

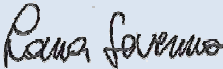
FINAL VALIDATION REPORT

“TATAR HYDRO ELECTRICITY POWER PLANT”

**RINA**

Document Prepared By RINA Services S.p.A.

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Summary:

Darenhes Elektrik Üretimi A.Ş. has commissioned RINA to carry out the validation of the “Tatar 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 near the Obuzbaşı and Tatar villages in the Elazığ and Tunceli Provinces, Turkey. The total installed capacity of the Project is 128.22 MW.

The starting date of the project activity/start date of the crediting period is 01/11/2013. It has been verified by RINA that the starting date represents the start date of generation of electricity and supply to the electricity grid. The start of operation of the project is 01/11/2013.

A fixed crediting period of 10 years has been chosen for the project, starting from 01/08/2013. The GHG emission reductions are estimated to be average 231,898 tCO_{2e} per year and 2,318,980 tCO_{2e} over the ten -year crediting period.

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 “Tatar Hydro Electricity Power Plant”, in “Turkey”, as described in the VCS-DD version 2.1 of 30/10/2013, 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 13.0.0 of 11/05/2012. Hence RINA requests the registration of the project as a VCS project activity.

Table of Contents	Page
1 Introduction	4
1.1 Objective	4
1.2 Scope	4
1.3 Level of assurance	4
1.4 VCS Project Description	4
2 VALIDATION PROCESS	5
2.1 Method and Criteria	5
2.2 Document Review	5
2.3 Interviews	7
2.4 Resolution of Findings	8
2.5 Site Inspections	8
2.6 Forward Action Requests	8
3 validation FINDINGS	9
3.1 Project Design	9
3.2 Application of the methodology	10
3.3 Environmental Impact	18
3.4 Comments by stakeholders	18
4 VALIDATION CONCLUSION	19
Appendix A: Validation Protocol	

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 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).

1.2 Scope and Criteria

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.

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	Timuroglu	Isil	Turkey
Financial Expert	Van der Tak	Casper	Italy
Technical Reviewer	Valoroso	Rita	Italy
Technical Reviewer	Menon	Rekha	India

Following the assessment performed, RINA considers the level of assurance as reasonable.

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 near the Obuzbaşı and

Tatar villages in the Elazığ and Tunceli Provinces, Turkey. The total installed capacity of the Project is 128.22 MW.

The starting date of the project activity is 01/11/2013 and the start date of the crediting period is 01/11/2013. 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 commercial operation was 01/11/2013 /62/, the date is therefore correct.

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 10/02/2012 /01/ and the VCS-PD version 2.1 of 30/10/2013 /22/ 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 “TatarHPPHydro_CM_2011v2.02” /23/ and the IRR calculations, also in the form of a spreadsheet “TatarFinancialAnalysisVersion2.02” /24/, were assessed as part of the validation.

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

/01/	Ekobil Environmental Services and Consulting Ltd.: VCS-PD for project activity “Tatar Hydro Electricity Power Plant” in Turkey, version 1.0 of 18/02/2012.
/02/	RINA: Signed participant list of all stakeholders involved during site-visit, 23/02/2012
/03/	CDM Executive Board: Validation and Verification Manual, version 01.2 EB55 of 30/07/2010.
/04/	CDM Executive Board: Baseline and monitoring methodology “ACM0002”, version “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 12.2.0 of 25/11/2011. CDM Executive Board: Baseline and monitoring methodology “ACM0002”, version “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 13.0.0 of 11/05/2012.
/05/	CDM Executive Board: Glossary of CDM terms, version 07.0 of 23/11/2012
/06/	UNFCCC, Tool to determine the remaining lifetime of equipment, version 1, 16/10/2009.
/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 03.0.0. of 23/11/2012
/08/	VCS: Project Description v3.2., 08/10/2013
/09/	VCS: Program definitions v3.5., 08/10/2013
/10/	VCS: Voluntary Carbon Standard , v3.4., 08/10/2013
/11/	VCS: Voluntary Carbon Standard Program Guide, v3.5., 08/10/2013
/12/	Ekobil Environmental Services and Consulting Ltd.: EF calculation sheet "TatarHydro_CM_2011"
/13/	Ekobil Environmental Services and Consulting Ltd.: IRR calculation sheet "TatarFinancialAnalysisVersion1.1"
/14/	UNFCCC: "Tool for the demonstration and assessment of additionality" version 5.2.1. 27/06/2011. UNFCCC: "Tool for the demonstration and assessment of additionality" version 7.0.0. 23/11/2012.
/15/	UNFCCC: Guidelines on the assessment of investment analysis, version 5, 15/07/2011
/16/	UNFCCC: Guidelines for the reporting and validation of plant load factors, version 1, 17/07/2009.
/17/	TEIAS (Turkish Electricity Transmission Company) data publications to calculate the grid emission factor, accessed on 01/08/2011, www.teias.gov.tr /Turkish and English website)
/18/	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.
/19/	Ekobil Environmental Services and Consulting Ltd.; Social Carbon Report "Tatar Hydro Electricity Power Plant, Turkey" version 1.0, 09/09/2011
/20/	The Ministry of Environment and Forestry: EIA Affirmative Certificate of 15/11/2006
/21/	Energy Market Regulatory Authority: Tatar Expropriation decision, 10/01/2008
/22/	Ekobil Environmental Services and Consulting Ltd.: VCS-PD for project activity "Tatar Hydro Electricity Power Plant" in Turkey, version 2.1 of 30/10/2013
/23/	Ekobil Environmental Services and Consulting Ltd.: EF calculation sheet "TatarHPPHydro_CM_2011v2.02", submitted on 31/10/2013
/24/	Ekobil Environmental Services and Consulting Ltd.: IRR calculation sheet "TatarFinancialAnalysisVersion2.02" submitted on 31/10/2013.
/25/	Darenhes Elektrik Üretimi A.Ş.: Decision on the need of the carbon credits for the development of the project, dated 01.04.2013.
/26/	Müşavirlik Mühendislik ve Mühendislik AS: Revised feasibility study, September 2011.
/27/	Quotation for the transmission line, dated 22/07/2011
/28/	Selin Insaat Turizm Müşavirlik Sanayi ve Ticaret Ltd.: EIA Report, dated October 2006
/29/	Turkey Bankasi: Financial Termsheet, 17/03/2009
/30/	Turkey Energy Market Regulatory Authority: Electricity Market Report for 2010.
/31/	Hydrocon Engineering: Feasibility Study report for Tatar, August 2011
/32/	Darenhes Elektrik Üretimi A.Ş.: Expenses overview Tatar, 08.12.2009
/33/	Energy Market Regulatory Authority: Electricity Productions Licence, 06.02.2005 Energy Market Regulatory Authority: Electricity Productions Licence (update), 17/11/2011
/34/	Andritz Hydro: Technical data of the diesel generation set, 28/11/2011
/35/	Darenhes Elektrik Üretimi A.Ş.: Stakeholder participation meetings information, participants list, newspaper publications within others included in the EIA process, performed on 15/02/06 and 16/02/06.
/36/	Darenhes Elektrik Üretimi A.Ş.: List of expropriation land, dated 19/09/2011
/37/	Ministry of Health: Water analysis report of the tatar river, dated 15/09/2011
/38/	Darenhes Elektrik Üretimi A.Ş.: Amendment to construction agreement, 01/11/2011
/39/	Ankara Chamber of Commerce: Certification for the trade activity, 23/10/12

