

KOROGLU HYDROELECTRIC POWER PLANT VALIDATION REPORT



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Summary:

Bureau Veritas Certification has made the validation of the “Koroglu Hydroelectric Power Plant” of Etken Elektrik Enerji Üretim Ltd. Şti. located in Province of Osmaniye, Kadirli district in the Mediterranean Region which is constructed on the Savrun River between the elevations of 875 m and 747 m on the basis of UNFCCC criteria for the CDM methodology (AMS I.D. Version 17), Voluntary Carbon Standard (VCS) v.3.4, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

Koroglu Hydroelectric Power Plant is owned by Etken Elektrik Enerji Üretim Ltd. Şti.. The project type is a run-of-the-river power plant. The project purpose is supplying electricity generation to the Turkish National Grid by generating electricity from renewable sources. The project total capacity is 9.06 MWe which is confirmed through the generation license and supplementary feasibility report. The power generation is achieved by installing and operating a run-of-the-river type HEPP comprising 3 horizontal axis Francis turbines. Each of them has 3.02 MWe capacity and totally 9.06 MWe capacity. Project expects to generate and supply 26.130 GWh of electricity per year to the grid and expects to reduce 13,846.28 tCO₂e per year by replacing non-renewable generation sources in the national grid. The crediting period of the project activity is 20/06/2014 to 20/06/2024.

The validation scope is defined as an independent and objective review of the project design document, the project’s baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and internal technical review followed by 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 Appendix B. Taking into account this output, Kilittasi Engineering Consulting & Construction Co. Ltd., on behalf of the project proponent, revised its project design document, final document being version 6.1, dated 07/04/2015, resolve the issues that have risen during the interviews and subsequent interactions.

In summary, it is Bureau Veritas Certification’s opinion that the project correctly applies the baseline and monitoring methodology AMS I.D. Version 17.0.0 “Grid-connected electricity generation” and meets the relevant UNFCCC requirements for the CDM Methodology, Voluntary Carbon Standard (VCS) v.3.4 requirements and the relevant host country criteria.

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1 INTRODUCTION

1.1 Objective

The validation serves as project design verification and is a requirement of all 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 UNFCCC CDM Methodology, Verified Carbon Standard (VCS) v.3.4 requirements and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meet the stated requirements and identified criteria. Validation is a requirement for all VCS-VCU projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified carbon units (VCUs).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules, Verified Carbon Standard (VCS) v.3.4 and associated interpretations.

The validation is not meant to provide any consulting towards the Kilittasi Engineering Consulting & Construction Co. Ltd. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Level of Assurance

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

1.4 Summary Description of the Project

The project is a run-of-the-river type hydroelectric power plant and involves 3 horizontal axis Francis turbines. Each turbine capacity is 3.02 MWe and combining a total installed capacity of 9.06 MWe. The project activity is located in the Mediterranean region of Turkey in Kadirli District of Osmaniye province.

CDM Project standard v.5, par. 82 (a) requires "the installed capacity for renewable electricity generating units that involve turbine-generator systems shall be based on the installed/rated capacity of the generator" for small scale projects.

Accordingly, the project's output capacity is calculated as $9.18 \text{ MW} = 3 * 3400 \text{ kVA} * 0.90$ (power factor). It is confirmed through the Turbine Generation Agreement between Wasserkraft GmbH&Co KG and Etken Elektrik Uretim Ltd. Sti. on Page 10.

The project comes under Type I – Renewable Energy Project as per Appendix B of the procedures for the CDM project activities. The project is also single Greenfield project and not a part of a project group or bundle.

Together with the energy produced in Koroglu HEPP, the energy will be transferred to the Sayan HEPP through the transmission line of 36 kV with a length of 2 km. Sayan HEPP is located at the downstream of the project activity and will be the connection point of the Koroglu HEPP to the Turkish National Grid System.

There will be three weirs in the project. One is the Main Weir located on the Savrun River, and the other two small tyrolean type weirs are located on the Kurbağalı Creek which is a side branch of the Savrun River. Main Weir is on the 875.0 m crest elevation on the Savrun River. Weir body height is 5 m from the thalweg. Penstock length is 998 m and its diameter is 1.8 m. Powerhouse is placed on the right side bank of the Savrun River at the tailwater elevation of 747.0 m.

The geographical coordinates of the project component are validated as follows;

Project Facilities	Latitude (6° UTM)	Longitude (6° UTM)
Koroglu Main Weir	41 68 185 (N)	251 255 (E)
Koroglu Side Weir (Kurbagali Weir)-1	41 67 020 (N)	250 028 (E)
Koroglu Side Weir (Kurbagali Weir)-2	41 67 275 (N)	250 220 (E)
Powerhouse	41 66 175 (N)	251 310 (E)

Project coordinates also are cross checked by the approved feasibility report.

The project won't produce any greenhouse gas (GHG) during operation. The project is expected to generate 26.13 GWh amount of energy per year. The electricity generated by the project can displace part of the power from the fossil fuel-fired plants of Turkey. As a result of this production, Koroglu HEPP is expected to generate 13,846.28 tCO₂e amount of emission reduction annually.

The lifetime of the project activity validated for 49 years through Koroglu HEPP Water Usage and Operation Agreement dated 5 Nov 2008. However, from the technical point of view, project life time can be referred to the lifetime of turbine. All construction elements have a lifetime of 45 years according to the DSI Report. The only element having shortest lifetime is turbine which is defined as 150,000 in UNFCCC CDM EB50-Annex 15. So the technical lifetime of the Koroglu HEPP Project is 150,000 hours (approximately 17 years).

The crediting period of the project of the project activity is 10 years 0 month which may be renewed twice. The crediting period will be 20 years and 0 month in total.

The raised corrective action requests and clarification requests for the description of the project activity can be seen as below;

CAR09 has been raised for the PD (power density) calculation and the reference of reservoir area by the validation team. PD calculation has been shown and the reference of reservoir area has been added in the validation report and the corrective action request is closed.

CL04 has been raised for the starting and ending date of the project crediting period by the validation team. Starting date of the project activity has been confirmed as 20/06/2014 through the provisional acceptance protocol of the project activity and the clarification request is closed.

2 VALIDATION PROCESS

2.1 Method and Criteria

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

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

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

The completed validation protocol is enclosed in Appendix B to this report.

The validation report underwent an Internal Technical Review (ITR) before requesting publishing of the report for the project activity. The ITR is an independent process performed to examine thoroughly that the process of verification has been carried out in conformance with the requirements of the verification scheme as well as internal Bureau Veritas Certification procedures.

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

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

The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the verification exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier and Validation Team and discusses these matters with Lead Verifier.

After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the PP(s) the finalized validation report is accepted for further processing.

2.2 Document Review

The Project Description (VCS-PD) submitted by Kilittasi Engineering Consulting & Construction Co. Ltd. and additional background documents related to the project design and baseline, i.e. technical documentation, assessments, reports, national laws and regulations, VCS Project Description Template v.3.2, Approved CDM methodology, VCS v.3.4 requirements, Kyoto Protocol, Clarifications (CL), Corrective Action Requests (CAR), and Forward Action Requests (FAR) on validation requirements to be checked by a Validation/Verification Body (VVB) were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Kilittasi Engineering Consulting & Construction Co. Ltd. revised the VCS-PD and resubmitted it on 20/10/2014.

The validation findings presented in this report relate to the project as described in the VCS-PD

2.3 Interviews

On 20/12/2012 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Etken Elektrik Enerji Üretim Ltd. Şti. were interviewed (see References).

The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Etken Elektrik Enerji Üretim Ltd. Şti. (Project Owner)	➤ Design of the project activity
	➤ The planning and the construction phase of the project
	➤ Working conditions
	➤ Training of the employees
	➤ Monitoring practices
Kilittasi Engineering Consulting and Construction Co. Ltd. (Consultant)	➤ Additionality of the project activity
	➤ Investment analysis
	➤ Baseline determination
	➤ Emission reduction calculations
	➤ Document review
	➤ CARs and CLs

2.4 Site Inspections

A site visit was performed on 20/12/2012, where representatives of Etken Elektrik Enerji Üretim Ltdi Şti. were interviewed about the project. Implementation of the project was observed on-site.

2.5 Resolution of Findings

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

2.6 Forward Action Requests

FAR01 is raised during the validation by DOE. It can be seen below that what topics FAR01 include.

FAR01: Many structures were not implemented yet. Therefore the location of the main structures must be verified during verification site visit.

3 VALIDATION FINDINGS

3.1 Project Details

The project is small scale run-of-the-river type hydroelectric power plant project and located in the Mediterranean region of Turkey in Kadirli District of Osmaniye province. Total installed capacity of the project is 9.06 MWe. Total capacity of the project is confirmed through the supplementary feasibility report dd. October 2010 and EMRA electricity generation license dd. 25/12/2008.

Expected annual amount of the electricity generation is 26.130 GWh/year. Project is supplying electricity to the Turkish National Power Grid by generating electricity from renewable energy source. The estimated and calculated emission reduction is 13,846.28 tonnes of CO₂e.

Emission factor and reduction methods are checked and confirmed by the validation team completely. Project scope is categorized as Type I – Renewable Energy, Energy Industries in accordance with UNFCCC 4/CMP.1, Annex II, Appendix B.

The project main purposes are; reducing the GHG gas emissions in Turkey, help to stimulate the growth of the small scale hydro power industry in Turkey, creating local employment, reducing other pollutants from power generation industry in Turkey, help to reduce Turkey's increasing energy deficit and differentiate the electricity generation mix and reduce import dependency.

Etken Elektrik Enerji Üretim Ltd. Şti. is the project developer of the project activity. Project start date is confirmed as 20/06/2014 through the provisional acceptance of the project activity.

The project is constructed on the Savrun River between the elevations of 875 m and 747 m.

There will be three weirs in the project. One is the Main Weir located on the Savrun River, and the other two small tyrolean type weirs are located on the Kurbağalı Creek which is a side branch of the Savrun River. Main Weir is on the 875.0 m crest elevation on the Savrun River. Weir body height is 5 m from the thalweg. Catchment basin area of the main weir is 149 km². Intake structure is placed on the right side bank of the river.

Penstock length is 998 m and its diameter is 1.8 m. Powerhouse is placed on the right side bank of the Savrun River at the tailwater elevation of 747.0 m. Water will be turbined by three units of horizontal axis Francis turbines.

All technical details of the project activity is carefully examined and confirmed by the validation team through the Supplementary Feasibility Report and technical specifications of the equipment. However, PP provided the DSI Approval for Feasibility Study Report with a 9.06 MWe capacity. The document is dated on October 2010.

Mandatory laws are applicable to the project are Electricity Market Law (Nr. 4628 / 03.03.2001), Renewable Energy Law (Nr.5346 / 18.05.2005), Energy Efficiency Law (Nr.5627 / 02.05.2007), The Forest Law (Nr.6831 / 31.08.1956), Environmental Law (Nr.2872 / 11.08.1983), Regulation on procedures and principles of signing the agreement of water resources utilization to generate electricity for the electricity market (Official Gazette Nr. 25150 / 26.06.2003) and Regulation on Environmental Impact Assessment (Official Gazette Nr. 26939 / 17.07.2008).

On the other hand confirmed project timeline by the validation team can be seen as follows;

DATE	MILESTONE	REFERENCE
05/11/2008	Water Usage Agreement	DSI Agreement
25/12/2008	Acquirement of Generation License	Generation License
10/2010	Revised Feasibility Report	Feasibility Report
25/08/2011	Project Introductory File	PIF Document
13/09/2011	EIA Exemption Letter	Decision File
11/10/2011	Electro-Mechanical Equipment Agreement <i>This is also the investment decision date</i>	Equipment Agreement
22/11/2011	Start of Construction Date	Site Receipt Report
13/02/2012	Additional Protocol for Water Usage and Operation Agreement	Additional Protocol
20/06/2014	Commissioning Date of The Project Activity <i>This is also the provisional acceptance date as well as the starting date of the first crediting period</i>	Provisional Acceptance Protocol

Investment decision date of the project activity is confirmed as 11/10/2011 through the electro-mechanical equipment agreement.

Project start date of the project activity is confirmed as 20/06/2014 through the provisional acceptance of the project activity.

Investment analysis are confirmed through the revised feasibility report dd. 10/2010 which is before the investment decision date, also investment analysis will be determined through the major investment items for cross-checking. Total amount of investment costs is crosschecked with the loan pay plan and investment cost list of the project.

Finally all milestones of the project are checked attentively by the validation team through the contracts and agreements. All given events reference documents are stored in DOE data base and completely confirmed by the validation team.

On the other hand it is confirmed that the project is not a grouped project, has not involved any other emission trading programs and other binding limits, has not participated under other GHG programs and has not created another form of environmental credit of renewable energy certificate by the validation team.

The given parameter's references are detailed in the VCS PD. All references are checked and confirmed by the validation team.

The VVB hereby confirms that the project description in VCS-PD (Version 6.1) is accurate and complete in all aspects of the project description.

3.2 Application of Methodology

3.2.1 Title and Reference

Applied methodology is AMS I.D. Version 17 - "Approved Small Scale Methodology for Grid Connected Renewable Electricity Generation"; "Tool for demonstration and assessment of additionality", v.07.0.0 for additionality and "Tool to calculate the emission factor for an electricity system" v.4.0.0 for calculation of the emission factor the national grid. Validation team has approved of the versions used.

3.2.2 Applicability

The steps taken to assess the relevant information contained in the VCS-PD against each applicability condition are described below.

- (1) The project activity is a grid connected renewable energy generation project, utilizing hydraulic power to generate electricity. This condition is confirmed through the EMRA generation license dd. 25/12/2008.
- (2) Koroglu HEPP project installs a new power plant at a site where there was no renewable energy generating power plant operating prior to the implementation of the project activity. This condition is confirmed through the revised feasibility report dd. 10/2010.
- (3) Koroglu HEPP is a run-of-river type project; therefore it has only a tiny reservoir to regulate water flow. Power density of the reservoir is calculated as $6,248 \text{ W/m}^2$ ($191.28 \times 10^6 \text{ W} / 1,420,000 \text{ m}^2$) that is higher than the threshold value, 4 W/m^2 . The reservoir area is confirmed through the technical drawings.
- (4) Koroglu HEPP project has only renewable component, utilizing hydraulic power. Its installed capacity is 9.06 MWe (9.53 MWm) which is less than the 15 MW limit value for small scale renewable type projects.

(5) Koroglu HEPP project is not a combined heat and power system. This condition is confirmed through the EMRA generation license dd. 25/12/2008.

(6) The project activity is not an additional to an existing renewable power generation facility.

(7) The project does not include retrofits, replacements or modification of an existing facility.

The VVB hereby confirms that the selected baseline and monitoring methodology (AMS I.D., “Approved Small Scale Methodology for Grid Connected Renewable Electricity Generation” version 17.0.0), tools “Tool for the demonstration and assessment of additionality” (version 07.0) and “Tool to calculate the emission factor for an electricity system” (version 04.0) is previously approved by the CDM Executive Board, and is applicable to the project activity, which, complies with all the applicability conditions therein.

3.2.3 Project Boundary

The VVB validated the project boundary by:

- Review of TEIAS Single Line Diagram, EMRA Generation License dd. 25/12/2008, DSI Approved feasibility report dd. 10/2010.
- On-site observations and interviews regarding the project site and equipment through a site visit.

The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the national electricity grid. According to ACM0002 version 15, project emissions are neglected.

Source		Gas	Included	Justification/Explanation
Baseline	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO ₂	Yes	Main emission source. The dominant emissions from power plants are in the form of CO ₂ ; therefore CO ₂ emissions from fossil fuel fired power plants connected to the grid will be accounted in baseline calculations.
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
Project	For hydro power plants, emissions of	CO ₂	No	Minor emission source
		CH ₄	No	According to ACM0002 version 15; CH ₄

	CH ₄ from the reservoir.	N ₂ O	No	emission is accepted as zero given that power density of the Koroglu HEPP is far larger than 10 W/m² threshold value (please see Section 2.2). Diesel generator is the only source of CO₂ emission due to only source of diesel generators neglected according to ACM0002 version 15.
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Based on the above assessment, the VVB hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

3.2.4 Baseline Scenario

The procedure contained in the methodology to identify the most reasonable baseline scenario has been correctly applied. The baseline scenario has been identified, in line with the applied methodology AMS I.D. Version 17.0.0, as “Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the ‘Tool to calculate the emission factor for an electricity system ver.04’ under Section 2.4 and Section 3.1 of VCS-PD v.6.1.

In line with the requirements of the applied tool, the Simple Operating Margin Emission Factor (EF_{grid,OM simple,y}) has been calculated ex-ante, using TEIAS data for 2008-2010 period which is actual data during the investment decision date.

The operating margin is calculated as **0,6555 tCO₂ / MWh**. The operating margin calculation is checked and accepted by the Baseline specialist through the actual references for the project activity.

For BM Calculation the set of power capacity additions in the electricity system that comprise 20% of the system generation and that have been built recently. The most recent data TEIAS 2010 values are used. For the determination of the emission factor for the build margin calculation, the lower limit of the IPCC EF values are used. The build margin emission factor is the generation-weighted average emission factor (tCO₂/MWh) of all power units.

The build margin is calculated as **0,4043 tCO₂ / MWh**. The build margin calculation is checked and accepted by the Baseline specialist through the actual references for the project activity.

In accordance with the methodology of the “Tool to calculate the emission factor for an electricity system” v.04.0, Project participant determined the Combined Margin Emission Factor as **0.5299 tCO₂/MWh** and this have been confirmed by the validation team with reviewing all baseline calculation sheet equations and confirming the parameters used for the calculations and their relevant sources.

After approval of the Baseline specialist all clarifications and corrective action requests related to Baseline calculations are closed by the validation team.

Based on the above assessment, the VVB hereby confirms that:

- (a) All the assumptions and data used by the project participants are listed in the VCS-PD, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the VCS-PD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) Relevant national and/or sectorial policies and circumstances are considered and listed in the VCS-PD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed VCS-VCU project activity.

3.2.5 *Additionality*

The step taken and sources of information used, to cross-check the information contained in the VCS PD Ver.6.1 on this matter are described below.

Prior consideration is not essential regarding to VCS rules. The carbon income evaluation in the decision proves that the VER revenues are taken into account before the investment decision date.

Investment decision date of the project activity is confirmed as 11/10/2011 through the electrical equipment agreement. Project start date of the project activity is confirmed as 20/06/2014 through the provisional acceptance protocol of the project activity.

“Tool for demonstration and assessment of additionality” (v07.0.0) has been utilized to demonstrate additionally. Following the requirements of the aforementioned tool, first valid alternatives to the project activity were determined and their compliance with relevant mandatory laws and regulations were evaluated. Following this, Investment Analysis was used to demonstrate the additionally of the project.”

