



**Verified Carbon
Standard**

ULUABAT HYDROELECTRIC POWER PLANT



Document Prepared by Earthood Services Private Limited

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Project Title	Uluabat Hydroelectric Power Plant
Version	2
Report ID	VCS.VAL.21.71_RCP

Report Title	Uluabat Hydroelectric Power Plant
Client	AKENERJI Elektrik Üretim A.Ş
Date of Issue	06/10/2022

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Summary:

Earthood Services Private Limited (hereafter referred to as ESPL) has been contracted by AKENERJI Elektrik Üretim A.Ş. to conduct the validation of renewal of the crediting period of the project - “Uluabat Hydroelectric Power Plant” (VCS ID- 536), with regards to the relevant requirements of VCS programme guidelines and standard (VCS standard version 4.2, VCS and VCS program guide version 4.1). Also, relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting has been applied for validation.

The project activity involves the installation and operation of a 100 MW hydroelectric power plant to generate energy. The reservoir dam and the hydroelectric power plant have been built from the running waters of Orhaneli Creek in Bursa’s Uluabat district of Republic of Turkey. The Electricity generated from the project activity is delivered to the Turkish National Grid and the project activity reduces GHG emissions that would have otherwise occurred in the baseline scenario. i.e., electricity generation from the fossil fuel sources in the Turkish National grid.

The objective of the project activity is to harness renewable energy in the form of Hydro potential for supplying power to the Turkish National Grid. Thus, project activity displaces the equivalent amount of electricity from the grid which is predominantly generated through fossil fuel-based power plant. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change. This is the proposed 2nd crediting period of the project which results in an estimated GHG emission reduction of 179,880 tCO₂e annually and a total of 1,798,804 tCO₂e over 10 years of the crediting period claimed. The power generated by the project will be replacing the equivalent amount of electricity from the Turkish National Grid, which is dominated by fossil fuel-based grid connected power plants.

The project activity was registered on VCS registry with version 10 of the CDM approved methodology ACM0002: Grid-connected electricity generation from renewable sources. During the current renewal of

the crediting period, the project activity applies the latest version 20 of the CDM approved methodology ACM0002: Grid-connected electricity generation from renewable sources. /01/.

The scope of the re-validation is to establish that:

- the proposed project activity still complies with the corresponding details provided in the registered VCS-PD and the latest version of the VCS-PD provided at the time of renewal/3/;
- the proposed project activity complies with all relevant VCS rules and requirements. The VCS renewal of crediting period was based on the updated VCS-PD, estimated emission reduction calculation spreadsheet, information from current validated VCS-PD and supporting documents made available to the ESPL by the project participants.
- The project activity correctly identifies and applies the latest available valid version of the baseline and monitoring methodology
- Baseline scenario of the project activity is still applicable and/or update with respect to the current scenario at the time of renewal of crediting period
- The project activity is still additional with the scope of regulatory surplus
- the proposed monitoring plan complies with all requirements of applied methodology.

Conclusion

ESPL has performed the validation of the renewal of crediting period of the project “Uluabat Hydroelectric Power Plant” with VCS Project ID 536.

A risk-based approach has been followed to perform this VCS validation of the renewal of crediting period. During validation, total of 01 Clarification request (CLs), 05 Corrective Action request (CARs) were raised and successfully closed.

As outcomes of this validation, the validation team confirms that:

- the latest available VCS-PD template has been applied.
- the original baseline is still valid and/or updated as it is directed by the applied methodology.
- the project additionality remains valid for the renewal of the crediting period as per section 3.8.9, paragraph 1 of the VCS Standard version 4.3. No regulatory constraint has been identified. The project is in accordance with all applicable regulations and legislations and regulatory surplus.
- the project description is in accordance with the characteristics identified on site and in the registered VCS PD.
- the monitoring plan is adequate to the project activity and is in accordance with the applied methodology.
- The project activity is likely to achieve the estimated emission reductions of 1,798,804 tCO_{2e} per year during the 2nd crediting period.

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1 INTRODUCTION

1.1 Objective

Earthood Services Private Limited has been contracted by AKENERJI Elektrik Üretim A.Ş to conduct the validation of the renewal of 2nd crediting period for the VCS project activity “Uluabat Hydroelectric Power Plant” for the period from 27/10/2020 to 26/10/2030 (including both days).

The purpose of this validation is to have an independent third-party assessment of whether the project activity conforms to the qualification criteria set out in the VCS Version 4.3 standard to attain real, measurable, additional and permanent emission reductions. The validation statement/opinion is a written assurance that:

- The project complies with all the applicable VCS requirements and has the ability to generate the emission reductions stated over the project's crediting period.
- The validation followed the requirements of the current version of the VCS Standard Version 4.3 and VCS program guide 4.1 to ensure the quality and consistency of the validation work and the report.
- The project shall result in emission reductions as declared by the organisation or GHG project's GHG assertion;
- The data reported is accurate, complete, consistent, transparent and free of material error or omission.

1.2 Scope and Criteria

The scope of the validation of the renewal of crediting period is to establish/verify that:

- the project is in accordance with requirements of the VCS Standard – version 4.3;/05/
- the update of the applied methodology is in accordance with CDM large scale methodology ACM0002 version- 20.0 and applicable tools;/01/
- the validation of the renewal of crediting period is in accordance with requirements of CDM methodological tool “Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period” – version 3.0.1./02/
- The validation of the renewal of crediting period is based on the registered VCS-PD/03/, revised VCS-PD/04/ and estimated GHG ER calculations/06/.

1.3 Level of Assurance

The level of assurance of the validation report falls under reasonable assurance engagements. Reasonable assurance is a high level of assurance regarding material misstatements, but not an absolute one.

Reasonable assurance includes the understanding that there is a remote likelihood that material misstatements will not be prevented or detected on a timely basis. To achieve reasonable assurance, the auditor needs to obtain sufficient appropriate audit evidence to reduce audit risk to an acceptably low level. This means that there is some uncertainty arising from the use of sampling, since it is possible that a material misstatement will be missed.

It is to be noted that there is no sampling used for the validation (100% data is verified) and the evidence used to achieve a reasonable level of assurance is specified in section 2.3 and 2.4 of this report.

1.4 Summary Description of the Project

The project activity consists of a reservoir dam and a hydroelectric power plant. The power plant involves installation of 2*50MW (total 100 MW) hydroelectric turbines to generate electricity from Orhaneli Creek in Bursa's Ulubat district. The Electricity generated is delivered to the Turkish National grid and the project activity reduces GHG emissions that would have otherwise occurred in the baseline scenario. i.e., electricity generation from the fossil fuel sources dominated Turkish National grid.

The project activity has installed capacity of 100 MW. The energy generation from the project activity is estimated in three phases. The project activity uses the water from Orhaneli Creek which is one of the major branches of Mustafa Kemal Paşa River in Turkey's northwestern Bursa province. Over the period of time, it is expected that usage of water from the Orhaneli Creek will be increased in other purposes also like agriculture and domestic usage. So the generation license and feasibility report have expected that average annual electricity generation from the project activity as 422.6 GWh until 2021, 373.03 GWh until 2028 and 323.65 GWh after 2028.