/40/	Darenhes Elektrik Üretimi A.Ş.: Written VCS Statement on local GHG limits or other forms of environmental certifications, dated 07/01/13.
/41/	Turkey transmission company: Interconnection agreement, 05/07/2011
/42/	Darenhes Elektrik Üretimi A.Ş.: Construction plan in google earth.
/43/	Andritz Hydro: Electro mechanic Contract, 30/06/2011
/44/	Assosiation of banks :Credit agreement signed on 08/06/2011
/45/	Limak Insaat San. Ve Tic A.S: Construction contract, 25/02/2008
/46/	Darenhes Elektrik Üretimi A.Ş.: Construction costs overview, 14/02/2012
/47/	Kar-Pa Ltd.: Transmission line construction contract.
/48/	Teias statistical report 2001-2011: http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2011/istatistik%202011.htm to calculate the grid emission factor.
/49/	Turkish official Gazette Nr. 25318: Environmental Impact Assessment (EIA) regulation dated December 16/12/2003.
/50/	Turkish Gazette 24319, 15/02/2001, requirements on meter calibration.
/51/	National electricity export report, operational lifetime of the technical equipment, published in 2001 (http://ekutup.dpt.gov.tr/enerji/oik585.pdf).
/52/	International Energy Agency: Renewable Energy Essentials, Hydropower, 2010 Website : http://www.iea.org/publications/freepublications/publication/Hydropower_Essentials-1.pdf (accessed on 14.08.2013)
/53/	USAID: Turkish electricity Price Curve Analysis (2010-2011), 09/03/2012
/54/	Darenhes Elektrik Üretimi A.Ş.: Board of directors carbon credit consideration, 01/04/2010
/55/	TEIAS: Grid connection agreement, 05/07/2011.
/56/	Darenhes Elektrik Üretimi A.Ş. and Ekobil Environmental Services and Consultancy Ltd.: Carbon consultancy contract, 27/06/2011.
/57/	The Ministry of Environment and Forestry: Approval Letter of Revised Feasibility Study of 10/11/2011
/58/	General Directorate Of State Hydraulic Works: Water Usage Agreement of 18/11/2011
/59/	Energy Market Regulatory Authority: Generation License numbered EU/491-1/549 of 02/06/2005
/60/	Türkiye Bankası: Loan Agreement, 17/03/2009
/61/	General Directorate of State Hydraulic works, location of the hydro power projects (http://www.dsi.gov.tr)
/62/	Ministry of Energy and Natural Resources: Confirmation on the start of operation to the power plant, 24/10/2013.
/63/	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.
/64/	UNFCCC: Projects under validation: http://cdm.unfccc.int/Projects/Validation/index.html , accessed 13.11.2013.
/65/	Gold Standard: Projects listed (http://www.cdmgoldstandard.org/our-activities/project-pipeline), accessed 13.11.2013.
/66/	Turkish Value Added Tax Law, Number 3065 (18%), 02/11/1984
/67/	Turkish Income Tax Law, Number 5281 (20%), 01/05/2005
/68/	UNFCCC: Guidelines on Common Practice, version 02.0, 13/09/2013

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/	23/02/2012	Asli Özcelik VCS Consultant	Ekobil Environmental	VCS-PD development Additionality, Baseline

			Services and Consultancy Ltd.	definition, Emission Factor calculation
/b/	23/02/2012	Murat Özcelik VCS Consultant	Ekobil Environmental Services and Consultancy Ltd.	VCS-PD development
/c/	23/02/2012	Çetin Aköz Project Manager	Darenhes Elektrik Üretimi A.Ş.	Project development , IRR calculations.
/d/	23/02/2012	Eşref Sönmez Excavator Operator	Darenhes Elektrik Üretimi A.Ş.	Project Construction
/e/	23/02/2012	Şah Demir HSE and Environmental Engineer	Darenhes Elektrik Üretimi A.Ş.	Project Development, Site coordination
/f/	23/02/2012	Düzgün Ge rçek	Head of Elmalık District	Local Stakeholder Consultation

2.4 Site Inspections

On 23/02/2012, RINA visited the project site, which is located near Obuzbaşı and Tatar villages in the Elazığ and Tunceli Provinces, 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 10/02/2012 /01/ and it's latest version 2.1 of 30/10/2013 /22/ 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 Design

The purpose of the proposed project activity is to generate renewable electricity to be delivered to the Turkish National Grid /27/ /47/ by utilizing water resources. The project activity is located near Obuzbaşı and Tatar villages in the Elazığ and Tunceli Provinces, Turkey. The project consists of a hydro power project with an installed capacity of 128.22 MW /31/, conformed by 2 identical Francis turbines (vertical axis) of 64.11 MW each /43/.

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 Darenhes Elektrik Üretimi A.Ş. from Turkey. The VCS consultants are Ekobil Environmental Services and Consultancy from Turkey.

The starting date of the project activity is 01/11/2013 when the plant started operation /62/, following VCS requirements /10/ this date is defined as the starting date of the project.

The project crediting period is 10 years, renewable twice. The start date of the first crediting period is 01/11/2013 ending on 31/10/2023.

The projects installed capacity is 128.22 MW, which is above 15 MW. Thus the proposed project activity is a large scale project, as per the “Simplified modalities and procedures for small-scale development mechanism project activities” /63/.

By checking the data base of UNFCCC /64/ and GS /65/, the audit team confirms that the proposed project has not participated nor it was rejected under any other GHG program. This was also confirmed from the statement provided by the /40/. The project is applying also the Social Carbon Standard /19/, but this does not represents a double counting of carbon credits.

The GHG emission reductions are estimated to be 231,898 tCO_{2e} per year and 2,318,980 tCO_{2e} over the ten year crediting period. The project is therefore a large scale project.