Under sub-step 1a, the following three alternatives are identified as the alternative scenarios that are likely to happen in the absence of the project activity:

Alternative 1: The proposed project activity not undertaken as a VER project activity.

Alternative 2: Construction of some other renewable energy plant with the same annual power output.

Alternative 3: Continuation of the current situation (in the situation that Koroglu HEPP is not built).

Alternative 1 is not a realistic alternative, since the project IRR of the proposed project activity is below the benchmark IRR.

As Alternative 2, other renewable resources may be considered as alternatives to the proposed project.

With this respect, project region technically is not an eligible location for wind power generation. As for the geothermal energy, this renewable energy source primarily exists in west side of the country. Therefore, at the project area, there is no geothermal source either. Using solar power or biomass for electricity generation is still in the infancy state in Turkey. As a result, Alternative 2 for the region is; therefore, eliminated.

Alternative 3 is the only realistic alternative under these circumstances. In this case, Koroglu HEPP is not built and the same amount of electricity will continue to be produced by the current power plant mix of Turkey. As a result, no emission reductions occur.

Under Step-2 Investment Analysis is performed to demonstrate the additionality of the project. Investment decision date of the project activity is confirmed as 11/10/2011 through the electro-mechanical equipment agreement.

Investment analysis are confirmed through the feasibility report dd. 10/2010 which is before the investment decision date, also major investment items are validated through the electro-mechanical equipment and construction agreement for cross - checking.

Under sub-step 2a Option III – Benchmark Analysis is selected through the “Tool for the demonstration and assessment of additionality Version (07.0.0)”. Option I is Simple Cost analysis and Option II is Investment Comparison analysis in the tool. Option I cannot be applied since project has income from sale of generated electricity without VER revenue. Option II is not applicable, as the baseline scenario of the proposed project is the national grid supplying the same amount of electricity rather than a similar investment project alternative and the project owner has no investment options to compare with.

Under Sub-step 2b Benchmark Analysis Method is applied. For the purpose of benchmark analysis project IRR has been chosen as the indicator.

As per the requirements of “Tool for the demonstration and assessment of additionality, Version 07” benchmark rate can be derived from commercial lending rates. To determine the benchmark value, “Main Economic Indicators” on a monthly basis published by the Ministry of Development are used.

As the project is a mid-term investment (exceeding a year), lending rate for medium term investment has been selected as the benchmark. The lending rate for the medium term investment as estimated by the Turkish Development Bank is 16% for the last quarter of the year.

As a conservative approach, **16 %** value is accepted as **the benchmark** for the proposed project. The benchmark rate is found acceptable for the project activity by the validation team.

Under sub-step 2c financial parameters used for the investment analysis is determined. The Koroglu HEPP Revised Feasibility Report dd. October 2010 is prepared for the Koroglu Hydroelectric Power Plant project.

The investment items are determined regarding the Koroglu HEPP Feasibility Report dd. October 2010. The project cost is confirmed as 10,795,265 \$ through the Koroglu HEPP Feasibility Report dd. October 2010. The all project IRR inputs are checked and accepted by the validation team. The annual electricity generation accepted as 26,130 MWh/year through the Koroglu HEPP Feasibility Report dd. October 2010 and electricity generation license.

Electricity tariff is confirmed as 0.073 \$/kWh through the Renewable Energy Law Number 5346. On the other hand the exchange rate is accepted as 1.6147 USD/TL through the Koroglu HEPP Feasibility Report dd. October 2010. Also the loan agreement is provided to the validation team.

The revenue from yearly electricity generation is based on the guaranteed feed in tariff applicable at the time of the investment decision and it is confirmed as 2,613,056 \$/year through the Koroglu HEPP Feasibility Report dd. October 2010.

The operational costs are based on the Koroglu HEPP Feasibility Report dd. October 2010 and it is confirmed as 413,531 \$/year.

Project IRR has been calculated and confirmed as **13.99 %** based on the parameters given in the feasibility report and the main financial parameters used for the investment analysis table.

Main Financial Parameters is shown above table;

Main Financial Parameters used for the Investment Analysis

Parameter	Value	Unit	Name of reference document
Installed Capacity	9.06	MWe	The Generation License
Estimation of annual grid-connected power generation	26.13	GWh/year	Koroglu HEPP Feasibility Report, October 2010
Plant Load Factor (PLF)	% 32.92	-	The plant load factor is calculated as per EB48 Annex 11 paragraph 3b using the figures in the feasibility report approved by DSI.
Total Investment Cost	10,795,265	USD	Koroglu HEPP Feasibility Report, October 2010
Annual Operational Costs	413,531	USD	Koroglu HEPP Feasibility Report,

			October 2010
Annual Expected Electricity Sales Revenue	2,613,056	USD/Year	Law on Utilization of Renewable Energy Resources
Electricity Selling Price	0.073	USD/kWh	Renewable Energy Law Number 5346
Currency conversion	1.6147	TL/USD	Koroglu HEPP Feasibility Report, October 2010

The plant load factor is calculated through the EB48 Annex 11 “Guidelines for the reporting and Validation of plant load factors, Version 01”

PLF calculated as follows; $26,130 \text{ MWh/year} / (9.06 \text{ MWe} * 8760 \text{ hours/year}) = \mathbf{32.92 \%}$

Project IRR is lower than the benchmark of 16 %. In the sensitivity analysis -10%, +10% range is applied for Investment Cost, Annual Operational & Maintenance Cost and Electricity Selling Revenue. The calculated IRR figures are again below the benchmark rate.

All figures such as investment cost, fix rates, installed power, operation costs, energy tariffs are confirmed by the validation team.

Under sub-step 2d, Sensitivity Analysis is applied to the following items:

- Investment Costs
- Annual operational and maintenance costs
- Electricity selling revenue

For a decrease of, %10 and for an increase %10 the results of the sensitivity analysis without carbon revenue are presented as below;

	-10%	-5%	0%	+5%	+10%
Investment Cost	15.73 %	14.83 %	13.99 %	13.22 %	12.51 %
O&M Cost	14.29 %	14.14 %	13.99 %	13.84 %	13.69 %
Selling Revenue	12.04 %	13.03 %	13.99 %	14.93 %	15.85 %

The sensitivity analyses provide that the project activity is not financially attractive. The biggest values are 15.85 % with a 10% rise in revenue, 15.73 % with a 10% decrease in investment cost and 14.29 % with a 10% decrease in operational cost which are lower than the Benchmark IRR 16 %. Therefore the project is considered as additional to the baseline scenario.

Barrier Analysis is not used for the project activity as well as the sensitivity analysis has shown that the project is not financially attractive.

The **Common Practice** is not applied to the project given that it is a small scale project as based on the requirement given in the CDM Validation and Verification Manual Version 1.2, paragraph 119, page 23.

CDM Validation and Verification Manual Version 1.2, paragraph 119, page 23 states that;

“For proposed **large-scale project activities**, unless the proposed project type is first-of-its kind as determined in accordance with the relevant guidelines, the DOE shall assess whether the project participants have conducted a common practice analysis.”

3.2.6 Quantification of GHG Emission Reductions and Removals

3.2.6.1 Baseline Emissions

The baseline emissions for the project were calculated in line with the applied methodology and the relevant tools AMS I.D. Version 17 “Approved Small Scale Methodology for Grid Connected Renewable Electricity Generation”; “Tool for the demonstration and assessment of additionality” v.07.0; “Tool to calculate the emission factor for an electricity system” v.04.0.

$$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$$

Where:

BE_y	Baseline emissions in year y (tCO ₂)
EG_{BL,y}	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)
EF_{CO2,grid,y}	CO ₂ emission factor for grid connected power generation in year y (tCO ₂ /MWh)

Since project is a green-field implementation: **EG_{BL,y} = EG_{facility,y}**

Where:

EG_{BL,y}	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)
EG_{facility,y}	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr).

3.2.6.2 Project Emissions

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y	Project emissions in year y (tCO ₂ e/yr)
PE_{FF,y}	Project emissions from fossil fuel consumption in year y (tCO ₂ e/yr)
PE_{GP,y}	Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO ₂ e/yr)

PE_{HP,y} Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/yr)

Geothermal (**PE_{GP,y}=0**) considerations is not applicable and project emissions arising from the reservoir formed by the project are neglected since:

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

If the power density (PD) of the hydro power plant is above 4 W / m², **PE_{HP,y}** is 0.

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

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

The project is a new hydropower plant so **Cap_{BL}** and **A_{BL}** are taken as zero. **A_{PJ}** is confirmed as 1,450 m² through the Koroglu HEPP Weir Layout drawing with the number of KRG-UY-RG-02 by the validation team. Power density confirmed by the validation team as follows;

$$PD = 9,060,000 \text{ W} / 1,450 \text{ m}^2 = \underline{6,248 \text{ W/m}^2}$$

The power density is 6,248 W/m² which is greater than 4 W/m² so the project emissions are taken as zero. **PE_{HP,y}= 0**

2) CO₂ emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" Version 02.

PE_{FF,y} = Project emissions from fossil fuel consumption in year y (tCO₂/year) is calculated according to the UNFCCC tool "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion", Version 02.

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

Where:

$PE_{FC,j,y}$ = Are the CO₂ emissions from fossil fuel combustion in process j during the year y (tCO₂/year);

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

$COEF_{i,y}$ = Is the CO₂ emission coefficient of fuel type i in year y (tCO₂/mass or volume unit)

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

Relevant calculation is as shown below;

$$PE_{FC,j,y} = \sum FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}$$

$$PE_{FF,y} = 0$$

AMS-I.D Version 17 methodology refers to the ACM0002 for calculating project emission. More actual methodology of ACM0002 says CO₂ emissions due to diesel emergency generator can be neglected.

Project being based on Small-Scale project activity; according to ACM0002 Version 15 and the **Project Emissions** are ($PE_{FF,y}$) is assumed to be **0 tCO₂/year**.

3.2.6.3 Leakage Emissions

According to the AMS I.D. Version 17, leakage should be considered if the energy generating equipment is transferred from another activity. The proposed project is a new power plant as a result the leakage is taken as zero.

$$LE_y = 0 \text{ tCO}_2$$

3.2.6.4 Summary of GHG emission reductions or removals

Accordingly the baseline emissions BE_y are calculated as following:

$$BE_y = (EG_{BL,y} - EG_{baseline}) \times EF_{grid, CM, y}$$

Where:

BE_y	Baseline emissions in year y (tCO ₂ /y)
$EG_{BL,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the VCS project activity in year y (MWh)
$EG_{baseline}$	Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh). For new power plants this value is taken as zero.
$EF_{grid, CM, y}$	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated by using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO ₂ /MWh)

Since project is a green-field implementation: $EG_{BL,y} = EG_{facility,y}$

$$EG_{BL,y} = 26,130 \text{ MWh/year}$$

$$EG_{baseline} = 0 \text{ (The figure is zero for the project as the project is new)}$$

Therefore, the expected baseline emission for the full year production of the project is:

$$BE_y = (26,130 - 0) * 0.5299 \text{ tCO}_2\text{e/MWh} = \mathbf{13,846.28 \text{ tCO}_2\text{e}}$$

According to the AMS I.D. Version 17, the generic equation for the calculation of emission reduction is:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y	Emission reductions for the year y (tCO ₂ e)
BE_y	Baseline emissions for the year y (tCO ₂ e)
PE_y	Project emissions for the year y (tCO ₂ e)
LE_y	Leakage emissions for the year y (tCO ₂ e)

As demonstrated **LE_y** is “0 tCO₂/year” and **PE_y** is “0 tCO₂/year” for the proposed project activity. Therefore, **Emission Reductions** of the project is equal to above calculation;

$$ER_y = BE_y - PE_y - LE_y = 13,846.28 - 0 - 0 = \mathbf{13,846.28 \text{ tCO}_2\text{e/year}}$$

Starting date of the project activity is confirmed as 20/06/2014 through the provisional acceptance protocol of the project activity.

Years	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2014 (20/06/2014 - 31/12/2014)	6,448.95	0	0	6,448.95
2015	13,846.28	0	0	13,846.28
2016	13,846.28	0	0	13,846.28
2017	13,846.28	0	0	13,846.28
2018	13,846.28	0	0	13,846.28
2019	13,846.28	0	0	13,846.28
2020	13,846.28	0	0	13,846.28
2021	13,846.28	0	0	13,846.28
2022	13,846.28	0	0	13,846.28
2023	13,846.28	0	0	13,846.28

2024 (01/01/2024 - 20/06/2024)	7,397.33	0	0	7,397.33
Total	138,462.80	0	0	138,462.80

Based on the above assessment, the VVB hereby confirms that:

- (a) All assumptions and data used by the project participants are listed in the VCS-PD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PD;
- (c) All values used in the PD are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions and leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PD.

The formulas and factors used in the calculation of GHG emissions are found to be transparent and correct by the validation team. Statistics related to the national grid were taken from publicly available TEIAS, EMRA sources.

All data, parameters and their sources, available at validation for the ex-ante calculation of the Combine Margin Emission Factor have been validated by the baseline expert of the validation team to be conservative and appropriate.

3.2.7 *Methodology Deviations*

There are no methodological deviations applied to the project.

3.2.8 *Monitoring Plan*

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, and this parameter will be the basis for the emission reduction calculations.

According to the methodology AMS I.D. Version 17, the parameters used to calculate the power density of HEPPs also need to be monitored. The DOE hereby confirms that the monitoring plan complies with the requirements of the methodology.

Data and parameters available at validation

The Combined Margin emission factor is calculated ex-ante; the parameters used in the calculation of the emission factor are available at validation. The parameters used to calculate the power density of HEPPs also are available at validation.

The below table shows the data and parameters that are available at validation.

Parameter	Data Unit	Description	Source
EG_{gross,y}	GWh	Turkey's Gross Electricity Generated by primary energy sources (2008 - 2010).	TEIAS (Turkish Electrical Transmission Company) Annual development of Turkey's gross electricity generation of primary energy sources between 1975-2010, Annual development of electricity generation-consumption-losses in Turkey between 1984-2010. Available at : http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2011/istatistik%202011.htm
EG_y	GWh	Annual Net Electricity Generation of Turkey in year y (2008 - 2010).	TEIAS (Turkish Electrical Transmission Company) Annual development of electricity generation-consumption-losses in Turkey between 1984-2010. Available at : http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2011/istatistik%202011.htm
FC_{i,y}	Ton (m ³ for Natural Gas)	Amount of fossil fuel consumed in the project electricity system by generation sources in year y (2008 - 2010).	TEIAS (Turkish Electricity Transmission Company) Fuels consumed in thermal power plants in Turkey by the electricity utilities (2006-2010)
HV_{i,y}	TCal/Mass (TCal/Volume)	Heating values of fuels consumed for electricity generation by fuel type in year y (2008 - 2010).	TEIAS (Turkish Electricity Transmission Company) Heating values of fuels consumed in thermal plants in Turkey by the electricity utilities (2006-2010)
NCV_{i,y}	TJ/Ton (TJ/m ³ for Natural Gas)	Net calorific values of fuels consumed for electricity generation by fuel type in year y (2008 - 2010).	TEIAS (Turkish Electricity Transmission Company) Heating values of fuels consumed in thermal plants in Turkey by the electricity utilities (2006-2010)

Electricity Capacity Additions	-	Capacity addition to the national grid between 2009-2010, which comprises the 20% of the total electricity generation in 2010.	TEIAS, "10 Year Energy Generation Capacity Projection Report", 2010 (In Turkish). pp.85-100. Available at http://www.teias.gov.tr/KapasiteProjesi/siyonu.aspx
EF_{grid,CM,y}	tCO ₂ /MWh	Combined margin CO ₂ emission factor for grid connected power generation in year y (2008 - 2010).	Koroglu HEPP VCS PD-Baseline Calculations "Tool to calculate the emission factor for an electricity system"

Data and parameters monitored

Data / Parameter:	Electricity Generated by the Koroglu HEPP (EG_{Facility,y})
Data unit:	MWh/y
Description:	Net electricity supplied to the national grid by the Koroglu HEPP in year y. Electricity generation will be continuously measured by the power meters.
Source of data:	Monthly official TEIAS invoices.
Description of measurement methods and procedures to be applied	Continuously measured by TEIAS-approved power meters located at the grid interface (TEIAS substation). Measured data is stored at the PMUM web site, which is operated by the TEIAS. Monthly official TEIAS invoices will be used for calculating EG _y . As a note, monthly settlement notifications of PMUM consist of electricity production and withdrawn from the grid on an hourly basis. PMUM data will be used to calculate net amount of electricity generated which will be equal to the electricity supplied to the grid minus electricity withdrawn from the grid.
Frequency of monitoring/recording	Measurement will be continuous
Value applied:	26,130 MWh /year (expected)
Monitoring equipment	Monitoring equipment is the power meters located at the TEIAS substation. They will measure the amount of electricity supplied to the grid and withdrawn from the grid. One power meter will be the main one, and the other will serve as the backup. Power meters will be sealed by the TEIAS to prevent any possible interventions. Power meters will measure data continuously; however, readings will be on a monthly basis. Collected data will be stored at the PMUM by the TEIAS. Brand of power meter is ELSTER and main power meter number is 00484541 and backup power meter number is 00484542.
QA/QC procedures to be applied	PMUM settlement data will be used for crosschecking monthly TEIAS invoices.

Purpose of data	-
Calculation method	The difference between the amount of electricity supplied to the national grid and electricity drawn from the national grid to be used by the Koroglu facility will be provide the “net electricity generation”.
Comments	-

Data / Parameter:	CAP_{PJ}
Data unit:	MW
Description:	Installed capacity of the hydropower plant after the implementation of the project activity
Source of data:	Nameplates of the project turbines
Description of measurement methods and procedures to be applied	Reading the nameplates of the project turbines
Frequency of monitoring/recording	Annually
Value applied:	9.06 MWe
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	-

Data / Parameter:	A_{PJ}
Data unit:	m ²
Description:	Area of the Project reservoir measured on the surface of the water, after the implementation of the Project activity, when the reservoir is full.
Source of data:	Project Final Design drawings (Official detailed design document of the project) Koroglu HEPP Weir Layout KRG-UY-RG-02.pdf
Description of measurement methods and procedures to be applied	Koroglu HEPP Weir Layout KRG-UY-RG-02.pdf
Frequency of monitoring/recording	Annually

Value applied:	1,450 m ²
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	-

Monitoring plan given in VCS-PD, are in line with the monitoring requirements of the applied approved CDM methodology, AMS I.D. Version 17. Main parameter monitored in line with the methodology is the net electricity supplied to the grid, which will be the basis of the amount of emission reduction achieved by the project. Roles and responsibilities regarding monitoring have been given under section 4.3 of the VCS-PD v.6.1.

Regarding monitoring of the quantity of net electricity delivered to the grid ($EG_{\text{facility},y}$), the main source for the data has been determined as the Monthly official TEIAS invoices, PMUM (Market Financial Settlement Centre) web site records will be used as the basis for cross-checking.

