VALIDATION REPORT TITLE DERELI HYDROELECTRIC POWER PLANT

RINA

Document Prepared By RINA Services S.p.A.

Project Title	Dereli Hydroelectric Power Plant
Version	*1.2 Aa*
Report ID	2011-DG-12-MD

Report Title	Dereli Hydroelectric Power Plant Final Validation Report
Client	Karadeniz Hidroelektrik Enerjiden Elektrik Üretim Santralı Ltd
Pages	48
Date of Issue	07-October-2015
Prepared By	*RINA Services S.p.A.*
Contact	Address: Via Corsica 12, 16128 Genoa, Italy Tel: +39 0105385509 Email: ghg.services@rina.org Website: http://www.rina.org
Approved By	Laura Severino

VCS VERIFIED CARBON STANDARD VALIDATION REPORT: *VCS Version 3*

Work Carried Out By	Sergio Degener (Lead Validator/Technical Expert) Hasan Zor (Local Expert) Nisha Raghavan (Financial Expert)

Summary:

Karadeniz Hidroelektrik Enerjiden Elektrik Üretim Santralı Ltd. has commissioned RINA to carry out the validation of the "Dereli Hydro Electricity Power Plant" project in Turkey. This report summarizes the findings of the validation of the project, performed on the basis of VCS Version 3 criteria, GHG program applied as well as criteria given to provide for consistent project operations, monitoring and reporting.

The purpose of the proposed project activity is to generate renewable electricity to be delivered to the National Power Grid by utilizing water resources. The project activity is located at the Dereli town, Giresun Province, Turkey. The total installed capacity of the Project is 49.2 MW.

The objective of the Validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the VCS Version 3 and GHG program applied, on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS requirements, GHG program requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

The validation scope is to review the VCS-PD against the VCS criteria which refer to VCS Version 3 standard and all the GHG program requirements.

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

In conclusion, it is RINA's opinion that the project activity "Dereli Hidroelectric Power Plant", in "Turkey", as described in the VCS-PD version 2.01 of 11/09/2015, meets all relevant requirements for VCS activities and all relevant host Party criteria and correctly applies the baseline and monitoring methodology "ACM0002", "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 16.0. of 28/11/2014. Hence RINA requests the registration of the project as a VCS project activity.

.

Table of Contents

1 INTRODUCTION

1.1 Objective

The objective of the Validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the VCS Version 3 and GHG program applied, on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCSrequirements, GHG program requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

1.2 Scope and Criteria

The validation scope is to review the VCS-PD against the VCS criteria which refer to VCS Version 3.5 standard and all the GHG program requirements.
Validation is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Level of Assurance

All the revisions of the validation report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation activities had been completed according to the pertinent RINA instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for VCS and CDM validation and verification.

The validation team and the technical reviewers consist of the following personnel:

Role	Last Name	First Name	Country
Team Leader Validator	Degener	Sergio	Germany
Local Expert	Zor	Hasan	Turkey
Financial Expert	Raghavan	Nisha	England
Technical Reviewer	Valoroso	Rita	Italy
Technical Reviewer in Training	Tong	Wing Yu	Italy

1.4 Summary Description of the Project

The purpose of the proposed project activity is to generate renewable electricity to be delivered to the National Power Grid by utilizing water resources. The project activity is located at the Dereli Town, Giresun Province, Turkey. The total installed capacity of the Project is 49.2 MW.

The starting date of the project activity and the start date of the crediting period is 10/01/2014. It has been verified by RINA that the starting date represents the start date of generation of electricity and supply to the electricity grid. It was observed during the site visit that the project is under construction, start of operation was 10/01/2014, substantiated by the partial acceptance letter sent to the Governance of Giresun Province, Giresun-Turkey /47/.

A crediting period of 10 years has been chosen for the project, renewable twice, starting from 10/01/2014. The GHG emission reductions are estimated to be average 83,983 tCO_{2e} per year and 839,830 tCO_{2e}over the ten -year crediting period..

2 VALIDATION PROCESS

2.1 Method and Criteria

Validation was conducted using RINA procedures in line with the requirements specified in the VCS. Standard and all others GHG Programs Requirements.

The validation consists of the following three phases:

- Document review;
- Follow-up actions;
- The resolution of outstanding issues and the issuance of the final validation report.

The following sections outline each step in more detail.

2.2 Document Review

The VCS-PD version 1.0 of 04/04/2011 /01/ and the VCS-PD version 2.01 of 11/09/2015 in particular the applicability of the methodology, the baseline determination, the additionality of the project activity, the starting date of the project, the monitoring plan, the emission reduction calculations provided in the form of a spreadsheet /05/, were assessed as part of the validation.

The following table lists the documentation that was reviewed during the validation.

/01/	Turkuaz Carbon Ltd.: VCS-PD for project activity “Dereli Hydro Electricity Power Plant” in Turkey, version 1.0 of 04/04/2011. Turkuaz Carbon Ltd.: VCS-PD for project activity “Dereli Hydro Electricity Power Plant” in Turkey, version 2.01 of 11/09/2015.
/02/	RINA: Signed participant list of all stakeholders involved during site-visit, 01/08/2011
/03/	CDM Executive Board: Validation and Verification Standard, version 01.2 EB55 of 30/07/2010. CDM Executive Board: Validation and Verification Standard, version 9.0 EB85 of 20/02/2015.
/04/	CDM Executive Board: Baseline and monitoring methodology “ACM0002”, version “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 12.3.0. of 02/03/2012. CDM Executive Board: Baseline and monitoring methodology “ACM0002”, version “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 16.0. of 28/11/14.
/05/	Turkuaz Ltd.: Emission factor calculations “Dereli_CM_2010”, version 1, 04/04/2011 Turkuaz Ltd.: Emission factor calculations “DereliHydro_CM_2012”, version 2, 11/09/15
/06/	UNFCCC, Guidelines for completing the Project Design Document (CDM-PDD) and the

	proposed new baseline and monitoring methodologies (CDM-NM), version 07 of 02/08/2008.
/07/	CDM Executive Board: Tool to calculate the emission factor for an electricity system, Version 02.2.1.of 29/09/2011 CDM Executive Board: Tool to calculate the emission factor for an electricity system, Version 4.0.of 04/10/2014.
/08/	VCS: Project Description v3.0., 08/03/2011 VCS: Project Description v3.2., 08/10/2013
/09/	CDM Executive Board: Glossary of CDM terms, version 05 of 19/08/2009 CDM Executive Board: Glossary of CDM terms, version 08 of 20/02/2015
/10/	VCS: Voluntary Carbon Standard , v3.2., 01/02/2012 VCS: Voluntary Carbon Standard , v3.5., 25/03/2015
/11/	VCS: Voluntary Carbon Standard Program Guide, v3.3., 01/05/2012 VCS: Voluntary Carbon Standard Program Guide, v3.5., 08/10/2013
/12/	VCS: Program definitions v3.3., 01/05/2012 VCS: Program definitions v3.5., 08/10/2013
/13/	Turkuaz Carbon: IRR calculation sheet “DereliFinancialAnalysisV.1.00”, version 1,04/04/2011. Turkuaz Carbon: IRR calculation sheet “DereliHPPFinancialAnalysisV.2.0”, version 2, 11/09/2015.
/14/	UNFCCC: Guidelines for objective demonstration and assessment of barriers, version 1, 16/10/2009 EB50 Annex 13
/15/	UNFCCC: Guidelines on the assessment of investment analysis, version 5, 15/07/2011 UNFCCC: Guidelines on the assessment of investment analysis, version 6, 24/07/2015
/16/	UNFCCC: Guidelines for the reporting and validation of plant load factors, version 1, 17/072009.
/17/	UNFCCC: “Tool for the demonstration and assessment of additionality” version 6.0.0. 25/11/2011. UNFCCC: “Tool for the demonstration and assessment of additionality” version 7.0.0. 23/11/2012.
/18/	TEIAS (Turkish Electricity Transmission Company) data publications to calculate the grid emission factor, accessed on 20/09/2015, www.teias.gov.tr
/19/	Turkish requirements on meter equipment ICE/TSE 62053-22: Electricity metering equipment (a.c) – Particular requirements - Part 22: Static meters for active energy (Classes 0,2 S and 0,5 S, no version number, April 2005.
/20/	Ekobil Environmental and Agricultural Services Ltd.; SCS Report for “Dereli Hydro Electric Power Plant, Turkey”, version 1.0 of 25/07/2011.
/21/	Giresun Provincial Directorate of Environment and Forestry: Certificate of exemption of EIA for the project activity, dated 27/04/2006.
/22/	UNFCCC: Tool to determine the remaining lifetime of equipment, version 1, 16/10/2009.
/23/	Teias statistical report 2001-2012: http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/istatistik%2