Proof of title, participation in other emission trading programs and the statement of non receipt of other forms of environmental credits, were provided to the audit team /40/. Through check in usual carbon credit programs (CDM, Gold Standard, Social Carbon Standard), the audit team can confirm is not participating or was rejected under other programs.

The expected operational lifetime of the project activity is 20 years, in line with the value reported in the national expert report /51/. 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 13.0.0: “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” /14/.

“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 Peri Stream, near the Tatar town, Turkey /31/. At this site no renewable power plant was operated prior to the implementation of the project activity, as the same could be observed during the site visit.
- The project involves the construction of a regulation pond with a surface of 10,830 m² /31/. The resulting power density is therefore 11.84 W/m². The power density is higher than 4 W/m² as required by the methodology.
- The project does not include any retrofit, capacity addition or replacement of an existing power plant /43/.

The project activity does not involve switching from fossil fuel use to renewable or biomass power plant /43/.

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 apply for the project activity, as an existing methodology is being applied /14/.
- 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 /14/.

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 /22/ /31/;
- 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 /23/.
- 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/31/.
- In case any biofuel is used in the calculations, its value applied as CO₂ 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 /55/, RINA validated that the project will generate electricity and it is connected to Turkey's National Power Grid.

Emission Factor is calculated by Ekobil Ltd. based on the latest data available at the time of the start of validation /23/. The spatial extent of the project boundary is thus identified as the extent of the National Power Grid including the power plants of the project. The information above is clearly described in section 3.1. of the VCS-DD /22/. It is validated that the delineation in the VCS-DD 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 ₂ O	No	Minor emission source
Project activity	For hydro power plants, emissions of CH ₄ from the reservoir.	CO ₂	No	Minor emission source
		CH ₄	No	Conservative. The project activity does not result in a new reservoir. However, it does involve the construction of a regulation pond, with PD > 4 W/m ² . Therefore, no CH ₄ emissions are expected to occur.
		N ₂ O	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 11.84 W/m² /31/, which is greater than 10W/m², project emission is regarded as zero according to the approved methodology /04/ A diesel generator /34/ will be installed for emergency purposes. The emissions from this generator can be neglected as specified in the applied methodology /04/.
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 /43/

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. An auxiliary diesel generation set will be installed at the project site, as per the equipment characteristics /34/ the maximum consumption of the equipment is 100 liter per hour of operation. The emissions can be therefore neglected.

By checking the information and physical site visit, RINA can confirm that the project boundary and emission sources described in the PDD are accurate and complete, and also that the selected sources and gases are justified for the proposed project activity.

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-DD version 1.0, from the Turkish Statistical Reports 2008-2010 /48/ 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% /48/.

RINA was able to verify the documented evidence listed above during the validation process and can confirm that the approved baseline methodology ACM0002 version 13.0.0. /04/ has been correctly applied in the VCS-DD 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. The combined margin (CM) is then calculated as the sum of half the value calculated as BM and half of the calculated value for OM.

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 /14/. Furthermore, the guidelines on the assessment of investment analysis have been followed.

Benchmark:

The project is calculating the equity IRR, an valid option as per the additionality tool /14/ 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 12.5%. There are no default values for equity benchmark in the investment analysis tool /15/ for Turkey, but the Moody's index for the country is Ba2 (in June 2011, when the investment decision on proceeding with the project took place and the loan agreement was signed with the banks and the contract for purchasing the turbines was signed with Andritz Hydro), same as other countries which are listed in the guideline, for example Armenia. 12.5% is then considered as correct taking into account that the countries have the same Moody's rating. .

Input parameters:

Parameters	Unit	Value	Source	Validation Assessment and cross checking
Capacity	MW	128.22	In line with the contract with the technology provider Andritz Hydro /43/ and the production licence /33/. The costs for the turbines were known at the time of investment decision (signature of loan agreement with the bank 08.06.2001 /44/) as the contract with Andritz Hidro was signed 3 weeks later, the contract conditions were of course known by the project owner.	The installed capacity is approved and confirmed in the energy production licence /33/.
Plant Load Factor	%	38.24	The value is calculated based on the approved value as per the energy production licence /33/.	The value is confirmed by the generation capacity calculated by a third party in the feasibility study report /31/.
Annual Electricity	Mwh	429,560	The value is calculated based on the approved value as per the	The value is confirmed by the generation capacity calculated by a third party in the feasibility study

Generation			energy production licence /33/.	report /31/.
Total investment	USD	383,577,822	Total investment costs are based on the investment data of the EIA report, page 15 /28/.	The cost represent about 3 million USD per installed MW, by crosschecking with a paper published with the International Energy Agency (http://www.iea.org/publications/frepublications/publication/Hydropower_Essentials-1.pdf) /52/, 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 in the field of other project activities. Furthermore, the turbine purchase contract /43/ and the construction contract /38/ are available to crosscheck that the real costs are near the expected costs.
Operating costs	USD	2,995,343	Calculated and included in the FSR /31/. Even if the FSR was officially concluded in the in September 2011, the data on investment was available at the time of investment decision in June 2011. The operation costs represents around 0.8% of the investment costs, the value can be considered correct and conservative for hydro power plants.	The presented costs represent around 7 USD per produced MWh, by crosschecking with a paper published with the International Energy Agency (http://www.iea.org/publications/frepublications/publication/Hydropower_Essentials-1.pdf)/52/, the operating and maintenance costs are estimated to be between 5-20 USD, therefore the presented costs can be considered conservative as it is located in the lower range of the presented costs.
Electricity price	USD/Kwh	0.080	Based on the EMRA reports for electricity price /30/	Crosschecked with the Turkish Electricity Price Curve Analysis (2010-2011) /53/, where is reported that the values in 2011 the electricity price fall to 0.074 USD/Kwh. The price used for calculations can be considered correct and conservative.
Debt	USD	246,500,000	Based on the agreements signed with the banks /44/.	
VAT	%	18	V.A.T. Law No:3065, applicable for the project activity /66/.	Law 3065 is still applicable in turkey, the VAT of 18% is therefore correctly included in the UIRR calculations.

Income Tax	%	20	Income Tax Law number 5281, applicable for the project activity /67/.	Law 5281 is still applicable in turkey, the income Tax of 20% is therefore correctly included in the UIRR calculations.
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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 project proponent has provided a detailed workbook including the input values which summarizes the input parameters used for calculations. The data of the workbook is considered commercially sensitive as includes the exact costs of every development step of the project activity, including the costs arranged with third party companies, which are confidential as described in the signed contract. This information can be considered very sensitive as it provides a very detailed expenditure overview within the construction process, such information is confidential as per the loan agreements with the banks. 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, and separating amortization for the mechanical equipment and the civil works (with a life of around 50 years), which makes sense taking into account the lifetime of the different components. The fair value can be therefore considered conservative.