The metering system is defined in the agreement as two groups: main meter and back up of the main meter. The design of the metering system is checked and approved by TEIAS before commissioning of the plant. The technical specifications of the power meters should comply with the Communiqué for Power Meters as announced by the EMRA for energy investors to comply with.

The specifications for power meters can be seen as below;

Specification	Main Meter	Back-up Meter
Brand	ELSTER	ELSTER
Type	Alpha A1500	Alpha A1500
Serial No	00484541	00484542
Accuracy Class	0.5S	0.5S

In case of the main meter has a breakdown, the readings of the back-up meter will be used. If both meters failed, the internal Supervisory Control and Data Acquisition System (SCADA) data will be used.

Power meters provide two types of data on an hourly basis. These are gross electricity generated and electricity consumed by the power plant. The difference between these two parameters provides the net electricity data.

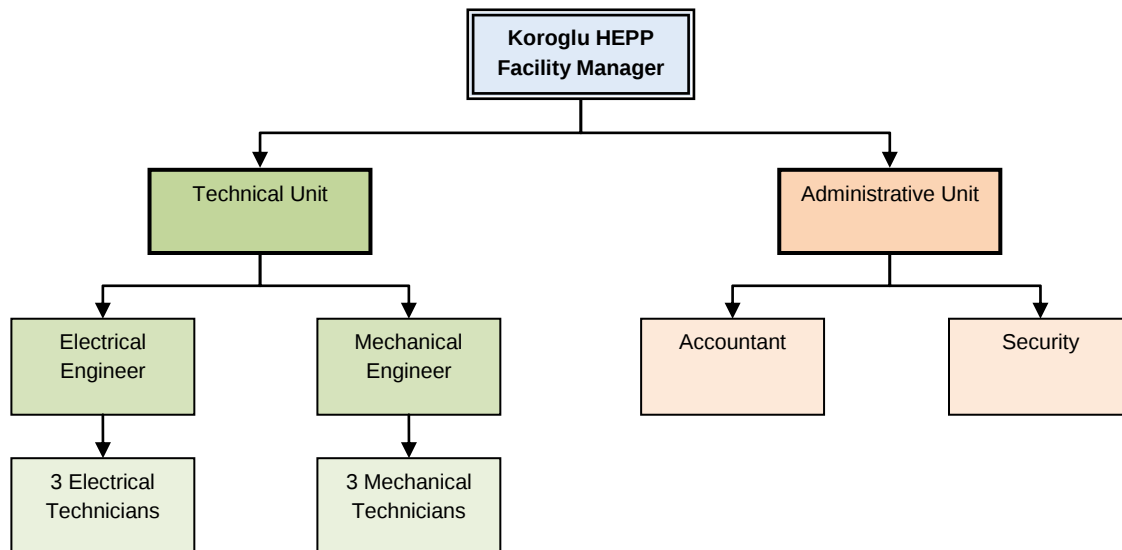
TEIAS officers read power meters on a monthly basis, then transmit the data electronically to the TEIAS network to be stored at the PMUM, which is an electronic medium operated by the TEIAS where electricity is purchased and sold by free market rules.

Based on this reading, a protocol form is printed out, which lists in detail the energy generation and consumption values in a similar way the PMUM web site lists them. Then, it is then signed by the site manager and the TEIAS officers.

The Project Owner will be responsible for the overall management of the monitoring procedures including recording, data collection, calculating emission reductions and project emissions.

Koroglu HEPP Plant Manager will be responsible for the implementation of the monitoring plan and preparation of the monitoring report. This task includes the archiving of TEIAS invoices, calculation of annual emission reduction for determining VCS VCUs, and crosschecking the TEIAS invoices data with the PMUM settlement web site for quality control purposes.

The monitoring team structure can be seen as below;



Calibration and maintenance of these two power meters are performed by the TEIAS once in a year as per the TEIAS System Usage Agreement rules.

By national law, the calibration and maintenance responsibilities regarding these meters belong solely to TEIAS. The meters are sealed by them and are never accessible by other parties. The periodical maintenance is performed once in a year as per the TEIAS System Usage Agreement.

The first calibration date of the meters is confirmed as 18/06/2013 through the Koroglu HEPP Meters First Index Protocol.

The VVB hereby confirms that the project participants are able to implement the monitoring plan.

3.3 Environmental Impact

The Environmental Impact Assessment (EIA) study for Koroglu HEPP was conducted in 2010, and Koroglu HEPP Project Description Report was prepared and submitted to the Ministry of Environment and Urbanization in accordance with the Annex II of the Regulation on Environmental Impact Assessment in Turkey that is issued on 17 July 2008 and published in the Official Gazette numbered 26939.

The project activity has received an EIA Exemption certificate dd. 13/09/2011 with decision number 161 from the Ministry of Environment and Forestry due to that its environmental impact is minimal. The exemption letter indicates that “EIA is not required” for Koroglu HEPP project.

In general, Koroglu HEPP project will produce benefits in many ways. First of all it is a renewable type; therefore, its impact on the environment is very limited as compared with the traditional thermal power plants which mainly dominate the Turkish grid system. Besides that, in the design of the project, special efforts spent to make the project in consistent with the sustainable development of the region. In other words, besides being environmentally friendly, project also will improve local people life through providing job opportunities.

As a renewable energy generation project, Koroglu HEPP does not affect the environment in a way that fossil fuelled power plants do. Project will contribute to the air quality by indirectly reducing the airborne pollutants that would otherwise be released by the thermal power plants in the national grid.

Mitigation measures will be taken to minimize possible negative environmental impacts, such as fish migration and sustaining the local habitat. Project will have a fish way, and will release a minimum amount of water to the river bed to sustain the existing aquatic life.

3.4 Comments by Stakeholders

Project owner contacted with local stakeholders to receive their comments about the project. First of all, face to face communication was realized with the local people living in the surrounding villages. Village people were informed about the project; and in return they stated their support to the project, believing that project will not deteriorate the environment and most importantly will contribute to the local economy. Village heads, called Muhktars, also stated their support the project. In general, project is welcomed by the local people.

All participants’ opinions were mostly positive about the project. The project proponent stated that people from local community were to be employed as much as possible.

In addition to generation of clean energy, Koroglu HEPP will provide economic and social benefits to its surrounding area. First of all, employment opportunities will be created during both construction and operational phases of the project activity. This will have a considerable impact on the income of the local people.

4 VALIDATION CONCLUSION

Bureau Veritas Certification has performed a validation of the “Koroglu Hydroelectric Power Plant”. The validation was performed on the basis of UNFCCC criteria, applied CDM Methodology AMS I.D. Version 17, VCS criteria and Turkey’s criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and internal technical review followed by the issuance of the final validation report and opinion.

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the VCS-PD provides analysis of investment barriers to determine that the project activity itself is not the baseline scenario.

As a hydro power production plant, the project is likely to result in reductions of GHG emissions partially. An analysis of the investment 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.

Project's technical aspects, annual expected generation amounts and ex-ante calculated grid combined emission factor has been confirmed by the validation team and the ex-ante calculations of the expected emission reductions (13,846.28 tonnes CO₂e) have been validated, therefore given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions (13,846.28 tonnes CO₂e) that has been validated in the VCS-PD v.6.1.

The review of the project design documentation (version 6.1) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfilment of stated criteria.

In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM Methodology AMS I.D. Version 17, VCS v.03.4 and the relevant host country criteria.

Bureau Veritas Certification thus requests registration of "Koroglu Hydroelectric Power Plant" as a VCS-VCU project activity.

5 REFERENCES

- Koroglu HEPP VCS PD Ver. 1.0 – 15/06/2012
- Koroglu HEPP VCS PD Ver. 2.0 – 04/10/2013
- Koroglu HEPP VCS PD Ver. 3.0 – 20/01/2014
- Koroglu HEPP VCS PD Ver. 4.0 – 03/09/2014
- Koroglu HEPP VCS PD Ver. 5.0 – 25/09/2014
- Koroglu HEPP VCS PD Ver. 5.1 – 30/09/2014
- Koroglu HEPP VCS PD Ver. 5.2 – 20/10/2014
- Koroglu HEPP VCS PD Ver. 5.3 – 22/11/2014
- Koroglu HEPP VCS PD Ver. 6.0 – 27/03/2015
- Koroglu HEPP VCS PD Ver. 6.1 – 07/04/2015
- Koroglu HEPP IRR Calculation Excel Sheet Rev. 01
- Koroglu HEPP IRR Calculation Excel Sheet Rev. 02
- Koroglu HEPP IRR Calculation Excel Sheet Rev. 03
- Koroglu HEPP IRR Calculation Excel Sheet Rev. 04
- Koroglu HEPP EF Calculation Rev. 01
- Koroglu HEPP EF Calculation Rev. 02
- Koroglu HEPP EF Calculation Rev. 03
- DSI Water Usage Agreement – 05/11/2008
- Project Introductory File – 25/08/2011
- EMRA Generation License – 25/12/2008
- EIA Positive Certificate – 13/09/2011
- Rev. Feasibility Report – October 2010
- Site Delivery Protocol – 22/11/2011

- Electrical-Mechanical Equipment Agreement – 11/10/2011
- ELSTER Calibration Records of the Meters – 18/06/2013
- Provisional Acceptance Protocol – 20/06/2014
- Board Decision Document – 30/09/2011
- Koroglu HEPP Weir Layout drawing with the number of KRG-UY-RG-02
- TEIAS Single Line Diagram
- Ecosystem Assessment Report

PERSONS INTERVIEWED

- **Mrs. Incigul Polat ERDOGAN** – Environment Engineer, MSc / Kilittasi Engineering Consulting and Construction Co. Ltd. – +90 312 472 77 67 – Ceyhun Atuf Kansu Cad., No:176/15, 06520, Balgat, Ankara / Turkey iperdogan@gmail.com
- **Mr. Yasar BOZKURT** – Site Manager / Koroglu HEPP (Etken Elektrik Enerji Üretim Ltd. Şti.) – In the Mediterranean region of Turkey in Kadirli District of Osmaniye Province / Turkey.

6. VALIDATION TEAM

Internal Technical Reviewer: Burcu Mutman – Environmental Engineer

Bureau Veritas Certification SAS – Internal Technical Reviewer

Burcu Mutman is an auditor for environment, safety and quality management systems. Has participated various online trainings, seminars and personal trainings on Gold Standard also participated in the Gold Standard Academy in 2009 and 2010.

Team Leader: Furkan Sadikoglu – Electrical and Electronics Engineer

Bureau Veritas Certification SAS – Lead Verifier

Furkan Sadıkoğlu is an Electrical & Electronics engineer. He has an experience in renewable energy and LED lightning sectors and he has over 2 years' experience in energy sectors. He has participated online seminars in the Gold Standard Academy in 2012 and 2013 and is a lead verifier for GHG emission reduction projects.

Team Member: Onur Yilmaz – Mechanical Engineer

Bureau Veritas Certification SAS – Verifier

Onur Yilmaz is a Mechanical Engineer and also Energy Manager as 5 years of consulting experience on energy efficiency. He has experience in conducting pre audits and audits in industrial and buildings establishments. He has also participated online seminars and trainings on Gold Standard.

Investment Analysis Specialists: Mr. Murat Gencer – Master of Economics

RiskTürk Software Development and Consultancy – Head of Financial Analysis Team

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

VALIDATION PROTOCOL

Table 1 Validation Requirements Based On the Voluntary Carbon Standard Version 03

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
1. VCS Program Specific Issues					
a. Are the VCS PD, monitoring reports, and other documents required under the VCS Program in English?	VCS Ver03	2.2	Documents have been prepared in English	OK	OK
2. Project Requirements					
a. General Requirements					
a. Have the project proponents 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 Ver03	3.1	Project applies the approved small scale CDM-methodology AMS-I.D.: "Grid connected renewable electricity generation", Version 17.0.	OK	OK
b. Grouped Projects					
a. Is this a grouped project?	VCS Ver03	3.4	PP as stated under section 1.2 that the project is not a grouped project	OK	OK
c. Content of the VCS PD					
a. Is the PD used as a basis for validation prepared in accordance with the latest template and guidance from the VCS?	VCS Ver03	3.19	1. VCS PD is not the latest template; 2. The header of the template has been erased, template should not be altered	CL01	OK
b. Are the followings provided at the cover page in a tabular format?	PD temp	Cover Page			

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
	Ver03				
i. Name of the project?	PD temp Ver03	Cover Page	Project name is given as Koroglu Hydroelectric Power Plant	OK	OK
ii. Version number of the VCS PD?	PD temp Ver03	Cover Page	Document is v.1.0	OK	OK
iii. The date of the document issued in DD-Month-YYYY format?	PD temp Ver03	Cover Page	VCS PD v.1.0 has been issued on 15/06/2012 and was submitted to the VVB on 21/11/2012	OK	OK
iv. Individual or entity that prepared the document?	PD temp Ver03	Cover Page	VCS PD prepared by Kilittasi Engineering Consulting and Construction Co. Ltd. .ltd has been repeated	CL02	OK
v. Physical address, telephone, email, website?	PD temp Ver03	Cover Page	Information is given as: Ceyhun Atuf Kansu Cad. No:176/15 06520 Balgat Ankara/TURKEY Tel: +90 312 472 77 67 Fax: +90 312 472 77 68 Email: iperdogan@gmail.com www.kilittasi.com.tr	OK	OK
c. Is a brief description of the project provided?	PD temp Ver03	1.1	A summary description of project is provided under section 1.1 of VCS PD v.1 Project is a greenfield HEPP, located on the SAvrün river and tributaries, implemented by ETKEN Elektrik Enerji Üretim Ltd. Sti. Consists of three weirs and has an installed capacity of 3 x 3.02 MW, aiming to replace fossil fuel		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			powered units in the national grid. Installed capacity is not stated in line with CDM requirements, i.e. General Guidelines to SSC CDM methodologies (Version 17), para 4.a and 4.b and related footnote 6. Please correct throughout document. Sources of certain given information not indicated. All information given VCS PD must be clearly referenced. Project site was visited on 20-21/12/2012.	CAR01	OK
d. Are the sectoral scope(s) applicable to the project, the AFOLU project category and activity type (if applicable), and whether the project is a grouped project indicated?	PD temp Ver03	1.2	VCS PD section 1.2 indicates project is of sectoral scope 1 and is not a grouped project	OK	OK
e. Are the contact information and roles/responsibilities for the project proponent(s) provided?	PD temp Ver03	1.3	In section 1.3 PP has been indicated as: ETKEN Elektrik Enerji Uretim Ltd.Sti. Contact Person: Mr. Aysun Baskan Energy Projects Coordinator Site Mah. Samanyolu Cad. Kerim Sk. No:2 Umraniye/ISTANBUL-TURKEY Tel: +90 216 533 81 81 Email: aysun@basarir.com Mr Baskan is the project coordinator.	OK	OK
f. Are the contact information and roles/responsibilities for any other entities	PD temp	1.4	The carbon consultant has been indicated as another entity under section 1.4:		