	02012.htm to calculate the grid emission factor.
/24/	Turkish official Gazette Nr. 25318: Environmental Impact Assessment (EIA) regulation dated 16/12/2003.
/25/	Turkish Gazette 24319, 15/02/2001, requirements on meter calibration.
/26/	National electricity expert report, operational lifetime of the technical equipment, published in 2001. http://www.kalkinma.gov.tr/Lists/zel%20htisas%20Komisyonu%20Raporlar/Attachments/72/oik585.pdf Last visited 07/10/2015
/27/	International Energy Agency: Renewable Energy Essentials, Hydropower, 2010 Website : http://www.iea.org/publications/freepublications/publication/renewable-energy-essentials-hydropower.html (accessed on 07/10/2015)
/28/	USAID: Turkish electricity Price Curve Analysis (2010-2011), 07/10/2015
/29/	General Directorate of State Hydraulic works, location of the hydro power projects in the host country (http://www.dsi.gov.tr)
/30/	Turkey Energy Market Regulatory Authority: Electricity Market Report for 2010
/31/	UNFCCC: Guidelines on Common Practice, version 02.0, 13/09/.2013 UNFCCC: Guidelines on Common Practice, version 3.1, 03/06/2015
/32/	UNFCCC: Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, 28/11/2005 to 10/12/2005.
/33/	UNFCCC: Projects under validation: http://cdm.unfccc.int/Projects/Validation/index.html, accessed on 07/10/15.
/34/	Gold Standard: Projects listed (https://mer.markit.com/br-reg/public/index.jsp?s=ci), accessed on 07/10/2015
/35/	Turkish Value Added Tax Law, Number 3065 (18%), 02/11/1984
/36/	Turkish Income Tax Law, Number 5281 (20%), 01/05/2005
/37/	Karadeniz Hidroelektrik Enerjiden Elektrik Üretim Santralı Ltd.: Revised Feasibility Study Report, dated February 2004
/38/	Dereli Generation Licence: dated 06/12/2004
/39/	Zhejiang Orient Engineering Co. Ltd., mechanical equipment purchase contract, 05/02/2007.
/40/	Tunzan Yapi Ltd. Construction contract, 15/02/2007
/41/	Turkish Energy Authority: Definition of renewable electricity price, 21/12/2006
/42/	Turkish Banks: Loan Agreement for the Cirakdami and Dereli HPP project, dated 29/08/2007
/43/	Turkuaz Carbon: LSC meeting Minutes, 09/04/2006
/44/	Teias: Grid Connection Agreement, 04/09/2006

	TEIAS: Revised Grid Connection Agreement, 24/01/2011
/45/	Turkish Ministry of Environment: EIA exemption certification, dated 27/04/2006
/46/	General Directorate of State Hydraulik Works: Water usage agreement, 28/09/2004
/47/	Ministry of Energy and Natural resources: Plant commissioning, 10/01/2014
/48/	Turkuaz Carbon: Excel sheet “DereliCommonPracticeData”, dated 12/07/2015
/49/	Karadeniz Hidroelektrik Enerjiden Elektrik Üretim Santralı Ltd.:Expenditures Report construction of the power plant, dated May 2014
/50/	Renewable Energy Resources for the Purpose of Generating Electrical Energy, Law No. 5346 dated 10/05/2005.
/51/	Karadeniz Hidroelektrik Enerjiden Elektrik Üretim Santralı Ltd.: Investment costs report, dated May 2014.
/52/	Google Earth picture: Dereli and Cirakdami HPP projects.
/53/	Karadeniz Ltd.:CAD Map, Dereli surface Area , submitted on 08/07/2015

2.3 Interviews

The key personnel interviewed and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	01/08/11	Asli Özcelik VCS Consultant	Ekobil Ltd. Subcontractor to Turkuaz Karbon Ltd.	Financial Analysis, Local stakeholder consultation process, Baseline and additionality discussion, ER Calculations, VCS-PD overall information
/b/	01/08/11	Murat Özcelik VCS Consultant	Ekobil Ltd. Subcontractor to Turkuaz Karbon Ltd.	Financial Analysis Local stakeholder consultation process Baseline and additionality discussion. ER Calculations VCS-PD overall information.
/c/	01/08/11	Özgün Gül (owner of Karadeniz Hidroelektrik Enerjiden Elektrik Üretim Santralı Ltd, Which is in charge of the development of the hydro project)	Bereket Enerji Ltd. (owner of Karadeniz Hidroelektrik Enerjiden Elektrik Üretim Santralı Ltd, which is in charge of the development of the hydro project)	Environmental issues
/d/	01/08/11	Rüzgar Keşmer Civil Engineer	Bereket Enerji Ltd.	Project development
/e/	01/08/11	Naim Ödenis Topograph	Bereket Enerji Ltd.	Project Development

/f/	01/08/11	Musa Kantik Electric Engineer	Bereket Enerji Ltd.	Project Development
/g/	01/08/11	Emre Özer Deputy Finance Manager	Bereket Enerji Ltd.	IRR calculations
/h/	01/08/11	Fevzi Elitez Civil Engineer-Site Manager	BereketEnerji Ltd.	Project Development
/i/	01/08/11	Ümit Kiliç Mechanical Engineer	Bereket Enerji Ltd.	Stakeholder
/j/	01/08/11	K. Zeki Şenlikoğlu	Dereli Major	Stakeholder

2.4 Site Inspections

On 1st of August 2011, RINA visited the project site, which is located at Dereli town, Giresun province, Turkey, to resolve questions and issues identified during the document review and to perform interviews with relevant stakeholders in the host country.

2.5 Resolution of Findings

The objective of this phase of the validation is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the project design.
A corrective action request (CAR) is raised if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions.
- The VCS/GHG Program requirements have not been met.
- There is a risk that the emission reductions cannot be monitored or calculate.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS/CDM requirements have been met.
A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the VCS/GHG Program requirements for registration.

2.6 Forward Action Requests

No Forward Action Requests (FARs) have been raised during the validation process.

3 VALIDATION FINDINGS

The findings of the validation related to the project, as described in the VCS-PD version 1.0 of 04/04/2011/01/ and it´s latest version 2.0.1. of 11/09/2015 are stated in the following sections.
The validation requirements, the means of validation and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

3.1 Project Details

The purpose of the proposed project activity is to generate renewable electricity to be delivered to the Turkish National Grid by utilizing water resources. The project activity is located at the Dereli town, Giresun province in Turkey. The project is a hydro power project with an installed capacity of 49.2MW.

The project belongs to sectoral scope 1, energy industries –renewable energy, applicable as the project will generate electricity using hydrologic sources.
The project owner is Karadeniz Hidroelektrik Enerjiden Elektrik Üretim Santralı Ltd. from Turkey. The VCS consultants are Turkuaz Karbon Ltd. from Turkey.

The starting date of the project activity is 10/01/2014 when the plant started opertation /47/. It has been verified by RINA that the starting date represents the starting date of the project following VCS requirements /10/.

The project crediting period is 10 years, renewable twice. The start date of the first crediting period is 10/01/2014 ending on 09/01/2024 as per the VCS-PD version 2.01.

The project is a large scale project, as its installed capacity is above 15MW. Thus the proposed project activity is a large scale project, as it is not part of the small scale project options under the “Simplified modalities and procedures for small-scale development mechanism project activities”.

By checking the data base of UNFCCC /33/ and GS /34/ the audit team confirms that the proposed project has not participated nor it was rejected under other program. This was also confirmed by the written confirmation provided by the client. The project is applying the Social Carbon Standard /20/, but this does not represents a double counting of carbon credits.

The GHG emission reductions are estimated to be 83,983 tCO_{2e} per year and 839,830 tCO_{2e} over the ten years crediting period. The project is therefore a large scale project.

The expected operational lifetime of the project activity is 20 years, in line with the value reported in the national expert report /26/. Afterwards, a major equipment overhaul is required.

RINA was able to verify all the documented evidence listed above during the validation process and can confirm that data and considerations are complete and accurate.

RINA confirms that the description of the proposed VCS project activity, as contained in the VCS-PD sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the proposed VCS project activity.

3.2 Application of Methodology

3.2.1 Title and Reference

The CDM approved baseline and monitoring methodology ACM0002-Version 16.0.0: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" /04/ is correctly applied for the project activity.

The tools applied for the project activity were:

"Tool for the demonstration and assessment of additionality" /17/.

"Tool to calculate the emission factor for an electricity system" /07/.

3.2.2 Applicability

The proposed project activity meets the criteria defined in the baseline methodology as it ensures that:

- The project activity involves the installation of a new Greenfield run-of-river hydroelectric power plant at the Aksu River, Dereli Town, Giresun Province, Turkey /37/. At this site no renewable power plant was operated prior to the implementation of the project activity and the same was confirmed during the site visit.
- The project activity results in a new reservoir with a surface of 3,894 m^2 /53/. The resulting power density is therefore 12,634 W/m^2. The power density is higher than 4 W/m^2 as required by the methodology.
- The project does not include any retrofit, capacity addition or replacement of an existing power plant /37/.
- The project activity does not involve switching from fossil fuel use to renewable or biomass power plant /37/.

The project applies the "Tool for the demonstration and assessment of additionality" as:

- The use of the tool is not mandatory when proposing a new methodology. This does not applies for the project activity, as an existing methodology is being applied /04/.

- The use is mandatory, when applying an approved methodology which includes the tool. This is the case for the project activity, applying an approved methodology /04/.

The project applies the "Tool to calculate the emission factor for an electricity system" as:

- This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects). This criteria applies for the project activity, the project will generate hydro power electricity and exported to the national grid /44/ /37/;

- Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. Only grid power plants are included in the EF calculations /05/.

- In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country. The project is not a CDM project and located in Turkey/37/.

- In case any biofuel is used in the calculations, it´s value applied as CO_2 emission factor is zero.

RINA hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein.

3.2.3 Project Boundary

According to the approved baseline and monitoring methodology ACM0002 /04/, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. Through assessing the Interconnection Agreement /44/, RINA validated that the project will generate electricity and it is connected to Turkey´s National Power Grid.

Emission Factor is calculated by Turkuaz Ltd. based on the data available /05/. The spatial extent of the project boundary is thus identified as the extent of the National Power Grid including the power plant of the project. The information above is clearly described in section 3.1. of the VCS-PD /01/. It is validated that the delineation in the VCS-PD of the project boundary is correct and meets the requirements of the selected baseline methodology and tool.