The equity IRR has been calculated to be 8.47 %, below the defined equity benchmark of 12.5%.

Sensitivity analysis:

Parameter	Changes/variation		Probability of the situation				
Total investment cost	+10%	6.4%	The investment cost must decrease by 12.3% for the project to cross the benchmark The investment costs are in line with the international costs per MW for similar projects /52/, so it can be assessed that the project costs to reduced more than 10% to make the project cross the benchmark. <table><tr><td>Cost per MW as per reference /52/</td><td>Costs of the project activity per MW installed</td></tr><tr><td>2-4 million USD/MW installed.</td><td>2,991,560 USD/MW</td></tr></table> Furthermore, the main costs of the project, turbines /43/ and construction /38/ are known and are in line with the value used for calculations of the IRR.	Cost per MW as per reference /52/	Costs of the project activity per MW installed	2-4 million USD/MW installed.	2,991,560 USD/MW
	Cost per MW as per reference /52/	Costs of the project activity per MW installed					
	2-4 million USD/MW installed.	2,991,560 USD/MW					
Electricity selling price	-10%	11.5%	The electricity price must increase by 26% for the project to cross the benchmark. As it was confirmed through actual electricity price report /53/. The price has decreased; therefore it can be assessed that the price will not be increase more than 10% and will not				
	+10%	10%					
	-10%	7%					

			reach 26% to make the project cross the benchmark.
	+10%	8.4%	The project would not cross the benchmark even if the O&M costs are reduced to 0.
Annual operational Cost	-10%	8.6%	As the O&M can be considered conservative based on the comparison with international average values /52/, even if the O&M costs are reduced to 0, the benchmark would not be crossed.

Common practice analysis:

As per the “Guidelines on Common Practice”, following steps has been assessed.

Step 1: Output range (+/-50%)

The range to analysis the project activity goes from 64.1 MW to 192 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 Euphrates 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. The area of the Tatar project is also near the border to Syria, giving currently special conditions and risks to the project development. To analyse similar projects within the catchment of the project and not in the whole country is considered correct.

There are 2 similar projects in the defined geographical area.. The similar projects are the Karklamis and Ozlüce-Peri projects /61/.

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.

Step 4: Define the projects different to the project activity.

Both are developed and manage with government funds, therefore is Nall the same as Ndiff.

Step 5: The factor $F=1-Ndiff/Nall$ shall be calculated.

As per the requirements of the tool, the calculation is $1-2/2 = 0$.

As the factor is under 0.2 and Nall-Ndiff 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 E_{Ry} of the project activity during the crediting period is the difference between the baseline emissions B_{Ey}, project emissions P_{Ey} and emissions due to leakage L_{Ey}, which are listed as follows:

1) Baseline Emissions (B_{Ey}): (tCO₂e) are the product of the baseline grid emission factor ($EF_{grid,CM,y}$ in tCO₂e/MWh) times the net electricity supplied by the project activity to the grid ($EG_{BL,y}$ in MWh).

2) Project Emissions (P_{Ey}): the project activity is a newly built hydropower project activity with no reservoir. The constructed regulation pound has a power density of 11.84 W/m² /31/, which is larger than 10W/m². As per the applied methodology ACM0002 version 13.0.0 /04/, the project emissions are Zero.

3) Leakage (L_{Ey}): no leakage emissions are considered for the project activity. According to the signed turbines and generators purchase agreement /43/, no equipment is transferred from other activities. Thus, the emission reductions are calculated as the following formulae:

$$E_{Ry} = B_{Ey} - P_{Ey} - L_{Ey}$$

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" version 3.0.0. /07/. The VCS-DD version 02.1 of 30/10/2013 /22/, is correctly applied the most recent data vintage for the baseline emissions calculation /23/.

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 /49/;
- IPCC 2006 default values for emission factors of each type of fossil fuel;
- The total electricity generated by each power plant /49/.

According to the statistical data from Teias /48/, the low-cost/must-run resources in the last five years (from 2006 to 2010) 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 0.65613 tCO₂e/MWh as a generation weighted average for the year 2008, 2009 and 2010.

BM is calculated to be 0.42357 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 /48/, based on the most recent information available. It has been calculated as the weighted average ($w_{OM}=0.5$, $w_{BM}=0.5$) of OM emission factor and the BM emission factor. The combined margin emission factor is calculated as 0.5398 tCO₂e/MWh.

The annual net electricity supplied by the project activity to the grid is estimated to be 429.56 GWh in the VCS-DD /22/.

Hence, the annual emission reductions generated by the project activity is calculated to be 231,898 tCO₂e/yr (=429.56 GWh*0.5398 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-DD version 02.1 /22/ and supporting file ER calculation spreadsheet /23/ 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 13.0.0. /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:

- $EG_{PP-self\ consumption, y}$ and $EG_{PP-gross, y}$: both parameters will be monitored to calculate the net electricity supplied by the project activity to the grid in year y. This parameter is the difference of electricity exported to the grid and electricity imported from the grid. The electricity exported to and imported from the national grid will be continuously monitored, hourly measured 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, as per the national regulations /50/. A monthly invoice from TEIAS technician is available and serves as crosscheck for the parameter, together with the monthly PMUM/MFRC screenshots which will be also a proof of data quality for the meter readings. The meter accuracy is +/- 0.2%, in line with the Turkish requirement for metering equipment /18/.
- 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.
- APJ: The water level will be defined by the SCADA system, the results will be reported annually. With the level of water is possible to calculate the surface area based on the known geographical conditions of the project area. The surface is therefore related to the water level.

RINA checked these parameters described in of the VCS-DD 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, staffs training and QA/QC procedures are clearly described in the VCS-DD version 02.1 /22/.

RINA validated through physical visit, interviews with the relevant persons, cross check with the relevant national regulations /50/ 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 Environmental Impact

According to the “Environmental Impact Assessment (EIA) regulation” published in the official Gazette dated 16/12/2003 /49/, the project requires a EIA as part of the approval process. The EIA was approved and received an affirmative certificate which is included as Annex 3 of the VCS-PD /22/.

The EIA includes the impacts and further actions to be performed on water quality, solid waste management, biodiversity, air quality within others. The important part of the EIA includes the assessment of the expropriation, which is required to develop the project activity.