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
involved in the development of the project provided?	Ver03		Kilitasi Engineering Consulting & Construction Co. Incigul Polat Erdogan Environment Engineer, MSc. Managing Partner Ceyhun Atuf Kansu Cad. No:176/15 06520 Balgat Ankara/TURKEY Tel: +90 312 472 77 67 Fax: +90 312 472 77 68 Email: iperdogan@gmail.com Consultant name is not consistent with the cover page	CL03	OK
g. Is the project start date (the date on which the project began reducing or removing GHG emissions) indicated in day, month and year format?	PD temp Ver03	1.5	As project is in implementation phase, an expected commissioning date is given under section 1.5: 01/04/2013	OK	OK
h. Is the starting and ending date of the project crediting period indicated in day, month and year format?	PD temp Ver03	1.6	Section 1.6 indicates: Starting date of the crediting period has a typo End date given as 01/04/2023	CL04	OK
i. Is the total crediting period indicated? (VCS project crediting period: A maximum of ten years which may be renewed at most two times)	PD temp Ver03	1.6	Section 1.6 states that the total crediting period is 10 years renewable twice	OK	OK
j. Is the scale of the project indicated? (Projects: Less than or equal to 1,000,000 tCO ₂ e per year; and Mega projects: Greater than 1,000,000 tCO ₂ e per year)	PD temp Ver03	1.7	Section 1.7 states project scale: CDM: As small scale since <15 MWe and will remain under; !! Mind CAR01 VCS: as project since expected annual reductions are < 1 M tCO ₂	OK	OK
k. Are the estimated annual GHG emission	PD	1.7	Annual expectation of GHG reductions is		OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
reductions or removals during the project crediting period indicated in a tabular format?	temp Ver03		indicated as 14,237 tCO ₂ and 143,270 for the crediting period Start and end dates have not been given in line with the indicated crediting period start and end dates in the table.	CL05	
l. Is the description of the project activity(s) including the technologies or measures employed provided?	PD temp Ver03	1.8	Please mind CAR01 Please see CAR02 Referred rivers names are not in line with section 1.1	CAR02 CL06	OK OK
m. Is a description of how the project will achieve GHG emission reductions and/or removal enhancements provided?	PD temp Ver03	1.8	Project aims to replace fossil fuel units in the grid with renewably generated electricity.	OK	OK
n. Is the lifetime of the project activity(s) provided?	PD temp Ver03	1.8	Project lifetime is given 49 years	OK	OK
o. Is the project location and geographic boundaries (if applicable) provided?	PD temp Ver03	1.9	Project location depicted by figure 2 and 3 on the country and province. Coordinates of major structures given as (6 UTM): Main weir: 4168185 N – 251255 E Tyrol weir 1: 4167020 N – 250028 E Tyrol weir 2: 4167275 N – 250220 E Powerhouse: 4166175 N – 251310 E Site visit performed on 20-21/12/2012. Many structures were not implemented yet. Therefore the location of the main structures must be verified during verification site visit	FAR01	
p. Are the conditions prior to project initiation	PD	1.10	Project is a greenfield implementation.	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
provided?	temp Ver03				
q. Is it demonstrated that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction?	PD temp Ver03	1.10	It has not been demonstrated that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.	CAR03	OK
r. Does the VCS PD include identification of relevant local, regional and national laws, statutes and regulatory frameworks related to the project and demonstration of compliance with them?	PD temp Ver03	1.11	Relevant laws and regulations indicated as: Environmental Law, Environmental Impact Assessment Regulation, Electricity Market Law, Electricity License Regulation, Electricity Market Balancing and Conciliation Regulation, Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy, Energy Efficiency Law	OK	OK
a. Was evidence of proof of title provided?	PD temp Ver03	1.12.1	License was not identified uniquely i.e. license #.	CL07	OK
b. 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?	PD temp Ver03	1.12.2	PP has declared in section 1.12.2 that Koroglu HEPP project will not be used for compliance with an emissions trading program or to meet binding limits on greenhouse gas (GHG) emissions.	OK	OK
c. 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	PD temp Ver03	1.12.2	N/A	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
or for the purpose of demonstrating compliance with the binding limits that are in place in that jurisdiction or sector?					
d. Have the project(s) indicate whether the project has been registered, or is seeking registration under any other GHG programs?	PD temp Ver03	1.12.3	Not declared whether the project has been registered, or is seeking registration under any other GHG programs?	CL08	OK
e. If yes, have the project participants provided the registration number and details?	PD temp Ver03	1.12.3	n/a	OK	OK
f. Have the project(s) created other forms of environmental credit (for example renewable energy certificates)?	PD temp Ver03	1.12.4	PP declared that Koroglu HEPP project has not created another form of environmental credit or renewable energy certificate.	OK	OK
g. 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?	PD temp Ver03	1.12.4	N/A	OK	OK
h. Was the proposed project rejected by other GHG Programs?	PD temp Ver03	1.12.5	PP declared that did not receive any rejection from any other GHG programs.	OK	OK
i. If yes, have the project participants provided the relevant information?	PD temp Ver03	1.12.5	N/A	OK	OK
j. Is the additional information relevant to the project as following provided?	PD temp Ver03	1.13		OK	OK
i. Eligibility Criteria: Are the eligibility criteria for inclusion of new instances of each project activity identified for	PD temp Ver03	1.13	Project is not a part of a grouped project	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
grouped projects?					
ii. Leakage Management: Is a description of the leakage management plan and implementation of leakage and risk mitigation measures provided? (if applicable)	PD temp Ver03	1.13	Project is greenfield and utilizes new equipment hence L is neglected in line with the applied methodology AMS ID	OK	OK
iii. Commercially Sensitive Information: Is it indicated whether any commercially sensitive information has been excluded from the public version of the project description and briefly description of the items to which such information pertains provided?	PD temp Ver03	1.13	VCS standard v.3.3, 3.18.3 states: "Information in the project documents related to the determination of the baseline scenario, demonstration of additionality, and estimation and monitoring of GHG emission reductions and removals shall not be considered to be commercially sensitive and shall be provided in the public versions of the project documents."	CL09	OK
iv. Further Information: Is any additional relevant legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and/or temporal information that may have a bearing on the eligibility of the project, the net GHG emission reductions or removals, or the quantification of the project's net GHG emission reductions or removals provided?	PD temp Ver03	1.13	N/A	OK	OK
s. Are the title, reference and version number of the methodology(ies) applied to the project provided?	PD temp Ver03	2.1	Project applies approved small scale CDM-methodology AMS-I.D.: "Grid connected renewable electricity generation", Version 17.0. and the related tools: "Tool to calculate the emission factor for an electricity system" Version 2.2.1		OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
			"Tool for the demonstration and assessment of additionality", version 6.0.0 1. Utilized tool versions are not up to date. 2. Methodology requires "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" for project emissions. Not applied.	CAR05	
t. Have the project participants demonstrated and justified that the project activity(s) meets the applicability conditions of the methodology(s) applied to the project?	PD temp Ver03	2.2	Project is a greenfield renewable project implementation that will be connected to the national grid. Does not involve capacity additions, retrofit or replacement. It has been indicated for applicability condition 3 that the project does not have a reservoir. This contradicts with the power density calculations that are shown later. Please clarify if the project creates newly flooded land/volume or not and support this with objective evidence.	CAR06	OK
u. Is the project boundary defined in a tabular format?	PD temp Ver03	2.3	Project boundary is given in a tabular format under 2.3 CH4 is main emission source for hydro projects and is included in the boundary per requirements of ACM0002 on the subject.	CL10	OK
v. Are GHG sources, sinks and reservoirs identified for the project and baseline scenarios? (including leakage if applicable)	PD temp Ver03	2.3	Please see CL10	CL10	OK
w. Is it described how the baseline scenario is identified?	PD temp	2.4	Baseline scenario indicated in section 2.4 is not in line with the applied methodology. Please	CAR07	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
	Ver03		check text		
x. Is the justification of the baseline scenario is provided?	PD temp Ver03	2.4	A justification that the energy grid, energy need and the tendency for fossil powered plants are included.	OK	OK
y. Has the additionality of the project activity been demonstrated and assessed in accordance with the applied methodology?	PD temp Ver03	2.5	Tool to for the Demonstration and Assessment of Additionality Version 6.0.0 has been utilized. It has not been indicated why the first alternative is not found to be realistic and plausible. Please also see CAR04 Please provide objective evidence, valid at the time of investment decision, to validate the IRR inputs.	CL11 CAR04	OK OK
z. Have the project proponents provided and justified methodology deviations?	PD temp Ver03	2.6	No deviations were reported	OK	OK
aa. Have the project proponents a description of the procedure for quantification of the baseline emissions and/or removals including all relevant equations?	PD temp Ver03	3.1	Tool to calculate the emission factor for an electricity system, Version 02.2.1 was applied following the steps Please see CAR08 regarding baseline calculations	CAR08	OK
bb. Have the project proponents a description of the procedure for quantification of the project emissions and/or removals including all relevant equations?	PD temp Ver03	3.2	1. Referred reservoir area is not justified. 2. PD calculation is not shown 3. CO2 emissions not taken into account in line with paragraph 21 of applied methodology	CAR09	OK
cc. Have the project proponents a description of the procedure for quantification of the leakage emissions and/or removals including all	PD temp Ver03	3.3	Equipment are new and are not transferred, therefore N/A	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
relevant equations?					
dd. Have the project proponents a description of the procedure for quantification of the net GHG emission reductions and removals including all relevant equations?	PD temp Ver03	3.4	Regarding section 3.4: 1. Procedure and calculations for quantification of net GHG emission reductions and removals has not been described. 2. Table is empty.	CL12	OK
ee. Are the ex ante calculation (estimate) of baseline emissions/removals, project emissions/removals, leakage emissions and net emission reductions and removals provided in a tabular format?	PD temp Ver03	3.4	Please see above	OK	OK
ff. Are data and parameters available at the validation described in the tabular form including:	PD temp Ver03	4.1		OK	OK
i. Data unit/parameter?	PD temp Ver03	4.1	Given	OK	OK
ii. Description?	PD temp Ver03	4.1	Given	OK	OK
iii. Source of data?	PD temp Ver03	4.1	Given	OK	OK
iv. Value applied?	PD temp Ver03	4.1	Referenced to relevant annex.	OK	OK
v. Justification of choice of data or	PD	4.1	Given	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
description of measurement methods and procedures applied?	temp Ver03				
vi. Any comment?	PD temp Ver03	4.1	No comments	OK	OK
gg.Are data and parameters monitored subsequent to validation described in the tabular form including:	PD temp Ver03	4.2		OK	OK
i. Data unit/parameter?	PD temp Ver03	4.2	1. Parameters required by "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" no included please do. 2. Parameters required for power density verification not included, kindly do.	CAR10	OK
ii. Data unit?	PD temp Ver03	4.2	Unit of EGfacility, y is not in line with the applied methodology.	CL13	OK
iii. Description?	PD temp Ver03	4.2	Given,	OK	OK
iv. Source of data?	PD temp Ver03	4.2	Source of data of EG fac. Is determined as PMUM records	OK	OK
v. Description of measurement methods and procedures to be applied?	PD temp Ver03	4.2	Please clarify if measurement is continuous?	CL14	OK
vi. Frequency of monitoring/recording?	PD temp	4.2	Please clarify if monitoring and recording are both monthly?	CL14	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
	Ver03				
vii. Value applied?	PD temp Ver03	4.2	In line with license and FSR, OK	OK	OK
viii. Monitoring equipment?	PD temp Ver03	4.2	Please clarify specification requirements for the equipment	CL15	OK
ix. QA/QC procedures to be applied?	PD temp Ver03	4.2	Given	OK	OK
x. Calculation method?	PD temp Ver03	4.2	Please indicate how the data for the parameter will be calculated.	CL16	OK
xi. Any comment?	PD temp Ver03	4.2	No comments included.	OK	OK
hh. Is the monitoring plan described?	PD temp Ver03	4.3	A description of the monitoring plan is included.	OK	OK
ii. Are the organizational structure, responsibilities and competencies of the monitoring plan identified?	PD temp Ver03	4.3	Indicated.	OK	OK
jj. Are the methods for generating, recording, storing, aggregating, collating and reporting data on monitored parameters described?	PD temp Ver03	4.3	Indicated	OK	OK
kk. Are the procedures for handling internal auditing and non-conformities described?	PD temp	4.3	N/A	OK	OK

CHECKLIST QUESTION	Ref.	item	COMMENTS	Draft Concl	Final Concl
	Ver03				
ll. Are the line diagrams used to display the GHG collection and management system? (optional)	PD temp Ver03	4.3	No diagram has been provided	OK	OK
mm. Was a summary of environmental impact assessment carried out with respect to the project provided? (if applicable)	PD temp Ver03	5	EIA exemption # 161 is dated 13/09/2011, section 5 indicates a different date.	CL17	OK
nn. Were relevant outcomes from stakeholder consultations and mechanisms for on-going communication provided?	PD temp	6	Please revise section 6	CL18	OK

Table 2 Validation requirements based on the Clean Development Mechanism Validation and Verification Manual (Version 01.2) and methodology AMS I.D (version 17) – “Grid connected renewable electricity generation”

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
3. Approval			<i>COUNTRY A (India)</i>	<i>COUNTRY B (Not applicable)</i>		
a. Have all Parties involved approved the project activity?	VVM	44	VCS Project: N/A		OK	OK
b. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval? (If yes, provide the reference of the letter of approval, any supporting documentation, and specify if the letter was received from the project participatn or directly from the DNA)	VVM	45	VCS Project: N/A		OK	OK
c. Does the letter of approval from DNA of each Party involved:	VVM	45	VCS Project: N/A		OK	OK
i. confirm that the Party is a Party of the Kyoto Protocol?	VVM	45.a	VCS Project: N/A		OK	OK
ii. confirm that participation is voluntary?	VVM	45.b	VCS Project: N/A		OK	OK
iii. confirm that, in the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country?	VVM	45.c	VCS Project: N/A		OK	OK
iv. Refers to the precise proposed CDM project activity title in the PDD being submitted for registration?	VVM	45.d	VCS Project: N/A		OK	OK
d. Is(are) the letter(s) of approval unconditional	VVM	46	VCS Project: N/A		OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
with respect to (i) to (iv) above?						
e. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA) and is valid for the CDM project activity under validation?	VVM	47	VCS Project: N/A		OK	OK
f. Is there doubt with respect to the authenticity of the letter of approval?	VVM	48	VCS Project: N/A		OK	OK
g. If yes, was verified with the DNA that the letter of approval is authentic?	VVM	48	VCS Project: N/A		OK	OK
4. Participation			<i>PP1 (Name of PP1)</i>	<i>PP2 (Name of PP2)</i>		
a. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	VCS Project: N/A		OK	OK
b. Has the participation of the project participants in the project activity been approved by a Party to the Kyoto Protocol?	VVM	51	VCS Project: N/A		OK	OK
c. Are the project participants listed in tabular form in section A.3 of the PDD?	VVM	52	VCS Project: N/A		OK	OK
d. Is the information in section A.3 consistent with the contact details provided in annex 1 of the PDD?	VVM	52	VCS Project: N/A		OK	OK
e. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation? (Provide reference of the approval document for each of the project participants)	VVM	52	VCS Project: N/A		OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
f. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	VCS Project: N/A	OK	OK
g. Has the approval of participation issued from the relevant DNA?	VVM	53	VCS Project: N/A	OK	OK
h. Is there doubt with respect to (g) above? L	VVM	53	VCS Project: N/A	OK	OK
i. If yes, was verified with the DNA that the approval of participation is valid for the proposed project participant?	VVM	53	VCS Project: N/A	OK	OK
5. Project desing document					
a. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM	55	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
b. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
c. In CDM-SSC-PDD section A.1 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Title of project	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. Current version number and date of document	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
d. In CDM-SSC-PDD section A.2 are following provided (max. one page)?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. A brief description of the project activity covering purpose which includes the scenario existing prior to the start of project, present scenario and baseline.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. Explanation how the GHG emission reductions are effected.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. The PP's view on the contribution of project activity to sustainable development.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iv. Are there any changes/modifications compared to the webhosted PDD?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
e. In CDM-SSC-PDD section A.3 are following provided in the tabular format?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. List of project participants and Party(ies)	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. Identification of host party	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. Indication whether the Party wishes to be considered as project participant	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
f. In CDM-SSC-PDD section A.4.1 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Technical description, location, host party(ies) and address as required?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. Detailed physical location with unique identification of the project activity (eg. Longitude/latitude) – not to exceed one page	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
g. In CDM-SSC-PDD section A.4.2 are following provided	EB 34	Ann 09			
i. the list of categories of project activities as per the latest categorization of Appendix B to the simplified modalities and procedures for small-scale CDM project activities, hereafter referred to as Appendix B. (refer http://cdm.unfccc.int/methodologies/SSCM methodologies)	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. A description of how environmentally safe and sound technology and know how is being applied by the project activity inter alia technology transfer to the Host Party(ies) for application in the project activity	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
h. In CDM-SSC-PDD section A.4.3 is the estimation of emission reductions provided,	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
as requested, in a tabular format?			of this protocol		
i. In CDM-SSC-PDD section A.4.4 is information regarding Public funding provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
j. In CDM-SSC-PDD section A.4.5 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. Indication if there is a registered small-scale project activity under the CDM or an application to register another small-scale project activity under the CDM	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
a. With the same project participants	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
b. Registered within the period of 2 years	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
c. Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity under the CDM at the closest point.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. Are there any changes/modifications compared to the webhosted PDD?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
k. In CDM-SSC-PDD section B.1 is the	EB	Ann	VCS Project. VCS-PD has been assessed	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
approved baseline and monitoring methodology and version no provided?	34	09	according to VCS requirements in Table 1.2.c of this protocol		
I. In CDM-SSC-PDD section B.2 are the following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Justification of the choice of project activity and category?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. Demonstration that the project activity qualifies as a small-scale project activity and that it will remain under the limits of small-scale project activity types during every year of the crediting period as per the following: For Type I : the capacity of the proposed project activity will not exceed 15 MW (or an appropriate equivalent); For Type II: the annual energy savings on account of efficiency improvements will not exceed 60 GWh (or an appropriate equivalent) in any year of the crediting period; For Type III: the estimated emission reductions of the project activity will not exceed 60 ktCO ₂ e in any year of the crediting period.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
m. In CDM-SSC-PDD section B.3 is the project boundary of the project activity, based on the guidance of the applicable project category, provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK

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n. In CDM-SSC-PDD Section B.4 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. The baseline for the proposed project activity with reference to the chosen project category.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. Justification of key assumptions and rationales	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. Transparent illustration of all data used to determine the baseline emissions (variables, parameters, data sources etc)	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iv. Are there any changes/modifications compared to the webhosted PDD?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
o. In CDM-SSC-PDD section B.5 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Explanation that the proposed project activity is additional as per options provided under Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. National policies and circumstances relevant to the baseline of the proposed project activity	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. Evidence that the incentive from the CDM	EB	Ann	VCS Project. VCS-PD has been assessed	OK	OK

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was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of validation. (this is part of the large scale project guidelines. It is better to be retained)	34	09	according to VCS requirements in Table 1.2.c of this protocol		
p. In CDM-SSC-PDD section B.6.1 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
(i) Explanation on how the procedures, in the approved project category to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
(ii) Clearly stating of which equations will be used in calculating emission reductions.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
(iii) Explanation and justification of all relevant methodological choices, including: where the category provides different options to choose from; where the category provides for different default values.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
q. In CDM-SSC-PDD section B.6.2 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. A compilation of information on the data	EB	Ann	(a) VCS Project. VCS-PD has been	OK	OK

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and parameters that are not monitored but determined upfront so as to be available for validation.	34	09	assessed according to VCS requirements in Table 1.2.c of this protocol		
ii. The actual value applied.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. Explanation and justification for the choice of the source of data.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iv. Clear and transparent references or additional documentation in Annex 3.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
v. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement results.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
r. In CDM-SSC-PDD section B.6.3 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. A transparent ex ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period,	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK

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applying all relevant equations provided in the approved methodology.					
ii. Documentation how each equation is applied, in a manner that enables the reader to reproduce the calculation	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. Additional background information and or data in Annex 3, including relevant electronic files (i.e. spreadsheets)	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iv. Emission reduction calculations for each component are provided separately if more than one component activity is applied	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
s. In CDM-SSC-PDD section B.6.4 are the results of the ex ante estimation of emission reductions for all years of the crediting period, in a tabular format, provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
t. In CDM-SSC-PDD section B.7.1 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. For each below parameter the following information, using the table provided:	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
a. The source(s) of data that will be actually used for the proposed project	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c	OK	OK

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activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred			of this protocol		
b. Where data or parameters are supposed to be measured, specify the measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person/entity that should undertake the measurements and what is the measurement interval; (i) A description of the QA/QC procedures (if any) that should be applied; (ii) Where relevant: any further comment. Provide any relevant further background documentation in Annex 4.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. A detailed description of the monitoring plan.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
a. The operational and management	EB	Ann	VCS Project. VCS-PD has been assessed	OK	OK

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structure that the project operator will implement in order to monitor emission reductions and any leakage effects generated by the project activity	34	09	according to VCS requirements in Table 1.2.c of this protocol		
b. These responsibilities for and institutional arrangements for data collection and archiving	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
c. Does the monitoring plan reflect good monitoring practice appropriate to the type of project activity	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
d. Relevant further background information in Annex 4	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
u. In CDM-SSC-PDD section B.8 are following provided	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY.	EB 34	Ann 09	(a) VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. Indicated if the person/entity is also a project participant listed in Annex 1	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK

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v. In CDM-SSC-PDD section C.1.1 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. The starting date of a CDM project activity is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun (EB33, Para 76/CDM Glossary of terms/EB41, Para 67)	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. A description of how this start date has been determined, and a description of the evidence available to support this start date	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. If this starting date is earlier than the date of publication of the CDM-SSC-PDD for global stakeholder consultation by a DOE, does Section B.5 above contain a description of how the benefits of the CDM were seriously considered prior to the starting date (EB41, Para 68).? (though this is in guideline for large scale projects, it is advisable to maintain this for small scale projects as well)	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
w. In CDM-SSC-PDD section C.1.2 is the expected operational lifetime of the project activity in years and months provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
x. In CDM-SSC-PDD section C.2 is it statet whether the project activity will use a	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c	OK	OK