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
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project activity	For hydro power plants, emissions of CH4 from the reservoir.	CO_2	No	Minor emission source
		CH_4	No	Conservative. The project activity results in a new reservoir , with PD > 4 W/m². Therefore, no CH_4 emissions are expected to occur.
		N_2O	No	Minor emission source

Emissions sources included in the project boundary are shown in the table below:

	GHGs involved	Description
Baseline emissions	CO_2	Emissions from power generation in fossil fuel fired power plants delivering electricity to the grid that are displaced due to the project activity
Project emissions	N/A	Since the power density of the project activity is 12,634 W/m^2 /53/, which is greater than 10W/m^2, project emission is regarded as zero according to the approved methodology /04/. Furthermore, the project owner will install an auxiliary diesel generator, the emissions can be neglected in line with the requirements of the methodology /04/. It is not foreseen that the emissions will contribute to more than 1% of the overall expected average annual emission reductions.
Leakage	N/A	No leakage is to be considered, since the project activity doesn't involve any transfer of energy generating equipment as per the signed equipment purchase agreement /39/

Emission sources which are not addressed by the applied methodology and which are expected to contribute more than 1% of the overall expected average annual emissions reduction have not been identified based on the physical site assessment.

By checking the information and physical site visit, RINA can confirm that the project boundary and emission sources described in the VCS-PD are accurate and complete, and also that the selected sources and gases are justified for the proposed project activity.
The combined margin (CM) is then calculated as the sum of 50% of the BM and OM and it is considered to be correct.

3.2.4 Baseline Scenario

According to the approved baseline and monitoring methodology ACM0002 /04/, the baseline scenario for new installed power plants like the project validated herewith is:

"Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

The ex-ante estimation methods was selected for the OM and BM emission factor based on the most recent information available at the time of start of the validation of the VCS-PD version 1.0, from the Turkish Statistical Reports 2009-2011 /23/ published in the TEIAS website.

Only grid connected power plants were taken into account in the calculations. Simple OM method (ex-ante option) calculation was used as per the "Tool to calculate the emission factor from an electricity system" /07/, as the share of "low cost/must run" are below 50% /05/.

RINA was able to verify the documented evidence listed above during the validation process and can confirms that the approved baseline methodology ACM0002 version 16.0.0. /04/ has been correctly applied in the VCS-PD and the confirmed baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity. Ex-ante option was used for the calculation of the BM.

3.2.5 Additionality

Investment analysis is selected to demonstrate the additionality of the project.

The proposed project generates economic benefits other than CDM income from selling of electricity and the baseline scenario is the continuation of the current situation (electricity supplied by the grid) that does not involve any investment; based on that the simple cost analysis and the investment comparison analysis are not applicable for the project activity. A benchmark approach is considered appropriate thus the benchmark analysis has been correctly applied as per the requirements of the additionality tool /17/. Furthermore, the guidelines on the assessment of investment analysis have been followed.

Benchmark:

The project is calculating the equity IRR, as valid option as per the additionality tool /17/ and the guidelines on the assessment of investment analysis /15/ as the project has a debt component, therefore equity benchmark is used for comparison and assessment of the additionality. The applied benchmark is 12.75%. There are no default values for equity benchmark in the investment analysis guidelines /15/ for Turkey, but the Moody´s index for the country was Ba3 (between december 2005 and January 2010), when the investment decision on proceeding with the project took place and the loan agreement was signed /40, 42/, same as other countries which are listed in the guideline, for example Bangladesh. 12.75% is then considered as correct.

Input parameters:

Parameters	Unit	Value	Source	Validation Assessment and cross checking
Capacity	MW	49.2	In line with the project FSR /37/.	The installed capcity is approved and confirmed in the energy production licence /38/.
Plant Load Factor	%	36.54	The value is calculated based on the approved FSR /37/.	Correct caluclated by third party
Annual Electricity Generation	Mwh	157,500	The value is calculated based on the approved FSR /37/.	Correct caluclated by third party
Total	USD	52,700,	Total investment costs are based on the	The cost represent about 1.07 million USD per installed MW, by

investment		000	investment data of the feasibility study report /37/. The docuemnt was available at the time of the investment desicion /39-40, 42/.	crosschecking with a paper published with the International Energy Agency /27/, the estimations provided in the paper for medium scale projects are between 2 to 4 million USD per MW. The project costs can be therefore considered correct and conservative, as they are bolow level of the presented range. Furthermore, the PP prepared an internal report with the actual porject costs /51/, where is shown that the real costs were higher than the expectations in the FSR.
Operating costs	USD	404,415	Calculated by the project owner based on expectation /37/, As a crosscheck, the operation and maintenance costs represents around 0.77% of the investment costs, the value can be considered correct as crosschecked with available statistical data for hydro power plants /27/, and conservative for hydro power plants.	The presented costs represent around 2.57 USD per produced MWh, by crosschecking with a paper published with the International Energy Agency /26/, the operating and maintenance costs are estimated to be between 5-20 USD, therefore the presented costs can be considered conservative as they are lower than the range of the presented costs.
Electricity price	USD/ Kwh	0.073	Electricity price based on the turkish energy law 5346 from 10/05/2005 /50/.	Crosschecked with the Turkissch Electricity Price Curve Analysis (2010-2011) /28/, where is reported that the values in 2011 the electricity price aere around 0.073 USD/Kwh. The price used for calculations can be considered correct and it is fixed for HEPP projects.
Debt	USD	36,890,000	Based on the agreements signed with the banks /42.	This also considered as the date of investment decision
VAT	%	18	V.A.T. Law No:3065, applicable for the project activity /35/.	Law 3065 is still applicable in turkey, the VAT of 18% is therefore correctly included in the IRR calculations.
Income Tax	%	20	Income Tax Law number 5281, applicable for the project activity /36/.	Law 5281 is still applicable in turkey, the income Tax of 20% is therefore correctly included in the IRR calculations.

The assessment involves checking the data input taken from documents, adoption of correct accounting principle and arithmetical accuracy. We have checked the documents and ensured that right input has been taken in the project cost and projections. The accounting principles adopted with respect computation of interest during construction, block of assets, pro rata expenses and tax computation are found to be in order. The arithmetical accuracy is also found to be correct. The principle adopted by the project developer for computing equity IRR is in conformity with the "Guidance on the Assessment of Investment Analysis ". IRR has been computed for 20 years and the final book value of the project activity after the defined calculation time has been included in the calculations, as it is recommended by the guideline for investment analysis /15/. The fair book value is considered correct calculated as result of the total investment costs discounting the amortisation over the defined calculation period. The fair value can be therefore considered correct.

The equity IRR has been calculated to be 10.77 %, below the defined equity benchmark of 12.75%.

Sensitivity analysis:

<table>
<tr><th>Parameter</th><th colspan="2">Changes/variation</th><th>Probability of the situation</th></tr>
<tr><td rowspan="2">Total investment cost</td><td>+10%</td><td>9.54%</td><td rowspan="2">The investment cost must decrease by 12.05% for the project to cross the benchmark
The investment costs are in line with the international costs per MW for similar projects /27/, so it can be assessed that the project costs will not reduce more than 10% to make the project cross the benchmark.
<table><tr><td>Cost per MW as per reference /26/</td><td>Costs of the project activity per MW installed</td></tr><tr><td>2-4 million USD/MW installed.</td><td>1.07 million USD/MW</td></tr></table>Furthermore, the main costs of the project, turbines and construction are known and are in line with the value used for calculations of the IRR /39-40/.</td></tr>
<tr><td>-10%</td><td>12.36%</td></tr>
<tr><td rowspan="2">Electricity selling price</td><td>+10%</td><td>11.68%</td><td rowspan="2">The electricity price must increase by 22.5% for the project to cross the benchmark.

As it was confirmed through actual electricity price report /30/. The price has not increase over the last years and it is mainly fixed for renewable energy; therefore it can be assessed that the price will hardly increase more than 10% to make the project cross the benchmark.</td></tr>
<tr><td>-10%</td><td>9.79%</td></tr>
<tr><td rowspan="2">Annual operational Cost</td><td>+10%</td><td>10.74%</td><td rowspan="2">The project would not cross the benchmark even if the O&M costs are reduced to 0.

As the O&M can be considered conservative based on the comparison with international average values /27/, even if the O&M costs are reduced to 0, the benchmark would not be crossed, the assessment is therefore not relevant.</td></tr>
<tr><td>-10%</td><td>10.80%</td></tr>
</table>

Common practice analysis:

As per the "Guidelines on Common Practice"/31/, following steps has been assessed.

Step 1: Output range (+/-50%)
The range to analysis the project activity goes from 24.6 MW to 73.8 MW.

Step 2: Similar projects in the geographical area, same measure and energy source, same quality of output, within the range calculated in step 1 and which started operation before the proposed project activity.

Geographical area: The geographical area considered for the assessment is within the borders of the Eastern Black Sea Catchment area. Turkey has a big land extension with very different development conditions in the different areas of the country. It can be considered that there are therefore special distinctions between the different regions. An investment, as a HEPP, cannot be compared with similar projects being developed in other areas of the country, due to the very different technical and investment conditions which result in a completely different risk analysis for each investment. To analyze similar projects within the catchment of the project and not in the whole country is considered correct.

There are 5 similar projects in the defined geographical area. The similar projects are the Muratli, Incirli Weir, Kalen, Kalkandere and Uzunderei /29/.

Step 3: Projects which are not under validation or registered under a carbon standard shall be defined as Nall. In This case, Nall is 2 (kalken and Kalkandere). All others are registered or under registration in carbon schemes as found during assessing of project databases.

Step 4: Define the projects different to the project activity.
The projects are considered similar, so Ndiff = 0.

Step 5: The factor F=1-Ndiff/Nall shall be calculated.
As per the requirements of the tool, the calculation is 1-0/2 = 1
As the factor N_{all}-N_{diff} is not greater than 3, the project is not common practice in the defined geographical area..