3.4 Comments by stakeholders

Prior to the start of validation, a local stakeholder meeting was conducted on 15 and 16/02/2006 /35/ at the Karakoçan Municipality, Elazığ and Elmalık village – Mazgirt as requirement for the national EIA approval. The invitation was done through letter and newspaper publication /35/ to local citizens, government and non-governmental organizations. A participant list, meeting minutes and comments were provided to the DOE /35/. During the site visit /02/, a local stakeholder (Muhtar) was consulted about his knowledge about the project. He was well aware 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 02.1 /22/ 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 “Tatar Hydro Electricity Power Plant” in Turkey, with regard to the relevant requirements for VCS activities.

The review of the project design document 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 13.0.0. /04/.

By generating renewable energy from hydropower plant, the project results in reduction of CO₂ 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 “Tatar Hydro Electricity Power Plant” are estimated to be on an average 231,898 tCO₂e per year over the selected 10 years crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

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 "Tatar Hydro Electricity Power Plant" in Turkey, as described in the VCS-PD, version 02.1 of 30/10/2013, 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 13.0.0. /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 "Tatar Hydro Electricity Power Plant". version1.0 of 10/02/2012.		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 3.4. of 04/10/2012 for completing the VCS-PD. The VCS-PD version 1.0 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 plants (HEPPs). The project activity is located near the Obuzbaşı and Tatar villages in the Elazığ and Tunceli Provinces,		OK

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

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				Turkey. The total installed capacity of the Project is 128.22 MW. The generated electricity will be delivered to the Turkish Power Grid which is dominated by fossil-fuel fired power plant. As per the situation seen during the site visit, the project is under construction. The evidence on the construction start on 06/06/2011 shall be provided.	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 total installed capacity of the projects is 128.22 MW, which falls under the large VCS scale as per the 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 production license, operating certification shall be provided to the audit team.	CL2	OK
A.3.2	Does the project activity reduce GHG emissions from activities that are included in an emission trading program or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?	/01/	DR	The signed statement shall be provided by the PP.	CL3	OK
A.3.3	Does the project have created another form of GHG-	/01/	DR	The evidences as per VCS standard is	CL3	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
	related environmental credit?			not available to demonstrate whether the project activity is included in emission trading program.		
A.3.4	Does the project is registered under another approved GHG program?	/01/	DR	Through cross checked with other common GHG programmes, it can be confirmed that the project is not registered under other GHG programmes. The project seeks registration under the Social Carbon standard, but the registration of SCS together with VCS is possible. But further evidence as per VCS standard is not available whether the project activity has created another form of GHG-related environmental credit.	CL3	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, by searching on their websites and using common searching tools, 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 project activity is located near the Obuzbaşı and Tatar villages in the Elazığ and Tunceli Provinces, Turkey. The project's geographical coordinates are included. To identify the unique project activity, the PP shall include the coordinates of the power house in the VCS-PD.	CAR2	OK
A.4.2	Does the project is categorized as "project" or "mega project"?	/01/	DR	The project will generate less than 1,000,000 tCO ₂ reductions, therefore it is categorized as a "project" activity as		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	presented in the FSR. Following the information included in the FSR, it can be considered that the project engineering reflect current good practice. Turkey is generating it's electricity with fossil fuels in a high percentage, from the environmental point of view, it can be stated that the technology to be used by the project activity represent a better performance as the current used technology.		OK
B. Application of a baseline and monitoring methodology						
B.1 Methodology applied						
B.1.1	Does the project activity apply an approved methodology and the correct version thereof?	/01/ /04/ /07/ /14/	DR, I	The VCS-PD version 1.0 has correctly applied the approved methodology "ACM0002" " <i>Consolidated baseline methodology for grid-connected electricity generation from renewable sources</i> ". 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. Furthermore, the applicability shall be presented in table form including each point of the methodology and explaining how the project meets the condition, and the connection point to the grid shall be explained in the VCS-PD to	CAR3	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				confirm applicability of the criteria.		
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 13.0.0 even though the VCS-PD version 1.0 applies version 12.2.0 of the methodology: <i>"Consolidated baseline methodology for grid-connected electricity generation from renewable sources"</i>, under the following conditions: Criteria 1: the project activity generates electricity using hydro resources and supplies electricity to the national grid; Criteria 2: The project will deliver the generated electricity to the Turkish Grid. Evidence 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 was 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 10.13W/m², which is greater than 4W/m²; 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	CAR3	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				site visit. Criteria 6: The project does not involve 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/m². The applicability criteria are not correctly included in the VCS-PD.		
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.	CL4	OK
B.3.2	What are the project's system boundaries (components and facilities used to mitigate GHGs)?	/01/ /04/	DR, I	As per the on-site visit, it is confirmed that the project boundary includes the	CL4	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
		/05/		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 the national grid.		
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/m ² . This is in compliance with ACM0002-Version 13.0.0 and version 12.2.0. applied in the VCS-PD version 1.0. Furthermore, CO ₂ emissions due to diesel consumption 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 no emission source which should be included in the VCS-PD. The possible consumption of diesel in the backup generator is not clearly defined in the VCS-PD, emissions are not included.	CAR4	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. The alternatives presented in the VCS-	CAR5	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				PD are not in line with the requirements of the methodology.		
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.	CAR5	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.	CAR5	OK
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						
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".	CAR3	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	/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		OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
	revenue from the sale of certified emission reductions?			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.		
B.5.2.2	What the financial indicator is used?	/01/ /04/ /13/ /17/	DR, I	The PP compared the equity IRR against a Benchmark. The benchmark was calculated based on country data. The defined benchmark is 12.5%. Supporting information used to calculate the benchmark and to demonstrate the date of the investment decision is not available. Furthermore, the benchmark is chosen as Armenia has the same rating as Turkey. The in the list of countries, there are other countries with the same rating and a lower benchmark (see Grenada), therefore the value is not conservative. The comparison with other countries shall be based on per capita GDP. The default values are after taxes, same approach shall be taken for IRR calculations. The default values are applicable for calculations in nominal terms, the VCS-PD shall confirm the same calculation approach of the equity IRR.	CL5	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	The IRR will be assessed once the support to all input values is provided.	CL5	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
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/ /15/	DR, I	See B.5.2.3.	CL5	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 source of all input values shall be provided, the value of the FSR alone is not enough, as third party information for each parameter is required. Furthermore, it shall be confirmed that each value was available at the time of investment decision. This information is not included in the VCS-PD.	CAR6	OK
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 will be assessed with closure of CL5.	CL5	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 CAR6 and CL5	CAR6 CL5	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 VCS-PD. The assessment can be performed once the sheet and values are supported.	CAR6 CL5	OK
B.5.3 Barrier analysis						
B.5.3.1	Are the barriers identified complimentary to a potential investment analysis?	/01/ /17/	DR, I	Yes, other barriers were presented.		OK
B.5.3.2	How were the investment barriers assessed to be real? How does VCS alleviate the investment barriers?	/01/	DR	The first barrier presented is similar to an access to finance barrier. If this barrier want's to be kept, it shall be demonstrated that the bank provides loan only because VCS carbon credits. In the security and transportation barrier, is not clear how VCS	CAR-7	OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			registration will help to overcome the barrier.		
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 practice assessed to be real? How does VCS alleviate the barriers due to prevailing practice?	/01/	DR	N/A		OK
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	See CAR 7.	CAR 7	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 hydrological sources. The region used is the river basin. The whole country has been used to assess the common practice, the analysis shall be performed following the guidance available in the latest version of the additionality tool.	<u>CAR8</u>	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
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.	CAR8	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.	CAR8	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.	CAR8	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.	CAR6 CAR7 CAR8 CL5	OK
B.6 Calculation 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. and the version applied for the VCS-PD v.12.1.0., 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/	DR, I	The baseline emission factor is determined ex ante according to the methodological tool "Tool to calculate the emission factor for an electricity	CAR9	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
		/07/ /18/		system” Version 02 as 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 crosschecked with the source during the site visit. The grid emission factor is calculated by used on information published by TEIAS (Turkish Electricity Transmission Company) in the website. The combined grid emission factor of the Turkish Grid is calculated as 0.51008 tCO₂e/MWh. 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. The baseline emission calculations can be only confirmed once the plant load factor has been confirmed as per guidelines to assess PLF. The calculation sheet with the EF calculations and the emission reduction calculation shall be presented to the DOE.		
B.6.2 Project emissions						
B.6.2.1	Are the calculations documented according to the approved methodology and in a complete and	/01/	DR, I	According to the project design, the power density is calculated as	CAR10	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
	transparent manner?			11.84W/m², which is higher than the threshold of 10W/m² given by the methodology, therefore, no project emissions need to be accounted with reference to the applicable methodology. The emissions related to the consumption of diesel fuel for auxiliary energy generation is mentioned as emission source, but the VCS-PD does not further explain the consumption, nor includes the consumption as monitoring parameter.		
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	CAR10	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