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renewable or a fixed crediting period and completed C.2.1 or C.2.2 accordingly?			of this protocol		
y. In CDM-SSC-PDD section C.2.1 is it indicated that each crediting period shall be at most 7 years and may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the Executive Board that the original project baseline is still valid or has been updated taking account of new data where applicable?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
z. In CDM-SSC-PDD section C.2.1.1 are the dates in the following format: (DD/MM/YYYY) provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
aa. In CDM-SSC-PDD section C.2.1.2 is the length of the first crediting period in years and months?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
bb. In CDM-SSC-PDD section C.2.2 is it indicated fixed crediting period at most ten (10) years	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
cc. In CDM-SSC-PDD section C.2.2.1 are the dates in the format (DD/MM/YYYY) provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
dd. In CDM-SSC-PDD section C.2.2.2 is the length of the crediting period in years and months provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ee. In CDM-SSC-PDD section D.1 is the documentation on the analysis of the	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c	OK	OK

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environmental impacts, if required by Host Party, provided?			of this protocol		
ff. In CDM-SSC-PDD section E.1 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. The process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
iii. The local stakeholder process has been completed before submitting the proposed project activity to the DOE for validation	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
gg. In CDM-SSC-PDD section E.2 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Local stakeholders that have made comments identified.	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK

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			of this protocol		
ii. A summary of these comments	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
hh. In CDM-SSC-PDD section E.3 is and explanation of how due account have been taken of comments received from local stakeholders provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. In CDM-SSC-PDD Annex 1 are following provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
i. Contact information of project participants	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ii. For each organisation listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
jj. In CDM-SSC-PDD Annex 2 is information from Parties included in Annex I on sources of public funding for the project activity which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK

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kk. In CDM-SSC-PDD Annex 3 is the background information used in the application of the baseline methodology provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
ll. In CDM-SSC-PDD Annex 4 is the background information used in the application of the monitoring methodology provided?	EB 34	Ann 09	VCS Project. VCS-PD has been assessed according to VCS requirements in Table 1.2.c of this protocol	OK	OK
6. Project description					
a. Does the PDD contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation?	VVM	58	Section 1.1 and 1.8 of PD states: Project is a greenfield HEPP project at Kadirli/Osmaniye, with a main weir and two additional tyrolean weirs to derive the waters of a tributary. 128 m gross head. 3 x 3.02 MWe Francis turbines to generate an estimated 26.13 GWh/y to the Sayan HEPP TS. 49 year operational lifetime.	OK	OK
b. Is the description of the proposed CDM project activity as contained in the PDD:	VVM	59			
i. sufficiently covering all relevant elements?	VVM	59	Sufficient detail given	OK	OK
ii. accurate?	VVM	59	Stated info in line with up to date PIF	OK	OK
iii. providing the reader with a clear understanding of the nature of the proposed CDM project activity?	VVM	59	Location, purpose, technical specs have been provided clearly	OK	OK
iv. Are there any changes/modifications compared to the webhosted PDD?	VVM	59	N/A	OK	OK
c. Is the proposed CDM project activity in existing facilities or or utilizing existing	VVM	60	No. Greenfield project.	OK	OK

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equipments?					
d. Is the CDM project activity one of the following types:	VVM	60			
i. Large scale?	VVM	60	9.06 < 15. NO	OK	OK
ii. Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year?	VVM	60	Non-bundled. 14,327 < 15,000. NO	OK	OK
iii. Bundled small scale projects, each with emission reductions not exceeding 15,000 tonnes?	VVM	60	Non-bundled	OK	OK
e. If yes to © and (d) above, was a physical site inspection conducted to confirm that the description in the PDD reflects the proposed CDM project activity, unless other means are specified in the methodology?	VVM	60	N/A	OK	OK
f. If yes to (d.iii) above, was the number of physical site visits based on sampling?	VVM	60	N/A	OK	OK
g. If yes is the sampling size appropriately justified through statistical analysis?	VVM	60	N/A	OK	OK
h. For other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?	VVM	61	A site visit was conducted on 20-21/12/2012 with Kilittasi and Etken representatives.	OK	OK
i. For all other proposed CDM project activities not referred to in paragraphs 59 – 61, was a physical site inspection conducted?	VVM	62	A site visit was conducted on 20-21/12/2012	OK	OK
j. If no, was it appropriately justified?	VVM	62	N/A	OK	OK

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k. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63	Greenfield project with new equipment	OK	OK
l. If yes, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	VVM	63	N/A	OK	OK
7. Baseline and monitoring methodology					
a. General requirement					
b. Do the the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board?	VVM	65	Project documents submitted to DOE on 21/11/2012 Project applied approved CDM methodology AMS-I.D.: "Grid connected renewable electricity generation", Version 17.0 Version is up to date "Tool for the demonstration and assessment of additionality", version 6.0.0 "Tool to calculate the emission factor for an electricity system" Version 2.2.1	CAR05	OK
c. Is the selected methodology applicable to the project activity?	VVM	66	Greenfield Hydro with PD > 10 Supplying to national grid Capacity < 15	OK	OK
d. Had the PP correctly applied the selected methodology?	VVM	66	This question will be answered after CARs/CLs relevant to the application of the methodology are closed.		
e. Had the selected methodology been	VVM	67	Project boundary has been depicted under	CL10	OK

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correctly applied with respect to project boundary?			section 2.3 of PD		
f. Had the selected methodology been correctly applied with respect to baseline identification?	VVM	67	Baseline scenario indicated in section 2.4 is not in line with the applied methodology. Please check text	CAR07	OK
g. Had the selected methodology been correctly applied with respect to Algorithms and/or formulae used to determine emission reductions?	VVM	67	This question will be answered after CARs/CLs relevant to the application of the methodology are closed.	OK	OK
h. Had the selected methodology been correctly applied with respect to additionality?	VVM	67	Additionality has been demonstrated with “Tool to for the Demonstration and Assessment of Additionality Version 6.0.0.	OK	OK
Has the general guidance to the small scale CDM methodologies, information on additionality (attachment A to appendix B) been applied correctly?	AMS	I D	No. Please consider EB 63 Annex 24 and state this in the PD.	CL19	OK
i. Had the selected methodology been correctly applied with respect to monitoring methodology?	VVM	67		CAR09 CAR10 CL13 CL14 CL15 CL16	OK OK OK OK OK OK
<i>b. Applicability of the selected methodology to the project activity</i>					
a. Is the selected baseline and monitoring methodology, previously approved by the CDM Executive Board, applicable to the project activity including that the used	VVM	68	“AMS-I.D. “Grid Connected Renewable Electricity Generation”, Ver.17 is the applicable approved methodology, and its version is the latest.	OK	OK

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version is valid?					
b. Has the DOE applied specific guidance provided by the CDM Executive Board in respect to the applicable approved methodology?	VVM	69	The applicability conditions of the methodology was validated through “AMS-I.D. <i>“Grid Connected Renewable Electricity Generation”</i> , Ver.17	OK	OK
c. Is the methodology correctly quoted?	VVM	70	Applicability conditions of the methodology considered under section 2.2 of PD.	CAR06	OK
d. Are the applicability conditions of the methodology met?	VVM	71			
i. Does the project activity comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to a national or a regional grid? Note: Project activities that displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit shall apply AMS-I.F.	AMS	I D	Hydro connected to single national grid	OK	OK
ii. Has the project participant provided justification in line with the applicability of methodology with respect to Table 2 of approved methodology ?	AMS	I D	Project produces electricity to be supplied to the single unified grid of Turkey	OK	OK
iii. Does the project activity a) install a new power plant at site where there was no renewable energy power plant operating prior to	AMS	I D	a) Greenfield plant as indicated by PIF, FSR and validated through the site visit.	OK	OK

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the implementation of the project activity (Greenfield plant); b) involve a capacity addition c) involve a retrofit of (an) existing plant(s) or d) involve a replacement of (an) existing plant(s)					
iv. For Hydro power plants with reservoirs, does it satisfy at least one of the following conditions (a) the project activity is implemented in an existing reservoir with no change in the volume of reservoir (b) the project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, is greater than 4 W/m ² © the project activity results in new reservoirs and the power density of the power plant is greater than 4 W/m ² .	AMS	I D	Project results in a PD > 4	OK	OK
v. Is the following guideline followed: (a) If the new unit has both renewable and non-renewable components (eg., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component.	AMS	I D	N/A	OK	OK

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(b) If the new unit co-fires fossil fuels, the capacity of the entire unit shall not exceed the limit of 15 MW.					
vi. Is the following guideline followed: Combined heat and power (co-generation) systems are not eligible under this category	AMS	I D	N/A	OK	OK
vii. Is the following guideline followed: In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct ⁶ from the existing	AMS	I D	N/A	OK	OK
viii. Is the following guideline followed: In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	AMS	I D	N/A	OK	OK
e. Is the project activity expected to result in emissions other than those allowed by the methodology?	VVM	71	Project emissions are limited to CO ₂ from the emergency generator and CH ₄ from the reservoir.	OK	OK
f. Is the choice of the methodology justified?	VVM	71	Applicability of methodology justified under section 2.2 of PD	OK	OK
g. Have the project participants shown that the project activity meets each of the applicability conditions or the approved	VVM	71	Applicability of methodology justified under section 2.2 of PD	OK	OK

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methodology?					
h. Have the project participants shown that the project activity meets each of the applicability conditions of any tool or other methodology component referred to the methodology?	VVM	71	Applicability of the relevant tools has not been included in the PD. Please do so. Please also mind CAR05.	CAR11	OK
i. Is the DOE, based on local and sectoral knowledge, aware that comparable information is available from sources other than that used in the PDD?	VVM	71	C/check sources are available.	OK	OK
j. If yes, was the PDD cross checked against the other sources to confirm that the project activity meets the applicability conditions of the methodology? (provide the reference to these choices)	VVM	71	Will be answered later	OK	OK
k. Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made?	VVM	72	Grid connection is validated through TEIAS data, grid connection agreement and project FSR. Project is greenfield as validated through the site visit and the relevant purchase contracts. Capacity is validated through the EMRA license as well as PIF and FSR and equipment contracts. However reservoir area has not been validated	CAR09	OK
l. If no, clarification of the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	72	N/A	OK	OK
m. If answer to (5.b.c) above is “no”, revision or	VVM	73		OK	OK

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deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?			N/A		
n. If yes to (5.b.k) and (5.b.l) above, a request for registration was submitted before the CDM Executive Board has approved the proposed deviation or revision?	VVM	74	N/A	OK	OK
c. Project boundary					
a. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity?	VVM	78	Please also depict and describe the physical delineation of the project boundary under section 2.3 of PD Please also see CL10	CL20 CL10	OK OK
i. Does the physical, geographical site of the renewable generation?	AMS	I D	Please see above	CL20	OK
b. Is the delineation in the PDD of the project boundary correct and include identification of all locations, processes and equipment including secondary equipment and associated processes such as logistics etc.?	VVM	79	Please see above	CL20	OK
c. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	VVM	79	Please see above	CL20	OK
d. Have changes been made to the project boundary in comparison to the webhosted PDD. If yes please comment on the reason	VVM	79	N/A	OK	OK

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for the changes.					
e. Have all sources and GHGs required by the methodology been included within the project boundary?	VVM	79	Please see CL 10	CL10	OK
f. Does the methodology allow project participant to choose whether a source or gas is to be included within the project boundary?	VVM	79	N/A	OK	OK
g. If yes, have the project participants justified that choice?	VVM	79	N/A	OK	OK
h. If yes, is the justification provided reasonable? (provide reference to the supporting documented evidence provided by the project participants)	VVM	79	N/A	OK	OK
d. Baseline identification					
a. Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM	81	The VCS-PD identifies the baseline as “the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants which are mainly fired by fossil fuel.” Please see CAR07	CAR07	OK
b. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	82	The methodology contains a single baseline scenario: “The baseline scenario is that the 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	OK	OK

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			addition of new generation sources into the grid.”		
i. Is the following guideline followed: Is the project activity new grid-connected renewable power plant/unit and hence the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources.	AMS	I.D	Please see CAR07	CAR07	OK
ii. Is the baseline emissions calculated as the product of electrical energy baseline EGBL, y expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission $BE_y = EGBL_y * EF_{CO2\ grid_y}$	AMS	I.D	Depicted so under section 3.1 of PD	OK	OK
iii. Is the Emission Factor calculated in a transparent and conservative manner as follows: (a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the .Tool to calculate the Emission Factor for an electricity system.. OR (b) The weighted average emissions (in t CO2/MWh) of the current generation mix.	AMS	I.D	Option A: combined margin has been preferred as shown under section 3.1 of PD	OK	OK

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The data of the year in which project generation occurs must be used. Calculations shall be based on data from an official source (where available) and made publicly available.					
iv. Is the following guideline followed: - In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. - If the recovered methane is used for electricity generation for supply to a grid then the baseline shall be calculated in accordance with paragraphs below else use other applicable type I methodologies such as AMS-IA or AMS-I.F. - If the recovered methane is used for heat generation or cogeneration it is eligible under category I.C.	AMS	I.D	Greenfield hydro - N/A	OK	OK
v. Is the following guideline followed for project activities that involve retrofits or replacements of an existing facility for renewable energy generation: - The baseline scenario is the continuing operation of the existing plant. - The methodology uses historical electricity generation data to determine the	AMS	I.D	Greenfield hydro - N/A	OK	OK

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electricity generation of the existing plant in the baseline scenario, assuming that the historical situation observed prior to the implementation of the project activity would continue. In the absence of the CDM project activity, the existing facility would continue to provide electricity to the grid BL retrofit y EG, at historical average levels EGhistorical, y until the time at which the electrical generation facility would be likely to be replaced or retrofitted in the absence of the CDM project activity (DATE _{BaselineRetrofit}). From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and baseline electricity production is assumed to equal the project.s net electricity production and no emission reductions are assumed to occur.					
vi. Is the following guideline followed for Retrofit/capacity addition of hydro, solar, wind, geothermal, wave and tidal plant–: – Use of standard deviation for calculating baseline electricity generation–. – A minimum of 5 years (60 months) (excluding abnormal years) of historical generation data is required in the case of hydro facilities and for other facilities a minimum	AMS	I.D	Greenfield hydro - N/A	OK	OK

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of 3 years (36 months) data is require–. – In the case that 5 years of historical data are not availab–e – e.g., due to recent retrofits or exceptional circumstance–8 – a new methodology or methodology revision shall be propose–. – In the case of wind, solar, wave or tidal power plants, the electricity produced by the added power plant(s) or unit(s) could be directly metered and used to determine EG BL,y. provided that the electricity produced by the added power plant(s) or unit(s) addition is separately metere–. – Project activities for capacity addition in hydro or geothermal shall use equation 3 replacing subscript .retrofit. with .capacity addition.					
vii. Is the following guideline followed for Retrofit renewable energy units other than hydro, solar, wind, geothermal, wave and tidal plants: Baseline emissions are calculated as: $BE_{\text{retrofit}, \text{CO}_2, y} = (EG_{\text{PJ}, \text{retrofit}-y} - EG_{\text{BL}, \text{retrofit}, y}) * EF_{\text{CO}_2}$ EG historic–I – A minimum of 3 years of data is required. In the case that 3 years of historical data are not available 9- e.g., due to recent retrofits or exceptional	AMS	I.D	Greenfield hydro - N/A	OK	OK

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circumstances – a new methodology or methodology revision shall be proposed					
viii. Is the requirements concerning demonstration of the remaining lifetime of the replaced equipment met as described in the general guidelines to SSC methodologies? Note: If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e., the time when the affected systems would have been replaced in the absence of the project activity.	AMS	I.D	Greenfield hydro - N/A	OK	OK
ix. Is the following guideline followed for Capacity addition with renewable energy units other than hydro, solar, wind, geothermal, wave and tidal plants: - The baseline scenario is the existing facility that would continue to supply electricity to the grid at historical levels, until the time at which the generation facility would likely be replaced or retrofitted ($DATE_{BaselineRetrofit}$). - If the existing units shut down, are derated, or otherwise become limited in production, the project activity should not get credit for generating electricity from the	AMS	I.D	Greenfield hydro - N/A	OK	OK

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same renewable resources that would have otherwise been used by the existing units (or their replacements).					
x. Does project activity involve co-firing ? If yes, the quantities and types of biomass and biomass to fossil fuel ratio to be used during crediting period is explained and documented transparently and presented in PDD ? Are ex ante estimation of these values provided in the PDD ?	AMS	I D	Greenfield hydro - N/A	OK	OK
c. Does the selected methodology require use of tools (such as the “Tool for the demonstration and assessment of additionality” and the “Combined tool to identify the baseline scenario and demonstrate additionality”) to establish the baseline scenario?	VVM	81	NO, Methodology dictates the baseline scenario	OK	OK
d. If yes, was the methodology consulted on the application of these tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM	82	N/A	OK	OK
e. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	83	No	OK	OK
f. If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the	VVM	83	N/A	OK	OK

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methodology reasonable in the context of the proposed CDM project activity?					
g. Has any reasonable alternative scenario been excluded?	VVM	83	All credible and realistic alternatives have been discussed	OK	OK
h. Is the baseline scenario identified reasonably supported by:	VVM	84	Applied methodology dictates the baseline scenario	OK	OK
i. Assumptions?	VVM	84	N/A	OK	OK
ii. Calculations?	VVM	84	N/A	OK	OK
iii. Rationales?	VVM	84	N/A	OK	OK
i. Are the documents and sources referred to in the PDD correctly quoted and interpreted?	VVM	84	N/A	OK	OK
j. Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available? (identify the sources)	VVM	84	N/A	OK	OK
k. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	85	Baseline scenario has been determined by the applied methodology as there is only one scenario	OK	OK
l. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	85	N/A	OK	OK
m. Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the	VVM	86	Current status and future projections regarding the Turkish national grid has been included from official sources, describing the activities that would replace the proposed project activity.	OK	OK

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absence of the proposed CDM project activity?					
<i>e. Algorithms and/or formulae used to determine emission reductions</i>					
a. Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring?	VVM	89	"Tool to calculate the emission factor for an electricity system, Version 02.2.1 has been used to calculate the grid emission factor and the formulae of the methodology have been followed.	OK	OK
b. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	90	Please see CAR08	CAR08	OK
i. Have project emissions considered as described in recent version of ACM0002 followed for: - Emissions related to the operation of geothermal power plants; - Emissions from water reservoirs of hydro power plants.	AMS	I.D	Please see CAR09	CAR09	OK
ii. Is leakage considered, if the energy generating equipment is transfereed from another activity	AMS	I.D	Leakage is zero in line with the methodology's guidance	OK	OK
iii. Is emission reduction calculated as per equation $ER_y = BE_y - PE_y - LE_y$	AMS	I.D	Please see CL12	CL12	OK
c. Does the methodology provide for selection between different options for equations or parameters?	VVM	90	Will be answered after CAR08 is closed	OK	OK
d. If yes, has adequate justification been	VVM	90		OK	OK