Conclusion

RINA can confirm that all data, rationales, assumptions, justifications and documentation provided by the project participants to support demonstration of additionality are credible and reliable.
By assessing the evidences presented and cross-checking the information contained in, RINA considers the reasoning for the proposed project additionality demonstration is credible and reasonable, i.e. the proposed project has the ability to reduce anthropogenic emissions of greenhouse gases by sources below those that would have occurred in the absence of the registered CDM project activity.

3.2.6 Quantification of GHG Emission Reductions and Removals

The emission reductions ER_y of the project activity during the crediting period is the difference between the baseline emissions BE_y, project emissions PE_y and emissions due to leakage LE_y, which are listed as follows:
1) Baseline Emissions (BE_y): (tCO_2e) are the product of the baseline grid emission factor ($EF_{grid,CM,y}$ in tCO_2e/MWh) times the net electricity supplied by the project activity to the grid ($EG_{BL,y}$ in MWh).

2) Project Emissions (PE_y): the project activity is a newly built hydropower project activity with no reservoir. The constructed regulation pound has a power density of 12,634 W/m^2 /53/, which is larger than $10W/m^2$. As per the applied methodology ACM0002 version 16.0.0 /04/, the project emissions are Zero.
3) Leakage (LE_y): no leakage emissions are considered for the project activity. According to the project cost report /51/, no equipment is transferred from other activities. Thus, the emission reductions are calculated as the following formulae:
$ER_y = BE_y - PE_y - LE_y$

The baseline grid emission factor for the project activity is determined ex-ante as a CM, consisting of the combination of OM and BM according to "Tool to calculate the emission factor for an electricity system" /07/. The VCS-PD version 02.01 of 01/05/2014 /01/, is correctly applied the most recent data vintage for the baseline emissions calculation /05/.
The following data were used for baseline emissions calculation:
- Country specific data for net calorific value and amount of consumption of each type of fossil fuel /23/;
- IPCC 2006 default values for emission factors of each type of fossil fuel;
- The total electricity generated by each power plant /23/.
According to the statistical data from Teias /23/, the low-cost/must-run resources in the last five years prior start of validation constitute less than 50% of the total grid generation. Therefore, it is justified that the OM is calculated using the simple OM method. OM is calculated to be 0.65716 tCO2e/MWh as a generation weighted average for the year 2009, 2010 and 2011.
BM is calculated to be 0.40930 tCO2e/MWh.

The CM grid emission factor of the grid is determined ex-ante for the 10 years crediting period following the applied methodology ACM0002 /04/, based on the most recent information available. It has been calculated as the weighted average (wOM=0.5, wBM=0.5) of OM emission factor and the BM emission factor. The combined margin emission factor is calculated as 0.5332 tCO2e/MWh.

The annual net electricity supplied by the project activity to the grid is estimated to be 157.50 GWh in the VCS-PD /01/ as stated in the connection agreement /44/.

Hence, the annual emission reductions generated by the project activity is calculated to be 83,983 tCO2e/yr (=157.50 GWh*0.5332 CO2e/MWh) over the selected 10 years renewable crediting period.
The estimation can be replicated using the data and parameter values provided in the VCS-PD version 02.01 /01/ and supporting file ER calculation spreadsheet /05/ submitted for registration.

RINA thus confirms that the GHG emission reduction calculations are complete and transparent, and the data accuracy has been verified. No other project emission or leakage sources contributing more than 1% and not mentioned by the methodology has been found.

3.2.7 Methodology Deviations

The project activity does not deviate from the applicable methodology ACM0002 /04/..

3.2.8 Monitoring Plan

The approved baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 16.0.0. /04/ has been applied. The monitoring plan is in accordance with the monitoring methodology; the monitoring plan will give opportunity for real measurement of achieved emission reductions.
RINA has checked all the parameters presented in the monitoring plan against the requirements of the methodology; no deviations relevant to the project activity have been found in the plan.
RINA confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

The monitoring plan makes provisions for the measurement of the following parameters which will allow an ex-post assessment of emission reductions. The project activity will supply electricity to the Turkish grid, thus, the project participants will monitor ex-post the following parameters:

- EG_y: redundant meter devices will be installed to assure correctness of the values and to estimate the net electricity supplied to the grid in year y. The electricity will be continuously monitored and at least monthly recorded, through the meter installed at the connection point between the project activity and the power grid. The meters maintenance falls under the responsibility of TEIAS, which calibrates the equipment every 10 years /25/. The meter accuracy is +/- 0.2%, in line with the Turkish requirement for metering equipment /19/.

- CapPJ: Installed capacity of the hydropower plant after the implementation of the project activity. It is not foreseen to change the installed capacity of the project, but the audit team will be able to verify the situation on site during verification activities. The installed capacity is confirmed by the plant commissioning document /47/.

- APJ: The water surface will be is defined by calculation as per topographic information available, in which the reservoir area can be defined. . The results will be reported once during each crediting period.

RINA checked these parameters described in of the VCS-PD and confirmed that 1) the title, unit, description, source of data and value are correct and in line with the documentation prepared by the project consultants and physical site visit; 2) the measurement of the parameters are appropriately described and in line with the applied methodology.

The organizational and management structure, including the responsibilities for monitoring, data collection, reporting and QA/QC procedures are clearly described in the VCS-PD version 02.01 /01/. The documentation related to the carbon credit issuance will be prepared by exeperinced carbon consultants. The information for the preparation of the documents will be based mainly on the data provided by the electricity meteres. Data quality assurance is done by the employees of the company, which are experienced in energy projects, as the company is developing and has developed other hydro projects in the region, as the Cyrakdami HEPP project, also registered as a VCS project. Each issuance request will be audited by an external company as per the VCS requirements.

RINA validated through physical visit, interviews with the relevant persons, cross check with the relevant national regulations /19/ and confirmed that the management arrangements described in the monitoring plan is feasible within the project design and the data management and QA/QC procedures are sufficient to ensure that the emission reductions can be reported ex post and verified.
It is RINA's opinion that the monitoring plan is in compliance with the requirements of the applied methodology and the project participants are able to implement the monitoring plan.

3.3 Non-Permanence Risk Analysis

N/A, no non permanence risks associated to the project activity, no analysis required.

3.4 Environmental Impact

The project has obtained a certificate of Exemption for the EIA process /45/ by the Giresun Provincial Directorate of Environment and Forestry, as the project has an installed capacity lower than 50 MW and therefore is considered out of the scope of the EIA regulation that was applicable during the period of application.

The minimal impact of the project to the environment will be monitored by the PP and reported to the Ministry of Environment as per local rules and regulations.

3.5 Comments by Stakeholders

Prior to the start of validation, a local stakeholder meeting was conducted on 09/04/2006 /43/ at the Muhtarship room of the Kuşluhan Subdistrict which is a close settlement at the project site. The meeting was announced by announcements placed at the Muhtarship board and several places at the nearby settlements. A participant list, meeting minutes and comments are available as part of LSC document /43/. During the site visit /02/, stakeholders from near villages were consulted to check their knowledge about the project. Noted that they were well aware of the project and confirmed that the communication flow with the developing company and the neighbors is working properly.

A summary of the stakeholders' comments has been incorporated in the VCS-PD version 2.01 /01/ and has been verified by RINA, and it is noted that the local government and the residents agreed with the construction of the project activity, and it is the common view that the project activity will bring social and economic benefits to the local people. As per the stakeholder's comments, it can be concluded that the local population agree with the development of the project activity.

RINA can confirm that the process is adequate and credible for local stakeholder consultation.

4 VALIDATION CONCLUSION

RINA Services S.p.A (RINA) has performed validation of the project activity "Dereli Hydroelectric Power Plant" in Turkey, with regard to the relevant requirements for VCS activities.

The review of the final VCS-PD version 2.01 /01/ and the subsequent follow-up interviews have provided RINA with sufficient evidence to determine the fulfillment of the stated criteria.

The project correctly applies the approved baseline and monitoring methodology "ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 16.0.0. /04/.

By generating renewable energy from hydropower plant, the project results in reduction of CO_2 emissions that are real measurable and giving long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the "Dereli Hidroelectric Power Plant" are estimated to be on an average 83,983 tCO_2e per year over the selected 10 years crediting period renewable twice. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is RINA's opinion that the project participants are able to implement the monitoring plan.

In conclusion, it is RINA's opinion that the project activity "Dereli Hidroelectric Power Plant" in Turkey, as described in the VCS-PD, version 02.01 of 11/09/15, meets all relevant VCS requirements and all relevant host Party criteria and correctly applies the baseline and monitoring methodology "ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 16.0.0. /04/.

RINA thus requests registration of the project as a VCS project activity.

