to the electricity system that the CDM project power plant is connected to?	PD ver01	DR	The project is a HEPP project hence the question not applicable	OK	OK
1.2.3 Is 'Biomass dumped or left to decay or burned in uncontrolled manner without utilizing for energy purposes most likely scenario?	PD ver01	DR	The project is a HEPP project hence the question not applicable	OK	OK
1.2.4 If answer to Question 1.2.3 is Yes, then are CH ₄ emissions in the project boundary are included?	PD ver01	DR	The project is a HEPP project hence the question not applicable	OK	OK
1.2.5 If answer to Question 1.2.3 is Yes, then are CH ₄ emissions calculated in a conservative manner using emission factors for uncontrolled burning of biomass?	PD ver01	DR	The project is a HEPP project hence the question not applicable	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1.2.6 Whether choice of inclusion/exclusion CH ₄ emissions in project and baseline are documented in PDD?	PD ver01 B.3.	DR	Under section B.3 of the PD version 01, the GHG sources are identified for the project in the tabular format. 3. CO₂ emissions have been identified as a MINOR emission source in the tabular format and EXCLUDED for simplification; however in section B.6 of the PD version 01 it has been defined that the use of diesel generator is the only project emission source; please clarify. 4. CH₄ emissions has been identified as major emission sources for hydroelectric projects according to ACM 002 version 10. Please reassess the emissions sources and the justifications in the PD section B.3.	CL10	OK
1.2.7. Is the regional project electricity system identified by the spatial extent of the power plants that can be dispatched without significant transmission constraints?	PD ver01 B.6.3.	DR	In section B.6.3 of the PDD version01, the identification of the relevant electrical power system has been defined as the following: <i>"According to the " Tool to calculate the emission factor for an electricity system", Version 01, a project electricity system has to be defined by the spatial extent of power plants that are physically dispatched without significant transmission constraints. Therefore, in this project activity the project electricity system includes the project site and all power plants attached to the Interconnected Turkish National Grid. "</i> The definition of the electricity system has been accepted by the DOE since the explanation is in	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
			line with the tool.		
	PD ver01	DR	In section B.6.3 of the PD version 01 the identification of the relevant electrical power system has been defined however please justify the choice of selecting the project electricity system as national grid in relation with the " <i>Tool to calculate the emission factor for an electricity system</i> ", requirements.	CAR04	OK
<i>1.2.8 Whether N2O has been excluded as GHG source within the project boundary?</i>	PD ver01	DR	According to ACM0002 Version 10 for Hydro power projects N ₂ O is a minor emission source and is negligible as an emission source.	OK	OK
<i>1.2.9. Are the assumptions made in determining the project electricity system defined and justified?</i>	PD ver01	DR	In section B.6.3 of the PD version 01 the identification of the relevant electrical power system has been defined however please justify the choice of selecting the project electricity system as national grid in relation with the " <i>Tool to calculate the emission factor for an electricity system</i> ", requirements.	CAR04	OK
<i>1.2.10. Does the application of this methodology result in a clear grid boundary?</i>	PD ver01	DR	Yes the application of this methodology result in a clear grid boundary. The boundary of the grid is the Turkish national grid.	OK	OK
<i>1.2.11. Does the application of this methodology result in a given country specific variations in grid management policies?</i>	PD ver01	DR	The application of this methodology does not result in a given country specific variations in grid management policies.	OK	OK
<i>1.2.12. If answer to question is yes then whether DNA of the host country provides the delineation of</i>	PD ver01	DR	N/A	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
<i>grid boundaries.</i>					
<i>1.2.13. If answer to question is no whether DNA guidance is available for defining the boundary.</i>	PD ver01	DR	There is no DNA in Turkey, therefore the checklist question is N/A.	OK	OK
<i>1.2.14. If answer to question is no whether the layered dispatch system (e.g. state/provincial/regional/national) the regional grid is used</i>	PD ver01	DR	There is no layered dispatch system in Turkey, therefore the checklist question is N/A.	OK	OK
<i>1.2.15. If the regional grid is not used whether the national or state grid is used.</i>	PD ver01 DR	DR	The Turkish national grid is used.	OK	OK
1.3. Identification of alternative baseline scenarios					
1.3.1. Are Realistic and credible alternatives separately determined for power, biomass and Heat?	PD ver01	DR	The baseline scenario is defined as as " <i>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) described in the "Tool to Calculate the emission factor for an electricity system"</i> as given in ACM0002 version 10 as the project activity is the installation of a new grid-connected renewable power plant/unit.	OK	OK
1.3.2. Are the various options for alternatives explained in PDD?	PD ver01	DR	ACM 002 version defines only the above methodology.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1.3.3. Is the explanation of these options transparent and complete	PD ver01	DR	The explanation of the alternatives are transparent and complete	OK	OK
1.3.4 Did the project participant provide evidence and supporting documents to exclude baseline options that do not comply with legal and regulatory requirements; or depend on key resources such as fuels, materials or technology that are not available at the project site?	PD ver01	DR	N/A	OK	OK
1.3.5 Are the calculations for baseline are as per latest version of ACM 0002 as required by this methodology?	PD ver01	DR	Please see section 6.	OK	OK
1.3.6 Are transmission & Distribution losses neglected as required by the methodology?	PD ver01	DR	The transmission& distribution losses are neglected as required by the methodology.	OK	OK
1.3.7 Is quantity of electricity required for operation of plant subtracted?	PD ver01	DR	Yes the electricity supplied to the grid has been taken into consideration as net electricity. However this step will be concluded through verification .	OK	OK
1.3.8 Where EG-historical is the average of historical electricity delivered by the existing facility to the Grid, whether spanning all data from the most recent available year (or month, week or other time period)	PD ver01	DR	The project is a Greenfield power plant, therefore the checklist question is N/A.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
to the time at which the facility was constructed, retrofit, or modified in a manner that significantly affected output (i.e., by 5% or more), expressed in MWh per year. A minimum of 5 years (120 months) (excluding abnormal years) of historical generation data is required in the case of hydro facilities.					
1.3.9. Whether a minimum of three years data is referred and used in case the project is non-hydro?	PD ver01	DR	The project is a Greenfield power plant, therefore the checklist question is N/A.	OK	OK
1.3.10. Is it required to estimate the point in time when the existing equipment would need to be replaced in the absence of project activity?	PD ver01	DR	The project is an installation of a new power plant; hence the question N/A	OK	OK
1.3.11 If the answer to question is Yes Whether project participants have taken any of the two approaches, indicated in the ACM0002 into account?	PD ver01	DR	The project is a Greenfield power plant, therefore the checklist question is N/A.	OK	OK
1.3.12 Whether the typical average technical lifetime of the type equipment is determined and documented taking into account common practices in the sector and country e.g. based on industry surveys, statistics, and technical literature?	PD ver01	DR	The project is not a retrofit or replacement of an existing renewable energy power plant; hence the checklist question is not applicable.	OK	OK
1.3.13. Whether the common practices of the responsible company regarding the replacement schedules is evaluated and documented, e.g. based on historical replacement records for such equipment?	PD ver01	DR	The project is not a retrofit or replacement of an existing renewable energy power plant; hence the checklist question is not applicable.	OK	OK
1.3.14. Whether the baseline emission factor is calculated as a combined margin consisting of the	PD ver01	DR	The baseline emission factor is calculated as a combined margin consisting of the combination of	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
combination of operating margin (OM) and build margin factors according to three steps indicated in the methodology ACM0002?	B.6.3.		operating margin and build margin as indicated in step 6 of the section B.6.3 of the PD rev01.		
	PD ver01	DR	The three steps indicated in the methodology ACM0002 has been applied during the calculations.	OK	OK
1.3.15 Whether the weighted average applied by project participant is fixed for a crediting period.	PD ver01	DR	The weighted average has been considered for 2005-2006-2007 by the PP. The weighed average applied is fixed for the crediting period as verified from the calculation sheet by the DOE.	OK	OK
1.3.16. Whether operating margin emission factors calculations are based on one of the four methods described in the methodology ACM 0002?	PD ver01	DR	OM emission factor calculations are based on the "Option C of the Simple OM (Method (a))" method described in ACM0002's referred methodological Tool to Calculate the Emission Factor for an Electricity System.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
	PD ver01	DR	Simple OM method is used for the calculation of the emission factor of the operating margin as described in step 2 of the section B.6.1 of the PD REV01.	OK	OK
	PD ver01	DR	The justification for not selecting the method is given as lack of data for fuel consumption of each power plant in section B.6.1 of the PD REV01. The statement is also verified from the TEIAS site by the DOE.	OK	OK
	PD ver01	DR	The justification for not selecting the option B and C are given as due to insufficient data in step 2 of the PD rev01.	OK	OK
	PD ver01	DR	It has been stated that Option C of the Simple OM method has been selected in step 3 of the section B.6.1 of the PD rev01. The selection has been justified by stating that fuel consumption and average efficiency data for each power plant/ unit are not available. The statement has also been accepted by the DOE since it has been validated from the TEIAS web site.	OK	OK
	PD ver01	DR	In Section B.6.1. of the PD rev 01 share of low cost-must run resources have been presented. The reference given has been checked and is concluded that share of low cost must ru resources is lower than 50 % so; option C is applicable to the project.	OK	OK
1.3.17 Is the most likely baseline scenario 'electricity production from other sources feeding into the grid?	PD ver01	DR	Yes the most likely baseline scenario is the electricity production from other sources feeding into the grid.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1.3.18 If the project activity modifies or retrofits an existing electricity generation facility, is the guidance by EB08 taken into account?	PD ver01	DR	No, the project does not modify or retrofit an existing electricity generation facility.	OK	OK
1.4. Additionality					
1.4.1. Was the additionality of the project activity demonstrated and assessed using the latest version of the "Tool for demonstration and assessment of additionality"?	PD ver01	DR	The methodological tool for the demonstration and assessment of the additionality has been defined as "Tool for the demonstration and assessment of additionality", Version 5.2. in section B.1 of the PD rev0.1.	OK	OK
1.5 Project Emissions					
1.5.1. Are the relevant project emissions indicators have been considered?	PD ver01	DR	It has been stated that in section B.6.3 of the PD version 01 that the only emission source in the plant is the diesel generator which is used as auxillary source. The assumption is also accepted by the DOE since it is a conservative approach.	OK	OK
1.5.2 Are the project emissions arising out of transportation of biomass and/or on site use of fossil fuel and/or CO ₂ emissions due to on site electricity consumption and/or Methane emissions from combustion of biomass residues	PD ver01	DR	In section B.6.3 of the PD version 01; calculation of CO ₂ emissions due to the diesel generator which is used as a auxillary power has been transparently presented.	OK	OK
1.5.3 Is the approach for project emissions conservative and transparent ?	PD ver01	DR	N/A	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1.5.4 In case of Methane emissions due to combustion of biomass, are the relevant IPCC values are taken in to account with appropriate uncertainty ?	PD ver01	DR	N/A	OK	OK
1.6. Baseline Emissions					
1.6.1. Are the baseline emissions determined according to the formula $BE_y = EG_y \times EF_y$?	B.6.3.	DR	Yes, the baseline emissions are determined according to the formula: $BE_y = EG_y \times EF_y$	OK	OK
1.6.2. Were the Emissions Factor for displaced electricity calculated as in ACM0002?	B.6.3.	DR	As Simple OM method is used calculating the Emissions Factor for displaced electricity is not required. (Only required in Dispatch data analysis OM)	OK	OK
1.6.3 Were the baseline emissions for heat correctly represent the existing situation of heat generation?	B.6.3.	DR	N/A	OK	OK
1.6.4 Whether 'life time aspects' are taken into account if required so by applicable scenario?	B.6.3.	DR	No. There is no applicable scenario which requires taking "life time aspects" into account. Therefore the checklist question is N/A.	OK	OK
1.6.5 Does project account for baseline emissions due to natural decay or uncontrolled burning of anthropogenic sources of biomass residues ?	B.6.3.	DR	N/A	OK	OK
1.6.6 Does project account for quantity of biomass residues used as a result of the project activity ?	B.6.3.	DR	N/A	OK	OK
1.7. Leakage					
1.7.1. Are the leakage considered?	B.6.3	DR	No leakage has been considered with justification that no equipment has been transferred from or to another activity in section B.6.3. of the PD version 01.	OK	OK
1.7.2. Have any credits been claimed for the project on account of reducing the emissions due to power plant construction, fuel handling and land inundation below the level of the baseline scenario?	B.6.3	DR	No. No credits have been claimed for the project on account of reducing the emissions due to power plant construction, fuel handling and land inundation below the level of the baseline scenario.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1.7.3 Has it been demonstrated that biomass availability from the region is abundant enough & that the use of the biomass residues does not result in increased fossil fuel consumption elsewhere ?	B.6.3	DR	N/A	OK	OK
1.7.4 Is this demonstration done through one of the options L1 to L3 as recommended by the methodology?	B.6.3	DR	N/A	OK	OK
1.7.5 When either L2 or L3 is chosen as a option, the radius for procurement of biomass is at least 20 km and not more than 200 km in any case?	B.6.3	DR	N/A	OK	OK
1.7.6 Where Project cannot demonstrate the procurement of biomass in above stated limits, is leakage penalty applied?	B.6.3	DR	N/A	OK	OK
1.8. Emission Reduction					
1.8.1. Did the emissions reductions were determined according to the formula $ER_y = ER_{\text{heaty}} + ER_{\text{electricity}} + BE_{\text{biomassy}} - PE_y - L_y$	B.6.3.	DR	ER_y is calculated as follows: $ER_y = BE_y - PE_y - LE_y$	OK	OK
1.8.2 Are the emission reduction calculations for displacement of power done as appropriate to chosen scenario ?	B.6.3.	DR	Yes the emission reduction calculations for displacement of power done as appropriate to chosen scenario.	OK	OK
1.8.3. Were all values chosen in a conservative manner and was the choice justified?	B.6.3	DR	Generally the values chosen were selected in a conservative manner. The findings that were also indicated in the checklist questions above in this protocol were summarized below.	OK	OK
			The Emission Factors used in the calculations are taken from the IPCC minimum values at the lower limit of uncertainty at a 95% confidence interval (table 1.4 of Chapter 1 of Vol. 2 (Energy) of the	CL17	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
			2006 IPCC Guidelines for GHG inventories. However, in section B.6.3. of PD version 1 , it has been stated that <i>"The emission factors required for calculation of CO2 emission coefficient have been obtained through IPCC 2006 guidelines for GHG inventories for fuels except for coal and lignite. For lignite and coal, the emission factors have been calculated using country specific heating values of fuels consumed and data from National Greenhouse Gas Inventory of Turkey"</i> . Please clarify the reference statement.		
			For the generation efficiency of coal, the value of present thermal power plants has been used from Türkiye Çevre Atlası prepared by Ministry of Environment and Forestry as indicated in section B.6.2. of the PD rev 01 However, the document has been published in 2004 and refers to data from power plants of all vintages in operation. On the other hand, the BM comprises most recently built power plants which are expected to be of higher efficiency. Hence using the default efficiency factor in the TOOL (for new power plants built after 2000), which is slightly higher, would be more appropriate.	CL18	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
			In Table 15 of the PD version 01, values used for the calculation of the OM have been presented. The reference for the table is given as the National Inventory of Turkey-2007. In 2007 inventory; IPCC mid values have been used. However, the EF values given in the table stand for the min IPCC min values. According to the "Tool to calculate the emission factor of an electricity system" it is convenient to use IPCC min values. So, please clarify the reference for the EF factors.	CL19	OK
			In the OM&BM calculations the employed emission factor for coal is the same as the IPCC lower level for anthracite. However according to NIR 2009-2007 there is no value for anthracite Please clarify the assumption.	CL20	OK
1.8.4. Whether an estimate of likely project emission reductions for the proposed crediting period is prepared as part of the PDD?	B.6.4.	DR	An estimate of likely project emission reductions for the proposed crediting period is prepared and shown in Table 11 in section B.6.4. of the PD.	OK	OK
1.8.5. Whether the estimate in principle employs the same methodology ACM0006?			Project is not biomass residue, therefore checklist question is N/A	OK	OK
1.8.6. Whether the emission factor is determined ex-post during monitoring?	B.6.3.	DR	EF is determined as ex-ante as stated under section B.6.3. Step 2	OK	OK
1.8.7. If yes whether project participants have used models or other tools to estimate the emission reductions prior to validation?			N/A	OK	OK
2. Monitoring Methodology					
2.1. Applicability					

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
2.1.1. Does the project activity generate electricity from a renewable source?	PD ver01	DR	The project generates electricity from a renewable source.	OK	OK
2.1.2. Is the power connected to the grid?	PD ver01	DR	The power is connected to grid as validated through the feasibility report.	OK	OK
2.1.3. Does the project activity relate to electricity capacity additions from renewable sources?	PD ver01	DR	The project activity relates capacity additions from renewable sources.	OK	OK
2.1.4. Is fuel switch done in the process?	PD ver01	DR	Since the project is the installation a new HEPP, the question is not applicable to the project.	OK	OK
2.1.5. Can the geographic and system boundaries for the relevant electricity grid be clearly identified?	PD ver01	DR	The geographic and system boundaries for the relevant electricity grid may be clearly identified	OK	OK
2.1.6. Is the information on the characteristics of the grid available?	PD ver01	DR	The information on the characteristics of the grid is available.	OK	OK
2.2. Monitoring Methodology					
2.2.1. Does the monitoring plan require monitoring of increased electricity generation from the proposed	PD ver01	DR	The monitoring plan requires monitoring of increased electricity generation from proposed	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
project activity?			project activity		
2.2.2 Does monitoring takes in to account the lower value between (a) the net quantity of electricity generated in the new power unit that is installed as part of the project activity and (b) the difference between the total net electricity generation from firing the same type(s) of biomass at the project site (EG total,y) and the historical generation of the existing power unit(s), (EG historic, 3yr) based on the three most recent years.	PD ver01	DR	N/A	OK	OK
2.2.3. Does the methodology requires monitoring of Data needed to recalculate the operating margin emission factor, if needed, based on the choice of the method to determine the operating margin (OM), consistent with ACM0002?	PD ver01	DR	The ex-ante option has been selected as indicated in section B.6. of the PD rev01.	OK	OK
2.2.4. Does the monitoring plan require monitoring of Data needed to recalculate build margin emission factor, if needed, consistent with ACM0002?	PD ver01	DR	The ex-ante option has been selected as indicated in section B.6. of the PD rev01.	OK	OK
2.2.5. Does the monitoring plan require monitoring of data needed to calculate fugitive carbon dioxide and methane emissions and carbon dioxide emissions from combustion of fossil fuels required to operate the geothermal power plant ?	PD ver01	DR	The project is a hydro powerplant project. So, the question is not applicable to the project.	OK	OK
2.3. Quality Control (QC) and Quality Assurance (QA) Procedures					
2.3.1. Did all measurements use calibrated measurement equipment that is regularly checked for its functioning?	PD ver01	DR	Equipments for electricity generation are planned to be calibrated. The calibration will be checked during the verification stage.	OK	OK
2.3.2 Are frequency of monitoring the parameters defined hourly/daily ?	PD ver01	DR	The monitoring of net electricity generation is planned as daily and recored monthly. The Apj and Capj will be monioted yearly.	OK	OK

TABLE 3 CHECKLIST BASED ON METHODOLOGICAL TOOL FOR ASSESSMENT OF ADDITIONALITY (VERSION 05.2 - EB 39 REPORT ANNEX 10)

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
1. Additionality of a project activity					
a. Does the VCS-PD state the latest version of the additionality tool being used?	PD ver01	DR	However the steps followed in section B.5 of the PD rev 01 is in line with the steps of the tool "Tool for the demonstration and assessment of additionality".	OK	OK
b. Has the tool used the following steps to assess additionality 1. Identification of alternatives to the project activity 2. Investment analysis to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible 3. Barriers analysis; and 4. Common practice analysis.	PD ver01	DR	In the PD all of the relevant steps are used. The PPs have chosen to use both the investment analysis and the barrier analysis. The PPS have realised investment analysis to determine that the proposed project activity is not economically or financially feasible. (It has been written in the PD as not the most economically attractive)	OK	OK
c. In Step 1 have all the sub-steps as below followed 1. Sub-step 1a: Define alternatives to the project activity 2. Sub-step 1b: Consistency with mandatory laws and regulations	PD ver01		Both of the sub-steps of step 1 are used	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
d. Have the following alternatives been included while defining alternatives as per sub-step 1a (a) The proposed project activity undertaken without being registered as a CDM project activity (b) Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services or services with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology (c) If applicable, continuation of the current situation (no project activity or other alternatives undertaken).	PD ver0 1	DR DR DR	Three alternatives have been defined by the PP in sub-step 1 a of section B.5 of the PD rev 01. The defined alternatives and the discussion about credibility of the secenarios are given below: - Proposed project not undertaken as a VER project activity - Continuuation of the current situation-supply of equal amount of electricity in the grid. - Construction of a thermal powerplant with the same installed capacity or the same annual power output	OK	OK
			The first scenario defined by the PP in sub-step 1 of section B.5 of the PD rev 01 is : The proposed project not undertaken as a ver project. As an altenative it is found realistic and credible by the DOE also; since it has been defined in the Additionality tool ver 5.02.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
			The second alternative has been defined as current situation-supply of equal amount of electricity in the grid. The justification has been defined as that the second alternative is the baseline scenario. The justification is also accepted by the DOE.	OK	OK
e. Has the project participant included the technologies or practices that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently being introduced in the relevant country/region.	PD ver0 1	DR	Construction of a thermal power plant with the same installed capacity or the same annual power output. has been defined as an alternative.	OK	OK
f. Has the outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity done correctly? Please briefly mention the outcome.	PD ver0 1	DR	In the outcome of step 1 a of section B.5. it has been stated that continuation of the current situation – supply of equal amount of electricity in the grid has been defined as a non realistic alternative. In the outcome of step 1 a of section B.5. it has been stated that continuation of the current situation – supply of equal amount of electricity in the grid has been defined as a non realistic alternative.	CL21	OK
			Please clearly state the realistic alternatives in the outcome of Step 1.a.	CL22	OK
g. Is the alternative(s) in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives	PD ver0 1	DR	The alternatives are in compliance with all mandatory applicable legal and regulatory requirements.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
other than GHG reductions, e.g. to mitigate local air pollution.					
h. If an alternative does not comply with all mandatory applicable legislation and regulations, has it been shown that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country.	PD ver01	DR	The alternatives are in compliance with all mandatory applicable legal and regulatory requirements.	OK	OK
i. Has the outcome of Step 1b: Identified realistic and credible alternative scenario(s) to the project activity that are in compliance with mandatory legislation and regulations taking into account the enforcement in the region or country and EB decisions on national and/or sectoral policies and regulations done correctly? Please state the outcome.	PD ver01	DR	In step 1.b. of the PD version 01 , the out come of step 1.b. has been defined as the following; <i>"Mandotory legislation and regulations for each alternative are taken into account in sub step 1.b. . Based on the above analysis, the proposed project activity is not the only alternative amongst the project participants that is in compliance with the mandatory regulations. Therefore, the proposed VER project activity is considered as additional".</i> Please clearly include which alternatives are in line with the applicable legislation	CL23	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
j. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3.)	PD ver0 1	DR	The PP selected both step 1 and step2.	OK	OK
k. In step 2 have all the sub-steps as below followed? 1. Sub-step 2a: Determine appropriate analysis method 2. Sub-step 2b: Option I. Apply simple cost analysis 3. Sub-step 2b: Option II. Apply investment comparison analysis 4. Sub-step 2b: Option III. Apply benchmark analysis 5. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III): 6. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III):	PD ver0 1	DR	In step 2 the following sub-steps have been followed as the below: 1. Determine appropriate analysis method. 2. OptionIII. Apply benchmark analysis 3. Calculation and comparison of financial indicators 4. Sensitivity analysis	OK	OK
l. In sub-step 2a has the determination of appropriate method of analysis done as per the guidance as below 1. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income (Option I). 2. Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification	PD ver0 1	DR	In substep 2a simple cost analysis has not been elected and the justification has been documented as below; <i>"Since the project activity generates economic benefits from sales of electricity, the simple cost analysis is not applicable."</i> The justification is found appropriate by the DOE by benchmarking with the similar projects.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
	PD ver0 1	DR	In substep II a of section B.5 of the PD version 01; it has been stated that 'benchmark analysis' has been selected. The justification is given as below: <i>"Since the baseline scenario of the project is generation of electricity by the grid, no alternative investment is considered at issue."</i>	OK	OK
m. Has the below guideline followed for sub-step 2b Option I. Apply simple cost analysis 1. Document the costs associated with the CDM project activity and the alternatives identified in Step1 and demonstrate that there is at least one alternative which is less costly than the project activity.	PD ver0 1	DR	N/A	OK	OK
n. Has the below guideline followed for sub-step 2b Option II. Apply investment comparison analysis 1. Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service most suitable for the project type and decision-making context. Please specify	PD ver0 1	DR	N/A	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
o. Has the below guideline followed for Sub-step 2b: Option III. Apply benchmark analysis 1. Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context. 2. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project	PD ver0 1		The discussions have been summarized below using the same numeric order with question list (left hand column) for traceability. 1. The financial indicator has been identified as IRR as the financial / economic indicator as stated in substep 2 b of section B.5 . IRR has also been found a suitable indicator for the project by the DOE in comparison with the similar projects.	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
			2. The financial / economic analysis has not been based on to the subjective profitability expectation or risk profile of a particular project developer.	OK	OK
			3. Discounts rates have been selected as given below: a.1) Government bond rates, increased by a suitable risk premium as indicated substep 2b of section B.5 of the PD rev 01 have been used for equity IRR.	OK	OK
			a.2) Please clearly state the date for the investment decision date.	CL24	
			a.3.) Government bond rates used as a benchmark has been presented in table 3 of the PD rev01. The selected benchmarks have maturity date as 2006-2010. Please select a bond with the maturity date same as the last year of the IRR period. Please also clearly state the date that the bond rates have been accessed.	CL25	
			a.4) In substep II b of the section B.5 of the PD version 01, it has been stated that <i>"Acceptable IRR values for energy investments in Turkey are, given the present global financial crisis and economic uncertainty, are expected at yields in excess of 15% per annum."</i>	CL26	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
			Please clearly state how the assumed value (%15) is computed in the PD. Please clearly state in the PD the value assumed for the bond rate and the risk premium		
			b) In the PD v.01 B.5 selection of appropriate benchmark for project IRR is not defined and justified.	CAR07	OK
p. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III): 1. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives, ODA, etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.		DR	The discussions have been summarized below using the same numeric order with question list (left hand column) for traceability 1.1 The IRR value which has been considered as as the suitable financial indicator has been calculated by the main financial parameters given in Table 4 of the PD version01. 1.1.1. The installed capacity of Power plant is MW as indicated in the generation license issued by EMRA.	OK	OK
			1.1.2. Please clarify the justification for the parameters given in Table 6 of the PD. Please consider that the costs should be in line with the investment decision date.	CL27	OK
			1.3.14 The calculation will be rechecked after the main parameters on the IRR have been	CL28	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
			clarified.		
2. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	PD ver0 1	DR	Please present the Investment analysis with carbon credit in a transparent manner in the Calculation sheet.	CL 29	OK
3. Justify and/or cite assumptions.	PD ver0 1	DR	Please present the Investment analysis with carbon credit in a transparent manner in the Calculation sheet.	CL 29	OK
4. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions	PD ver0 1	DR	The only project risk is the change in the flow regime. However the risk can not be substantiated hence the energy generation indicated in the license has been assumed as a conservative approach. The assumption has also been accepted.	OK	OK
5. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	PD ver0 1	DR	The assumptions (electricity generation and the exchange ratio) do not differ across the project activity.	OK	OK
6. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity Please specify details for above	PD ver0 1	DR	Please clearly state the benchmark in the PDD for the additionality demonstration.	CL30	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
q. Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III): 1. Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	PD ver0 1	DR DR	A sensitivity analysis have been carried in sub-step 2.d. of the section B.5. of the PD version 1. Please clearly state how the parameters selected for the sensitivity analysis.	CL 31	OK
r. Has the outcome of Step 2 clearly mentioned with justification?	PD ver0 1	DR	The outcome of step 2 has been defined clearly.	OK	OK
s. In step 3: Barrier analysis have all the sub-steps as below followed? 1. Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity 2. Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):	PD rev0 1 B.5	DR	Barrier analysis have all the substeps as below in step 3 of the the PD version 01: 1. Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity 2. Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):	OK	OK
t. Has the below guideline followed for Sub-step 3a: Identify barriers that would prevent the implementation of the proposed VCS project 1. (a) Investment barriers: For alternatives undertaken and operated by private entities: Similar activities have only been implemented with grants or other non-commercial finance terms. No private capital is available from domestic or international capital markets due	PD rev0 1 B.5	DR	In step 3 of the section B.5. of the PD version 01; only investment barriers have been defined. In step 3 of the section B.5 of the PD version 01; high level of financing and long pay back period has been identified as a barrier under the investment barrier title. High level of financing and long pay back period is related with finance which has already been included in the investment analysis. Please amend.	OK CAR0 8	OK OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin. 2. (b) Technological barriers: Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance; Lack of infrastructure for implementation and logistics for maintenance of the technology, Risk of technological failure: the process/technology failure risk in the local			In step 3 of the section B.5. of the PD version 01; limited incentives for renewable energy has been defined as a barrier under investment barrier title. Please clarify the how the named barrier is related with the investment barrier given in " Tool for the demonstration and assessment of additionality" and presented below <i>".....if Similar activities have only been implemented with grants or other non-commercial finance terms. No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin."</i>		

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information, The particular technology used in the proposed project activity is not available in the relevant region. 3. (c) Barriers due to prevailing practice: The project activity is the "first of its kind". 4. (d) Other barriers, preferably specified in the underlying methodology as examples.			Please clarify how the uncertainty in the flow regime is a barrier for the proposed project	CL32	OK
u. Has the outcome from Step 3a clearly mentioned in PDD?		DR	The outcome from Step 3 a has not been clearly mentioned in the PD version 01.	CAR09	OK
v. Has the below guideline followed for	PD	DR	The guideline has been followed to show that the	CAR0	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity): 1. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CDM project activity. In other words, demonstrate that the identified barriers do not prevent the implementation of at least one of the alternatives. Any alternative that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration. 2. provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers. 3. The type of evidence to be provided should include at least one of the following: (a) Relevant legislation, regulatory information or industry norms; (b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions,	rev0 1 B.5		identified barriers would not prevent the implementation of at least one of the alternatives. However the assessment will be concluded after CAR 09 and CL32 has been closed.	9	

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
industry associations, companies, bilateral/multilateral institutions, etc; (c) Relevant statistical data from national or international statistics; (d) Documentation of relevant market data (e.g. market prices, tariffs, rules); (e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others. Please specify.					
w. Has the outcome from Step 3 clearly mentioned in PDD?	PD rev0 1 B.5	DR	The out come of the step3 has not been defined in the PD.	CAR 10	OK
x. In step 4: Common practise analysis have all the sub-steps as below followed? 1. Sub-step 4a: Analyze other activities similar to the proposed project activity 2. Sub-step 4b: Discuss any similar Options that are occurring		DR	Both of the steps have been used in sub step 4-b of the section B.5 of the PD version 01. In substep 4 a in section B.5 of the project, it has been stated that share of HEPPS in total installed capacity of Turkey is about 32.8 % where as share of HEPPS in total generation is only 18.7 %. Additionally, it has been stated that the installed capacity of thermal power plants has shown a rapid growth where as that of hydroelectric powerplants decrease from %40 to 32.8 % historically. The statement has been justified by the statistics of TEIAS which show the annual development of Turkeys' installed capacity and annual development of Turkeys' gross electricity generation by primary sources. It has been agreed that the electricity generation by hydropowerplants is not diffused to country wise in comparison with	OK	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
			thermal powerplants considering the potential of turkeys' hydroelectric potential.		
y. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity 1. Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	PD rev0 1 B.5	DR	The project activity is generation of electricity by hydroelectric power plant. Accordingly please clarify the assessment of other activities similar to the project activity as the following; Please supply an analysis of hydroelectrical power plants that are operational and that are in the same country/region and or rely on a similar technology, are of similar scale, and take place in a comparable environment according to the sub step 4.a of the additionality tool version 5.02. Please consider that CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	CL32	OK
z. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring: 1. If similar activities are identified, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and	PD rev0 1 B.5	DR	The project activity is generation of electricity by hydroelectric power plant. Accordingly please clarify the assessment of other activities similar to the project activity as the following; Please supply an analysis of hydroelectrical power plants that are operational and that are in the same country/region and or rely on a similar technology, are of similar scale, and take place in a comparable environment according to the sub step 4.a of the additionality tool version 5.02. Please consider that CDM project activities are not to be included in this	CL32	OK

CHECKLIST QUESTION	Ref.	MoV	COMMENTS	Draft Concl	Final Concl
explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or did not face the barriers to which the proposed project activity is subject. In case similar projects are not accessible, the PDD should include justification about non-accessibility of data/information.			analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.		
æ. Has the outcome from Step 4 clearly mentioned in PDD?	PD rev01 B.5	DR	The outcome of step4 has not been presented in the PDversion 01.	CAR 06	OK
ø. Has it been proved that the porject is additional?		DR	A number of CLs and CARs have been raised on table 3 of this protocol based on rev 01 of the PD. The conclusion will be realized after the CLs and CARs have been closed.	OK	OK

TABLE 4 LEGAL REQUIREMENTS

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?	2	DR	The EIA assessment for Akocak HEPP project has been prepared by PRD. as defined by the regulations. The Report was approved by the Ministry of Environment and Forestry (MoEF) on 17th October 2006.	OK	OK
1.2. Are the conditions of the environmental license being met?	2	DR	The conditions of environmental license are being met as validated from the reports of Environmental Ministry.	OK	OK
1.3 Are the conditions of the Designated National Authority being met?	2	DR	There is no DNA in Turkey yet.	OK	OK

TABLE 5 RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
<u>CAR01</u> Demonstration of compliance to local laws and regulations have not been included in the PDD	Table 1 2-d-m	Compliance with local laws have been included in PDD v2	In outcome of Step 1 ^a of Section B5, related laws and compliance are explained. <u>Corrective action request has been closed.</u>
<u>CAR 2</u> Please supply economic, sectoral, social, environmental, geographic, site-specific information in the PD	Table 1 2-d-t	Detailed info has been included in PDD.	Benefits of the project by means of employment opportunities and natural resource usage and current situation by means of socio economic level, land usage and agriculture are given together in Section A.2 of the PD version02. Information about Socioeconomic level, land usage and agricultural use have been validated during the site visit through interviews. <u>Corrective action request has been closed.</u>
<u>CAR 03</u> According to ACM 002 version 10, All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period. Please include the archiving methodology in the PD.	Table 1 gg-viii	It has been specified that data will be kept for at least two years.	In section B.7 of the PD version 02 it is specified that data will be kept in electronic format for 2 years. The inserted paragraph is line with the requirements of ACM002 version 10 and the related tools. <u>Clarification request has been closed.</u>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
CAR 04 In section B.6.3 of the PDD the identification of the relevant electrical power system has been defined however please justify the choice of selecting the project electricity system as national grid in relation with the " Tool to calculate the emission factor for an electricity system", requirements.	Table 2 1.2.7.	Electricity system has been justified in revised PDD.	The justification has been given in section B.2 of the PDD version 02 as the following. • In case of electricity systems with spot markets for electricity: there are differences in electricity prices (without transmission and distribution costs) of more than 5 percent between the systems during 60 percent or more of the hours of the year. • The transmission line is operated at 90% or more of its rated capacity during 90% percent or more of the hours of the year. The justification is in line with the " Tool to calculate emission factor of an electricity grid". <u>The corrective action request has been closed.</u>
CAR05 In the version 01 of the PD, it has been stated that the list of most recent capacity additions to the grid and their average and firm generation capacities are available at the TEIAS web page	Table 2	List of the capacity additions has been determined using the referred reference in TEIAS web page already.	The plant based data has only been given in projection reports in the TEIAS website The projection report does not give the details of the plants that are in the

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
However the data that is used in the calculations does not give detailed plant based information on the capacity additions. Please revise your calculations and the references given in the PD using the detailed lists that are given in the annexes of capacity projection reports that are also available on the TEIAS website.			operation. The assumption has been accepted since the assumption will not create any material mistake as accepted by the baseline specialist. <u>Corrective action has been closed.</u>
<u>CAR 06</u> The outcome of step4 has not been presented in the PD version 01.	Table 3	Commonpractice analysis has been improved and outcome of step 4 has been revised. <u>PP Response 29/06/2010</u> Outcome of common practice analysis has been revised.	<u>Review 1:</u> Plase revise outcome accordingly with your answer to be revised for CL 33 <u>Review 2:</u> It has been stated in outcome of step 4 in PD version 02.2 that there are no similar activities in Turkey in consideration with the same capacity which are owned by the generation companies. The web site has been accessed by the validation team. It has been concluded that the project type is not common practice in Turkey and the outcome has been clearly stated. <u>Corrective action request has been closed.</u>
<u>CAR07</u>	Table 3	Investment Analysis section has been	The PP has selected both project

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
In the PD v.01 B.5 selection of appropriate benchmark for project IRR is not defined and justified.		updated.	IRR and the equity IRR in version 01 of the PD. However in version 02 of the PD, only equity IRR has been applied. PP can apply either equity IRR or project IRR according to additionality tool version 5.02. Hence deleting project IRR calculations is accepted by the validation team. CAR 07 is no more valid. <u>Corrective action request has been closed.</u>
<u>CAR 08</u> In step 3 of the section B.5 of the PD version 01; high level of financing and long pay back period has been identified as a barrier under the investment barrier title. High level of financing and long pay back period is related with finance which has already been included in the investment analysis. Please amend. In step 3 of the section B.5. of the PD version 01; limited incentives for renewable energy has been defined as a barrier under investment barrier title. Please clarify the how the named barrier is related with the investment barrier given in "Tool for the demonstration and assessment of additionality" and presented below ".....if Similar activities have only been implemented with grants or other non-commercial finance terms. No private capital is	Table 3	Barrier analysis section has been removed in revised version of PDD.	The removal of barrier analysis is stated together with the explanation that "additionality is demonstrated in financial step" in version 02 of the PD. According to the "Additionality Tool version 05.2" the project proponent can apply either barrier analysis or financial analysis. Removal of barrier analysis has been accepted by the validation team. <u>Corrective action request has been closed.</u>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin."			
CAR09 The outcome from Step 3 a has not been clearly mentioned in the PD version 01.	Table 3	Barrier analysis section has been removed in revised version of PDD.	The removal of barrier analysis is stated together with the explanation that "additionality is demonstrated in financial step" in version 02 of the PD. According to the "Additionality Tool version 05.2" the project proponent can apply either barrier analysis or financial analysis. Removal of barrier analysis has been accepted by the validation team. <u>Corrective action request has been closed.</u>
CAR10 The out come of the step3 has not been defined in the PD.	Table 3	Barrier analysis section has been removed in revised version of PDD.	The removal of barrier analysis is stated together with the explanation that "additionality is demonstrated in financial step" in version 02 of the PD. According to the "Additionality Tool version 05.2" the project proponent can apply either barrier analysis or financial analysis.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
			Removal of barrier analysis has been accepted by the validation team. <u>Corrective action request has been closed.</u>
<u>CL1</u> It is not specified if the project is a grouped project . Please specify if the project is a grouped project.	Table 1	It has been specified in v2 of PDD that project is not a grouped activity.	It has been specified in A.4.2. that project is not grouped. <u>Clarification request has been closed.</u>
<u>CL2</u> Please state the project size in the PD (Micro project: Less than 5,000 tonnes CO2 equivalent emissions reductions per year; Mega Project: More than 1,000,000 tonnes CO2 equivalent emissions reductions per year)	Table 1	Project size has been specified in v2 of PDD.	It has been specified in A.4.2. of the PD version 02 that the project delivers more than 5,000 tons CO ₂ e and less than 1,000,000 tons of CO ₂ e per year and therefore it is neither a micro nor a mega project. <u>Clarification request has been closed.</u>
<u>CL3</u> Please include the conditions prior to the project initiation in the PD.	Table 1	Conditions prior to project initiation has been added to PDD v2.	In section A.2. of the PD version it has been stated that unemployment rate of Araklı District has been determined as 6.56% whereas population increase rate is about 11.44%. About 77.7% of the population works on agriculture and 18.1% works on service sector whereas only 4.2% works on industry. In

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
			addition it has been observed during the site tour, it has been observed that most of the project area is occupied by forests and agricultural areas are limited. <u>Clarification request has been closed.</u>
<u>CL4</u> Please clearly state in the PD; if there are any risks that may substantially affect the project's GHG emission reductions	Table 1	Most propable risk is fluctuation in generation figures of hepps due to dependence on natural resources. It has been included in PDD	In the explanation of sub-step 4a, it is described that fluctuation in generation could be a risk for the project. However since the project has a accumulation reservoir it has been concluded that the risk does not substantially affect the project's GHG emission reductions <u>Clarification request has been closed.</u>
<u>CL5</u> Please clarify if the project has been rejected under other VCS programs	Table 1	It has been specified that proposed project has not been rejected by other GHG credit programs.	In section F.3 of PD version 2, it is mentioned that the project has not applied for other GHG programs and never been rejected <u>Clarification request has been closed.</u>
<u>CL6</u> Please clarify the project proponents roles and responsibilities, including contact information of	Table 1	Roles of project participants have been included. Contact information is available in Annex I.	In section A.3, it is specified that Akenerji is Project Owner and Global Tan Energy Limited is Project Developer.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
the project proponent, other project participants			In addition responsibilities in relation with the monitoring have been included in section B.7. of the PDD version 01 <u>Clarification request has been closed.</u>
<u>CL7</u> Please clarify in the PD if there is any commercial sensitive information that has been excluded from the public version of the PD that will be displayed on the VCS Project Data Base.	Table 1	It has been specified in section f.6 that PDD does not include any commercially sensitive information.	In Section F.6 it is specified that PDD does not involve any commercially sensitive information. <u>Clarification request has been closed.</u>
<u>CL8</u> For the justification of the choice of the methodology and its applicability to the project, it is stated in section B.2. of the PD rev01 that; the geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available. Please clarify the sources for identification and the characteristics of the grid in the PD.	Table 1	Characteristic and source of grid info has been included in PDD v2.	Schematic demonstration of the Turkish Electricity Grid is presented and the source is given as web site of TEIAS. The clarification has been accepted by the validation team. <u>Clarification request has been closed.</u>
<u>CL9</u> For the justification of the choice of the methodology and its applicability to the project, it is stated in section B.2. of the PD rev01 that; the project is a run off river project and does	Table 1	It has been specified that a new reservoir is formed and power density is higher than 4 W/m ² .	It is specified in Section B.2 of the PD version 2 that the project causes formation of a new reservoir whose power density is higher than 4 W/m ² .

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
not result in reservoir. Please clarify which applicability criteria is applied to the project (new reservoir, existing reservoir with no change volume or existing reservoir with a change in the volume). Please justify the applicability criteria selected. Please clearly present how the power density has been calculated by also giving references for the data used in calculation.			In section B.6.4. of the PD version 02, the calculation method for the power density has been presented transparently. The maximum lake area has been validated from the EIA report and the electricity generation has been validated from the generation license. <u>The clarification request has been closed.</u>
<u>CL10</u> Under section B.3 of the PD version 01, the GHG sources are identified for the project in the tabular format. 1. CO₂ emissions have been identified as a MINOR emission source in the tabular format and EXCLUDED for simplification; however in section B.6 of the PD version 01 it has been defined that the use of diesel generator is the only project emission source; please clarify. 2. CH₄ emissions has been identified as major emission sources for hydroelectric projects according to ACM 002 version 10. Please reassess the emissions sources and the justifications in the PD section B.3.	Table2	1. Diesel generator emission has been excluded for simplification. 2. Justification has been added to PDD.	As corrected in the PDD version and also according to ACM002, it is correct to accept CO₂ emission from baseline as major emission and CH₄ emission from hydro plants as major emission and exclude the rest as they are minor emissions. <u>Hence the clarification request has been closed.</u>
<u>CL11</u>	Table 2	Reference has been added for the	Reference 10, showing the

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
It has been stated in section B.4. of PD version 01 that "In the absence of the proposed project activity, same amount of electricity is required to be supplied via either the current power plants or by an increased number of thermal power plants, thus increasing GHG emissions." The statement has been justified by indicating that "Turkish electricity generation is composed mainly of thermal power plants. The share of hydroelectric power plants has decreased significantly in recent years, due to the reduction of the economically feasible hydraulic resources." Please supply a reference for the above justification.		statement. PP Response 29/06/2010 The statement has been revised in revised version.	decrease of hydro power share in total installed capacity is relevant and existing but referenced figure is irrelevant. Please correct references. <u>Hence the clarification request has NOT been closed.</u> <u>Review2:</u> The sentence has been revised as the following in version 02 of the PD as the following; "According to the TEIAS statistics³, share of HEPPs in total installed capacity of Turkey is about 32.8% whereas share of HEPPs in total generation has been realized as about 18.6% in 2007⁴. However, when we look at the historical data, it seen that total installed capacity of thermal power plants has shown a rapid growth in parallel with the demand for electricity whereas the increase in hydroelectric power generation has been much slower. This has decreased

³ <http://www.teias.gov.tr/ist2007/1.xls>

⁴ <http://www.teias.gov.tr/ist2007/13.xls>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
			the share of hydroelectric power from 40% in the past to the current levels^{5.1}." The statement has been referred to IEA Turkey Country Report, 2005 (Table 16 in page 117). The statement has been checked and accepted by the validation team. <u>Clarification request has been closed.</u>
<u>CL12</u> In section B.7. of the PD version 01 the parameters EGy have been presented for monitoring in the tabular format. However, the parameters which are included in ACM 002 version 10 namely EG Facility, Cappj, Apj, and FCi,j,y (ALTOUGH REFERRED IN SECTION b.6. of the PD) are not included in the tabular format. The tabular format shall include data unit, description, source of data to be used, measurement procedures, monitoring frequency, QA/QC procedures. Please include the relevant parameters in the monitoring as required by the methodology.	Table 2	Relevant parameters were included in revised version of PDD.	Cappj and Apj parameters have been included in tabular format in version 02 of the PD. <u>Clarification request has been closed.</u>

⁵ IEA Turkey Country Report, 2005 (Table 16 in page 117)

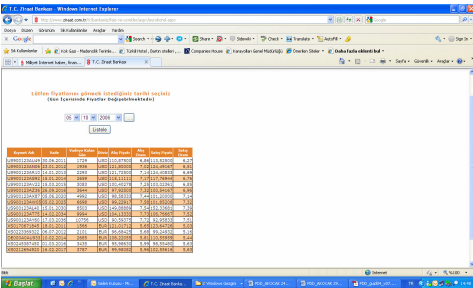
Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
CL13 The description of the parameter EGy does not match with the description in the ACM002 version 10. Please clarify	Table 2	Parameter was updated.	Description of EGy as "Net Electricity generated and delivered to the grid by the Akocak Hydroelectric Power Plant in year y" is now adequate. <u>Clarification request has been closed.</u>
CL14 In section B.6.4 of the PD version 01, the annual emission reductions have been presented in the tabular format for 10 years. However, total numbers of crediting years have been defined as 7 years please clarify.	Table 2	Number of crediting years have been corrected as ten years. 29/06/2010 The crediting period is selected as ten years and intended to be renewed depending on the market conditions as per the VCS rules.	Number of crediting period has been corrected as 7 years as B.6.4. in PDD however in section C .1. it has been stated that renewal crediting period has been selected. Clarification request has not been closed. <u>Review2:</u> Clarification request has been closed.
CL15 Please clarify the chronological plan for the date of initiating project activities, date of terminating the project, frequency of monitoring and reporting in the PD	Table 2	The table1 has been updated to include expected termination date. Frequency of monitoring will be determined during operation stage considering market conditions.	The clarification request has been found acceptable. <u>The clarification has been closed.</u>
CL16 Please clarify the evidence of proof of title	Table 2	Generation License has been provided to DOE.	The clarification has been closed.
CL17	Table 2	The statement has been corrected in	Lignite and coal EF's are also in

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
The Emission Factors used in the calculations are taken from the IPCC minimum values at the lower limit of uncertainty at a 95% confidence interval (table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines for GHG inventories. However, in section B.6.3. of PD version 1 , it has been stated that "The emission factors required for calculation of CO2 emission coefficient have been obtained through IPCC 2006 guidelines for GHG inventories for fuels except for coal and lignite. For lignite and coal, the emission factors have been calculated using country specific heating values of fuels consumed and data from National Greenhouse Gas Inventory of Turkey". Please clarify the reference statement.		revised PDD.	accordance with IPCC now. <u>Clarification action request has been closed.</u>
CL18 For the generation efficiency of coal, the value of present thermal power plants has been used from Türkiye Çevre Atlası prepared by Ministry of Environment and Forestry as indicated in section B.6.2. of the PD rev 01 However, the document has been published in 2004 and refers to data from power plants of all vintages in operation. On the other hand, the BM comprises most recently built power plants which are expected to be of higher efficiency. Hence using the default efficiency factor in the TOOL (for new power plants built after 2000), which is slightly higher, would be more appropriate.	Table 2	Analysis of efficiency of plants has been made considering heating values of fuels used in thermal power plants (for coal and NG) and corresponding electricity generation for that year. The analysis has shown that overall efficiency of plants has not changed significantly between 2001-2007. Considering that installed capacity for NG and coal has nearly doubled meantime, the overall efficiency should have increased also however this has not been the case. This fact can be due to the difference in specifications of the plants which do not consider	Please revise your calculations using the default efficiency factor in the tool to calculate emission factor. Review2: The calculations have been revised using the default efficiency factors in version 02 of the PDD and calculation sheet. <u>Clarification has been closed.</u>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
		consumption during start up, shut down and standby period and practical operation conditions. Regardless of the discussion above, the calculations have been revised to finalize the validation.	
CL19 In Table 15 of the PD version 01, values used for the calculation of the OM have been presented. The reference for the table is given as the National Inventory of Turkey-2007. In 2007 inventory; IPCC mid values have been used. However, the EF values given in the table stand for the min IPCC min values. According to the "Tool to calculate the emission factor of an electricity system" it is convenient to use IPCC min values. So, please clarify the reference for the EF factors.	Table 2	Reference for data used has been updated.	The IPCC min values have been referred in version 02 of the PDD. The validation team reviewed the data and accepted. <u>The clarification action request has been closed.</u>
CL20 In the OM&BM calculations the employed emission factor for coal is the same as the IPCC lower level for antracite. However according to NIR 2009-2007 there is no value for antracite Please clarify the assumption.	Table 2	The value has been updated to use lower value of sub-bit. coal.	The calculation sheet for CM and PD version has been updated according to lower value of of sub-bit. coal . The clarification has been found acceptable. <u>Clarification action request has been closed.</u>
CL21 In the outcome of step 1 a of section B.5. it has	Table 2	The referred statement has been updated.	The statement has been updated as "continuation of the current