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provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)?			Will be answered after CAR08 is closed		
e. If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	90	Will be answered after CAR08 is closed	OK	OK
f. Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	91	Will be answered after CAR08 is closed	OK	OK
g. If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions:	VVM	91	Will be answered after CAR08 is closed	OK	OK
i. Appropriate and correct?	VVM	91	Will be answered after CAR08 is closed	OK	OK
ii. Applicable to the proposed CDM project activity?	VVM	91	Will be answered after CAR08 is closed	OK	OK
iii. Resulting in a conservative estimate of the emission reductions?	VVM	91	Will be answered after CAR08 is closed	OK	OK
h. Will data and parameters be monitored on implementation and hence become available only after validation of the project activity?	VVM	91	Will be answered after CAR08 is closed	OK	OK
i. If yes, are the estimates provided in the PDD for these data and parameters reasonable?	VVM	91	Will be answered after CAR08 is closed	OK	OK
8. Additionality of a project activity					
a. Does the PDD describe how a proposed CDM project activity is additional?	VVM	94	Additionality has been demonstrated through "Tool to for the Demonstration and Assessment of Additionality Version 6.0.0."	OK	OK

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b. Were the following steps of the tool to assess additionality used:	EB 39	Ann 10		OK	OK
i. Identification of alternatives to the project activity?	EB 39	Ann 10	Alternatives (3) have been determined and justified under section 2.5 of the PD	OK	OK
ii. 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?	EB 39	Ann 10	Investment analysis has been applied	OK	OK
iii. Barriers analysis?	EB 39	Ann 10	N/A	OK	OK
iv. Common practice analysis?	EB 39	Ann 10	Common practice analysis has not been applied in line with the requirements of the EB69 Annex 8 v.02.0	CAR12	OK
c. In step 1 (i) have all the sub-steps as below followed?	EB 39	Ann 10		OK	OK
(i) Sub-step 1a: Define alternatives to the project activity	EB 39	Ann 10	Proposed project implemented not as a VCS project, continuation of the existing situation and implementation of the project with other renewable energy sources were defined as alternatives	OK	OK
(ii) Sub-step 1b: Consistency with mandatory laws and regulations	EB 39	Ann 10	Applicable laws and regulations have been tabulated in the PD in section 1.11 table 2 and alternatives are consistent with these OK Table 2 referred in substep 1b is in 1.11 not 1.10.	CL21	OK
d. Have the following alternatives been included while defining alternatives as per	EB 39	Ann 10		OK	OK

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sub-step 1a?					
(a) The proposed project activity undertaken without being registered as a CDM project activity;	EB 39	Ann 10	Alternative 1	OK	OK
(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;	EB 39	Ann 10	Alternatie 2. Wind solar and geothermal plants with similar capacity was considered and was found unrealistic since all three are dependant on availability of natural resources	OK	OK
(c) If applicable, continuation of the current situation.	EB 39	Ann 10	Alternative 3	OK	OK
e. Has project participant included the technologies, practices that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity that have been implemented previously or are currently introduced in relevant country?	EB 39	Ann 10	Alternatie 2. Wind solar and geothermal plants with similar capacity was considered and was found unrealistic since all three are dependant on availability of natural resources	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.	EB 39	Ann 10	As alternative 1 isn't financially feasible as demonstrated by investment analysis, 2 isn't applicable as it isn't realistic at project area due to unavailability of wind, solar. Alternative 3 is baseline scenario and is realistic and credible.	OK	OK
g. Is the alternative(s) in compliance with all	EB	Ann		OK	OK

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mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution.?	39	10	Alternative 3 is in compliance with all relevant laws and regulations.		
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?	EB 39	Ann 10	N/A	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.	EB 39	Ann 10	Kindly indicate the outcome of step 1 here: stating the realistic and credible scenario that is in compliance with the relevant laws and regulations.	CL22	OK
j. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?	EB 39	Ann 10	PP has applied ONLY step 2	OK	OK
k. In step 2, have all the sub-steps as below	EB	Ann			

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been followed?	39	10			
(a) Sub-step 2a: Determine appropriate analysis method;	EB 39	Ann 10	Option iii benchmark analysis has been chosen	OK	OK
(b) Sub-step 2b: Option I. Apply simple cost analysis;	EB 39	Ann 10	N/A	OK	OK
(c) Sub-step 2b: Option II. Apply investment comparison analysis;	EB 39	Ann 10	N/A	OK	OK
(d) Sub-step 2b: Option III. Apply benchmark analysis;	EB 39	Ann 10	This option is selected. Benchmark IRR was determined as 15%, from a MoE&U report	OK	OK
(e) Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III);	EB 39	Ann 10	Please see CAR04	CAR04	OK
(f) Sub-step 2d: Sensitivity analysis (only applicable to Options II and III).	EB 39	Ann 10	Sensitivity analysis performed for investment costs, operational costs and electricity revenue with +/- %10 variation in %5 steps.	OK	OK
I. In sub-step 2a has the determination of appropriate method of analysis done as per the guidance as below?	EB 39	Ann 10		OK	OK
(a) 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).	EB 39	Ann 10	N/A	OK	OK
(b) Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification.	EB 39	Ann 10	Option iii benchmark analysis has been utilized. Option ii N/A as there are no comparable alternatives to the project activity.	OK	OK
m. Has the below guideline followed for sub-	EB	Ann		OK	OK

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step 2b Option I. Apply simple cost analysis? 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.	39	10	N/A		
n. Has the below guideline followed for sub-step 2b Option II. Apply investment comparison analysis? 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	EB 39	Ann 10	N/A	OK	OK
o. Has the below guideline followed for Sub-step 2b: Option III. Apply benchmark analysis?	EB 39	Ann 10			
(a) Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.	EB 39	Ann 10	A benchmark (threshold IRR of 15%) determined from a MoE&U report for small scale applications was preferred. However this document indicates that this threshold value is for micro hydro project <5 MW. Justify the applicability of the benchmark IRR value.	CL23	OK
(b) 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	EB 39	Ann 10	All parameters have been based on public or government approved data.	OK	OK

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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 activity can be considered.					
(c) Discount rates and benchmarks shall be derived from: (a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data; (b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects; (c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in 2. The project developers shall demonstrate that this benchmark has been consistently	EB 39	Ann 10	Please show the calculation of the IRR in the PD substep 2c in section 2.5	CAR13	OK

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used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark; (d) Government/official approved benchmark where such benchmarks are used for investment decision©© Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified. Please specify benchmark and justify.					
p. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?	EB 39	Ann 10			
(a) 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	EB 39	Ann 10	Will be answered after CAR04 is closed	CAR04	OK

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investments in the host country.					
(b) 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.	EB 39	Ann 10	Will be answered after CAR04 is closed	CAR04	OK
(c) Justify and/or cite assumptions.	EB 39	Ann 10	Will be answered after CAR04 is closed	CAR04	OK
(d) 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.	EB 39	Ann 10	Will be answered after CAR04 is closed	CAR04	OK
(e) Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	EB 39	Ann 10	Will be answered after CAR04 is closed	CAR04	OK
(f) Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity. Please specify details for above.	EB 39	Ann 10	Will be answered after CAR04 is closed	CAR04	OK
q. Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable	EB 39	Ann 10			

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variations in the critical assumptions.					
r. Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	Will be answered after CAR04 is closed	CAR04	OK
s. In step 3: Barrier analysis have all the sub-steps as below been followed?	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity;	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
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).	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
t. Has the below guideline followed for Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project?	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
l. (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 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	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK

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reports of reputed origin.					
II. (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 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.	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
III. © Barriers due to prevailing practice: The project activity is the “first of its kind”.	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
IV. (d) Other barriers, preferably specified in the underlying methodology as examples.	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
u. Has the outcome from Step 3a clearly mentioned in PDD?	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
v. Has the below guideline followed for Sub-	EB	Ann		OK	OK

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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)?	39	10	Barrier analysis is not utilized.		
(a) 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.	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
(b) 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.	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
(c) The type of evidence to be provided should include at least one of the following: (a) Relevant legislation, regulatory information or industry	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK

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norms; (b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, 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, ru©); © 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?	EB 39	Ann 10	Barrier analysis is not utilized.	OK	OK
x. In step 4: Common practise analysis have all the sub-steps as below followed?	EB 39	Ann 10			
(a) Sub-step 4a: Analyze other activities similar to the proposed project activity;	EB 39	Ann 10	Will be answered as CAR12 is closed	CAR12	OK
(b) Sub-step 4b: Discuss any similar Options that are occurring.	EB 39	Ann 10		OK	OK
y. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other activities that are	EB 39	Ann 10	Will be answered as CAR12 is closed	CAR12	OK

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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.					
z. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring? 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 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	EB 39	Ann 10	Will be answered as CAR12 is closed	CAR12	OK

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are not accessible, the PDD should include justification about non-accessibility of data/information.					
aa.Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10	Will be answered as CAR12 is closed	CAR12	OK
bb.Has it been proved that the project is additional?	EB 39	Ann 10	Will be answered as all CAR/CL regarding implementation of additionality are closed.	OK	OK
cc. Has the PP demonstrated additionality by explaining Investment barrier, Access-to-finance barrier, Technological barrier, Barrier due to prevailing practice or other barriers?	EB 35	Ann 34	Barrier analysis is not utilized.	OK	OK
dd.If Investment barrier has been explained, is it demonstraed that financilly more viable alternative to the project activity would have led to higher emissions? Please explain.	EB 35	Ann 34	Barrier analysis is not utilized.	OK	OK
ee.If Access-to-finance has been explained, is it demonstraed that the project activity could not access appropriate capital without consideration of the CDM revenues? Please explain.	EB 35	Ann 34	Barrier analysis is not utilized.	OK	OK

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ff. If Technological barrier has been explained, is it demonstraed that a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions? Please explain.	EB 35	Ann 34	Barrier analysis is not utilized.	OK	OK
gg.If prevailing practise barrier has been explained, is it demonstrated that the prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions? Please explain.	EB 35	Ann 34	Barrier analysis is not utilized.	OK	OK
hh.If other barrier has been explained, is it demonstrated that Other barriers such as institutional barriers or limited information, managerial resources, organizational capacity, or capacity to absorb new technologies would prevent the project activity any way?	EB 35	Ann 34	Barrier analysis is not utilized.	OK	OK
ii. Have the project participants identified the most relevant barrier?	EB 35	Ann 34	Barrier analysis is not utilized.	OK	OK
jj. Have the project participants provided transparent and documented third party evidence such as national/international statistics, national/provincial policy and legislation, studies/surveys by independent	EB 35	Ann 34	Barrier analysis is not utilized.	OK	OK

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agencies etc. to demonstrate the most relevant barrier? Please explain.					
a. Prior consideration of the clean development mechanism					
a. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	98	N/A as project is VCS	OK	OK
b. If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	98	N/A as project is VCS	OK	OK
➤ Is the start date of the project activity, reported in the PDD, in accordance with the “Glossary of CDM terms”, which states that “The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins.”?	VVM	c.	N/A as project is VCS	OK	OK
d. Does the project activity require construction, retrofit or other modifications?	VVM	99	N/A as project is VCS	OK	OK
e. If yes, is it ensured that the date of commissioning cannot be considered as the project activity start date?	VVM	99	N/A as project is VCS	OK	OK
f. Is it a new project activity (project activities with starting date on or after 02 August 2008) or an existing project activity (project activities with a start date before 02 August 2008)?	VVM	100	N/A as project is VCS	OK	OK
g. For a new project, for which PDD has not	VVM	101	N/A as project is VCS	OK	OK

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been published for global stakeholder consultation or a new methodology proposed to the Executive Board before the project activity start date, had the PP informed the Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? (Provide reference to such confirmation from Host Party DNA and/or UNFCCC secretariat).					
h. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	102	N/A as project is VCS	OK	OK
(i) Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project, including, inter alia:	VVM	102	N/A as project is VCS	OK	OK
(a) Minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity?			N/A as project is VCS	OK	OK
(ii) Reliable evidence from project	VVM	102	N/A as project is VCS	OK	OK

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participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, including, inter alia:					
(iii) contract with consultants for CDM/PDD/methodology services?	VVM	102	N/A as project is VCS	OK	OK
(iv) Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds)?	VVM	102	N/A as project is VCS	OK	OK
(v) evidence of agreements or negotiations with a DOE for validation services?	VVM	102	N/A as project is VCS	OK	OK
(vi) submission of a new methodology to the CDM Executive Board?	VVM	102	N/A as project is VCS	OK	OK
(vii) Publication in newspaper?	VVM	102	N/A as project is VCS	OK	OK
(viii) interviews with DNA?	VVM	102	N/A as project is VCS	OK	OK
(ix) earlier correspondence on the project with the DNA or the UNFCCC secretariat?	VVM	102	N/A as project is VCS	OK	OK
b. Identification of alternatives					
a. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	105	The baseline scenario is single and dictated by the methodology: The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the	OK	OK

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			operation of grid-connected power plants and by the addition of new generation sources into the grid.		
b. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	105	N/A	OK	OK
c. Does the list of alternatives given in the PDD ensure that:	VVM	106			
i. the list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	VVM	106	N/A	OK	OK
ii. the list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	VVM	106	N/A	OK	OK
iii. the alternatives comply with all applicable and enforced legislation?	VVM	106	N/A	OK	OK
c. Investment analysis					
a. Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	108	Will be answered after CAR04	CAR04	OK
b. If yes, does the PDD provide evidence that	VVM	108	Will be answered after CAR04	CAR04	OK

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the proposed CDM project activity would not be:					
i. the most economically or financially attractive alternative?	VVM	108	Will be answered after CAR04	CAR04	OK
ii. economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	VVM	108	Will be answered after CAR04	CAR04	OK
c. Was this shown by one of the following approaches?	VVM	109	Will be answered after CAR04	CAR04	OK
i. Demonstrate that the proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity.	VVM	109	Will be answered after CAR04	CAR04	OK
ii. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	109	Will be answered after CAR04	CAR04	OK
iii. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	109	Will be answered after CAR04	CAR04	OK
d. Is the period of assessment limited to the	EB	Ann	Will be answered after CAR04	CAR04	OK

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proposed crediting period of the CDM project activity?	62	5			
e. Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical life-time), or – if a shorter period is chosen – include the fair value of the project activity assets at the end of the assessment period?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
f. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
g. Do the project participants justify the appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
h. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessment period?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
i. Has the fair value been calculated in accordance with local accounting regulations where available, or international best practice?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
j. Does the fair value calculations include both the book value of the asset and the reasonable expectation of the potential profit	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK

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or loss on the realization of the assets?					
k. Was depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, added back to net profits for the purpose of calculating the financial indicator (e.g. IRR, NPV)?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
l. Has taxation been included as an expense in the IRR/NPV calculation in cases where the benchmark or other comparator is intended for post-tax comparisons?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
m. Are the input values used in all investment analysis valid and applicable at the time of the investment decision taken by the project participant?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
n. Is the timing of the investment decision consistent and appropriate with the input values?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
o. Are all the listed input values been consistently applied in all calculations?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
p. Does the investment analysis reflect the economic decision making context at point of the decision to recommence the project in the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK

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q. Have project participants supplied the spreadsheet versions of all investment analysis?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
r. Are all formulas used in this analysis readable and all relevant cells be viewable and unprotected?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
s. In cases where the project participant does not wish to make such a spreadsheet available to the public has the PP provided an exact read-only or PDF copy for general publication?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
t. In case the PP wishes to black-out certain elements of the publicly available version, is it justifiable?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
u. Was the cost of financing expenditures (i.e. loan repayments and interest) included in the calculation of project IRR?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
v. In the calculation of equity IRR, has only the portion of investment costs which is financed by equity been considered as the net cash outflow?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
w. Has the portion of the investment costs which is financed by debt been considered a cash outflow in the calculation of equity IRR? (this is not allowed)	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
x. Was a pre-tax benchmark be applied?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
y. In cases where a post-tax benchmark is	EB	Ann	Will be answered after CAR04	CAR04	OK

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applied, is actual interest payable taken into account in the calculation of income tax?	62	5			
z. In such situations, was interest calculated according to the prevailing commercial interest rates in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous three years?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
aa. In cases where a benchmark approach is used is the applied benchmark appropriate to the type of IRR calculated?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
bb. Has local commercial lending rates or weighted average costs of capital (WACC) selected as appropriate benchmarks for a project IRR?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
cc. Has required/expected returns on equity selected as appropriate benchmark for an equity IRR?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
dd. In case benchmarks supplied by relevant national authorities selected is it applicable to the project activity and the type of IRR calculation presented?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
ee. In the cases of projects which could be developed by an entity other than the project participant is the benchmark applied based on publicly available data sources which can	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK

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be clearly validated?					
ff. Have internal company benchmarks/expected returns (including those used as the expected return on equity in the calculation of a weighted average cost of-capital – WACC) been applied in cases where there is only one possible project developer?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
gg. In such cases, have these values been used for similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
hh. Has a minimum clear evidence of the resolution by the company's Board and/or shareholders been provided to the effect as above?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
ii. Has a thorough assessment of the financial statements of the project developer – including the proposed WA-C – to assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects been conducted?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
jj. Does the risk premiums applied in the determination of required returns on equity reflect the risk profile of the project activity being assessed, established according to	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK

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national/international accounting principles? (It is not considered reasonable to apply the rate general stock market returns as a risk premium for project activities that face a different risk profile than an investment in such indices.)					
kk. Has an investment comparison analysis and not a benchmark analysis used when the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
ll. Have variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues been subjected to reasonable variation (positive and negative) and the results of this variation been presented in the PDD and be reproducible in the associated spreadsheets?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
mm. Have a corrective action been raised for a variable to be included in the sensitivity analysis which constitute less than 20% and have a material impact on the analysis ?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
nn. Is the range of variations selected is reasonable in the project context?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
oo. Does the variations in the sensitivity analysis at least cover a range of +10% and -10%,	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK

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unless this is not deemed appropriate in the context of the specific project circumstances?					
pp. In cases where a scenario will result in the project activity passing the benchmark or becoming the most financially attractive alternative, is an assessment done of the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions in the presented investment analysis, taking into consideration correlations between the variables as well as the specific socio-economic and policy context of the project activity?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
qq. Was the plant load factor defined ex-ante in the CDM-PDD according to one of the following options:	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
i. The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
ii. The plant load factor determined by a third party contracted by the project participants?	EB 62	Ann 5	Will be answered after CAR04	CAR04	OK
rr. Was a thorough assessment of all parameters and assumptions used in	VVM	111	Will be answered after CAR04	CAR04	OK

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calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?					
ss. Were the parameters cross-checked against third-party or publicly available sources, such as invoices or price indices?	VVM	111	Will be answered after CAR04	CAR04	OK
tt. Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	VVM	111	Will be answered after CAR04	CAR04	OK
uu. Was the correctness of computations carried out and documented by the project participants assessed?	VVM	111	Will be answered after CAR04	CAR04	OK
vv. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions assessed?	VVM	111	Will be answered after CAR04	CAR04	OK
ww. Is the type of benchmark applied is suitable for the type of financial indicator presented?	VVM	112	Will be answered after CAR04	CAR04	OK
xx. Do any risk premiums applied determining the benchmark reflect the risks associated with the project type or activity?	VVM	112	Will be answered after CAR04	CAR04	OK
yy. To determine this, was it assessed whether it is reasonable to assume that no			Will be answered after CAR04	CAR04	OK