APPENDIX A: VALIDATION PROTOCOL

TABLE 1 REQUIREMENTS CHECKLIST

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
A Description of Project Activity						
A.1 Title of the project activity						
A.1.1.	Title of the project activity, revision number and date of VCS-PD. State the clearly identifiable title of the project activity, the version number and the date of the VCS-PD.	/01/	DR	The title of the project activity is "DereliHydro Electricity Power Plant". version1.0 of 04/04/2011.		OK
A.1.2	Does the project comply with the applicable requirements for completing the VCS-PDs?	/01/ /11/	DR	The project does not fully comply with "VCS Program Guide", version 3.2. of 01/02/2012 for completing the VCS-PD. The VCS-PD version 01 does not include reference to the plant load factor as per the guidelines for the reporting and validation of plant load factors and project development timelines to assess the starting date of the project activity.	~~CAR 1~~	OK
A.2 Description of the proposed project activity						
A.2.1	Does the PDD contain an accurate description of the project activity and provide the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? How was the design of the project assessed?	/01/ /11/	DR, I	The project activity consists of the construction of one Greenfield regulator and hydroelectric power plant (HEPP). It will be located on Aksu River, Giresun Province in Turkey's. The rated capacity		OK

[1] MoV: DR document review, I interview, CC cross checking

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				of the project is 49.2MW. The generated electricity will be delivered to the Turkish Power Grid which is dominated by fossil-fuel fired power plant. The expected annual generation is 157.5 GWh, which represents the emission reductions of 83,201 tons of CO_2 per year. As per the situation seen during the site visit, the project was under construction. The project FSR and technical information on the installed capacity shall be provided to confirm the information of the VCS-PD.	~~CL1~~	
A.2.2	Does the project activity involve alteration of existing installations? If yes, have the differences between pre-project and post-project activity been clearly described in the PDD?	/01/	DR, I	As seen during site visit, the project is being newly installed, no alteration of an existing project takes place.		OK
A.2.3	Does the project expect a "Grouped Projects"?	/01/ /10/	DR, I	The project consistsof one hydro power plant.. The total installed capacity of the projects is 49.2 MW, which falls under the large VCS scale project guidelines /10/. The project does not fall under "Grouped Projects".		OK
A.3 Ownership and other programs ***(VCS Standard Version 3 § 3.12)***-- Project eligibility ***(VCS Standard Version 3 § 3.4.1)***						
A.3.1	Does the Proof of title is available and in accordance with the "right of use" of VCS requirements?	/01/	DR	The proof of title for water use, environmental and construction permit were not available during the site visit.	~~CL2~~	OK
A.3.2	Does the project activity reduce GHG emissions from activities that are included in an emission trading		DR	The evidences as per VCS standard is not available to demonstrate whether	~~CL3~~	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
	program or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?			the project activity is included in emission trading program..		
A.3.3	Does the project have created another form of GHG-related environmental credit?		DR	The evidences as per VCS standard is not available wether the project activity has created another form of GHG-related environmental credit.	~~CL3~~	OK
A.3.4	Does the project is registered under another approved GHG program?	/01/	DR	Through cross checked with other common GHG programmes and the interviews performed during site visit with the project owner, it can be confirmed that the project is not registered under other GHG programmes.		OK
A.3.5	Does the project is rejected under other GHG program?	/01/	DR	The audit team performed a cross check with other GHG programme information, no rejection of the project activity was found.		OK
A.4 Technical description of the project						
A.4.1	Is the project location clearly defined? (VCS Standard Version 3 § 3.11)	/01/	DR, I	Yes, the project location is clearly defined in the VCS-PD version 1.0. The location is the Giresun province, Turkey. The project geographical coordinates are no included. To identify the unique project activity, the PP shall include the coordinates of the power house and the dam in the VCS-PD.	~~CAR2~~	OK
A.4.2	Does the project is categorized as “project” or “mega project? *(VCS Standard Version 3 § 3.10)*	/01/ /05/	DR	The project will generate less than 1,000,000 tCO_2 reductions, therefore it is categorized as a “project” activity as presented in the emission reduction calculation sheet. Final confirmation can be given once the FSR is provided.	~~CL1~~	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
A.4.3	Does the project design engineering reflect current good practices? Would the technology result in a significantly better performance than any commonly used technologies in the host Country?	/01/ /	DR, I	The documentation on project design is requested to be provided. :.	~~CL1~~	OK
B. Application of a baseline and monitoring methodology						
B.1Methodology applied						
B.1.1	Does the project activity apply an approved methodology and the correct version thereof?	/01/ /04/ /07/ /17/	DR, I	The VCS-PD version 01 has correctly applied the approved methodology "ACM0002"*"Consolidated baseline methodology for grid-connected electricity generation from renewable sources*". All applicability conditions as per methodology are included in the VCS-PD. The VCS-PD shall apply the latest version of the methodology and tools, namely the "Tool to calculate the emission factor from an electricity system and the additionality tool.	~~CAR3~~	OK
B.2 Applicability criteria of the methodology/tools						
B.2.1	How was it validated that the project activity complies with the applicability criteria?	/01/ /04/	DR, I	The project activity, for energy generation component, meets the criteria of the approved methodology ACM0002-Version 12.3.0, eventhough the VCS-PD version 01 applies version 12.0.1 of the methodology: *"Consolidated baseline methodology*		OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				for grid-connected electricity generation from renewable sources", under the following conditions: Criteria 1: the project activity generates electricity using hydro resources and supplies electricity to the regional grid; Criteria 2: The project will deliver the generated electricity to the Turkish Grid (FSR requested), Criteria 3: the project activity is a newly built hydropower plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity, as it could be confirmed during site visit as the project was under construction; Criteria 4: the project activity results in a new regulation pond with the power density of 767 W/m2 or728 W/m^2 (both values are reported)which is greater than 4W/m^2; The final value will be assessed once the VCS-PD version 1 is corrected and supporting information provided. Furthermore, the reported value shall be consistent troughout the PDD. Supporting information on the surface area shall be provided. Criteria 5: The project does not involve the addition of renewable energy generation units to an existing renewable power generation facility, as the project consists in the installation of new power plants, as seen during site visit. Criteria 6: The project does not involve	~~CL1~~ ~~CL4~~	