The project is up and running from last more than 10 years and have successfully completed the first crediting period. The Electricity generated by the power plant is transmitted through 154 KV line to the nearby connection point to the grid.

As per the registered PD, the project activity also provides water for irrigation and drinking purpose to the surrounding area of Bursa province and its industrial zone, Apart from it the project activity provides various employment opportunities to the nearby localities.

From the first crediting period of 27/10/2010 to 26/10/2020, the first monitoring period of 27/10/2010 to 30/04/2012 and 2nd monitoring period of 01/05/2012 - 31/03/2018 have been verified and issued. The third and last monitoring period of 01/04/2018 - 26/10/2020 is also verified and submitted to verra for the issuance request. Thus, the first crediting period has been completely verified at the time of completion of this report.

During the second crediting period, it is estimated that the project activity will reduce the emission reduction up to 1,798,804 t CO₂e.

The project is listed at VCS and can be accessed by the following link:
<https://registry.verra.org/app/projectDetail/VCS/536>

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation of the renewal of crediting period process is conducted as per internal CDM Quality Manual and in accordance with criteria laid down by VCS. It includes the following steps:

- contract with PP for the scope and appointment of validation team and technical review team.
- completeness check of VCS-PD.
- desk review of VCS-PD and estimated GHG emission reduction calculations.
- physical on-site inspection / Remote inspection by alternate means by validation team.

- follow up activities e.g., interviews.
- reporting and closure of findings (CARs/CLs/FARs) and preparation of draft validation report;
- independent technical review of the draft validation report and final/revised documentation (e.g., VCS-PD, corresponding estimated ER calculations sheet and evidence);
- issuance of the final validation report to contracted PP (or authorized representatives).

2.2 Document Review

A desk review was conducted by the validation team that included:

- a review of the data and information presented to assess its completeness.
- a review of the registered VCS-PD/03/, revised VCS-PD/04/, estimated GHG emission reduction calculations/06/, the applied methodology including applicable tool(s)/02/ and relevant laws regulations for the host country.
- supporting documents as provided by the Project Participant and listed under Appendix 1.

A complete list of documents/evidence reviewed is included as Appendix I.

2.3 Interviews

The assessment team has carried out interviews in order to verify the information included in the project documentation and to gain additional information regarding the compliance of the project with the VCS requirements. Representatives of the project activity and consultant were also interviewed through online meeting. The names and designations of the personnel interviewed are mentioned as below.

The main topics covered during the interview are as follows:

- General Aspects of the project and Implementation
- Equipment and operation since start of the project activity
- Staff Training procedures and Calibration procedures
- Monitoring & Measuring System
- Mechanism for ongoing local stakeholder's consultation
- Data collection, recording and archiving procedure
- QA/QC procedures and VCS documentation
- Emission reduction calculations

A remote audit was conducted for the project activity on 27/01/2022. The names of the persons interviewed during remote audit through Microsoft Teams Application/07/ is given below

#	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Kargılı	Cemal	Head of Fadıllı Village	27/01/2022	Discussion with villagers	Kubra Agriman
2.	Kargılı	Nursen	Villager from Fadıllı Village			
3.	Uluturk	Salih	Villager from Fadıllı Village			

4.	Erdem Erkin	Dede	Plant Manager	27/01/2022	Project activity monitoring, Excel calculations	Harsh Raval / Kubra Agriman
5.	Mehmet	Küçük	Plant Business Manager			
6.	Burak Can	Akyol	Generation Performance Analysis Specialist			
7.	Tibet	Aydın	Strategic Planning and Risk Specialist			
8.	Özlem	Palabıyık	Strategic Planning and Risk Manager			
9.	İnci Hazal	Özcan	Project Developer			

2.4 Site Inspections

The current site inspection was based on the virtual means/17/ in place of a physical site visit. This was deemed sufficient to confirm the plant operations and other aspects of the project operations. This approach adopted i.e., remote site visit (RSV) was in accordance with para 4.1.2 of the VCS standard v4.2/7/ “The validation/verification body shall select samples of data and information to be validated or verified to provide a reasonable level of assurance and to meet the materiality requirements of the specific project.” The representatives of the PA were interviewed through video call on 27/01/2022 (via Microsoft teams), details of which is included in further sections of this report.

To achieve a reasonable level of assurance, the assessment team has followed the alternative means to substantiate the validation criteria as discussed in the table below:

Assessment Criteria	Means of verification/source documents	Assessment opinion
Description of project activity	i. Generation License /11/ and connection agreement /10/ ii. EIA Report /8/ iii. Registered PD subsequent validation report /3/ iv. First Monitoring report and subsequent verification report v. Remote Audit conducted on 27/01/2022	The information's with reference to project capacity, technology, plant equipment's and commissioning dates as provided in VCS PD are found consistent with the documents.
Compliance of the project implementation with the registered project design document	i. Geographical co-ordinates (Location of WTGs) verified through Google Map vi. Registered PD subsequent validation report /3/	Location of project is verified through Google Map and government approvals. Grid connectivity of the project is confirmed through the connection agreement.

	vii. First Monitoring report and subsequent verification report viii. Remote Audit conducted on 27/01/2022	All the information's regarding the project implementation as discuss above are further verified through VCS validation report, VCS 1st MR verification report and found consistent.
Compliance of the registered monitoring plan with applied methodology	i. Registered PD subsequent validation report /3/ ii. First Monitoring report and subsequent verification report iii. Remote Audit conducted on 27/01/2022	The organizational structure, responsibilities and competencies of the personnel confirmed through interview. Frequency of monitoring of parameters listed under approved monitoring plan is verified through Validation and verification reports. The methods used for measuring, recording, storing, aggregating, and reporting the data on monitored parameters are verified through interactions with site personnel. Procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mentioned in the revised PD is confirmed through interviews and policy documents and found satisfactory.
Assessment of data and calculation of estimated emission reductions or net removals	i. CO₂ emission factor for Turkish Grid/15/ ii. Energy Yield assessment report for the project/16/ iii. Applied Methodology ACM0002, Version 20/01/	Methods, formulae and emission factor for calculating baseline emissions have been followed are in accordance with the applied methodology and as described in the registered VCS validation report.

Validation team has used the above alternative means for its assessment and to justify that they are sufficient for the purpose of validation. Along with desk review, audit team has conducted remote audit interview.

A complete desk review of the Project documents including the register PD, revised PD submitted for renewal of crediting period, previous monitoring report and subsequent verification report, as well as all applicable country legal requirement and supportive evidence have been checked by the validation team.

Validation team has performed interview with PP in order to check the project implementation, project boundary, current situation, monitoring procedures etc.

Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in the supporting documents.

A check of the monitoring system including performance and observations of monitoring practices against the requirements of the VCS PD, registered PDD/03/ and the selected methodology.