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investment would be made at a rate of return lower than the benchmark by:					
iii. assessing previous investment decisions by the project participants involved?	VVM	112	Will be answered after CAR04	CAR04	OK
iv. determining whether the same benchmark has been applied?	VVM	112	Will be answered after CAR04	CAR04	OK
v. determining if there are verifiable circumstances that have led to a change in the benchmark?	VVM	112	Will be answered after CAR04	CAR04	OK
zz. Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities?	VVM	113	Will be answered after CAR04	CAR04	OK
xx. If yes:	VVM	113	Will be answered after CAR04	CAR04	OK
i. has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?	VVM	113	Will be answered after CAR04	CAR04	OK
ii. Are the values used in the PDD and associated annexes fully consistent with the FSR?	VVM	113	Will be answered after CAR04	CAR04	OK
iii. If not, was the appropriateness of the	VVM	113	Will be answered after CAR04	CAR04	OK

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values validated?					
iv. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?	VVM	113	Will be answered after CAR04	CAR04	OK
d. Barrier analysis			Barrier analysis has not been used in the project		
a. Has barrier analysis been used to demonstrated the additionality of the proposed CDM project activity?	VVM	115	N/A	OK	OK
b. If yes, does the PDD demonstrate that the proposed CDM project activity faces barriers that:	VVM	115	N/A	OK	OK
i. prevent the implementation of this type of proposed CMD project activity?	VVM	115	N/A	OK	OK
ii. do not prevent the implementation of at least one of the alternatives?	VVM	115	N/A	OK	OK
c. Are there any issues that have a clear direct impact on the financial returns of the project activity, other than: risk related barriers, for example risk of technical failure, that could have negative effects on the financial performance; or barriers related to the unavailability of sources of finance for the project activity? {If yes, these issues cannot be considered barriers and shall be	VVM	116	N/A	OK	OK

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assessed by investment analysis. [Refer to (6.c) above]}					
d. Were the barriers determined as real by:	VVM	117	N/A	OK	OK
i. assssing the available evidence and/or undertaking interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) to determine whether the barriers listed in the PDD exist?	VVM	117	N/A	OK	OK
ii. ensuring that existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics?	VVM	117	N/A	OK	OK
iii. Is existence of a barrier substantiated only by the opinions of the project participants? (If yes, this barrier cannot be considered as adequately substantiated)	VVM	117	N/A	OK	OK
e. Were the barriers determined as preventing the implementation of the project activity but not the implementation of at least one of the possible alternatives by applying local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally	VVM	117	N/A	OK	OK

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prevent implementation of <i>at least one of</i> the possible alternatives, in particular the identified baseline scenario?					
<i>e. Common practice analysis</i>					
a. Is this a large-scale, or first-of-its kind small-scale project activity?	VVM	118	Will be answered as CAR12 is closed	CAR12	OK
b. If yes, was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	VVM	118	Will be answered as CAR12 is closed	CAR12	OK
c. Was it assessed whether the geographical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type? (For certain technologies the relevant region for assessment will be local and for others it may be transnational/global).	VVM	118	Will be answered as CAR12 is closed	CAR12	OK
d. Was a region other than the entire host country chosen?	VVM	120	Will be answered as CAR12 is closed	CAR12	OK
e. If yes, was the explanation why this region is more appropriate assessed?	VVM	120	Will be answered as CAR12 is closed	CAR12	OK
f. Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	VVM	120	Will be answered as CAR12 is closed	CAR12	OK

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g. Are similar and operational projects, other than CDM project activities, already "widely observed and commonly carried out" in the defined region?	VVM	120	Will be answered as CAR12 is closed	CAR12	OK
h. If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	120	Will be answered as CAR12 is closed	CAR12	OK
9. Monitoring plan					
a. Does the PDD include a monitoring plan?	VVM	122	VCS PD section 4 is regarding the monitoring plan and its description	OK	OK
b. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	122	Monitoring plan is based on AMS I D	OK	OK
c. Were the list of parameters required by the the selected methodology identified?	VVM	123	There are missing monitoring parameters Apj, CapPJ,, diesel consumed	CAR05. 2 CAR06 CAR10	OK OK OK
d. Does the monitoring plan contains all necessary parameters?	VVM	123	Please see above	OK	OK
e. Are the parameters clearly described?	VVM	123	Will be answered after relevant CARs are closed.	OK	OK
f. Does the means of monitoring described in the plan comply with the requirements of the methodology?	VVM	123	Will be answered after relevant CARs are closed.	OK	OK
g. Have all relevant parameters been monitored as indicated in the table of the methodology? PI state any	AMS	I.D	Will be answered after relevant CARs are closed.	OK	OK

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deviations/omissions.					
h. Has the CO2 emission factor of the grid electricity measured either by Combined Margin or by the Weighted Average emission?	AMS	I.D	Combined margin has been utilized	OK	OK
i. Has the CO2 emission factor of fossil fuel type i measured as per the .Tool to calculate project or leakage CO2 emissions from fossil fuel combustion.”	AMS	I.D	Will be answered after relevant CARs are closed.	OK	OK
j. Has the Net calorific value of fossil fuel type i measured as per the .Tool to calculate project or a leakage CO2 emissions from fossil fuel combustion.	AMS	I.D	Will be answered after relevant CARs are closed.	OK	OK
k. Has the Quantity of fossil fuel consumed in year y measured as per the .Tool to calculate project or a leakage CO2 emissions from fossil fuel combustion.	AMS	I.D	Will be answered after relevant CARs are closed.	OK	OK
l. Has the Quantity of net electricity supplied to the grid in year y measured using energy meters.	AMS	I.D	N/A	OK	OK
m. Is the quantity of net electricity supplied to the grid in year y monitored/recorded – Continuous monitoring, hourly measurement and at least monthly recording? Notes on measurement method: - Calibration should be undertaken as prescribed in the relevant paragraph of General Guidelines to SSC Methodologies.	AMS	I.D	Will be answered after relevant CARs are closed.	OK	OK

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- If applicable, measurement results shall be cross checked with records for sold/purchased electricity (e.g., invoices/receipts) - The net electricity export/supplied to a grid is the difference between the measured quantities of the grid electricity export and the import. If applicable, cross check net electricity supplied to a grid as gross energy generation in the project activity power plant minus the auxiliary/station electricity consumption, technical losses and electricity import from the grid to the project power plant measured at the grid interface/connection used for billing purposes					
n. Is the Quantity of biomass consumed in year y monitored/recorded Continuously or estimate using annual energy/mass balance? Notes on measurement method: - Use mass or volume based measurements. - Adjust for the moisture content in order to determine the quantity of dry biomass. - And/or perform an annual energy/mass balance that is based on purchased quantities and stock.	AMS	I.D	N/A	OK	OK

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- For projects consuming biomass and fossil fuel to produce electricity, a specific energy consumption ¹¹ of each type of fuel (biomass or fossil) to be used should be specified ex ante. The consumption of each type of fuel (biomass or fossil) shall be monitored. If fossil fuel is used, the electricity generation metered should be adjusted by deducting the electricity generation from fossil fuels using the specific energy consumption and the quantity of fossil fuel consumed. The amount of electricity generated using biomass fuels calculated then shall be compared with the amount of electricity generated calculated using specific energy consumption and amount of each type of biomass fuel used. The lower of the two values should be used to calculate emission reductions					
o. Is the Moisture content of the biomass residues monitored at least on a monthly basis?	AMS	I.D	N/A	OK	OK
p. Is the weighted average of the moisture content calculated for each monitoring period and used in the calculations? Notes on measurement method: On-site measurements In case of dry biomass, monitoring of this	AMS	I.D	N/A	OK	OK

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parameter is not necessary					
q. Is Net calorific value of biomass residue type k monitored annually? Notes on measurement method: Measurement in laboratories according to relevant national/international standards. Measure the NCV based on dry biomass. Check the consistency of the measurements by comparing the measurement results with measurements from previous years, relevant data sources (e.g. values in the literature, values used in the national GHG inventory) and default values by the IPCC. If the measurement results differ significantly from previous measurements or other relevant data sources, conduct additional measurements	AMS	I.D	N/A	OK	OK
r. Is the Standard deviation of the annual average historical net electricity generation delivered to the grid by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity calculated from data used to establish Eghistorical?	AMS	I.D	N/A	OK	OK
s. Is the parameters relevant to reservoir based hydro and geothermal plants monitored following the most recent version of ACM0002?	AMS	I.D	Will be answered after relevant CARs are closed.	OK	OK

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t. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	123	Will be answered after relevant CARs are closed.	OK	OK
u. Does the monitoring plan provide details regarding calibration of monitoring equipments/ instruments or does it include zero check as a substitute for calibration?	EB 24	37	Calibration will be TEIAS responsibility as the grid connection states. 10 year period.	OK	OK
v. Are the following means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified:	VVM	123	Will be answered after relevant CARs are closed.	OK	OK
i. data management procedures?	VVM	123		OK	OK
ii. quality assurance procedures?	VVM	123		OK	OK
iii. quality control procedures?	VVM	123		OK	OK
10. Sustainable development					
a. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	125	VCS project N/A	OK	OK
b. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	VVM	126	N/A	OK	OK
11. Local stakeholder consultation					
a. Were local stakeholders (public, including individuals, groups or communities affected,	VVM	128	Please see CL18	CL18	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?					
b. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity invited?	VVM	129	Please see above	OK	OK
c. Is the summary of the comments received as provided in the PDD complete?	VVM	129	Please see above	OK	OK
d. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	129	Please see above	OK	OK
12. Environmental impacts					
a. Have the project participants submitted documentation on the analysis of the environmental impacts of the project activity?	VVM	131	Project has submitted a PIF for the assessment of environmental affects prepared by Aktel engineering, dd. Aug. 2011.	OK	OK
b. Have the project participants undertaken an analysis of environmental impacts?	VVM	132	Project has submitted a PIF for the assessment of environmental affects prepared by Aktel engineering, dd. Aug. 2011	OK	OK
c. Does the host Party require an environmental impact assessment?	VVM	132	As capacity is below the regulation stated 25 MW no full EIA required	OK	OK
d. If yes, have the project participants undertaken an environmental impact assessment?	VVM	132	N/A	OK	OK

Table 2 Specific validation activities

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1. Project design of small-scale clean development mechanism project activities					
a. Does the proposed small-scale project activity meet the requirements of the simplified modalities and procedures for small-scale CDM project activities?	VVM	133	Project is type i D (greenfield hydro with 9.06 MWe), not debundled,	OK	OK
b. Does the project activity qualify within the thresholds of the three possible types of small scale project activities? [Type (i) project activities: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts; Type (ii) project activities: energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 gigawatt hours per year; Type (iii) project activities: other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually.]	VVM	134	Greenfield hydro project with 9.06 MWe capacity: type I	OK	OK
c. Does the project activity conform to one of the approved small-scale categories?	VVM	134	Project generates electricity to the national grid: D	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
d. Does the project activity apply the relevant tool and methodology?	VVM	134	Project applies AMS ID, "Tool to calculate the emission factor for an electricity system, Tool for the demonstration and assessment of additionality and Tool to calculate project or leakage CO2 emissions from fossil fuel combustion"	OK	OK
e. Are the small-scale methodologies applied in conjunction with the general guidance to the methodologies, which provides guidance on equipment capacity, equipment performance, sampling and other monitoring-related issues?	VVM	134	ACM0002 is used for monitoring of PD related parameters as guided	OK	OK
f. Is the project activity a debundled component of a large-scale project, i.e., is there a registered small-scale CDM project activity or an application to register another CDM project activity: (a) with the same project participants; (b) in the same project category and technology/measure; and (c) registered within the previous 2 years; and (d) whose project boundary is within 1 km of the proposed boundary of the proposed small-scale activity at the closest point?	VVM	134	Project is not a debundled project as the company has other projects in other parts of turkey	OK	OK
g. Is and assessment of the environmental impacts of the proposed	VVM	134	Project is EIA exempt	OK	OK

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
CDM project activity required by the host Party?					
h. Is the project additional?	VVM	135	Will be answered later.	OK	OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
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CAR01 Installed capacity is not stated in line with CDM requirements, i.e. General Guidelines to SSC CDM methodologies (Version 17), para 4.a and 4.b and related footnote 6	Table 1.1.c.c	Installed capacity is revised (in MWe units) by providing references. <u>Turbine production Agreement with Wasserkraft co. is provided.</u> <u>In this agreement, maximum turbine output is defined in MW (as $3.078 \text{ MW} \times 3 = 9.235 \text{ MW}$).</u> <u>According to that, whole report is revised.</u> <u>Turbine and generator output capacities revised according to License and feasibility report as $3.02 \text{ MWe} \times 3 = 9.06 \text{ MWe}$ and $3.177 \text{ MWm} \times 3 = 9.53 \text{ MWm}$. Also generator output capacity calculated and added according to EB61 Annex 21.</u>	Msu131226: CDM Project standard v.5, par. 82 (a) requires “the installed capacity for renewable electricity generating units that involve turbine-generator systems shall be based on the installed/rated capacity of the generator “ Equipment contract with scope not available for validation, please provide <u>Review 1</u> Please define project capacity regarding to EB61 Annex 21. It is still open. <u>Review 2:</u> The installed capacity is determined in line with “General Guidelines of SSC CDM Methodologies, version 17” EB 61 Annex 21 paragraph 4 as “The rated/installed capacity for renewable electricity generating units that involve turbine-generator systems shall be based on the installed/rated capacity of generator” where; Installed capacity = (Generator Number x Nominal Power x Power Factor) Define project capacity regarding to EB61 Annex 21 as above calculation. It is still open. <u>Review 3:</u> Project capacity is defined regarding to EB61 Annex 21 with using above calculation under section 1.1 of the VCS PD. <u>The Corrective Action Request is closed.</u>
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CAR02 Sources of certain given information not indicated. All information given VCS PD must be clearly referenced.	Table 1.1.c.c	References are provided.	Msu131226: References, added, OK <u>The Corrective Action Request is closed.</u>
CAR03 It has not been demonstrated that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.	Table 1.1.c.q	Section 1.10 is revised. Expropriation record provided.	Msu131226: Statement added, OK. Please justify/document the statements in the section (e.g. expropriation records) Remains open <u>Review 1</u> Expropriation records are provided. <u>The Corrective Action Request is closed.</u>

CAR04 1. Please check the depreciation periods used in IRR analysis. Please take reference of the Turkish statutory accounting principles. 2. In PDD it is written that “Equity Internal Rate of Return (IRR) is selected as the financial indicator for the demonstration of the additionality of the project.” However, in IRR analysis project IRR is calculated. Please correct the confusion. 3. Please also note that in the referenced document equity IRR is set to be a benchmark. Please calculate equity IRR instead of project IRR. 4. Please give reference date for the currency rates. Please note that the date of the currency rates should be valid at the investment decision date, as rest of the investment analysis. 5. Please check the interest cost calculations. Simply the interest cost in the first year must be debt taken (7.5) times interest rate (6%), which is 0.45m\$. The result is different from this result. 6. Please exp		Depreciation periods are updated as per the Turkish statutory accounting principles: Energy Transmission Lines: 30 years Electromechanic Equipment: 15 years <u>Project IRR is calculated, and IRR excel file is revised (equity IRR deleted, project IRR written).</u> <u>Project IRR is calculated.</u> Currency rates are based on the Feasibility report. All IRR inputs are taken from the feasibility report. Mistake in interest calculation corrected. Please see the IRR analysis excel file. Koroglu project interest rate was assumed as 6% by the time of writing of this report at that time loan was not received yet. This 6% value was the average market value by that time. However, in Koroglu HEPP Feasibility Report, this value was taken as 9.5% as stated by DSI to be used in feasibility calculations in all HEPP projects. To stay on the conservative side, it was taken as 6%. Grid fee expenses taken as zero to stay on the safe side.	Msu131226: OK, If both investment cost either financed by equity or debt is taken into consideration in the cash flow, the calculated IRR would be “Project IRR”. In equity IRR calculations, only the equity paid amount is considered in the cash flow. On the other hand, please note that interest cost shouldn’t have impact on the cash flow. Not closed Please see above; OK OK
loan rate verification.			125

CAR04 (cont'd) 6. Please explain why there is no yearly grid fee expenses. 7. Please clarify if there are VATs on the asset items or not? 8. Please add fair value (initial investment value – total depreciated amount during the life of the project) in profit & loss table so it has an impact on the corporate tax paid. 9. Please provide the loan agreement details. There is a need of loan rate verification. 10. Please add a spreadsheet to the analysis depicting all investment inputs, parameters, rates used, with relevant sources that are valid at the time of investment decision indicated.		There is no VAT on the assets. Since project is small and correspondingly IRR is low, fair value is not considered. An IRR Input Excel sheet is prepared. NOPLAT calculation is corrected as per the comment. Whole report is revised based on the revised IRR which is 13.99%.	Msu131226 (cont'd): OK OK Ok OK OK <u>Review 1</u> 2. In NOPLAT calculation, please exclude Debt-Loan Interest item. The formulation should be “G102-G103” instead of “=G102-G103-G104”. After this correction IRR becomes 13.99%. It is still open. <u>Review 2:</u> IRR calculation is revised. There is no longer a problem. <u>The Corrective Action Request is closed.</u>
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CAR05 1. Utilized tool versions are not up to date. 2. Methodology requires “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” for project emissions. Not applied.	Table 1.2.c.s	Tool versions updated. “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” ADDED.	Msu131226: Revised to versions valid at the time of submission, OK. Tool added, OK <u>The Corrective Action Request is closed.</u>
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CAR06 It has been indicated for applicability condition 3 that the project does not have a reservoir. This contradicts with the power density calculations that are shown later. Please clarify if the project creates newly flooded land/volume or not and support this with objective evidence.	Table 1.2.c.t	Section 2.2 is updated as follows: Koroglu HEPP is a run-of-river type project; therefore it has only a tiny reservoir to regulate water flow. Power density of the reservoir is higher than the threshold value, 4 W/m². AMS-ID Version 17.0 methodology refers to the ACM002 for calculating project emission where the Power Density (EW/m²) of the project activity is calculated by using the following formula: $PD = \frac{Cap_{p1} - Cap_{p0}}{A_{p1} - A_{BL}}$ Where = Power density of the project activity (W/m²) Cap_{p1} = Installed capacity of the hydro power plant after the implementation of the project activity (W) Cap_{p0} = 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_{p1} = Area of the single or multiple reservoirs 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 single or multiple reservoirs 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. Reservoir area of the project activity is "1450 m²" and total installed capacity is 9.53x10⁶ W, resulting with a power density of 6572 W/m² that is far larger than the 4 W/m² threshold value provided in the ACM002. KRG-UY-02.DWG is provided in drawing format; it can be opened with Autocad. Reservoir area value can be calculated directly from this drawing. Blue colour shows the reservoir area. KRG-UY-02.pdf is provided.	Msu131226: - Please identify the given reservoir area value in the referred evidence (tech. drawing.) sorry, could not spot it - Please see clarification SSC_629 to AMS-ID v.17 (https://cdm.unfccc.int/filestorage/a/u/A1ZIPYH9VSKJ372QRBD0FG54W6LCNO.pdf/Final%20response.pdf) Remains open <u>Review 1</u> - Reservoir area drawing is received but we can't open this file. Recently we will open and evaluate this file. Provide the file in pdf format. It is still open. <u>Review 2:</u> Reservoir area drawing is provided as pdf format. <u>The Corrective Action Request is closed.</u>
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CAR07 Baseline scenario indicated in section 2.4 is not in line with the applied methodology. Please check text	Table 1.2.c.w	AMS ID defines the baseline scenario bellows: "The baseline scenario is that the 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 into the grid." Other baseline definitions in the methodology refers to the projects which either involve retrofits or replacements of an existing ones. Our projects is not retrofit or a replacement one. So we think our PD meets this requirement by including explanation about existing and future grid connected power plants. Otherwise, it is not clear for us what kind of correction is requested from us for CAR07. We kindly ask for clarification.	Msu131226: My bad, CAR removed. <u>The Corrective Action Request is closed.</u>
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CAR08 1. Accuracy of Emission Reduction Calculations: The discussion, findings and conclusion regarding spreadsheet formulas and connections, conversions, aggregations, consistent use of factors in line with the monitoring plan, possible manual transposition errors between data sets, uncertainty of technology (e.g. metering) and appropriateness of default data where specific source data is lacking should be summarised in this section. 2. OM calculations: The simple OM emission factor should be calculated as the generation-weighted average CO2 emissions per unit net electricity generation. However, a simple average has been employed. This should be corrected. 3. BM Calculations: a. The 20% calculation has been based on gross electricity generation in year 2010. In this calculaton CDM project activities should have been excluded. Since this is not done, the BM generation requirement is inflated and should be corrected.		OM and BM Emission factor calculations are revised as per the comment. Table 27 is revised. Table xxxx typo corrected as Table 27..	Msu131226: 1. OK 2. OK 3. OK 4. OK 5. OK <u>The Corrective Action Request is closed.</u>
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CAR08 (continued) 3. b. Table 27 presents the total Electricity Generation of Selected Recent Capacity Additions as 43593.67 GWh. This value does not appear in the calculations. Therefore, it is not understood why/how it is used. 4. Quality of Evidence to Determine Emission Reductions: The discussion, findings and conclusion related to that the evidence is of sufficient quantity and appropriate quality, the reliability of the evidence and the source and nature of the evidence (external/internal, oral, documented) should be summarised in this section. 5. P.63 of the PDD is referencing to Table XXX			
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CAR09 1. Referred reservoir area is not justified. 2. PD calculation is not shown 3. CO2 emissions not taken into account in line with paragraph 21 of applied methodology	Table 1.2.c.bb	For reservoir area, KRG-UY-RG-02.DWW is provided. Installed capacity is defined as 9.235 MW in the turbine production agreement with wasserkraft. Hence, PD calculation is updated. Regarding the monitoring of emissions from diesel generator, following reference may be used to state that this type of monitoring may not be necessary. ACM0002: Grid-connected electricity generation from renewable sources --- Version 14.0.0, Section 5.4.1, paragraph 32 states that "The use of fossil fuels for the back up or emergency purposes (e.g. diesel generators) can be neglected." Statement deleted and Section 3.2 and Section 3.4 are revised, and emissions from diesel generators are included.	Msu131226: 1. As requested before, the area data could not be spotted on the drawing, please also see CAR06; 2. Calculations added, however these may need to be revised as the installed capacity is clarified according to CAR01 and the reservoir area is clarified according to CAR06; 3. An ex-ante calculation is not required in the validation stage. What is required is that it must be indicated in the VCS-PD that emissions from the emergency generator will be monitored and relevant parameters and the monitoring methods to be included in 4.1 and 4.2 and 4.3 <u>Review 1</u> 1. Couldn't open file. Again will be checked. Please provide the file in pdf format. 3. According to AMS-I.D. Ver.17.0, project emissions resulting from diesel generator are required to monitor. Please revise the relevant statement. It is still open. <u>Review 2:</u> 1. Relevant file is provided. 3. Project emissions resulting from diesel generator are calculated and taken into account for emission reduction calculation. <u>The Corrective Action Request is closed.</u>
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CAR10 - Parameters required by “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” no included please do. - Parameters required for power density verification not included, kindly do.		Please see CAR09. Regarding the monitoring of emissions from diesel generator, following reference may be used to state that this type of monitoring may not be necessary. ACM0002: Grid-connected electricity generation from renewable sources --- Version 14.0.0, Section 5.4.1, paragraph 32 states that “The use of fossil fuels for the back up or emergency purposes (e.g. diesel generators) can be neglected.”	Msu131226: Justification not accepted as this is a monitoring requirement of the methodology. PE arising from the emergency generator shall be monitored per methodology requirements <u>Review 1</u> - Please see CAR09 Review 1 c section. - Power density calculation is added for applicability condition 3rd section. It is still open. <u>Review 2:</u> “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” Version 02 requires the calculation of CO2 emission from internal fossil fuel combustion. Relevant parameters are indicated under section 3.2 of the PD. - Required parameters for power density calculation are provided under section 3.2 of the PD. <u>The Corrective Action Request is closed.</u>
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CAR11 Applicability of the relevant tools has not been included in the PD. Please do so ² Available at http://cdm.unfccc.int/methodologies/PAmethodologies/tools/index.html#tool-03-v2.pdf. Accessed on 18 July 2013.	All tools are applied. Following added to the Section 2.1. To estimate the CO₂ emission, AMS-I.D. refers to the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” Version 02.² This tool is used to calculate the CO₂ emission from diesel generators located in the power house of Koroglu HEPP <u>Following added to the Section 2.1.</u> In addition, CDM-methodology AMS-I.D refers to the following tools for additionality analysis and project emission calculations. <i>“Tool to calculate the emission factor for an electricity system” Version 4.0.0.</i> <i>“Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” Version 02.</i> <i>“Tool for the demonstration and assessment of additionality”, version 7.0.0.</i> Koroglu HEPP meets the applicability conditions of the following tools; and here are the justifications: “Tool to calculate the emission factor for an electricity system” Version 4.0.0. This methodological tool is used for baseline calculations. It determines the CO₂ emission factor for the displacement of electricity generated by power plants in an electricity system, by calculating the Combined Margin emission factor (CM) of the electricity system. The CM is the result of a weighted average of two emission factors pertaining to the electricity system: the Operating Margin (OM) and the Build Margin (BM).	Msu131226: Applicability criteria indicated by the applied tools must also be justified under section 2.2 Remain open <u>Review 1</u> Applicability criteria indicated by the applied tools are justified under section 2.2. <u>The Corrective Action Request is closed.</u>
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CAR12 Common practice analysis has not been applied in line with the requirements of the EB69 Annex 8 v.02.0		Based on the requirement in the CDM Validation and Verification Manual Version 1.2, paragraph 119, page 23, common practice analysis may not be applied to our project given that it is a small scale project. CDM Validation and Verification Manual Version 1.2, paragraph 119, page 23 states that “For proposed large-scale project activities, unless the proposed project type is first-of-itskind as determined in accordance with the relevant guidelines, the DOE shall assess whether the project participants have conducted a common practice analysis.” Statement only concerns about the large scale projects, not small ones. Therefore, common practice analysis is not applied. Note: Please contact with Furkan Sadıkoğlu regarding this issue. We agreed with him about not to apply common practice analysis for ours the other two projects.	Msu131226: May bad, CAR removed. [it was still not very clear how the implementation was going to be at the time of draft protocol preparation] <u>The Corrective Action Request is closed.</u>
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CAR13 Please show the calculation of the IRR in the PD sub step 2c in section 2.5		Benchmark IRR calculation is provided under the Section Sub-step 2b - Option III- Apply Benchmark Analysis section.	Msu131226: What was meant was the calculation of the benchmark IRR, sorry. Calculation of the benchmark shall be clearly documented in the VCS-PD. The formulae, parameters/values used must all be clearly listed and justified and referenced. Remain open <u>Review 1</u> Please add the reference and formula of the IRR calculation in sub-step 2c under section 2.5 of the PDD. It is still open. <u>Review 2</u> There is no need an explanation. <u>The Corrective Action Request is closed.</u>
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CAR14 Please include a timeline of project activities depicting major milestones of implementation		Timeline included. Regarding the start of construction, we can only provide the Saha Teslim Tesellüm Tutanağı document which is taken from the Ministry of Forestry to start the construction at the project site. Construction is being carried out by the project owner (not by a subcontractor), therefore owner does not keep written records regarding the construction such as saha teslim tutanagi. Therefore, Saha Teslim Tesellüm Tutanağı from the Ministry of Forestry Orman is the best official record we have. Other documents (investment decision and E&M contract) provided.	Msu131226: 1. Indicated 'Investment Decision by Board of Directors' not documented; evidence not provided to DOE 2. Construction start not documented; evidence not provided to DOE 3. Major contracts not included and not documented (E&M, construction, loan, etc.) evidence not provided to DOE Remains open <u>Review 1</u> 1. Board decision date document is provided. 2. Construction start date document is provided. 3. And also equipment contract document is provided. <u>The Corrective Action Request is closed.</u>
CL01 1. VCS PD is not the latest template, please check v-c-s.org; 2. The header of the template has been erased, template should not be altered	Table 1.1.c.a	Document is revised as per the VCS PDD Template version 3.1.	Msu131226: 1. Revised, OK. 2. Corrected, OK <u>The Clarification Request is closed.</u>

CL02 .ltd has been repeated	Table 1.1.c.b.iv	Corrected.	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>
CL03 Consultant name is not consistent with the cover page	Table 1.1.c.f	Corrected	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>
CL04 Starting date of the crediting period has a typo	Table 1.1.c.h	Typo corrected	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>

CL05 Start and end dates have not been given in line with the indicated crediting period start and end dates in the table.	Table 1.1.c.k	Table content is corrected. Table in Section 1.7 is revised.	Msu131226: June 2014 seems like only the month's value is reported (jun-Dec ??) please revise relevant tables Remains open <u>Review 1</u> Relevant statement is revised as 1 June 2014 and 1 June 2024. Conflictual meaning is corrected. <u>The Clarification Request is closed.</u>
CL06 Referred rivers names are not in line with section 1.1	Table 1.1.c.l	River names are corrected.	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>
CL07 License was not identified uniquely.	Table 1.1.c.r.a.	License is identified as a footnote.	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>
CL08 Not declared whether the project has been registered, or is seeking registration under any other GHG programs?	Table 1.1.c.r.d	Section 1.12.3 is revised accordingly.	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>

CL09 VCS standard v.3.3, 3.18.3 states: “Information in the project documents related to the determination of the baseline scenario, demonstration of additionality, and estimation and monitoring of GHG emission reductions and removals shall not be considered to be commercially sensitive and shall be provided in the public versions of the project documents.”	Table 1.1.c.r.j.iii	Section 1.13 is revised as follows: Commercially Sensitive Information The whole content of all the contracts signed with other parties for construction, purchase of electromechanical equipment, maintenance and services, board decisions and financial data are commercially sensitive information. However all required information from these documents including copies of cover pages, and/or various pages as per the requested information, will be provided to the Auditors to meet the following criteria as stated by the VCS standard v.3.3, 3.18. “Information in the project documents related to the determination of the baseline scenario, demonstration of additionality, and estimation and monitoring of GHG emission reductions and removals shall not be considered to be commercially sensitive and shall be provided in the public versions of the project documents.”	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>
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CL10 CH4 is main emission source for hydro projects and is included in the boundary per requirements of ACM0002 on the subject.	Table 1.2.c.s	Following added to the table in the Section 2.3. Minor emission sources. As per the ACM002, Section 5.4.1 CH4 emission is accepted as zero given that power density of the Koroglu HEPP is far larger than 4 W/m2 threshold value (please see Section 2.2) CO2 emission is accepted as zero as per the ACM0002 Section 5.4.1, paragraph 32 which states that "The use of fossil fuels for the back up or emergency purposes (e.g. diesel generators) can be neglected.". Since diesel generator is the only source of CO2 emission from the project activity, ACM002, Section 5.4.1 could be applicable to our case. The table in Section 2.3 is revised as stated in your comment. CH4 emissions revised in Section 2.3.	Msu131226: As there is a reservoir according to CDM definitions and since PD parameters are to be monitored per ACM0002 (as required by AMS-ID), and as the applied methodology includes these (par. 20 and 21) project emissions it must be shown that Emissions of CH4 are included in the project boundary and than may be assumed as 0 if the conditions are met. <u>Review 1</u> Under section 2.3 in project boundary table parameter (CH4) is not in line with the ACM002 section 5.1 table 2. Regarding to ACM0002 (as required by AMS-ID), Emissions of CH4 must be shown in the project boundary and as mentioned above it may be assumed as 0 if the conditions are met. Please revise the table under section 2.3. It is still open. <u>Review 2:</u> Regarding to ACM0002 (as required by AMS-ID), emissions of CH4 must be shown in the project boundary. It is line with the most actual ACM0002 methodology. <u>The Clarification Request is closed.</u>
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CL11 It has not been indicated why the first alternative is not found to be realistic and plausible.		Section is revised as including the reasons of why the first alternative is not realistic.	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>
CL12 Regarding section 3.4: 1. Procedure and calculations for quantification of net GHG emission reductions and removals has not been described. 2. Table is empty.		Table is filled and calculations are provided in Section 3.4.	Msu131226: Corrected, OK <u>The Clarification Request is closed.</u>
CL13 Unit of E _g facility, y is not in line with the applied methodology.		E _g facility parameter unit is corrected.	Msu131226: Corrected, <u>The Clarification Request is closed.</u>

CL14 1. Please clarify if measurement is continuous? 2. Please clarify if monitoring and recording are both monthly?		Section 4.2, Electricity Generated by the Koroglu HEPP ($EG_{Facility,y}$) table is updated as per the CL14 comments. <u>Following added to the Frequency of monitoring/recording line in Electricity Generated by the Koroglu HEPP ($EG_{Facility,y}$) table</u> <u>“Measurement will be continuous”</u>	Msu131226: In the table, indicated frequency of monitoring (monthly) not in line with meth. Requirements (meth. Page 11: Continuous monitoring, hourly measurement and at least monthly recording) Remains open <u>Review 1</u> Relevant statement is revised as “Measurement will be continuous”. <u>The Clarification Request is closed.</u>
CL15 Please clarify specification requirements for the equipment		Monitoring equipment specifications will comply with the TEIAS System Connection Agreement, EK-2.	Msu131226: OK referred to in 4.3 <u>The Clarification Request is closed.</u>
CL16 Please indicate how the data for the parameter will be calculated.		Data for the parameter calculation is provided in Section 4.3, paragraph 6, 7 and 8th.	Msu131226: Also indicated in the table, OK <u>The Clarification Request is closed.</u>

CL17 EIA exemption # 161 is dated 13/09/2011, section 5 indicates a different date.		EIA exemption date in Section 5 corrected.	Msu131226: Corrected, <u>The Clarification Request is closed.</u>
CL18 Please revise section 6		Content added to the Section 6.	Msu131226: Corrected, <u>The Clarification Request is closed.</u>
CL19 Please consider EB 63 Annex 24 and state this in the PD.		Added to the Outcome of Step 1a: Existing grid mostly dominated by the thermal power plants which would have lead more CO2 emission to the atmosphere. Therefore, as per the <i>EB 63, Annex 24: Attachment A of Appendix B</i> , there is an investment barrier to this project.	Msu131226: Corrected, <u>The Clarification Request is closed.</u>

CL20 Please also depict and describe the physical delineation of the project boundary under section 2.3 of PD	This CL will be resolved in the next revision. However, please see below for our question about this issue. We understand that geographical depiction is preferred to define the project boundary. But, we do not have any official data (from DSI or any other source such as EPDK) that will prove the existence of the other projects located on the Savrun River. We have two options for this CL20. 1) we can find out the other projects on the Savrun river through by internet/checking the DSI website etc. But there will not be an official reference to the geographical depiction that we will prepare. 2) we can officially ask DSI to inform us about the existence of the other project on the Savrun river, but this will take time. Please let us know what you prefer. Electricity transmission line diagram is provided.	Msu131226: 1. Project boundary is not defined in line with the methodology and Tool to... electricity system 2. A geographical depiction is requested <u>Review 1</u> 1. Please provide the connection point (electricity transmission line) of the project activity in detail. 2. It is added. It is still open. <u>Review 2:</u> The electricity transmission line diagram (the connection point) is provided. <u>The Clarification Request is closed.</u>
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CL21 Table 2 referred in substep 1b is in 1.11 not 1. 10.		Corrected.	Msu131226: Corrected, <u>The Clarification Request is closed.</u>
CL22 Kindly indicate the outcome of step 1 here: stating the realistic and credible scenario that is in compliance with the relevant laws and regulations.		Outcome of Step1a and Outcome Step1b deleted. Outcome of Step1 added. This is the added content. Outcome of Step1: The only realistic and credible scenario is the third alternative, which is the supply of the same amount of electricity from the existing grid that is in compliance with the relevant mandatory laws and regulations.	Msu131226: Corrected, <u>The Clarification Request is closed.</u>
CL23 A benchmark (threshold IRR of 15%) determined from a MoE&U report for small scale hydro applications was preferred. However this document indicates that this threshold value is for micro hydro project <5 MW. Please justify the applicability of the benchmark IRR value.		Benchmark value is updated by calculating it through government bond rates with the addition of premium risk rate as suggested by the tool.	Msu131226: Corrected, however please see CAR13 <u>The Clarification Request is closed.</u>

CL24 There are more than one references to an older version of the applied additionality tool, inside the VCS-PD. (e.g. 2.5, substep 2a...)		Versions of all the tools used in the PD are updated. Additionality tool updated to 7.0, Tool to calculate the emission factor for an electricity system updated to 4.0. Whole report is revised as per these updated revisions.	OY03022014: Versions of all the tools are updated in whole report. <u>The Clarification Request is closed.</u>
CL25 Section 4.3 refers to another project.		Yes it refers to Dagbasi project. It is all corrected now.	OY03022014: All relevant statements are corrected. <u>The Clarification Request is closed.</u>
FAR01 Many structures were not implemented yet. Therefore the location of the main structures must be verified during verification site visit.			