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				retrofit or replacement of any power unit. Criteria 7: The project does not involve the switch of fossil fuel to renewable energy sources, is not a biomass power plant or is not a hydro power plant with a new reservoir where the power density is less than 4W/m^2.		
B.2.2	Is the selected baseline one of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/01/ /04/	DR, I	The baseline is defined by the methodology /4/ to be that the electricity delivered to the grid by the project would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources.		OK
B.3 Project boundary						
B.3.1	Is the project boundary are clearly defined and in accordance with the applied methodology?	/01/ /04/	DR	The boundary is not clearly defined as per the methodology /04/, as the spatial extent of the project in addition to all plants connected to the grid. The VCS-PD description of the connection point to the grid, shall be confirmed through supporting information. Furthermore, it is not clearly indicated that the project boundary is the project power plant and all the power plants connected to the turkish national electricity grid.	CL5	OK
B.3.2	What are the project's system boundaries (components and facilities used to mitigate GHGs)?	/01/ /04/ /05/	DR, I	As per the on-site visit, it is confirmed that the project boundary includes the project site and all power plants connected to the Turkish National Grid, but supporting documentation is not available. The exact components as defined by the methodology /04/ are the power plant, and all power plant connected to	CL5	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				the national grid, as included in the grid emission factor calculation sheet /05/.		
B.3.3	Which sources are identified for the project? Does the identified project boundary cover all possible sources linked to the project activity?	/01/ /04/	DR	Only CO_2 is considered as the main source of baseline emission for the proposed project. CH_4 emissions from the reservoir are not taken into account as project emissions, as the power density of the project is higher than 10 W/m2. This is in compliance with ACM0002-Version 12.3.0. Furthermore, CO_2 emissions due to diesel consuption as auxiliary power are taken into account in the project activity.		OK
B.3.4	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute by more than 1% to the estimated emission reductions of the project?	/01/	DR	There is one emission source which is included in the VCS-PD. The possible consumption of diesel in the backup generator will be monitored, but it is expected that the emission will be less than 1% to the estimated emission reductions of the project.	CL~~1~~	OK
B.4 Baseline scenario identification						
B.4.1	Which baseline scenarios have been identified? Is the list of the baseline scenarios complete?	/01/ /03/ /04/	DR, I	As the baseline scenario is defined by the methodology, no other alternatives were presented in the VCS-PD, which is in line with the latest version of the validation and verification manual.		OK
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/01/ /04/	DR, I	Please refer to B.3.1.		OK
B.4.3	What is the baseline scenario? Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/01/ /04/	DR	Please refer to section B.3.1.		OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
B.4.4	Has the baseline scenario been determined using conservative assumptions? Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/01/ /04/	DR	Not applicable.		OK
B.5 Additionality determination***(VCS Standard Version 3 § 3.15)***						
B.5.1	What tool does the project use to assess additionality? Is this in line with the methodology?	/01/ /04/ /17/	DR, I	In line with the applied approved methodology ACM0002:*"Consolidated baseline methodology for grid-connected electricity generation from renewable sources*", the PP demonstrate the additionality through the "*Tool for the demonstration and assessment of additionality".*	~~CAR~~3	OK
B.5.2	What is the project additionality mainly based on?	/01/ /04/ /13/	DR, I	The project additionality has been conducted based on investment analysis.		OK
B.5.2	Investment analysis					
B.5.2.1	What is the analysis method used to determine whether the proposed project activity is not (a) the most economically or financially attractive; or (b) economically or financially feasible, without the revenue from the sale of certified emission reductions?	/01/ /04/ /13/ /17/	DR	Since the proposed project activity generates economic benefits other than CDM income and the baseline scenario is the continuation of the current situation (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) that does not involve any investment, the benchmark analysis has been applied.		OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
B.5.2.2	What the financial indicator is used?	/01/ /04/ /13/ /17/	DR, I	The PP compared the project IRR against a Benchmark based on WACC. The benchmark was calculated based on country data The defined benchmark is 10.6%. Supporting information used to calculate the benchmark shall be provided.	C~~L6~~	OK
B.5.2.3	Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the Host Country?	/01/ /13/	DR, I	Depreciation has been included in the calculations. Supporting document shall be provided for tax and depreciation values used.	C~~L7~~	OK
B.5.2.4	Is the time period of the investment analysis and operating time of the project realistic? Has salvage value been taken into account? Is the working capital returned in the last year of the operation?	/01/ /13/	DR, I	The period of calculation is 20 years, in line with the recommendations of the investment analysis guidelines. The salvage value used shall be supported with evidences.	C~~AR~~4	OK
B.5.2.5	Cross-check of main parameters used in the financial analysis: electricity generation, electricity tariff, investment costs, operating and maintenance costs, taxes, other costs. The main parameters can be changed for the different project category.	/01/ /13/ /17/	DR, I	The main parameters shall be crosschecked with third party evidences, furthermore: - For the electricity price,the value used shall be confirmed, as the value from the renewable energy law is the lowest that can be obtain in the host country. The market price is usually higher, and the PPs can close , following experience in Turkey, contracts with direct consumers, obtaining the highest price, and option being actually used by the project owners. All input values used in the investment analysis needs to be supported with independent/real sources.Furthermore, the input values in the IRR calculation sheet are not consistent with the	C~~AR5~~	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				values included in the VCS-PD.		
B.5.2.6	Sensitivity analysis: have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified?	/01/ /13/ /17/	DR, I	The sensitivity analysis is included in the calculation sheet. Investment costs, O&M costs and Electricity revenue and electricity production were included.		OK
B.5.2.7	Sensitivity analysis: is the range of variations is reasonable in the project activity? The main parameters can be changed for the different project category.	/01/ /13/	DR, I	See CAR5	CA~~R5~~	OK
B.5.2.8	Have the key parameters been varied to reach the benchmark and the likelihood of this happening been justified to be small?	/01/ /13/	DR, I	The variations required to reach the benchmark were included in the excel sheet but are missing in the VCS-PD. The assessment can be performed once the values are supported.	C~~AR5~~ C~~AR6~~	OK
B.5.3 Barrier analysis						
B.5.3.1	Are the barriers identified complimentary to a potential investment analysis?	/01/ /17/	DR, I	No barriers were presented in the VCS-PD, in line with the requirements of the additionality tool, which allows to perform only investment analysis to present the additionalyty of the project.		OK
B.5.3.2	How were the investment barriers assessed to be real? How does VCS alleviate the investment barriers?	/01/	DR	N/A		OK
B.5.3.3	Is the project activity prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/	DR	N/A		OK
B.5.3.4	How were the technological barriers assessed to be real? How does VCS alleviate the technological barriers?	/01/	DR	N/A		OK
B.5.3.5	Is the project activity prevented by the technological barriers and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/	DR	N/A		OK
B.5.3.6	How were the barriers due to prevailing practise	/01/	DR	N/A		OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
	assessed to be real? How does VCS alleviate the barriers due to prevailing practice?					
B.5.3.7	Is the project activity prevented by the barriers due to prevailing practice and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/	DR	N/A		OK
B.5.3.8	How were the other barriers assessed to be real? How does VCS alleviate the other barriers?	/01/	DR	N/A		OK
B.5.3.9	Is the project activity prevented by the other barriers and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/	DR	N/A		OK
B.5.4 Common practice analysis						
B.5.4.1	What are the geographical scope and scope of technology of the common practice analysis?	/01/ /17/	DR	The proposed project activity is a large scale project that generates electricity based on hydrologicalsources. The region used is the river basin, The whole country has beenused to assess the common practice, the analysis shall be performed following the guidance available in the latest version of the additionality tool.	C~~AR3~~	OK
B.5.4.2	How many similar non-CDM-projects exist in the region within the scope?	/01/ /	DR	Please refer to section B.5.4.1.	~~CAR~~3	OK
B.5.4.3	How were possible essential distinctions between the project activity and similar activities assessed?	/01/	DR	Please refer to section B.5.4.1.	CA~~R3~~	OK
B.5.4.4	What is the data source(s) used for the common practice analysis?	/01/	DR	Please refer to section B.5.4.1.	C~~AR3~~	OK
B.5.5 Conclusion on the additionality assessment						
B.5.5.1	What is the conclusion with regard to the additionality of the project activity?	/01/ /17/	DR, I, CC	Please refer to the sections related to additionality, i.e. section B.5.1 to section B.5.4.	C~~AR~~3 C~~AR4~~ C~~AR5~~ C~~AR6~~ C~~L6~~	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
					CL7	
B.6Calculation of GHG emission reductions						
B.6.1 Baseline emissions						
B.6.1.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/01/ /05/ /07/	DR, I	According to the approved methodology ACM0002-Version 12.3.0, the baseline emissions are the product of electrical energy baseline expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor. The emission factor is a combined margin and according to the methodological tool to calculate the emission factor for an electricity system has been calculated as weighted average of OM and BM, which are selected for the first crediting period as 0.5.		OK
B.6.1.2	Have conservative assumptions been used when calculating the baseline emissions and are the uncertainty estimates properly addressed?	/01/ /05/ /07/ /18/	DR, I	The baseline emission factor is determined ex ante according to the methodological tool "Tool to calculate the emission factor for an electricity system" Version 02as the weighted average of OM and BM. The weight of OM and BM are selected for the first crediting period as 0.5 as requested by the methodological tool. The combined margin emission factor is determined ex-ante based on the most recent information available at the date of the commencement of the validation, as it was crosscheck with the source during the site visit. The grid emission factor is calculated bysed on information published by TEIAS (Turkish Electricity	C~~AR~~1 C~~AR7~~	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				Transmission Company) in the website. . The combined grid emission factor of the Turkish Grid is calculated as 0.528 tCO2e/MWh. The calculation of the operating margin and build margin emission factors has been documented electronically in a spreadsheet and includes all data used to calculate the emissions factors as required by the methodological tool "Tool to calculate the emission factor for an electricity system" Version 02. The EF calculation is not done in accordance with the latest version of the methodological tool available on the UNFCCC website. Moreover the VCS-PD has to be updated with the latest version of the tool to calculate emission factor. Furthermore, the grid emission factor is not consistent through out the PDD. The baseline emission calculations can be only confirmed once the plant load factor has been confirmed as per guidelines to assess PLF.		
B.6.2 Project emissions						
B.6.2.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/01/ /04/	DR, I	According to the project design, the power density is calculated as 728W/m^2 , which is higher than the threshold of 10W/m^2given by the methodology, therefore, no project emissions need to be accounted with reference to the applicable methodology. The emissions related to	~~CL~~4	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				the consumption of diesel fuel for auxiliary energy generation will be measured and discounted from the emission reduction calculations.		
B.6.2.2	Have conservative assumptions been used when calculating the project emissions and are the uncertainty estimates properly addressed?	/01/	DR, I	Please refer to section B.6.2.1	~~CL~~4	OK
B.6.3 Leakage						
B.6.3.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/01/	DR, I	According to the approved methodology, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected.		OK
B.6.3.2	Have conservative assumptions been used when calculating the leakage and are the uncertainty estimates properly addressed?	/01/	DR, I	Please refer to section B.6.3.1		OK
B.6.4 Emission reductions						