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
been stated that continuation of the current situation –supply of equal amount of electricity in the grid has been defined as a non realistic alternative. Please clarify.			situation is realistic” in version 02 of the PD. <u>Clarification action request has been closed.</u>
<u>CL22</u> Please clearly state the realistic alternatives in the out come of Step 1.a.	Table3	Alternatives are realistic. Further clarification has been added step1.a	Realistic alternatives are clearly stated as Supply of electricity by the grid which requires addition of new power plants or Implementation of a thermal power plant to deliver electricity in order to meet the electricity demand in version 02 of the PD. <u>Clarification action request has been closed.</u>
<u>CL23</u> In step 1.b. of the PD version 01 , the out come of step 1.b. has been defined as the following; “Mandatory legislation and regulations for each alternative are taken into account in sub step 1.b. . Based on the above analysis, the proposed project activity is not the only alternative amongst the project participants	Table3	Further clarification has been added to revised PDD.	It has been added that existence of thermal power plants serves as an evidence for demonstrating that alternatives are not prevented by laws or regulations. The alternatives include construction of thermal power or supply electricity from the grid which is dominated

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
that is in compliance with the mandatory regulations. Therefore, the proposed VER project activity is considered as additional". Please clearly include which alternatives are in line with the applicable legislation			by thermal plants. The clarification has been accepted by the validation team. <u>Clarification request has been closed.</u>
<u>CL24</u> Please clearly state the date for the investment decision date.	Table3	Investment Decision date has been identified as equipment purchase	Please clarify in the PDD that Investment Decision date has been identified as Equipment Purchase Agreement Date. Please clarify the reason for not selecting the investment decision date as feasibility report whereas the feasibility report is available. Clarification action request has NOT been closed. <u>Review2:</u> It has been defined in the PDD that the investment decision date has been assumed as the equipment purchase agreement date. Purchase agreement with Siemens 05.10.2006 has been reviewed by the validation team has been accepted. <u>Clarification request has been closed.</u>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
CL25 Government bond rates used as a benchmark has been presented in table 3 of the PD rev01. The selected benchmarks have maturity date as 2006-2010. Please select a bond with the maturity date same as the last year of the IRR period. Please also clearly state the date that the bond rates have been accessed.	Table3	Selected benchmark bond rate has been revised. PP Response 29/06/2010 The rates given represents the bond rates available at time of investment decision(equipment purchase agreement). Print screen is given below. 	Please select the benchmark according to the investment decision date. <u>Clarification action request has NOT been closed.</u> <u>Review 2:</u> The Eurobond rate at the time of investment decision which is the date of turbine purchase agreement (November 2006) is taken. The maturity date of the eurobondrate is also convenient for the investment analysis period which is selected as 20 years. The rates assumed have been accesses form the website of Ziraat Bank and accepted by the validation team. <u>Clarification request has been closed.</u>
CL26 In substep II b of the section B.5 of the PD version 01, it has been stated that "Acceptable IRR values for energy investments in Turkey are, given the present global financial crisis and economic uncertainty, are expected at yields in excess of 15% per annum."	Table3	Investment Analysis section has been updated.	Project IRR has been deleted. <u>Hence the clarification has been closed.</u>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
Please clearly state how the assumed value (%15) is computed in the PD. Please clearly state in the PD the value assumed for the bond rate and the risk premium			
<u>CL27</u> Please clarify the justification for the parameters given in Table 6 of the PD. Please consider that the costs should be in line with the investment decision date.	Table3	The investment cost has been updated in version 2 of PDD. Construction cost has been based on figures in feasibility report (Table 8.2). EM cost has been based on contracted amount as it is defined as investment decision date. VAT has been assumed for domestic items only. Other assumptions have been indicated as explanation on excel sheet. <u>Response2:</u> The estimate reports dated 2006 which are inline with the investment decision date have been considered. EM cost have been based on the purchase agreement.	The costs have been validated from the feasibility report. Please clarify the EM cost according to the feasibility report. <u>Review 2:</u> The estimate reports have been reviewed by the financial specialist. The turbine purchase agreement with siemens has also been reviewed. <u>The clarification request has been closed.</u>
<u>CL28</u> The calculation will be rechecked after the main parameters on the IRR have been clarified.	Table3		Majority of the data used in the IRR calculations are taken from the form the turbine purchase agreement and the cost estimate reports for the construction. Other data has been referred to the

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
			feasibility report. The projected costs have been checked from the cost estimate reports and the feasibility report. <u>Clarification request has been closed.</u>
CL29 Please present the Investment analysis with carbon credit in a transparent manner in the Calculation sheet.	Table3	The model is transparent and impact of carbon credit and other parameters can be seen by changing the values in the red cells.	The comments indicating the assumptions have been included in the excel sheet. <u>Hence the clarification has been closed.</u>
CL30 Please clearly state the benchmark in the PDD for the additionality demonstration.	Table3	Selection of Benchmark has been clarified in PDD. PP Response 29/06/2010 The rates given represents the bond rates available at time of investment decision(equipment purchase agreement).	Please select the benchmark according to the investment decision date. <u>Clarification action request has NOT been closed.</u> <u>Review 2:</u> The rates given represents the bond rates available at time of investment decision(equipment purchase agreement). <u>Hence the clarification has been closed.</u>
CL31	Table3	Parameters have been selected	Cost, electricity generation has

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1/2/3/4/5	Summary of project owner response	Validation team conclusion
A sensitivity analysis have been carried in sub-step 2.d. of the section B.5. of the PD version 1. Please clearly state how the parameters selected for the sensitivity analysis.		considering the tool applied. Hence parameters that have significant impact on revenue has been used.	been defined as the parameters for the sensitivity analysis. <u>Clarification has been closed.</u>
<u>CL32</u> Please clarify how the uncertainty in the flow regime is a barrier for the proposed project	Table3	Barrier analysis section has been removed in revised version of PDD.	<u>Clarification action request has been closed.</u>
<u>CL33</u> The project activity is generation of electricity by hydroelectric power plant. Accordingly please clarify the assessment of other activities similar to the project activity as the following; Please supply an analysis of hydro electrical power plants that are operational and that are in the same country/region and or rely on a similar technology, are of similar scale, and take place in a comparable environment according to the sub step 4.a of the additionality tool version 5.02. Please consider that CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	Table3	Common practice analysis has been updated.	Detailed reviews of HEPP plants owned by the generation companies have been given In version 02 of the PD. <u>Hence the CL has been closed.</u>