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
B.6.4 Emission reductions					
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 16 of the PDD is incorrect and not in line with the methodology. No project emissions have been reported.	CAR10 CAR11 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/ /18/	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 Fraction of the power grid is fixed over the first crediting period: 0.51008 tCO ₂ e/MWh has been reported in the VCS-PD, the final value could be adjusted once the update from the tool is performed.. CAP _{BL} and A _{BL} are not reported in the VCS-PD version 1.0. Furthermore, the diesel consumption shall be defined and monitored.	CAR 9 CAR12 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.	CAR12 OK
B.7.1.2	Does the monitoring plan contain all necessary	/01/	DR, I	The only parameter monitored are the net electricity supplied to the grid and the diesel consumption. All	CAR12 OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
	parameters and are they clearly described?	/04/		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, 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/ /18/	DR, I	Information on the monitoring equipment has been included, the serial number after the ACTARISSL7000 shall be included.	CAR12 CAR13	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.	<u>CA12</u>	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.	CAR12	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 13.0.0., 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		OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				sustainable development indicators.		
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	As per the VCS-PD version 1.0, an Environmental Impact Assessment has been prepared for the project activity. The EIA has not been provided to the audit team.	CL6	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.	CL6	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. See CAR 10	CAR 12	
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
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/	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.		OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				The VCS-PD is inconsistent in defining if the electricity metered supplied to the grid will be crosschecked with the electricity information of the PMUM website. Calibration and/or test of the meters will be performed once of the meters (main or backup) fails.		
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 statement was not found in the VCS-PD.	CAR14	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 02/12/2013, date in which is the expected date to start operation. Timeline on status of construction needs to be provided to assess the date.	CL7	OK
C.1.2	What is the expected operational lifetime of the project activity? Is it reasonable?	/01/	DR, I	Lifetime of the project is reported to be 20 years. Supporting document 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.	CL8	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
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, 02/12/2013.	CL7	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.		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	The EIA has been prepared, but the document was not provided to the audit team.	CL6	OK
D.1.2	Will the project create any adverse environmental effects? Are transboundary environmental impacts considered in the analysis?	/01/	DR, I	The EIA has been prepared, but the document was not provided to the audit team.	CL6	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.	CL6	OK
D.1.4	Is it the project in line with the current environmental legislation in the host Country?	/01/	DR, I	The approval to the EIA has been included in Annex 3 of the VCS-PD. The project comply with the environmental requirements of the host country.		OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
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 as required by the EIA process. It shall be clarified if the local stakeholder consultation regarding carbon credits, also taking into account the registration under the Social Carbon Standard, has been performed.	CL-9	OK
E.1.2	Area the stakeholders invited is considered as regards commenting the proposed project activity?	/01/	DR, I	Meetings were held in the project area. The flooded area will represent the expropriation and reallocation of inhabitants to other areas.		OK
E.1.3	Is the summary of the comments received from the stakeholders, provided in the VCS-PD complete?	/01/	DR, I	The comments were included in the VCS-PD, mainly regarding the price to be paid for the expropriation. This issue was also discussed by the audit team with the villager during the site visit. In general, the villagers were not happy with the paid amount, but RINA local expert assessed the payment as OK taking into account local and regional prices for land.		OK
E.1.4	Has due account been taken by the project participants of any stakeholder comments received?	/01/	DR, I	The comments from the local stakeholders were taken into account in the preparation of the EIA. See CL 10.	CL9	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
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 was required as part of the EIA. It can be considered as correctly performed, as the EIA was approved by the authorities, certificate included in Annex 3 of the VCS-PD.		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.	The guideline requests us to base our Plant Load Factor calculations on third party reportss, in fact the load factor was calculated based on the official production license issued by EMRA (Previously Presented as Document 11). The Project's electric capacity and the amount of electricity expected to be produced by the project activity are shown in this official document. These numbers are also shown in the Feasibility Study Report prepared by the 3 rd party (Hydrocon) and approval letter of this FSR by DSI (presented earlier as Document 7. The load factor calculation was not shown in the VCS-PD. It is included now in the version 2.0 of the VCS-PD.	Information has been included in the revised VCS-PD. CAR closed.
CAR2 The coordinates of the power house are not included in the PDD.	A.4.1.	Please see version 2 of the PDD and the attached Google Earth file (Document A)	Information has been included in the revised VCS-PD. CAR closed.
CAR3 The VCS-PD does not apply the latest version of the methodology and tools. Furthermore, the applicability is not be presented in table form including each point of the methodology and explaining how the project meets the condition, and the connection point to the grid is not	B.1.1. B.2.1.	The PD version 2.00 is updated to reflect the latest version of ACM 0002 v.13.0.0, and the applicability is presented in the form of a table, the connection point to the grid was shown on figure 1, and was mentioned on page 6 and a phrase	The VCS-PD has been correctly updated. CAR closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
explained in the VCS-PD to confirm applicability of the methodology.		emphasizing the connection points is added to the 3 rd paragraph of section 2.4.	
CAR4 The possible consumption of diesel in the backup generator is not clearly defined in the VCS-PD, emissions are not included.	B.3.4.	The ACM 0002 v.13.0.0 neglects the emissions related to diesel generator consumption (see page 6 of the methodology). The diesel generator that will be installed to the project site is only going to be used as an emergency back up. This situation is also emphasized in version 2.0 of the PD and Diesel generator related emissions are clearly neglected for this project activity.	Information has been included in the revised VCS-PD. CAR closed.
CAR5 The methodology does not require the presentation of alternatives for new power plants. The alternatives presented in the VCS-PD are not in line with the requirements of the methodology.	B.4.1.	Corrected please see version 2.0 of the PD.	Information has been included in the revised VCS-PD. CAR closed.
CAR 6 The source of all input values shall be provided, the value of the FSR alone is not enough, as third party information for each parameter is required. Furthermore, it shall be confirmed that each value was available at the time of investment decision. This information is not included in the VCS-PD.	B.5.2.5.	All the input values are based on the EIA report submitted to the Ministry of Environment and Forestry (later changed as Ministry of Environment and Urban Planning) and these numbers were approved as the Ministry have granted the EIA Affirmative certification. Also these numbers are in parallel with the latest feasibility report. But we have also supplied documents that back up these values and show that most of the estimations are met. (See Zip file B)	Information has been included in the revised VCS-PD. CAR closed.
CAR 7 The first barrier presented is similar to an access	B.5.3.2. B.5.3.8.	In version 2.0 we have removed the barrier analysis and we choose to	Information has been included in the revised VCS-PD. CAR closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
to finance barrier. If this barrier want's to be kept, it shall be demonstrated that the bank provides loan only because VCS carbon credits. In the security and transportation barrier, is not clear how VCS registration will help to overcome the barrier.		only go forward with the financial analysis.	
CAR8 The whole country has been used to assess the common practice, the analysis shall be performed following the guidance available in the latest version of the additionality tool.	B.5.4.1. B.5.4.2. B.5.4.3. B.5.4.4.	PDD updated please see version 2.0.	Information has been included in the revised VCS-PD. CAR closed.
CAR 9 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. The baseline emission calculations can be only confirmed once the plant load factor has been confirmed as per guidelines to assess PLF. The calculation sheet with the EF calculations and the emission reduction calculation shall be presented to the DOE.	B.6.1.2.	EF calculation and its relevant sections have been updated please see version 2.0 of the PD, and the EF calculation workbook version 2.0.	Information has been included in the revised VCS-PD. CAR closed.
CAR 10 The emissions related to the consumption of diesel fuel for auxiliary energy generation is mentioned as emission source, but the VCS-PD does not further explain the consumption, nor includes the consumption as monitoring parameter.	B.6.2.1. B.6.2.2. B.7.3.1.14	As explained above in version 2.0 it is clearly indicated that diesel generator related fuel consumption is neglected as also suggested by the ACM0002.	Information has been included in the revised VCS-PD. CAR closed.
CAR 11 Table 16 of the PDD is incorrect and not in line with the methodology. No project emissions have been reported.	B.6.4.1.	The table 16 is updated, and please check that the methodology ACM0002 is neglecting diesel generator related emissions, as the Diesel generator will be a back up/emergency unit. Other than that	Information has been included in the revised VCS-PD. CAR closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		methodology clearly states that the project emissions related to reservoir are neglected if the power density is greater than 10 W/m ² . The project has a power density of 11.84 W/m ² , which is greater than the limit.	
CAR 12 CAP _{BL} and A _{BL} are not reported in the VCS-PD version 1.0. Furthermore, the diesel consumption shall be defined and monitored.		As explained above in version 2.0 it is clearly indicated that diesel generator related fuel consumption is neglected as also suggested by the ACM0002., but in version 2.00 CAP _{pi} and AP _j are also included to the monitored data and to the monitoring plan to be followed up	Information has been included in the revised VCS-PD. CAR closed.
CAR 13 The serial number after the ACTARISL7000 shall be included.	B.7.1.3.	In version 2.0 we have even had to remove the brand name of the electricity meters as it is not yet clear which brand will be preferred and installed where? It can only be defined in general terms. Therefore we have only mentioned that it will be in compliance with the Turkish electricity meter regulations.	Information has been included in the revised VCS-PD. CAR closed.
CAR 14 The VCS-PD does not includes the confirmation that the monitoring information will be kept for at least 2 years after the end of the crediting period.	B.7.3.4.	The confirmation is added to the version 2.0 of the VCS PD.	Information has been included in the revised VCS-PD. CAR closed.
CL1 The evidence on the construction start on 22/10/2010 shall be provided.	A.2.1.	This information was wrong construction restarted in the project activity in 1/11/2011 as marked by the amendment to the construction contract. The construction contract amendment is added as (document C), and the date is updated in the PDD version 2.0	Document provided. CL solved.
CL2	A.3.1.	The production license was	Document provided. CL solved.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
The proof of title for production license, operating certification shall be provided to the audit team.		provided as documents: 18-TatarEMRALicenceold.pdf and 11uptodateProductionLicence.pdf, in addition to this Please find Document D-	
CL3 The signed statement on the location of the project (if included in a region with binding limits) shall be provided by the PP, together with the statement about the project generating other form of environmental credits.	A.3.2.	Please Find Document E-Signed statementTatar.pdf, a document signed by the project owner about the project location.	Document provided. CL solved.
CL4 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.	Please find attached Document F-TatarConnectionAgreement.pdf (Was previously provided as number 3- https://www.box.com/s/1w0h13bw38hx15uoyl5v) , showing the date and signature page of the egreement. In addition to the TEIAS conection agreement, On page 32 it is clearly indicated that "All the baseline emissson calculations are made for the entire Turkish Grid." In addition to this on page 7 the project boundary was indicated schematically and the connection points to the grid was given. The electricity production license also certifies the connectivity points to the Turkish National grid this was previously provided as document number 11. It is provided again	Document provided. CL solved.
CL5 Supporting information used to calculate the benchmark and to demonstrate the date of the investment decision is not available. Furthermore, the benchmark is chosen as	B.5.2.2.	In case of determining the benchmark using the Anex of the investment analysis guideline (EB 62 Report Annex 5), I believe it is safer and better to stick to the	Document provided. CL solved.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
Armenia has the same rating as Turkey. In the list of countries, there are other countries with the same rating and a lower benchmark (see Grenada), therefore the value is not conservative. The comparison with other countries shall be based for example on per capita GDP. The default values are after taxes, same approach shall be taken for IRR calculations. The default values are applicable for calculations in nominal terms, the VCS-PD shall confirm the same calculation approach of the equity IRR or the benchmark shall be re-calculated to real terms. .		moddy's index as a reference to compare countries. Because if we look at GDP Per capita we need to first decide on what is the GDP per capita for Turkey as it is given in different numbers by different sources. Wikipedia provides these numbers from 4 different sources (http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP)_per_capita) and accordingly Turkey can be considered to have a comparable GDP per capita with Argentina (B3 Moody's index)-Bench Mark 14.5, Chile (Aa3 Moody's index) Bench Mark, 10.3 and according to U-PENN with Panama (Ba1) benchmark 12.00 , Venezuela (B2) benchmark 13.75 and Dominican Rep. (B2) Benchmark 13.75. Based on IMF and CIA data it is Mexico (Baa1) Benchmark 11.2 % and Dominica (No Moody's) 12.9 %. If I was a foreign investor I would directly look if the country had a Moody's or S&P rating and I would not look at the GDP per capita. As these indexes are taking into account a lot of things including GDP. (I would definitely pass countries that were not listed in Moody's) So therefore I insist that it is the best way to compare Turkey's Benchmark. At the time of investment decision (end of 2010 – to early 2011) Turkey's Moody's index was Ba2 same as Georgia,	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		Armenia etc. and the relevant Benchmark was 12.5. The Moody's index is a reasonable and a relatively consise source to find default benchmark for Turkey. Today, Turkey's Moody's index is Ba1 (same as Panama) and if the investment decision was given today the benchmark would have been 12.00%. But since the investment decision was given in last quarter of 2010, (construction start date), the Moody's index was Ba2. ANSWER CONTINUED: Please look at the Appendix of the "Annex 5; Guidelines On The Assessment of Investment Analysis (Version 05)". The Moody's index for Guinea and Grenada are not provided and when we check the Moody's index for those countries where this value is provided, all of them with Ba2 rating indicate 12.5% for group 1 projects (Project activity is also a group 1 project). So we insist that the benchmark should stay as 12.5%. Eventhough a lower benchmark of 11.75% does not change the result. The date "8.6.2011" is when the loan agreement for Tatar and Pembelik. Was signed but the construction started about 8 months prior to that, based on the contracts and credit loan offers the project owner obtained, but the project owner managed to sign the credit	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		contract on 8.6.2011. There is a board decision on April 2010, and Construction started on October 5th, 2010. So it is more logical to consider investment decision date as the construction start date (5 Oct. 2010) when the PO committed to the project. We have also mentioned this with a foot note in the PDD version 2.0 The equity IRR is calculated with the parameters known at the investment decision time and all the values are taken in USD, with the indicative currency rate at the time of investment decision.	
CL 6 The EIA has not been provided to the audit team.	B.7.2.2. D.1.1.	The EIA was previously provided as document number 15 (https://www.box.com/s/i2gh59iiw8n dbkaexpgs), it is provided again attached to this table, as Document G	Document provided. CL solved.
CL 7 Timeline on status of construction needs to be provided to assess the operation start date.	C.1.1.	Please see document Document I- Expected ProjectStartDate, that exhibits the expected project start date.	Document provided. CL solved.
CL 8 Supporting document required to assess if the operational lifetime of the equipment comply with the "Tool to determine the remaining lifetime of equipment". The webpage provided as source cannot be accessed.	C.1.2.	The link provided in the relevant part of the VCS-PD was not working since the hyperlink was also affecting the page number we were referring to in the expert report. Now it is corrected and the referred document is also provided (as Document H), with yellow highlights. In addition to this, the tool to determine technical lifetime of an equipment is also	Document provided. CL solved.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
		taken into account and that part of the VCS-PD is amended to reflect this consideration please see version 2.0 of the PD.	
CL 9 It shall be clarified if the local stakeholder consultation regarding carbon credits, also taking into account the registration under the Social Carbon Standard, has been performed.	E.1.1. E.1.4.	There was no specific LSC conducted for the sake of the carbon project, and therefore social carbon was not explained in a separate LSC meeting. In order to obtain information related to social carbon parameters, the arbon consultant preferred to communicate to local stakeholders in small groups or on a one to one basis. This is explained in detailed in the social carbon report.	Document provided. CL solved.

TABLE 3 FORWARD ACTION REQUEST

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



RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

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

Sergio Alejandro Degener

è qualificato come¹:
is qualified as:

CDM (-TEC, -VAL, -VER, -TL)
VCS (-TEC, -VAL, -VER, -TL)
GS (-TEC, -VAL, -VER, -TL)
SCS (-TEC, -VAL, -VER, -TL)
JI-TEC

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

1.2, 13.1, 13.2, 15.2

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Energy generation from renewable energy sources	1
13.1	Waste handling and disposal	13
13.2	Animal Waste Management	13
15.2	Animal Waste Management	15

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	04-04-2011	-
3	03-06-2013	Annual revision

Il Resp. QPT
Head of QPT

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS: Gold Standard
SCS: Social Carbon Standard
JI: Joint Implementation

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RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

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

Isil Timuroglu

è qualificato come¹:
is qualified as:

GS-TEC, GS-VAL, GS-VER, GS-TL,
VCS-TEC, VCS-VAL, VCS-VER, VCS-TL,
SCS-TEC, SCS-VAL, SCS-VER, SCS-TL,
Local expert (Turkish language),
CDM-TEC, CDM-VAL, CDM-VER, CDM-TL

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	Energy generation from renewable energy sources	1
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
-	13/02/2012	-
4	12/09/2013	Annual revision

Il Resp. QPT
Head of QPT

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RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

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

Casper Van Der Tak

è qualificato come¹:
is qualified as:

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

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

1.2, 3.1, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Energy generation from renewable Energy sources	1
3.1	Energy demand	3
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	26-10-2011	-
3	03-06-2013	Annual revision

Il Resp. QPT
Head of QPT

¹ Legend:

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VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

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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, 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:

1.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Energy generation from renewable Energy sources	1
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	18-01-10	-
7	12-07-13	Annual revision

Il Resp. QPT
Head of QPT

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VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

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RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

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

Rekha Menon

è qualificato come¹:
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

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	Energy generation from renewable energy sources	1
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
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Il Resp. QPT
Head of QPT

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