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
B.6.4.1	Has the methodology been correctly applied to calculate the emission reductions and can this be replicated by the data provided in the PDD and supporting files to be submitted for registration?	/01/ /05/	DR, I	Please refer to section B.6.1 to B.6.3. Table 15 of the PDD is incorrect and not in line with the methodology. No baseline emissions have been reported.	~~CL1~~ CL4 CAR7 CAR8	OK
B.6.5 Data and parameters that are available at validation and that are not monitored						
B.6.5.1	How were the parameters available at validation verified?	/01/ /05/	DR, I	The following default values have been applied in the emission reductions calculation. The OM and BM are calculated ex-ante, so the CM Emission Faction of the power grid is fixed over the first crediting period: 0.528 tCO_2e/MWh. The correctness of the value can be confirmed once updates are performed and the grid EF is consistent in the VCS-PD and ER calculation sheet.	CAR7	OK
B.7 Monitoring plan						
B.7.1 Data and parameters monitored						
B.7.1.1	Does the monitoring plan described in the PDD comply with the requirements of the methodology?	/01/ /04/	DR, I	The parameters to be monitored are not in line with the requirements of the latest version of the methodology ACM0002.	CAR9	OK
B.7.1.2	Does the monitoring plan contain all necessary parameters andare they clearly described?	/01/ /04/ /19/	DR, I	The only parameters monitored arethe net electricity supplied to the grid and the diesel consuption. All parameters requested by the methodology shall be included in the VCS-PD. Furthermore, information on diesel consumption is not consistent in the VCS-PD, as it is a parameter included to be monitored,	CAR9	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				but other parts of the VCS-PD states that the consumption will not be monitored and consumption will be neglected.		
B.7.1.3	Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and deemed appropriate? Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?	/01/	DR, I	Information on the monitoring equipment has been included, taking into account the national requirements for the measurement equipment. The meters installed comply with ICE/TSE 62053-22: Electricity metering equipment (a.c) – Particular requirements - Part 22: Static meters for active energy (Classes 0,2 S and 0,5 S), required in Turkey.	C~~AR~~9	OK
B.7.1.4	Is the monitoring frequency adequate for all monitoring parameters? Is it in line with the monitoring methodology?	/01/ /04/	DR, I	Please refer to section B.7.1.1.	C~~AR~~9	OK
B.7.1.5	Is the recording frequency adequate for all monitoring parameters? Is it in line with the monitoring methodology?	/01/ /04/	DR, I	Please refer to section B.7.1.1.	~~CAR~~9	OK
B.7.2 Monitoring of sustainable development indicators/environmental impacts						
B.7.2.1	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/01/ /04/ /20/	DR, I	According to the approved methodology ACM0002-Version 12.3.0., the sustainable development indicators need not to be monitored. The monitoring of sustainable indicators is not required. Furthermore, the project is requesting registration under the Social Carbon Standard, which will include sustainable development indicators.		OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
B.7.2.2	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/01/ /21/	DR, I	There is a certificate of exception of EIA for the project activity, as the installed capacity is under 50MW. The collection of information regarding environmental, social and economic impacts falls under the Social Carbon Standard component, as there is no local requirements to monitor these parameters.		OK
B.7.2.3	Are the sustainable development indicators in line with stated national priorities in the host country?	/01/ /04/	DR, I	Please refer to section B.7.2.2.		OK
B.7.3 Management, quality assurance and quality control						
B.7.3.1	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/01/	DR, I	At the date of the site visit, it was found that no monitoring arrangement was installed; anyway RINA can confirm that the monitoring arrangements described in the monitoring plan are feasible within the project design, taking also into account that the project owner has already plenty of experience in hydro installations.		OK
B.7.3.2	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/01/	DR, I	Data to be used for emission reductions calculation will be aggregated, summarized, calculated and recorded in both electronic by the monitoring responsible and paper form every month in form of invoices. .		OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
B.7.3.3	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/01/ /19/	DR, I	All the electricity meters will be calibrated according to national standard to assure the correctness of the readings from the meters. The readings from the meters will be cross checked with sales receipts or PMUM Website. The VCS-PD is inconsistent in defining if the electricity metered supplied to the grid will be crosschecked with the electricity invoices or the PMUM website. Meter calibration and test falls under the responsibility of the national authorities, therefore the PP does not have access to the electricity meters.	C~~AR10~~	OK
B.7.3.4	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of VCUs, for this project activity, whichever occurs later?	/01/	DR, I	The information has been included in the VCS-PD.		OK
C. Duration of the project activity and crediting period.						
C.1 Start date of project activity						
C.1.1	What is the expected starting date of the project activity and how has been determined? When was the first construction activity?	/01/	DR, I	The starting date is 01/12/2011, date in which is the expected date to start operation. Timeline needs to be	C~~L8~~	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
				provided, as requested.		
C.1.2	What is the expected operational lifetime of the project activity? Is it reasonable?	/01/ /22/	DR, I	Lifetime of the project is reported to be 20 years. Supporting document is required to assess if the value comply with the "Tool to determine the remaining lifetime of equipment". The webpage provided as source cannot be accessed.	~~CL9~~	OK
C.2 Start date of crediting period						
C.2.1	What is the expected starting date of the proposed project activity? Does the crediting period start eight week after the request for registration?	/01/	DR, I	Start of crediting period is in line with the starting date of the project, 01/01/2012.	~~CL8~~ ~~CAR11~~	OK
C.2.2	What is the length of the crediting period? Is it clearly defined and reasonable?	/01/	DR, I	The crediting period is 10 years, renewable twice. Reasonable for the type of technology to be used for the project activity. The crediting period presented in the VCS-PD is incorrect, as it is less than 10 years.,		OK
D. Environmental Impact						
D.1.1	Has an analysis of the environment impacts of the project activity been undertaken? Is it clearly and sufficiently described in the PDD?	/01/	DR, I	No EIA is required as per national laws. The region where the project is being constructed has also other hydro power plants.		OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
D.1.2	Will the project create any adverse environmental effects? Are transboundary environmental impacts considered in the analysis?	/01/ /21/	DR, I	EIA is not required by national law. The certificate of the non-requirement of EIA is included in the VCS-PD and was provided to the audit team for revision.-There are no impacts defined in the VCS-PD.		OK
D.1.3	Is the analysis of the environmental impacts required by the legislation of the host Country? If yes, has the EIA has been approved by local Government? Does the approval contain any conditions that need monitoring?	/01/ /21/	DR, I	Please refer to section D.1.1.		OK
D.1.4	Is it the project in line with the current environmental legislation in the host Country?	/01/	DR, I	The construction and environmental permit needs to be provided to the audit team to assess compliance with current legislation.	C~~L~~2	OK
E.	**Local stakeholder consultation**					
E.1.1	Are the local stakeholders being invited by the PP?	/01/	DR, I	The local stakeholder consultation was carried out by the VCS consultant. . More accurate information on the meetings performed and the comments received by the stakeholders, together with the response provided, shall be included in the PDD. Supporting documents shall be provided.	C~~AR12~~	OK
E.1.2	Area the stakeholders invited is considered as regards commenting the proposed project activity?	/01/	DR, I	Refer to E.1.1.	C~~AR12~~	OK

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
E.1.3	Is the summary of the comments received from the stakeholders, provided in the VCS-PD complete?	/01/	DR, I	Refer to E.1.1.	~~CAR12~~	OK
E.1.4	Has due account been taken by the project participants of any stakeholder comments received?	/01/	DR, I	Refer to E.1.1.	~~CAR12~~	OK
E.1.5	If a stakeholder consultation process is required by regulations/laws in the host Country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/01/	DR, I	The stakeholder consultation process is not required by regulations of laws in Turkey. During the site visit, the major of the local community was visited to clarify the local requirements on stakeholder meeting requirements.		OK

TABLE 2 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
CAR1 The Plant Load Factor, in line with the guidelines for assessing the plant load factor, and project development timelines to assess the starting date of the project shall be included in the VCS-PD.	A.1.2. B.6.1.2.	Plant load factor is calculated and added to the version 2.0 of the PD, inline with the guidelines.	The plant load factor complies with the requirements, at it is the one used for the approval of the authorities during project implementation. CAR is closed.
CAR2 The coordinates of the power house and the dam shall be included in the VCS-PD.	A.4.1.		The coordinates are now correctly included in the VCS-PD. CAR is closed.
CAR3 The VCS-PD shall apply the latest version of the methodology and tools.	B.1.1.	The Methodology and tools are updated to ACM0002 Version 16 and its relevant tools, please see version 2.00 of the PDD. Further request form the DOE: The VCS-PD shall apply the template version 3.2, available since October 2013. The title page needs to apply Arial 10. There are still sections referring to old versions of the methodology (see page 13 for example).	The information has been included in the revised VCS-PD /01/, were latest version of methodology and tools have been applied /04/ /07/. CAR is considered closed.
CAR4 Further information and inclusion of the savage value shall be included in line with the guidelines for assessment of the investment analysis.	B.5.2.4.	Included, Please see version 2.0 of the	The investment analysis sheet was updated /13/ including the information as per the FSR /37/. Information included, CAR closed.
CAR5 Third party evidences in relation to the input values of the investment analysis shall be provided. Furthermore: -electricity price: the price given by the renewable	B.5.2.5.	The Financial analysis is updated, please see version 2.00 of the DereliFinancialAnaysisv2.00.xlxs. In the relevant tabs:Summary, InvestmentCost, Operation cost	Information included, CAR closed. The investment analysis sheet was updated /13/ including the information as per the FSR /37/.The electricity price is based on the RE law. The contracts ahs been

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
energy law in Turkey is considered the minimum value that a project can obtain. The standard market price is higher than the energy price set by law, and the PP is able to sell the electricity directly to final consumers via contracts. The electricity price used for calculation shall be further support. - All input values of used for calculations of the IRR shall be confirmed with third party/real values. - PP provide details of actual debt obtained for the project. Has the debt equity ratio and interest rates of the actual loans been considered in the financial analysis. - Furthermore, the input values in the IRR calculation sheet are not consistent with the values included in the VCS-PD.		and Finance are all referenced. -Electricity Price is considered as 0.73 USD. As the max value guaranteed by the RE Law, Compared to the publically announced electricity price of 0.0913 TL/KWh (converts as 0.055 USD/KWh). The guaranteed price is a conservative estimation. (See version 2.00 page 18 of the VCS-PD). In addition to this at the time of investment decision electricity price suggested by DSI was 6.0 cents/KWh of Firm energy (and 3.3 cents for the secondary electricity). -The values utilized at the investment cost, operation cost are taken from the FSR presented to DSI and to financial institutions. -The Investment cost and other parameters can also be cross checked with the E&M Purchase Contract and Construction sub contracts.	provided to assess that the values for O&M costs and investment costs are in line with the expectations at the time of investment decision.
CAR6 The variations required to reach the benchmark were included in the excel sheet but are missing in the VCS-PD	B.5.2.8.	Please see version 2.00 of the PDD. Those values are not only updated but also are included in the PDD.	he investment analysis sheet was updated /13/, the sensitivity analysis has been corrected accordingly. Information included, CAR closed.
CAR7 The Grid emission factor shall be calculated using the latest available tool. Furthermore, the grid emission factor is not consistent throughout the PDD.	B.6.1.1.	Please see version 2.00 of the PDD, the Grid Emission Factor is made consistant and calculated based on the available data at the time of PDD version 1.00 submission.	The EF sheet /05/ has been updated and is in line with the requirements of the latest version of the “Tool to calculate the emission factor from an electricity system” /07/. Information included, CAR closed.
CAR8 Table 15 of the PDD is incorrect and not in line	B.6.4.1.	That entire section is corrected please see version 2.00 of the	VCS-PD corrected /01/. Information included, CAR closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
with the methodology. No baseline emissions have been reported.		PDD.	
CAR9 The VCS-PD does not include all parameters to be monitored in line with the requirements of the methodology ACM0002. Furthermore, information on diesel consumption is not consistent in the VCS-PD, as is a parameter included to be monitored, but other parts of the VCS-PD states that the consumption will not be monitored and consumption will be neglected.	B.7.1.1.	That entire section is corrected please see version 2.00 of the PDD. But Please also note that the project is not a small scale project and is therefore implementing ACM0002, and ACM0002 neglects the uof diesel fuel for auxilary power, therefore diesel consumption is not going to be utilized.	The information has been included in the revised VCS-PD /01, the emissions for diesel consumption for the auxiliary generator will be neglected CAR closed.
CAR10 The VCS-PD is inconsistent in defining if the electricity metered supplied to the grid will be cross checked with the electricity invoices or the PMUM website.	B.7.3.3.	The electricity sold will be cross checked with PMUM Data please see version 2.00 of the PDD.	The information has been included in the revised VCS-PD /01/. Information included, CAR closed.
CAR11 The crediting period presented in the VCS-PD is incorrect, as it is less than 10 years.,	C.2.2.	It is now corrected Please see version 2.00 of the PDD.	Document correct. CAR closed.
CAR12 The VCS-PD does not include the meeting dates, comments from the stakeholders and response provided by the PP. Supporting documents shall be provided.	E.1.1.	That section is revised please see version 2.00 of the PDD and the suporting documents are added please see document number (5)	The information has been included in the revised VCS-PD /01/, furthermore, supporting evidence on the stakeholder meeting was provided /43/. Information included, CAR closed.
CL1 The project forecasted generation and information on the technical equipment is not available to confirm the information provided in the PDD.	A.2.1. A.4.2. A.4.3. B.2.1. B.3.4.	Please see document number (1) and number (3), the technical information is taken from there.	The FSR was provided to the audit team /37/. Further information provided, CL closed.
CL2 The proof of title, environmental and construction permit were not available during the site visit..	A.3.1. D.1.4.	Please see documents number (1), (6) and (9).	Further information provided, CL closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
CL3 The evidences as per VCS standard is not available to demonstrate whether the project activity is included in emission trading program or in the jurisdiction in which binding limits are established on GHG emissions. Furthermore, a statement on the creation of another form of GHG environmental credits, in line with VCS requirements was also not available.	A.3.2. A.3.3.	Please see PDD version 2.00. The project is located in Turkey where there are no binding Emissions Reductions Programme.	The project has not been found in other project registries /33-34/. Further information provided, CL closed.
CL4 Supporting information to confirm the surface area of the reservoir and therefore the applicability is not available. Furthermore, the value is not consistent trough out the VCS-PD	B.2.1. B.6.2.1. B.6.2.2.	The document titled: "(11)DERELİ_ÇIRAKDAMI.KMZ" exhibits the position and footprint of each component of the project, the DOE can make use of this file to measure the aerial extent of the reservoir lake, and a topographic map showing the reservoir area is provided as document (13) and this one is also added as Appendix IV to the version 2.00 of the PDD. Further request of the DOE: The surface area is still not consistent in the VCS-PD, see pages 12 and 40.	CAD Draw for the surface area provided /53/. Further information provided, CL closed.
CL5 The connection of the project to the electricity grid shall be confirmed, supporting information is not available. Furthermore, it is not clearly indicated that the project boundary is the project power plant and all the power plants connected to the Turkish national electricity grid.	B.3.1.	This information is provided in the first chapter of the PDD version 2.00 (also see page page 6 prg 2, , in addition to this the connection agreement is provided as document number (7).	The grid connection agreement is available. Further information provided, CL closed.
CL6 The information used to calculate the benchmark is not available. It shall be further confirmed why	B.5.2.2.	To be conservative we have updated our approah and we have considered the benchmark please	The information has been included in the revised VCS-PD /01/ and in the revised IRR calculation sheet /13/. Further