#	Activity performed on-site	Site location & Date of Remote Site visit	Team member
1.	Introduction, scope and objective of work, roles and responsibilities of audit team	Remote Site visit 27/01/2022	Kubra Agriman, Harsh Raval, Vishnu Panicker
2.	Project Activity (Technology, Location and Implementation, lifetime), Choice and applicability of baseline methodology(ies)		
3.	Baseline identification, Project boundary and emission sources included in the project boundary.		
4.	Parameter fixed Ex-ante and Baseline emissions, Project emissions and Leakage calculation		
5.	Monitoring plan (feasibility of monitoring arrangements described in PD, QA/QC procedures, responsibility of implementation of monitoring plan, data recording & storage procedures)		
6.	Local Stakeholder's consultation and mechanism for on going consultation		

2.5 Resolution of Findings

As an outcome of the validation process, the team can raise different types of findings:

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

Where a non-conformance arises the team leader shall raise a Corrective Action Request (CAR). A CAR is issued, where:

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

The validation process may be halted until this information has been made available to the team leader's satisfaction. Failure to address a CL may result in a CAR. Information or clarifications

provided as a result of a CL may also lead to a CAR. No CL has been raised during the validation of the project activity.

During the present verification, 01 CLs and 05 CARs were raised and successfully closed.

The list of findings and their resolution are presented at Appendix III of this report.

2.5.1 Forward Action Requests

FAR (Forward Action Request) is raised during the verification if

- A Forward Action Request (FAR) will be issued when certain issues related to the project activity should be reviewed during the next verification.

During the validation of the crediting period renewal, it has been noted that 1st crediting period is yet to be completely verified. Thus, FAR#07 has been raised to check that before the verification of 1st monitoring period of 2nd crediting period, the previous monitoring periods are consistently reported and verified and there are no overlaps with previous monitoring periods as well as time gap between the monitoring periods.

3 VALIDATION FINDINGS

3.1 Project Details

The project activity is already registered project activity by VCS ID- 536. It has commissioned by the start of the first crediting period and is successfully running since then. The implementation and status of the project activity has been checked with the registered PD and its validation report/3/. The first crediting period of the project activity was applicable from 27/10/2010 to 26/10/2020.

Current validation is for renewal of the crediting period for the project for 2nd crediting period ranging from 27/10/2020 to 26/10/2030. Following details regarding the project activity have been re-checked and re-validated from the registered PD/3/ and final revised PD, version 02/4/ submitted at the time of renewal of crediting period.

Some of the characteristics of the project activity as re-validated are described below:

- Project Details:

The project activity involves the installation of a 100 MW (2*50 MW identical turbines) hydroelectric power plant to generate energy from the running waters of Orhaneli Creek in Bursa's Uluabat district in Turkey. Electricity generated by the project activity is delivered to the Turkish National Grid and the project activity reduces GHG emissions that would have otherwise occurred in the baseline scenario. i.e., electricity generation from the fossil fuel sources.

Uluabat HEPP is a hydroelectric power plant project located on the lower basin of Orhaneli Creek, one of the major branches of Mustafa Kemalpaşa River. It is built within the scope of Emet Orhaneli Project developed by General Directorate of DSI (State Hydraulic Works) for utilizing the water potential in the region.

Uluabat HEPP project has been awarded to Akenerji Elektrik Üretim A.Ş. for 49 years period after the bidding by the Turkish Energy Market Regulatory Authority (EMRA).

A feasibility report/16/ had been prepared by the Akenerji Elektrik Üretim A.Ş. and the report and same has been approved by State of Hydraulics department. The report estimates average annual generation from the project activity in 3 phases.

- Phase 1 - up to year 2021 - when only downstream water demand has been supplied from the dam the total energy production will 422.647 GWH,
- Phase 2 - up to year 2028 - which includes 1st stage of drinking, usage and industrial water supply from the dam and generation will be reduced to 373.030 GWH
- Phase 3 - after year 2028 - which includes the whole drinking, usage and industrial water supply from the dam and generation will further reduced at 323.653 GWH

The generation license/11/ issued to the project activity is also checked and uses the same energy generation estimation in the project approval.

The second crediting period for the project activity falls under phase 2 of generation and thus estimated emission reduction and energy generation are validated accordingly in the current report.

Also, the generation data/3/ for past monitoring periods have been checked and it seems to be under the estimated limits of generation,

- Project Eligibility:

The project activity is grid connected renewable electricity generation from hydro energy. The project activity replaces the electricity generation from more carbon incentive fossil fuel based thermal power plants in the baseline, which is substantiated in the later section of this report. Thus, by generation of clean renewable energy the project activity reduces the emission of CO₂ in the baseline and is eligible under VCS scope as per point (1) under Para 2.1.1 of VCS standard, version 4.3.

Further, in accordance with table 1 provided under Para 2.1.1 of VCS standard, version 4.3, grid connected large scale hydro power projects are no longer eligible under the VCS Program. However, the project activity is already registered VCS project activity with renewal crediting period and current validation is only for renewal of the crediting period. This is not a new project being proposed. So, exclusion under table 1 of section 2.1.1 is not applicable to the current project activity.

The project activity has also applied approved CDM methodology ACM0002, version 20 appropriately, which is the latest available and applicable version of the methodology and allowed under the VCS program.

Thus, the proposed renewal of crediting is eligible under the VCS scope.

- Project Proponents:

AKENERJI Elektrik Üretim A.Ş. The name of the project proponent is crossed checked with the registered VCS PD/3/ and is found consistent. Further, project ownership is also checked by means of approvals/10/11/. AKENERJI Elektrik Üretim A.Ş. holds all licenses, permits, and rights for ownership of Uluabat HEPP.

- Project Category:

Project ($\leq 300,000$ tCO_{2e}/y); The estimated annual emission reductions for the project activity are 1,79,880 tCO_{2e} per year (proposed annualized average value) is lower than 300,000 tCO_{2e}. Hence the category is applicable under "Project".

- Methodology:

The project activity has applied approved CDM methodology ACM0002: Grid-connected electricity generation from renewable sources. Version 20.0. /01/. The methodology has been correctly applied and is applicable to the project activity.

- Estimated GHG emission reductions:

The project activity is expected to avoid the emissions of 179,880 tCO_{2e} per year and 1,798,804 tCO_{2e} over the entire 2nd crediting period. The emission reduction calculation approach is found appropriate in line with the applied methodology. The input data and assumption are based on the validated project details. The same has been discussed in later section of this report.

- Start Date:

27/10/2010 – date on which the project proponent marks the start of the First GHG emission reduction. The start of the project has been checked with the commissioning date/3/ and validation report.

- Crediting Period:

The first crediting period of the project activity was from 27/10/2010 to 26/10/2020 and the second crediting period starts from 27/10/2020 to 26/10/2030 – 10 years – renewable; the crediting period is consistent with information provided on project activity page on verra website/14/;

- Project Location:

The project site lies between 28° 46' – 28° 43' E longitudes and 40° 03' – 40° 09' N latitudes. The closest settlement is the Akçalar Village, about 20 kilometers from the project site. The project lies between Emet Creek in the west and Nilüfer Creek in the east. The location of the project activity has been re-checked with the validation report and previous verification report also cross verified during the remote audit.

- Conditions prior to project initiation:

Electricity delivered to the grid by the projects 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 'TOOL07: Tool to calculate the emission factor for an electricity system v.07/02/

- Compliance with applicable laws, statutes and other regulatory frameworks:

Complies of the project activity with applicable laws of the host country has been checked. Uluabat HEPP has been in continuous operation since its start date on 27/10/2010. The project has still valid government approval and license to operate in the host country.

With the help of the local expert of the host country and the project proponent, it has been checked that project activity complies with all applicable laws and regulations in Turkey such as:

- a. Electricity Market Law (Law Number: 6446, ratified 14/03/2013, enacted 30/03/2013)
- b. Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy (Law Number: 5346, ratified 10/05/2005, enacted 11/08/1983)
- c. Energy Efficiency Law (Law Number: 5627, ratified 18/04/2007, enacted 02/05/2007)
- d. Forest Law (Law Number: 6831, ratified 31/08/1956, enacted 08/09/1956)
- e. Environment Law (Law Number: 2872, ratified 09/08/1983, enacted 11/08/1983)

- Emissions trading programs and other binding limits:

GHG emission reductions generated by the project are not included in an emissions trading program or any other mechanism that includes GHG allowance trading. The project activity is not registered with any other GHG program. The same has been checked by means of declaration from the project proponent and verified by interview with project proponent during the remote audit.

- Other forms of environmental credit sought or received and eligible to be sought or received:

The project has not received nor participated in any other form of environmental credit. The project proponent also do not indent to participate in any other such scheme. This has been confirmed by declaration of the project during the remote audit.

- Participation and/or rejection under other GHG programs:

The project activity has not participated in any other GHG program. This has been checked through publicly available information as well as confirmation from the project proponent.

- Sustainable development contribution: The project is said to contribute to sustainable development via environmental, economic, social, and technological means.

- a. Contributing to meet the increasing electricity demand and reducing dependency on fossil fuel weighed electricity sector. The project activity does not degrade any resources and does not negatively impact biodiversity, resource sustainability, human health, etc.
- b. The project has indirectly and directly created job opportunities during construction and operation phase.

- Additional Information related to the Project:

- c. Leakage Management: Since there is no transfer of energy generating equipment from or to another activity, according to ACM0002. Version 20, there is no leakage and the value is considered NIL.
- d. Commercial Sensitive Information: There is no sensitive information included in the project document by the project proponent.

- Technical details

The following technical details are checked as mentioned in the registered PD and revised PD submitted for renewal: the details are found consistent in validated registered PD and revised PD submitted for renewal.

Location	Orhaneli Creek of Susurluk Basin
Design Discharge	40.00 m ³ /sec
Length of Tunnel	11.82 km
Average Natural Flow	23.47 m ³ /sec
Gross Head	325 m
Thalweg Level	333 m
Crest Height	123.0 m
Total Installed Capacity	100 MW
Reservoir Volume	186.75 hm ³
Maximum Reservoir Surface Area	10.14 km ²
Number of Units	2 each
Derivation Tunnel	Horseshoe type – 0.56 km long
Turbine Type	Francis type – horizontal axis
Irrigation Land	3,000 ha
Total Water Demand	118.25 hm ³ /year

The overall description, implementation and project design as mentioned in the VCS-PD/04/ is found to be accurate, complete, and consistent with the validated registered VCS PD. The revised PD submitted for renewal provides a clear understanding of the nature of the project.

The project activity is about renewal of crediting period request and public comment requirement is not applicable at this stage as per the VCS program requirements.

CAR#02 was raised by the assessment team regarding compliance with template, consistency, and technical information. It was subsequently closed as PP submitted the revised PD with correction.

CAR#05 was raised by the validation team and has been successfully closed after the Project proponent's response.

3.2 Safeguards

3.2.1 No Net Harm

There is no negative impact to any socio-economic conditions of the region due to the project activity. No adverse environmental impact has been envisaged in the project activity. All the necessary clearances government department has been obtained. This project activity will not involve any negative environmental or socio-economic impacts, as the turbines are installed for generation of power using hydro power which is a clean source of energy. Hence, no mitigation measures are required. The Environmental Assessment was done prior to start/construction of the project activity and project was approved based in the study /08/.

3.2.2 Local Stakeholder Consultation

The local stakeholder consultation was done during the validation of the project activity at the time of first crediting period. The details of the same have been checked in the registered PD/3/ as well as its validation report and found appropriate.

Conducting a second stakeholder's meeting is not part or purview of this audit as it is renewal of crediting period. However, as per the para 3.17.4 of VCS standard, version 4.2, the mechanism of ongoing communication with local stakeholders has been checked. As a part of the process, interview of few of the Local Stakeholders were conducted by the assessment team on 27/01/2022 via video conference. It was confirmed the overall feedback of stakeholders regarding the project were very positive and affirmative. Two local nearby villagers, one female - one male, and the head of nearby Fadıllı village were interviewed to get their feedbacks about the project. It is safe to say that the project benefited the region by increasing the employment generation and also protecting the endangered species and biodiversity conservation. The social and environmental benefits as mentioned in the revised PD have been confirmed by the interviewed local stakeholders.

Thus, it has been confirmed that project proponent has well established mechanism for ongoing communication with local stakeholders and over feedback regarding the project activity is positive.

3.2.3 Environmental Impact

The environmental impact and its assessment were done at the time of the construction phase of the project activity. The details for the same have been checked along with registered PD and its subsequent validation report.

The project proponent has also submitted the EIA report for the project activity carried out at that time. Under EIA, the project activity had been evaluated under Article 4 of the Environment Impact assessment Regulation, enacted and published in official gazette no.24777 on June 6, 2002. EIA report was prepared and evaluated the possible impacts of the project even though the project was exempted from preparing EIA report as the approval date is before February 7, 1993. There

is no negative impact of the project on environment as there is no shift in irrigation and structure of the ecosystem in the region. Solid wastes during construction and operation phase were recycled, disposed in disposal site, or used for concrete preparation and base supplies for road construction. The wastewater in construction and operation phase was also treated, handled, and discharged according to the Water Pollution Control Regulation. The hazardous waste was also contained in leakproof containers both in construction and operation phase with a proper trained person employed for management. The emission and noise have also been properly addressed in the EIA report. /08/

There is no requirement of EIA in the host country at the current phase of the project activity. The issues identified at the time of EIA study have been taken care by the project proponent and relevant ongoing monitoring of the environmental parameters is being done on regular basis.

3.2.4 Public Comments

Not applicable at the current stage.

3.2.5 AFOLU-Specific Safeguards

Since this is a non-AFOLU projects, this section is not applicable.

3.3 Application of Methodology

3.3.1 Title and Reference

The project activity has applied CDM approved methodology ACM0002 - version 20.0/01/.

Title: Grid-connected electricity generation from renewable sources

Tools/02/ referenced in the applied methodology:

- Tool to calculate the emission factor for an electricity system - Version 07.0
- Methodological Tool- Tool for the demonstration and assessment of additionality - Version 5.2
- Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period," Version 03.0.1

3.3.2 Applicability

All applicability conditions of the updated version of the methodology (ACM0002 version 20.0) are met. Thus, the methodology is deemed fully applicable for the new crediting period and no request for deviation with regards to the applicability of the methodology is required. All applicability conditions are completely and correctly included in the revised VCS PD/04/.

Criteria-1.

This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).

Validation assessment:

- Project activity is Greenfield hydro power project, supplying electricity to national grid. This is verified through the connection agreement/10/ and production licence /11/.

Thus, the criterion is fulfilled by the proposed project activity.

Criteria-2:

The methodology is applicable under the following conditions:

(a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;

Validation assessment:

The proposed project activity is a hydro power plant with reservoir.

(b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects, the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.

Validation assessment:

Not Applicable as the project activity was envisaged and registered as green field project activity.

Criteria-3:

In case of hydro power plants - The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7) of applied methodology, is greater than 4 W/m².

Validation assessment:

This is applicable to the project activity as it is built of existing single reservoir and the size of the reservoir is increased in as manner that power density of the project activity is greater than 4 W/m². The validation of the power density is discussed I later section of this report.

The other conditions as specified in the applied methodology via para (6-8) are not applicable to the current project activity as it is neither Integrated hydropower plant and Biomass based plant nor involves retrofits, rehabilitations, replacements, or capacity additions.

Thus, applied baseline and monitoring methodology ACM0002, version 20 is applicable to the project activity. Apart from the methodology, following tools are referred in the PD, which are found applicable to the project activity in accordance with the applied methodology.

- Tool for the demonstration and assessment of additionality,” Version 5.2
- Tool to calculate the emission factor for an electricity system,” Version 07
- Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period,” Version 03.0.1

3.3.3 Project Boundary

The project boundary is the physical geographical site of the Uluabat HEPP and since the project is connected to the Turkish National Grid through Görükle-Akçalar Substation, all power plants connected physically to the Turkish national electricity grid and feeding electricity into it will be included in the project boundary.

There is no change in the project boundary since the registration of the project activity and project boundary has been correctly identified in the revised VCS PD/3/.

CAR#03 was raised by the validation team for correction of an error in project boundary table for emission sources, it has been successfully closed after the comments was addressed by Project Proponent.

3.3.4 Baseline Scenario

The project activity was a greenfield renewable energy generation facility at the time of initial registration with the VCS. As per the Para 22 of applied methodology ACM0002, Version 20, *“If the project activity is the installation of a Greenfield power plant, the baseline scenario 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 TOOL07: Tool to calculate the emission factor for an electricity system”*. The baseline scenario selected for the project activity in the initial registered PD was combined margin (CM) calculations described in TOOL07: Tool to calculate the emission factor for an electricity system and it is still valid for 2nd crediting period. Further selected baseline scenario is in accordance with the applied methodology: “ACM0002: Grid-connected electricity generation from renewable sources. Version 20.0”/01/

Thus, as per VCS Standard v.4.2, paragraph 2b. “the GHG emissions associated with the original baseline scenario shall be reassessed using the latest version of the CDM “Tool to assess the

validity of the original/ current baseline and to update the baseline at the renewal of a crediting period”.

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies: -

Validation: - The selected current baseline scenario complies with all relevant mandatory national/sectoral legislation since no other laws that impact the project activity have come into force. The installation of a renewable energy based green field power plant is still legally approved and not a mandated option in Turkey. This has been checked with various laws referred in the additionality section of this report and with the local expert of assessment team.

The energy demand in Turkey is increasing and the national grid is not saturated by generation. The Turkey is still energy importing country and thus in absence of the project activity a new power plant would have been built in the grid to meet the growing energy demand,

The baseline scenario identified by the PP was found to be in accordance with applied methodology/01/ and the registered PDD/3/. Therefore, PP's decision to not make changes in the current baseline was found to be acceptable by the validation team.

Step 1.2: Assess the impact of circumstances:

Validation: - Since the project is undergoing its second crediting period the grid emission factor needs to be determined based on the latest available data in accordance with the latest available version 07 of the Tool 7. Thus, the project proponent has updated the emission factor with latest version of the Turkey's National electric Grid Emission factor” for 2019. Also, as guided by the tool, the weightage average factor for the Operating margin and the Build margin have been changed being it a second crediting period.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested:

Validation: - The baseline scenario identified at the validation of the project activity was the continuation generation of electricity from grid-based power plants. According to information provided by the project proponent, The Turkish national grid is still fossil fuel dominated intensive grid. the same is also checked with CO₂ emission factor data factsheet as published by the Turkey's National agency/15/. The operating and build margin for 3 years clearly show dominance of fossil fuel based power generation.

Further, projection by Turkish Electricity Transmission Corporation clearly shows the increasing future demand for the electricity with 3.3 percent increase per year. To meet up this demand new fossil fuel based power plant would have been built in absence of the project activity at crediting period renewal stage also.

Step 1.4: Assessment of the validity of the data and parameters:

Validation:- Emission reduction calculations are based on two main parameters; energy generation and grid emission factor. The “Grid emission factor” needs to be updated during the 2nd crediting period in line with the tool and is correctly revised by the project proponent.

The application of Steps 1.1, 1.2, 1.3 and 1.4 above confirmed that the current baseline remains valid for the subsequent crediting period and that fixed parameters have been changed or included due to the circumstances presented above.

As there are parameters that were updated for the 2nd crediting period, Step 2 is assessed below:

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline:

Although the current baseline is valid, the baseline emissions have been updated in accordance with parameters assessed above in Step 1.4. In addition, the calculation of the baseline emissions took into consideration the monitored data from the previous crediting period.

Step 2.2: Update the data and parameters:

The Grid emission factor has been updated since it is the second crediting period. The EF_{grid,CM,y} has been updated to 0.4929 tCO₂/MWh by applying the ACM0002's Tool 7's specifications, “renewable energy projects except for wind and solar ones should calculate the CM factor for the second and third crediting period by taking w_{OM} as 0.25 and w_{BM} as 0.75.”

Issue 1 in CAR#06 was raised for providing a clear demonstration of validity of baseline scenario. It was subsequently closed as PP submitted the revised PD with correction.

3.3.5 Additionality

According to paragraph 3.8.9(1) of the VCS Standard v.4.2, “A full reassessment of additionality is not required when renewing the project crediting period. However, regulatory surplus shall be demonstrated in accordance with the requirements set out in the VCS Program rules and the project description shall be updated accordingly.”

Following applicable laws have been referred and provided by the project proponent and compliance with respect to the same for project activity have been checked.

- 1 – Electricity Market Law (Law Number: 6446, ratified 14/03/2013, enacted 30/03/2013)
- 2 – Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy (Law Number: 5346, ratified 10/05/2005, enacted 11/08/1983)
- 3 – Energy Efficiency Law (Law Number: 5627, ratified 18/04/2007, enacted 02/05/2007)

- 4 – Forest Law (Law Number: 6831, ratified 31/08/1956, enacted 08/09/1956)
- 5 – Environment Law (Law Number: 2872, ratified 09/08/1983, enacted 11/08/1983)

Further project activity generation license has been checked and is found to be valid. The project activity still has a valid connection agreement with the grid and a permission to operate.

Thus, it can be concluded that there is no regulatory constraint in operation of the project activity. Further, applicable laws do not mandate the project proponents to establish hydro as well as renewable energy power plants in the host country. The establishment and operation of renewable energy power plants are still voluntary in the host country,

Thus, it can be concluded that project activity is still regulatory surplus activity.

The project proponent has kept the demonstrated additionality through investment analysis in line with registered PD intact in the revised PD submitted for CP renewal. The same has not been re-validated and kept as it is to maintain the consistency with the registered PD.

Issue 2 in CAR#06 was raised for clear demonstration of regulatory surplus and it was subsequently closed.

3.3.6 Quantification of GHG Emission Reductions and Removals

All the equations to calculate the ERs are in accordance with the applied methodology and VCS-PD. The proposed project uses Turkey's Energy and Natural Resources Ministry's factsheet/15/ for the emission factors to measure estimated emission reductions. The calculated emission factors from the ministry's factsheet: OM=0.7258, BM=0.4153. As per the Tool 7, renewable energy projects except for wind and solar ones should calculate the CM factor for the second and third crediting period by taking w_{OM} as 0.25 and w_{BM} as 0.75. Thus, the CM factor for the second crediting period is calculated as 0.4929 tCO₂/MWh by using the ministry's BM and OM values and the respective weights per the applied tool.

The operating margin and build margin values as provided by the Turkey's Energy and Natural Resources Ministry are calculated in compliance with Tool 7, version 07 and thus accepted.

Project emission of Uluabat HEPP according to ACM0002 is

$$PE_y = PE_{HP,y}$$

where

PE_y = Project emissions from water reservoirs of hydropower plants in year y (t CO₂e/yr)

In the initial Project Document, the project proponent had not considered the existing reservoir are (rivers surface area) into calculation due to unavailability of the data and thus the project emissions from the reservoir were considered in the calculation in accordance with the applied methodology. The power density was calculated as 9.86 W/m² in the registered PD. However, during the first monitoring period, the river's surface area (0.47 km²) prior to the project was documented and deducted from the reservoir area.

The total reservoir area generated after the project was 10.14 Km², out of which 0.47 km² is the surface area of the river basin, already existed prior to the project activity. The said area of the river basin prior to the project activity is certified from the General Directorate of State Hydraulic Works (DSİ)/18/ and thus accepted.

The river area of 0.47 km² can be said the parameter A_{BL} as per the applied methodology for the project activity and will remain ex-ante fixed during the project period.

However, the total area of the reservoir A_{PJ} (as considered 10,140,000 m² in registered PD) is a monitored parameter as per ACM0002, version 20. Parameter - A_{PJ} - “total Area of the reservoirs measured in the surface of the water, when the reservoir is full” is to be measured once at the beginning of each crediting period. As per the methodology, it can be demonstrated through topographical surveys, maps, satellite pictures, etc.

A satellite image/map dated 10/09/2020^{09/} has been provided by the PP, which measures the total surface area of filled reservoir water body as 10.14 Km².

This calculation resulted in the power density increasing to 10.34 W/m². According to ACM0002 project emissions calculation methodology: “[...] If the power density of the project activity is greater than 10 W/m²:

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

where $PE_{HP,y}$ is project emissions from water reservoirs (t CO_{2e}/yr).

Hence, the project emissions are ignored and considered zero.

According to ACM0002, emission reductions are calculated as,

$$ER_y = BE_y - PE_y$$

where

ER_y = Emission reductions in year y (t CO_{2e}/yr)

BE_y = Baseline emissions in year y (t CO_{2e}/yr)

PE_y = Project emissions in year y (t CO_{2e}/yr)

Since $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ and $PE_y=0$

The Emission reduction formula is

$$ER_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Thus, it can be concluded that:

- all relevant assumptions and data are listed in the project description, including their references and sources;
- all data and parameter values used in the project description are considered reasonable in the context of the project;
- all estimates of the baseline emissions can be replicated using the data and parameter values provided in the project description;

- the quantification of GHG emission reductions were determined in accordance with applied methodology. CL#01 was raised by the validation team for validation of the applicable power density at the time of this renewal crediting period and same has been closed after PP has justified the considered/calculated power density along with supporting documents,
- CAR#04 was raised as weightage average factors were not correctly take considering the 2nd crediting period in accordance with the tool and compliance with version 07 of the tool was not consistently mentioned. It was subsequently closed.

3.3.7 Methodology Deviations

There is no deviation in the methodology used in this VCS-PD but the power density has been changed from the previous version of the VCS-PD as the initial Project Design Document, the power density was calculated as 9.86 W/m². However, in the monitoring report, the river's surface area (0.47 km²) prior to the project was documented and deducted from the reservoir area.

After adding the river's surface area, the calculation resulted in the power density increasing to 10.34 W/m². So, according to ACM0002 project emissions calculation methodology: If the power density of the project activity is greater than 10 W/m², the project emission is considered zero, i.e., $PE_{HP,y} = 0$.

3.3.8 Monitoring Plan

The monitoring plan in the revised PD for CP renewal is in compliance with the applied monitoring methodology ACM0002, Version 20.0. The monitoring plan will give opportunity for real measurement of emission reductions achieved. Since the project is a renewable energy (hydro) generation activity, having power density more than 10 W/m², no indicators have been defined regarding project emissions in accordance with the applied methodology. Leakage accounting has not been considered for the project since the renewable energy technology equipment used is new equipment and not transferred from another activity. The monitor-able action plan for the same has been included in section 5.3 of the PD. The Validation team confirms that the project participant is able to implement the project as per the monitoring plan.

It can be concluded that there are no substantial changes from the already validated registered monitoring plan, which may require re-validation.

- Data and parameters available at validation

The baseline grid emission factor of 0.4929 tCO₂/MWh is determined ex-ante based on the most recent information available at the time of renewal of the crediting period, which is calculated as a combined margin (CM), consisting of the combination of OM and BM emission coefficient. The parameters applied in the calculation are validated by the assessment team to be credible.

The OM and BM data are considered as 0.7258 t CO₂/MWh and 0.4153 t CO₂/MWh respectively and are directly sourced from the nationally published data for Turkey's National Electric Grid Emission Factor. The same has been calculated in compliance with version 07 of the Tool 7 and found to be acceptable.

- Data and parameters monitored

The project applies monitoring methodology ACM0002, version 20. As per the methodology, monitoring shall consist of metering the quantity of net electricity generation supplied by the project plant/unit to the grid by the renewable technology installed by the project proponent.

Net electricity generated and delivered to the grid by project activity: $EG_{PJ, facility, y}$

Electricity generation data are recorded by two meters – main and check. The meters installed are bi-directional meters having capable of measurement of import and export values at the same time. These meters are sealed by the government agency/grid company - TEİAŞ. Every month there will be a joint meter reading along with grid company and project proponent representative. The plant's internal consumption will be subtracted from the gross generation. The calculated net generation will be used in calculation of the emission reductions. Since, two meters are installed, the data results can be crosschecked and in case of faulty meter the readings from another meter can be considered.

Turkish Electricity Transmission Corporation (TEİAŞ) is a government entity responsible for transmission of the generated electricity, while EPIAŞ is a company responsible for operation of electricity sales market under the ministry. The meters installed are maintained and under custody of TEİAŞ. The data of the meter readings shall also be crosschecked with invoices issued to EPIAŞ for sale of electricity. Both EPIAŞ and TEİAŞ data are retrieved from the same meters but can be used for crosscheck as being measured by independent government agencies. Apart from it, the recorded data can also be cross checked with daily import/export as recorded in plant SCADA system.

The calibration frequency of once in 2 years as per TEİAŞ regulation. It has been confirmed through the interviews of the PP which is considered as appropriate. However, it is also checked that the calibration frequency of all electricity meters in Turkey as per general regulation is once 10 years.

The other aspects of the monitoring plan like roles and responsibilities / QA-QC procedures data recording have been checked and is found consistent with the validated registered PDD.

Overall, it is assessment team's conclusion that the monitoring plan is in compliance with the applied methodology and project proponent is able to implement it.

Issue 2 in CL#01 was raised by assessment regarding clarification of the calibration frequency and it was subsequently closed.

3.4 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
NA	NA	NA	NA	NA

4 VALIDATION CONCLUSION

ESPL, contracted by AKENERJI Elektrik Üretim A.Ş, has performed the independent validation of the renewal of crediting period of the project “Uluabat Hydroelectric Power Plant”, with VCS Project ID 536.

ESPL commenced that the validation based on the baseline and monitoring methodology ACM0002: Grid-connected electricity generation from renewable sources. Version 20.0, the registered VCS-PD – version 04 (from previous crediting period)/03/ and VCS-PD (for the new crediting period)/04/.

ESPL’s validation approach is based on the understanding of the risks associated with reporting the project activity, estimates of GHG emission data and the controls to be implemented to mitigate these. ESPL planned and performed the validation by obtaining evidence, other information and explanations that ESPL considered necessary to give reasonable assurance that the estimated GHG emission reductions are fairly to be achieved.

The validation team confirms, based on final revised VCS-PD, version 02, that:

- the original baseline is still valid as it is given by the applied methodology.
- the project additionality remains valid for the renewal of the crediting period as per section 3.8.5, paragraph 1 of the VCS Standard version 4.3. No regulatory surplus has been identified. The project is in accordance with all applicable regulations and legislations.
- the project description is in accordance with the characteristics identified on site.
- the monitoring plan is adequate to the project activity and is in accordance with the applied methodology.
- at this 2nd crediting period, the project activity is likely to achieve the estimated of 1,798,804 tCO_{2e} for the entire period.



Approved by

Kaviraj Singh

Managing Director

Earthood Services Private Limited

Date: 06/10/2022

Place: Gurgaon, Haryana

APPENDIX I: REFERENCES

No.	Title	References
1.	Methodology ACM0002: Grid-connected electricity generation from renewable sources.	Version 20.0
2.	Tools - TOOL01: Tool for the demonstration and assessment of additionality - TOOL07: Tool to calculate the emission factor for an electricity system - TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period	version 5.2 version 07.0 version 03.0.1
3.	3.1: Registered VCS-PD and subsequent validation report 3.2: First Monitoring report from 27/10/2010 to 30/04/2012 and its verification report 3.3: Copy of 2 nd Monitoring report from 01/05/2012 – 31/03/2018 and its final verification report as submitted by the PP to Verra 3.4: Copy of 3 rd Monitoring report from 01/04/2018 to 26/10/2020 and its final verification report as submitted by the PP to Verra	Version 04 15/10/2010
4.	Renewed VCS-PD, version 02	Version 02 29/09/2022
5.	VCS Standard	Version 04.3 22/06/2022
6.	CM Uluabat (ER Calculation)	Corresponding to final revised PD
7.	Uluabat HEPP Attendance sheet	27/01/2022
8.	Environment Assessment Report of Uluabat Power Tunnel & HEPP project	March 2006
9.	satellite image/map dated 10/09/2020 for calculating the total surface area of filled reservoir water body	10/09/2020
10.	Connection agreement	08/06/2018
11.	Generation license	27/06/2007
12.	VVS for PA	Version 03
13.	UNFCCC	http://cdm.unfccc.int
14.	VCS Program guide	https://verra.org/project/vcs-program/

15.	CO ₂ Grid emission factors published by Turkey's Energy and Natural Resources Ministry	https://bit.ly/3Ffgn3r
16.	Energy Yield Assessment report for the project activity carried out prior to start of the project activity	-
17,	Online-recorded remote audit and interviews conducted by the assessment team for project activity on 27/01/2022	-
18,	Certificate from the General Directorate of State Hydraulic Works (DSİ), Turkey for existing river surface area prior to the project activity	

APPENDIX II: ABBREVIATIONS

Abbreviations	Full texts
AFOLU	Agriculture, Forestry and Other Land Use
BE	Baseline Emission
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CL	Clarification Request
DNPM	National Department of Mineral Protection
DOE	Designated Operational Entity
ER	Emission Reduction
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Greenhouse gas(es)
HEPP	Hydroelectric Power Plant
MP	Monitoring Plan
MR	Monitoring Report
MW	Megawatt
PA	Project Activity
PE	Project Emission
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCS-PD	VCS – Project Description
VCU	Verified Carbon Unit
VVB	Validation/verification Body
XLS	Emission Reduction Calculation Spread Sheet

APPENDIX III: FINDINGS

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	-	Section no.	E.2	Date : DD/MM/YYYY
Description of FAR				
-				
Project participant response				Date : DD/MM/YYYY
-				
Documentation provided by project participant				
-				
DOE assessment				Date: DD/MM/YYYY
-				

Table 2. CL from this verification

CL ID	01	Section no.	Section – 4	Date : 27/01/2022
Description of CL				
1. The Project Proponent is requested to clarify the current power density (W/m²) for the project activity (i.e. at the start of the second crediting period) and also basis/calculation for the same. 2. PP needs to clarify the calibration frequency to be followed for the energy meters. Also, the responsible person for daily electrical operations and recording and monitoring of relevant data and periodic reporting – as it was defined as electricity engineer in the earlier monitoring plan, however missing it the current monitoring plan.				
Project participant response				Date : 11/02/2022
1. The calculation of the Çınarcık Dam Lake Area has been provided. Nevertheless, the project proponent has conveyed that the calculations were made by survey engineers, from a topographic map of the river basin area - that has been approved by the General Directorate of State Hydraulic Works (DSİ). The calculations show that the area of the river basin is 0.47 km². Because water retention was already naturally realized on the area, this area was subtracted from the total reservoir area; this calculation resulted in the power density reaching 10.34 W/m². These power density and APJ calculations were approved and resolved by Verra during the previous Verification reports (you can find them published in the Verra Platform). 2. According to the Inspection of Measuring Instruments Regulation, the meters must be calibrated every 10 years. Nevertheless, the Turkish Electricity Transmission Corporation (TEİAŞ) can also perform tests during this period and the frequency of these tests can differ. The missing information from the monitoring plan has been added to the PD.				
Documentation provided by project participant				
1. Çınarcık Dam Lake Area calculations.				
DOE assessment				Date: 17/02/2022

1.	The PP has clarified the calculation done for the power density. The total reservoir area generated after the project was 10.14 Km², out of which 0.47 km² is the surface area of the river basin, already existed prior to the project activity. The said area of the river basin prior to the project activity is certified from the General Directorate of State Hydraulic Works (DSİ). And thus accepted. The river area of 0.47 km² can be said the parameter A_{BL} as per the applied methodology for the project activity and will remain ex-ante fixed during the project period. However, the total area of the reservoir A_{PJ} (as considered 10,140,000 m² in registered PD) is a monitored parameter as per ACM0002, version 20. Parameter - A_{PJ} – “total Area of the reservoirs measured in the surface of the water, when the reservoir is full” is to be measured once at the beginning of each crediting period. As per the methodology, it can be demonstrated through topographical surveys, maps, satellite pictures, etc. A satellite image/map dated 10/09/2020 has been provided by PP, which measures the total surface area of filled reservoir water body as 10.14 Km². Accepted.
2.	The PP has clarified the calibration frequency for meters which is 10 years as per Inspection of Measuring Instruments Regulation. The same is observed across other renewable project in the Turkey also. Accepted.
Closed.	

Table 3. CAR from this verification

CAR ID	02	Section no.	1 - Completeness	Date : 27/01/2022
Description of CAR				
1. PP is requested to maintain the title of project inline with the registered project title at all the places in the PD and also to maintain type of font/size in line with template (i.e. it needs to be corrected in cover page) 2. The estimated average annual emission reductions are not consistently maintained in the PD. 3. The description about the age and average lifetime of the equipment's based on manufacturer's specifications and industry standards are not transparently mentioned in the PD.				
Project participant response				Date : 11/02/2022
1. The title has been updated with respect to the registered PD. Format changes have also been applied. 2. As per the required methodology, the annual emission reductions have been re-calculated due to the change in emission factors. The previously mentioned annual emission reductions have been updated in line with the new calculation. 3. The information provided by the project proponent regarding the lifespan of the equipment has been added to the PD.				
Documentation provided by project participant				
Revised PD				
Revised Emission Reduction calculations				
DOE assessment				Date: 17/12/2022

1. The PP has corrected the title and also the font/size in line with the template. Accepted. It is also noted that PP has changed the template to latest available version 4.1 from the Verra website. OK 2. The estimated emission reductions are now consistently mentioned across the PD. Accepted. 3. The PP has added the information regarding the equipment lifetime. Accepted.
Closed.

CAR ID	03	Section no.	3.3 Project Boundary	Date : 27/01/2022
Description of CAR				
Description under “ <i>Table 3. Emission sources included or excluded from the project boundary</i> ” also mentions the emission from CO2 included in the project scenario. The PP needs to correct the same in line with the methodology.				
Project participant response				Date : 11/02/2022
The table containing emission sources included/excluded from the project boundary has been corrected.				
Documentation provided by project participant				
Revised PD				
DOE assessment				Date: 17/02/2022
The PP has corrected the emission sources as per methodology. Accepted.				
Closed.				

CAR ID	04	Section no.	4.1 – baseline emissions	Date : 27/01/2022
Description of CAR				
PP needs to correct the weightage considered in calculation of the combine margin in accordance with guidance provided in the Tool for second crediting period. Please also clarify if the data used in calculation of combine margin are latest available as per the Tool 7, version 7 and latest version of the tool is referred in the PD.				
Project participant response				Date : 11/02/2022
Emission factor calculations have been corrected with the relevant weighted calculations as stipulated by the methodology for the second crediting period. The data used to calculate the combined margin were published by Turkey’s Energy and Natural Resources Ministry in October 2021. The data used for calculating the combined margin factor are build margin and operating margin factors, which have been obtained from the ministry’s relevant factsheet. This factsheet contains the latest available data in the country and is issued by the highest authority that can make such calculations and determine the factors.				
Documentation provided by project participant				
Energy and Natural Resources Ministry, Turkey National Electricity Grid Emission Factors Factsheet				

DOE assessment	Date: 17/02/2022
The emission factor calculation is corrected now. Combined margin calculation is in line with the guidance from the Tool 7, version 07 for second crediting period. The data used for EF calculation are also latest available as per the Tool 7. Accepted Closed.	

CAR ID	05	Section no.	3.3 Project Boundary	Date : 27/01/2022
Description of CAR				
The date of 2nd crediting period is incorrectly mentioned throughout the PD as 27/09/2020. As per the project page on Verra website, it is 27/10/2020 - 26/10/2030				
Project participant response				Date : 11/02/2022
The project date was determined according to the latest report prepared for the project, which is the monitoring report. However, it has been corrected and updated throughout the PD.				
Documentation provided by project participant				
Revised PD				
DOE assessment				Date: 27/01/2022
Revised PD has been checked. The crediting period is now correctly and consistently throughout the PD as 27/10/2020 - 26/10/2030. Accepted Closed.				

CAR ID	06	Section no.	3.3 Project Boundary	Date : 27/01/2022
Description of CAR				
- Under section 3.4 of the PD, the PP needs to clearly define that baseline scenario for the project activity (i.e. fossil fuel based power generation in grid) is still valid at current scenario at the time at start of the second crediting period. - The PP has demonstrated that still the project has regularly surplus, but the reference made to the laws should be to the latest laws and their applicable revised/modified publication dates.				
Project participant response				Date : 11/02/2022
- Necessary official data has been added to Section 3.4. of the PD to demonstrate that the baseline scenario for the project activity is still valid at the current scenario. - The reference made to the laws has been updated with their newest versions.				
Documentation provided by project participant				
Revised PD				
DOE assessment				Date: 17/02/2022

1. The PP has added the demonstration of baseline scenario at current time of renewable CP. The selected baseline of grid connected power plants is still valid for the project activity.
2. The PP has updated the reference to the latest available versions of laws. Accepted.

Closed.

APPENDIX IV: COMPETENCY STATEMENTS

Competence Statement			
Name	Harsh Raval		
Education	Bachelor of Engineering in Chemical Engineering Masters of Science in Environmental and Energy Engineering		
Experience	15 Years		
Field	Climate Change, Environment and Waste Management		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	-		
Local expert	YES (INDIA)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert (1.2)	YES		
Reviewed by	Deepika Mahala (Quality Manager)	Date	08/12/2021
Approved by	Ashok Gautam (Technical Manager)	Date	08/12/2021

Competence Statement	
Name	Vishnu S Panicker
Country	India
Education	
M.Sc	Subject/Specialization: Sustainable Development and Environment Management
B.Sc	Subject/Specialization: Forestry
Experience	
08/2021- present	Company: ESPL Designation: Project Officer (Trainee)
Approved Roles	
Team Leader	NO
Validator	NO
Verifier	NO
Methodology Expert	NO

Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (1.2)	NO		
Trainee (Validator/Verifier)	YES		
Reviewed by	Deepika Mahala (Quality Manager)	Date	08/09/2021
Approved by	Ashok Gautam (Technical Manager)	Date	17/09/2021

Competence Statement			
Name	Kubra Agriman		
Education	BS Environmental Engineering		
Experience	2 years		
Field	Environmental Engineering		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	Yes (Turkey)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Reviewed by	Deepika Mahala	Date	28/06/2021
Approved by	Ashok Gautam	Date	01/07/2021

Competence Statement	
Name	Shreya Garg
Country	India
Education	M.Sc. (Climate Science & Policy), TERI University
Experience	6 Years +
Field	Climate Change
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012
Local expert	YES (India)
Financial Expert	NO

Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018