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
the PP considered a publicly available benchmark such as PLR of the central bank of the country as the benchmark.		see version 2.00 of the PDD.	information provided, CL closed.
CL7 Supporting documentation to evidence the depreciation and taxes applied is not available. PP to provide the explanation and statutory support for VAT.	B.5.2.3.	The regulation numbers are indicate on the PDD, and this is the bassis.	The information has been included in the revised VCS-PD /01/ and in the revised IRR calculation sheet /13/. Further information provided, CL closed.
CL8 Supporting documentation shall be provided to proof that operation of the plant started on 01/12/2011.	C.1.1. C.2.1.	Please see document number 10	Document number 12 provided, confirming the starting date of the project on 10/01/2014. CL closed.
CL9 Supporting documentation shall be provided to assess if the value comply with the “Tool to determine the remaining lifetime of equipment”. The webpage provided as source cannot be accessed.	C.1.2.	Please see version 2.0 of the PDD. A hydroelectric turbine is a water cooled electric generator, and according to the “Methodological Tool:Tool to determine the remaining lifetime of equipment” (Version 01)” The default lifetime of such equipment is 30 years. We have made this point clear in version two of the PDD. But also, the mentioned Public documet about the lifespan of the hydroelectric powerplant equipment can be downloaded from the following link: http://www.kalkinma.gov.tr/Lists/zel%20htisas%20Komisyonu%20Raporlar/Attachments/72/oik585.pdf	. The information has been included in the revised VCS-PD /01/ and it is in line with the requirements of the “Tool to determine the remaining lifetime of equipment” /06/. Further information provided, CL closed.

TABLE 3 FORWARD ACTION REQUEST

Forward action request	Reference to Table 2	Response by project participants Validation Conclusion
FAR 1		

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: *We declare that Mr/Mrs/Ms:*	**Sergio Alejandro Degener**
è qualificato come[1]: *is qualified as:*	**CDM -TEC, -VAL, -VER**
per le seguenti aree tecniche: for the following technical areas:	**1.1, 1.2, 13.1, 13.2**

AREE TECNICHE **TECHNICAL AREAS**	**DESCRIZIONE DELL'AREA TECNICA** ***TECHNICAL AREA DESCRIPTION***	**SCOPO SETTORIALE** ***SECTORAL SCOPE***
1.1	Thermal energy generation	1
1.2	Renewables	1
13.1	Solid waste and wastewater	13
13.2	Manure	13

in accordo alle istruzioni del Settore Sostenibilità, Ambiente & Cambiamenti Climatici.
in accordance with the instructions of the Sustainability, Environment & Climate Change Sector.

REVISIONE ***REVISION***	**DATA** ***DATE***	**MOTIVAZIONI PER LA REVISIONE** ***REASON FOR THE REVISION***
0	04-04-2011	-
7	10-11-2015	New revision of IS-QPT-GHG-20

Il Resp. QPT
Head of QPT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

RINA

CERTIFICATO DI QUALIFICA GHG
GHG QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: **Hasan Zor**
We declare that Mr/Mrs/Ms:

è qualificato come[1]: **LOCAL EXPERT**
is qualified as: **(Turkish mother tongue)**

per le seguenti aree tecniche: **-**
for the following technical areas:

AREA TECNICA ***TECHNICAL AREA***	**CODICE RINA** **RINA CODE**	**SCOPO SETTORIALE** ***SECTORAL SCOPE***	**CODICE RINA** **RINA CODE**
-	-	-	-

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE ***REVISION***	**DATA** ***DATE***	**MOTIVAZIONI PER LA REVISIONE** ***REASON FOR THE REVISION***
0	23-03-2011	-

Il Responsabile di Schema
Scheme Manager

Il Resp. Tecnico della Divisione
Head of CRT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: Social Carbon Standard
TEC-FIN:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Reghu Raghavan Nair Kumar

è qualificato come[1]:
is qualified as:

CDM-TEC, CDM-VAL, CDM-VER, CDM-TL, CDM-FIN-EXP
VCS-TEC, VCS-VAL, VCS-VER, VCS-TL, VCS-FIN-EXP
GS-TEC, GS-VAL, GS-VER, GS-TL, GS-FIN-EXP
SCS-TEC, SCS-VAL, SCS-VER, SCS-TL, SCS-FIN-EXP
JI-TEC, JI-FIN-EXP

per le seguenti aree tecniche:
for the following technical areas:

1.1, 1.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 5.1, 6.1, 11.1, 13.1

AREE TECNICHE **TECHNICAL AREAS**	**DESCRIZIONE DELL'AREA TECNICA** ***TECHNICAL AREA DESCRIPTION***	**SCOPO SETTORIALE** ***SECTORAL SCOPE***
1.1	Thermal energy generation from fossil fuel and biomass including thermal electricity from solar	1
1.2	Energy generation from renewable energy sources	1
4.3	Iron and steel	4
4.4	Refinery	4
4.5	Rubber and Plastics	4
4.6	Electrical/electro technical products	4
4.7	Coke/coal/char-coal production	4
4.8	Pulp and paper production	4
5.1	Chemical process industries	5
6.1	Construction	6
11.1	Chemical process industries	11
13.1	Waste Handling and Disposal	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE ***REVISION***	**DATA** ***DATE***	**MOTIVAZIONI PER LA REVISIONE** ***REASON FOR THE REVISION***
0	31-08-2009	-
7	03-06-2013	Annual revision

Il Resp. QPT
Head of QPT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

RINA

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: *We declare that Mr/Mrs/Ms:*	**Rita Valoroso**
è qualificato come1: *is qualified as:*	**CDM -TEC, -VAL, -VER, -TL** **TECHNICAL REVIEWER**
per le seguenti aree tecniche: for the following technical areas:	**1.2, 13.1**

AREE TECNICHE **TECHNICAL AREAS**	**DESCRIZIONE DELL'AREA TECNICA** ***TECHNICAL AREA DESCRIPTION***	**SCOPO SETTORIALE** ***SECTORAL SCOPE***
1.2	Renewables	1
13.1	Solid Waste and waste water	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE ***REVISION***	**DATA** ***DATE***	**MOTIVAZIONI PER LA REVISIONE** ***REASON FOR THE REVISION***
0	18-01-10	-
9	22-12-2014	Update qualification according to AS ver.6.0

Il Resp. QPT
Head of QPT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

RINA

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: *We declare that Mr/Mrs/Ms:*	**Wing Yu Tong**
è qualificato come[1]: *is qualified as:*	**CDM-TEC, VCS-TEC, GS-TEC, SCS-TEC, JI-TEC, VCS-VAL**
per le seguenti aree tecniche: for the following technical areas:	**1.2**

AREE TECNICHE **TECHNICAL AREAS**	**DESCRIZIONE DELL'AREA TECNICA** ***TECHNICAL AREA DESCRIPTION***	**SCOPO SETTORIALE** ***SECTORAL SCOPE***
1.2	Energy generation from renewable Energy sources	1

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE ***REVISION***	**DATA** ***DATE***	**MOTIVAZIONI PER LA REVISIONE** ***REASON FOR THE REVISION***
0	04-12-2010	-
6	29-07-2013	Annual revision

Il Resp. QPT
Head of QPT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports