



FEKE II 69.58 MW HYDROELECTRIC POWER PLANT



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LGAI Technological Center S.A. (Applus+ Certification)

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Summary:

Verification purpose: LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed^{/2/} by “Akenerji Elektrik Üretim A.Ş.” to perform the 2nd verification (01-October-2012 to 30-September-2018) of the “FEKE II 69.58 MW HYDROELECTRIC POWER PLANT” (VCS ID 534)^{/5/}. The main purpose of this verification activity is to have an independent third party assessment of the monitoring report to ensure a thorough assessment of the project activity implementation against the applicable VCS requirements.

The purpose of the project activity is to generate energy by the utilization water potential of Goksu Branch in Seyhan Basin. Feke II Hydroelectric power plant project is located in the south of Turkey, in the Mediterranean Region, on the Goksu Creek, a main branch of Seyhan River, within the province of Adana, about 9 km southwest of Feke I district. Feke I and Feke II projects were first developed by General Directorate of DSI (State Hydraulic Works) as a single project. The project activity is installation of 69.58 MW Hydro power Project project, promoted by Akenerji Elektrik Üretim A.Ş. The Project Activity was commissioned on 24-December-2010.^{/01/}. The monitoring period for this VCS verification is 01-October-2012 to 30-September-2018 (including both days) and the project activity achieved 396,881 tCO₂e emission reductions during this monitoring period.

The scope of the verification is the independent and objective review of the Monitoring Report (MR)^{/6/}. The MR is reviewed against the relevant criteria of VCS and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the VCS Validation and Verification Manual, version 03.2^{/9/}, review against registered PDD^{/5/} and Final Validation report^{/4/}, Monitoring report for 1st period and corresponding verification report^{/18/}, CDM validation and verification standard for project activities, version 03.0^{/14/}, VCS program guide version 4.2^{/9/} and VCS Standard Version 4.3^{/9/}.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 06 Corrective Action requests (CAR), 00 Clarification Requests (CLs) were raised and successfully closed. No FAR was raised during this verification. The review of the Monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided LGAI Technological Center S.A. (Applus+ Certification) with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VCU. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/verification conducted to arrive at positive verification conclusions.

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1 INTRODUCTION

1.1 Objective

LGA Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+) has been appointed by “Akenerji Elektrik Üretim A.Ş.” to perform the 2nd verification of the “FEKE II 69.58 MW HYDROELECTRIC POWER PLANT” under VCS Project guide, version 4.2 and VCS standard, version 4.3. The objective of this verification activity is to have an independent third party for the assessment of the project design, Monitoring Report and to ensure a thorough assessment of the project activity against the applicable CDM and VCS requirements. In particular;

- The project's baseline is assessed against ACM0002, version 10/¹⁶/
- The project's monitoring plan is assessed against “ACM0002, version 10/¹⁶/
- the projects compliance with the requirements, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS program guide, version 4.2 and VCS standard, version 4.3
- CDM validation and verification standard for project activities, Version 03.0/¹⁴/
- VCS program guide version 4.2/⁹/
- VCS standard version 4.3/⁹/

Verification 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 verified carbon units.

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR)^{/6/} prepared as per the registered VCS PDD/^{5/} and registered approved methodology ACM0002, version 10/¹⁶/. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard, version 4.3 and programme guide, version 4.2, including the approved baseline and monitoring methodology ACM0002, version 10. The verification was based on the requirements in the CDM validation and verification standard for project activities, version 03.0 and VCS program guide version 4.2 and VCS Standard, version 4.3.

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. It follows the paper trail back to the raw data such as meter reading records and invoices. There are no material errors, overestimation of Emission Reductions,

omission or misstatement. Verification team conducted remote audit to verify metering/monitoring arrangement. The verification team has reviewed all the documents like commissioning certificates^{1/}, technical specification^{17/}, O & M practices^{8/}, Monthly Facility Reports^{10/}, PMUM records^{10/}, grievance register^{13/} etc.

1.3 Level of Assurance

Applus+ has planned and performed the verification by obtaining evidence and other information and explanations that assessment team considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated. All documentary evidences were checked, a remote audit was conducted to verify metering/monitoring arrangement to arrive at a verification conclusion by the assessment team.

In our opinion, the estimated GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, version 10 and the VCS Standard, version 4.3.

1.4 Summary Description of the Project

The project activity is a Hydroelectric power plant project is located at the south of Turkey, in the Mediterranean Region, on the Goksu Creek, a main branch of Seyhan River, within the province of Adana, about 9 km southwest of Feke I district, Turkey. The Project activity is promoted by Akenerji Elektrik Üretim A.Ş. The monitoring period this VCS verification covered from 01-October-2012 to 30-September-2018 (inclusive of both dates) and the project activity achieved 396,881 tCO₂e emission reductions during this monitoring period. The start date of the Project Activity is 24-December-2010 as the project activity was commissioned^{1/} on this date. Assessment team checked the commissioning status of the project activity with the commissioning Certificates and found correct. The project is implemented as per the description in the registered PDD^{5/}. The project has received issuance¹ for the 1st monitoring period of 01-January-2011 to 30-September-2012 and this is 2nd monitoring period for the project activity.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process: The project assessment is based on VCS Validation and Verification Manual, version 3.2, CDM validation and verification standard for project activities, Version 03.0, VCS standard, version 4.3, VCS program guide version 4.2 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral

¹ <https://registry.terra.org/app/search/VCS?programType=ISSUANCE&exactResId=534>

scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out: -

1. A desk review of the Monitoring report^{/06/} against the registered VCS PDD^{/5/} and final validation report^{/4/};
2. Follow-up interviews with project participant;
3. The resolution of outstanding issues and the issuance of the final verification report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS executive board.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. Applus+ has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from validating the identified criteria.

Appointment of the assessment team

According to the sectoral scope/technical area and experience in the sectoral or national business environment, Applus+ has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+.

The composition of audit team shall be approved by the Applus+ ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Lead Auditor in Training (LAI^T).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Mr. Pankaj Kumar	LA/TE	YES	YES	NA	YES
Mr. Deepak Pundlik	LAI ^T	YES	YES	NA	NO
Mr. Srikanth Meesa	TR	YES	YES	NA	YES

The detail regarding the assessment team is provided below in this report as Appendix 3.

Document review

The Monitoring report version 01/06/ submitted by the PP was reviewed against the approved methodology/^{16/}, approved registered PDD/^{05/}, final validation report/^{4/} and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information.

Further, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in Appendix 1.

Follow-up interviews

A remote audit was conducted by LGAI Technological Center S.A. (Applus+ Certification) who performed interviews, telephone conferences with project stakeholders to confirm selected information and to resolve issues identified in the document review. The details are provided in this report in the below sections.

Resolution of Clarification and Corrective Action Request

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ were resolved during communications between the Client and Applus+ to guarantee the transparency of the verification process. The concerns raised and responses provided are summarized below in the Appendix 2.

The final MR Version 05/06/ submitted by PP, serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main VCS objectives. The two VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Internal quality control

As final step of a verification of the final documentation including the verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e., each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the PP, the positive verification opinion and relevant documents are submitted to the VCS board through the VCS web-platform.

2.2 Document Review

The details of the document observed during the verification process are listed below in Appendix 1 of this report.

2.3 Interviews

A remote audit was conducted for the project activity on 08-August-2022. Though COVID-19 situation was not prevalent in the host country – India. taking into account the possibility of infection during the travel, VVB decided to skip the onsite visit to avoid any potential health risks. Moreover, The VCS Program does not explicitly mandate remote audits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (as per Section 4.1.2 of the VCS Standard, version 4.3)

The VVB has taken alternative measures to reach reasonable level of assurance and conducted remote audit through video conferencing with site personal & consultant (refer section 2.3) with the PP representative.

Technical details & metering/monitoring arrangement verified through onsite photographs / name plates /^{19/} and calibration certificates shared by PP. All the documents were cross checked to ensure conservative emission reduction.

During the remote audit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning date of equipments, generation records, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, commissioning certificate, PPA, Plant records, Energy Generation Record sheets, invoices, calibration certificate etc. were also verified. The names of the persons interviewed during remote audit through video conferencing is given below;

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Palabiyik	Ozlem	Akenerji Elektrik Üretim A.Ş.	08-August-2022	Project Implementation, energy generation & invoicing procedure, calibration, grievance mechanism, Management practices, data storage, QA/QC	Mr. Pankaj Kumar
2.	Dogan	Isil	EKI Energy Services Ltd.		GHG calculations, MR and ER preparation, Data collection, data storage, QA/QC	
3.	Dalokay	Vedat	Local stakeholder		SD goals, environment impacts, jobs, grievance mechanism	
4.	Fazil	Tibet				

5.	Burak	Ozar				
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2.4 Site Inspections

Remote Audit (Video Conferencing): 08-August-2022				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PDD is actually practised onsite. Also, assessment team checked any change in host country criteria which may affect the baseline of the project activity.	Feke Village, province of Adana, on the Goksu creek basin, Turkey	08-August-2022	Mr. Pankaj Kumar

2.5 Resolution of Findings

The objective of this phase of the verification was to resolve the requests for corrective actions and clarification and any other outstanding issues from verification which need to be clarified for VVB's positive conclusion on the monitoring report. The Corrective Action Requests and Clarification Requests raised by VVB were resolved during communications between the Client and Applus+ to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final MR Version 05/06/ submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main VCS objectives. The two VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	01	00
Description of project activity	00	01	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
Applicability of methodology and standardized baseline	00	00	00
Deviation from methodology	00	01	00
Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	02	00
Calibration details	00	00	00
Monitoring plan	00	01	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	00	00
Others (please specify)	00	00	00
Total	00	06	00

The list of findings and the resolution is presented in Appendix 2 of this report.

2.5.1 Forward Action Requests

This is 2nd verification of the project activity and no FAR was raised from validation and previous verification.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ holds the accreditation for Validation of projects under this Sectoral Scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project is not registered under any other GHG program except VCS.

3.2 Methodology Deviations

This section is not applicable for present verification as no methodology deviation sought during this verification and also in the earlier verifications by project participant.

3.3 Project Description Deviations

PP has applied for 4 project description deviations. All 3 were approved as a part of 1st verification, deviation no. 2 is revised as a part of current verification and deviation 4 added during current verification.

1. In the registered VCS PDD for “Feke II 69.58 MW Hydroelectric Power Plant” in Turkey, Version 03.1 of 15/06/2010, the source of the net electricity generation is defined as “Monthly Meter Reading Protocols” which is signed by TEIAS and plant manager. However,

since TEIAS started to monitor electricity remotely, Monthly Meter Reading Protocols are not available. Therefore, the source of the parameter is defined as “Market Financial Settlement Center (PMUM) records/^{10/} which is the basis of the invoices. The electricity generation figures are based on the PMUM records and Monthly Facility Reports/^{10/} are used for crosscheck.

This deviation is approved during earlier verification and it has been confirmed by VVB that this change does not affect the additionality, applicability/application of baseline methodology. Also, the scale of the VCS project remains the same.

2. In the earlier monitoring report version 05 dated 24/12/2012, the installed capacity is defined as 69.35 MW which is decreased from actual installed capacity of 69.58 MW. VVB has cross checked the Production License/^{17/} where on the last page under item no. 6, total installed capacity is specified as 69.58 MW.

VVB confirms that this change does not affect the additionality, applicability/application of baseline methodology. Also, the scale of the VCS project remains the same.

3. Regarding the project emissions from diesel generators, bills would be used for quantification. For conservativeness, working hours, have been deployed.

VVB confirms that this change does not affect the additionality, applicability/application of baseline methodology. Also, the scale of the VCS project remains the same.

4. The project has been in operation since 24-December-2010 meanwhile, crediting period for the project has been considered to start from 01-January-2011

VVB confirms that this change does not affect the additionality, applicability/application of baseline methodology. Also, the scale of the VCS project remains the same

VVB confirms that all the above deviations are of permanent nature and has no impacts on the applicability of the methodology, additionality or the appropriateness of baseline scenario and is accepted by VVB.

3.4 Grouped Project

This is not a grouped project. Thus, this section is not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the remote audit, it was concluded that the project is implemented as per VCS PDD and this is verified from the commissioning certificates, Power purchase agreement (PPA) submitted.

During the current monitoring period, it was observed that no unforeseen situation evolved which can impact the operation of the project activity. The same was verified through the shutdown details/^{15/} of the project activity submitted. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team.

Project location is confirmed by the assessment team through interview with PP during remote audit and assessment of monitoring report. Assessment team also checked the technical details of the project site containing latitude and longitude of the project site and confirmed that the details as mentioned in the MR are correct.

The project site lies between 35° 51' 41.7" – 35 ° 52' 2.2" E longitude and 37° 44' 35.9" – 37° 44' 52.6"N latitude. The closest settlement is the Feke Village, about 10 km north of the project site, within the province of Adana. The project lies on the Goksu creek basin, which is a branch of Seyhan River.

The start date of the project is 24-December-2010 which is the date of commissioning of the plant. The project time line is as below which is checked and confirmed based on document review:

Activity	Date
Issuance of Generation License	17-May-2007
Establishment of Plant Facilities	01-May-2008
Access Road Construction	01-June-2008
Start of Tunnel Construction	01-July-2008
Start of Dam Construction	01-December-2008
Start of Powerhouse Construction	01-December-2008
Start of EM Installation	01-January-2009
Start of Energy Transmission Line Construction	01-May-2009
Provisional Acceptance & Commissioning	24-December-2010
Registration with VCS	06-April-2020 ²
1 st monitoring period	01-January-2011 to 30-September-2012

Verification team confirmed from the registered VCS PDD/^{5/} and from previous verification report/^{18/} that the location of the project activity including the coordinates is same.

Assessment team checked the commissioning certificate/^{1/} and confirmed that the dates of commissioning for the project activity are correct. Assessment team also conformed during interview with the PP representatives that there is no change in the project design and the project is implemented as per the description provided in the VCS PDD.

Assessment team also checked, the technical details/^{17/} of project installed during remote audit, from documents submitted by PP and previous verification report. The same is cross checked from the photographs of the project site and sub-station metering locations /^{19/} submitted by PP.

Technical Specifications of the project activity are as follows:

² <https://registry.verra.org/app/projectDetail/VCS/534>

Location:	Göksu river/feke district/adana province
Design discharge:	127.50 m3/sec
Length of tunnel:	317 m
Average natural flow	51.17 m3/sec
Gross head:	63 m
Riverbed height	485 m
Crest height	545 m
Total installed capacity:	69.58 mw
Reservoir volume	1610.5 hm3
Max. Reservoir surface area	2.477 km ²
Number of units:	2 each
Turbine type:	Francis type – vertical axis
Turbine manufacturer:	Ecdi
Generator type:	3 phase synchronous with 0.98 efficiency
Length of energy transmission line:	7 km
Energy transmission line capacity:	154 kv
Number of penstocks:	1
Length of penstock:	171 m
Average annual power generation:	223.410 gwh
Grid connection	The grid connection shall be provided by means of a 7 km long 795 mcm energy transmission line to feke I transformer substation

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period. The project design as mentioned in the registered PD is implemented and thus the same is acceptable to the assessment team. All required monitoring equipment's and procedures as mentioned in the registered PD are available and implemented in an appropriate manner.

The organisational role and responsibility as mentioned in the registered VCS PDD is followed onsite as confirmed during the remote audit. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same. Meters

are calibrated as per calibration frequency in registered PD. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same. Thus, completeness of the monitoring plan confirmed and there are no any material discrepancies between the actual monitoring system and the plan provided in the registered PD.

Assessment team confirms following during the verification remote Inspection:

1. Start date of the project activity is 24-December-2010 as mentioned in the registered VCS PDD.
2. PP has given a written declaration that the credit claimed under VCS for the current monitoring period is not claimed under any other GHG mechanism^{/11/} and no double counting will occur. The GHG credits from 01-October-2012 to 30-September-2018 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the “No Double Counting”^{/11/}.
3. Assessment team confirms that this is the 2nd periodic monitoring under VCS and covers the activity from 01-October-2012 to 30-September-2018 (inclusive of both dates). Current crediting period is the 1st crediting period of 10-years. The project activity adopts renewable crediting period which can be renewed two times as per applicable VCS rule at the time of project registration.
4. Assessment team checked and found that the Project proponent of the project activity mentioned in Section 1.3 of monitoring report is correct^{/1/5/6/17/}
5. Assessment team also checked the details of other entity mentioned in Section 1.4 of monitoring report. This entity is changed to EKI Energy Services Limited and has a role of Project consultant replacing ‘Global Tan Energy Ltd.’ From the 1st monitoring period.
6. The quantified emission reduction calculation for the current monitoring period is correct and conservative. Assessment team also compared actual VCUs with the estimated VCUs and found that the actual VCUs are 396,881 tCO₂e which is 45.9% lower than the estimated emission reductions for the current monitoring period which is 733,564 tCO₂e. This deviation in the emission reduction has occurred due to less electricity generation due to less rainfall during the years of 2014 and 2017^{/20/} which led to decrease in the amount of water coming to the plants due to the change in the precipitation regime in Turkey. This is a natural phenomenon and thus was not in control of project owner. The VVB confirms that this doesn’t have an impact on baseline/additionality of the project hence accepted.

Sustainable development indicators

As a part of regional development efforts associated with the project, PP has supported many education, health & infrastructure related needs for local people. These are funded from the revenue generated from the operation of the project activity. In the absence of project activity, there would be no revenue generated from the project and hence the activity would have not occurred in the absence of the project activity. PP has selected SDG 7, 8 and 13 as a project contribution which was checked based on the submitted documents and as confirmed with local stakeholders during remote audit. The monitoring of SDGs is not mandatory for the PP as per the VCS guidelines for the current project and PP has decided to include this on voluntary basis which is checked and accepted by the assessment team.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the documents review and remote audit. The project is renewable energy project and thus no negative impact observed due to project activity.

The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation. The project does not have any negative effects on the environment because it is operated based on national and international regulations. The HEPP does not change any water volume or cause any water pollution. Thus, the environmental impacts of the project activity are not considered to be significant. All necessary permissions including, environmental, health and safety, have been acquired from relevant agencies and all precautions have been applied strictly by Investor Company. Assessment team checked and found this appropriate.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration. For on-going stakeholder's communication, PP has maintained grievance register^{/13/} at the site office. All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, version 4.3 and appropriate actions taken time to time by PP.

Assessment team checked the grievance register^{/3/} and found that local stakeholders can anytime lodge their grievances, if any, in the register over the operational life time of the project. During current monitoring period, no grievance was received as confirmed from the grievance register. Thus, assessment team is of the opinion that the ongoing stakeholder mechanism is adequate and appropriate.

4.3 AFOLU-Specific Safeguards

This section is not applicable as this project activity is a non-AFOLU project activity.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed the accuracy of the data and calculations of GHG emission reductions achieved resulting from the MR. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PDD ^{/5/} .
Findings	CAR 05 and CAR 06 were raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the details.
Conclusion	Ex-ante Parameters:

Below parameters were mentioned as ex-ante fixed parameters. Assessment team checked the values, source of data, choice of data, purpose of the data mentioned in the MR from the registered PD & MR for 1st MP and confirms that the similar approach was considered for the current monitoring period also.

EG_{y,Total} (MWh): Net Electricity generated by power plants in Turkey

The values applied are 169,543.1 GWh for 2006, 183,339.7 GWh for 2007, 189,761.9 GWh for 2008 (TEIAS web page <https://www.teias.gov.tr/>).

This Parameter is fixed ex-ante for the entire crediting period and as per the registered VCS PDD /5/ same is fixed. Verification team found same was used in the ER calculations.

EF_{CO2, i, y} (tCO₂/TJ) : CO₂ emission factor of fossil fuel type “i” in year “y”

For EF of fossil fuels, IPCC values at the lower limit has been used.

Fuel Source	EF(tCO ₂ /Tj)
Coal	89.50
Lignite	90.9
Fuel Oil	75.5
Diesel	72.6
LPG	61.6
Naphta	69.3
Natural Gas	54.3

This Parameter is fixed ex-ante for the entire crediting period and as per the registered VCS PDD/5/ same is fixed. Verification team found same was used in the ER calculations.

FC_{i, y} (Tons or 1000 m³ for gases): Amount of fuels consumed by thermal power plants for electricity generation in terms of fossil fuel type i in year y

	2006	2007	2008	Total Fuel Consumption 2006-2008	Total Emission 2006-2008
Natural Gas	17,034,548	20,457,793	21,607,635	59,099,976	117.716.966

Lignite	50,583,810	61,223,821	66,374,120	178,181,751	111.311.693
Hard Coal	5,617,863	6,029,143	6,270,008	17,917,014	35.571.662
Fuel Oil	1,746,370	2,250,686	2,173,371	6,170,427	18.590.041
Diesel Oil	61,501	50,233	131,206	242,940	751.393
LPG	33	0	0	33	0
Naphta	13,453	11,441	10,606	35,500	107.934

TEIAS (Turkish Electricity Transmission Company) is the official source for this data, providing the most up-to-date and accurate information available³. This Parameter is fixed ex-ante for the entire crediting period and as per the registered VCS PDD^{5/} same is fixed. Verification team found same was used in the ER calculations.

$\eta_{m,y}$ (%) : Average net energy conversion efficiency of power unit m in year y

Source of data is Annex I of “Tool to Calculate Emission Factor For An Electricity System”

	Average Conversion Efficiency $\eta_{m,y}$
Natural Gas	60%
Lignite	39%
Coal	39%
Fuel Oil	39.5%
Diesel Oil	39.5%
Naphtha	60%
LPG	39.5%

This Parameter is fixed ex-ante for the entire crediting period and as per the registered VCS PDD^{5/} same is fixed. Verification team found same was used in the ER calculations.

NCV (Tj/kt) : Net Calorific Values of Fuel combusted in power plants.

³ (<https://webapi.teias.gov.tr/file/ee7ede69-2e11-4ec7-8356-bf9a604e881e?download>)

TEIAS (Turkish Electricity Transmission Company) is the official source for this data, providing the most up-to-date and accurate information available⁴.

	NCV (Tj/kt) (1000 m3 for gas)
Coal	22.18
Lignite	6.87
Fuel Oil	39.90
Diesel Oil	42.60
LPG	0.00
Naphtha	43.87
Natural Gas	36.68

This Parameter is fixed ex-ante for the entire crediting period and as per the registered VCS PDD^{5/} same is fixed. Verification team found same was used in the ER calculations.

Cap_{BL} (W): Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero.

Since project involves a new reservoir this value is zero. This Parameter is fixed ex-ante for the entire crediting period and as per the registered VCS PDD^{5/} same is fixed. Verification team found same was used in the ER calculations.

A_{BL} (m²): Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m²). For new reservoirs, this value is zero.

Since project involves a new reservoir, this value is zero. This Parameter is fixed ex-ante for the entire crediting period and as per the registered VCS PDD^{5/} same is fixed. Verification team found same was used in the ER calculations.

Ex-post parameters:

As per the registered monitoring plan and requirement of the applied methodology, following parameters needs to be monitored:

⁴ (<http://www.teias.gov.tr/istatistik2008/46.xls> and <https://www.teias.gov.tr/>)

	EG_{facility,y} (GWh): Net Electricity generated and delivered to the grid by Feke II HEPP in year y. As a part of remote audit, VVB confirmed that the energy generation data is obtained remotely by TEİAŞ and there are no signed meter readings. PMUM records are used for main calculation where “Monthly Facility Reports” (signed by the project owner) are used for cross-check. Continuous measurement at the site and daily and monthly recording are applied. The plant manager and the staff extracted the records regularly every day. The monthly records are collected by TEİAŞ remotely. This is monitored continuously through Four calibrated ammeters (two of them are spare). Meters used are in compliance with the regulation on meters issued by relevant government agencies and have 0.5S accuracy class⁵. During current monitoring period, total generation has been 725,621.81 MWh. Average monthly generation corresponds to 10,078.08 MWh and average annual generation of the plant corresponds to 120,936.96 MWh which is confirmed based on the ER sheet^{7/} and supporting documents. The verification team has cross-checked the Monthly Facility Reports^{10/} and PNUM records^{10/} with the reported data in ER^{7/} sheet and found it to be consistent. Cap_{PJ} (W): Installed capacity of the hydro power plant after the implementation of the project activity. The source of data is Project site observations i. e. technical specification of the HEPP. The value monitored is 69.58 mWe⁶ which is monitored annually. The verification team has cross-checked the reported data during the remote audit and found it to be consistent. AP_J (m²): Area of the reservoir measured on the surface of the water, after the implementation of the project activity, when the reservoir is full. This parameter is measured from topographical surveys or maps. PP had displayed topographical survey/map during the remote audit which was discussed and confirmed that the value monitored is 2,480,000 (m²)⁷ which is monitored yearly. The verification team has cross-checked the reported data during remote audit and found it to be consistent. PE_{FF,y} (tCO₂/yr): Project emissions from fossil fuel consumption in year y
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⁵ First Index Protocol

⁶ FEKE II Generation licence

⁷ FEKE II Hepp Reservoir Map

Project emissions from fossil fuel consumption for current monitoring period is 0 tCO₂ as diesel is not used at the project site. The assessment team has checked bills and working hour register for Diesel Generator which confirmed that no diesel is used/^{19/} and found it to be consistent.

As per the registered PD and applied methodology, formula used to calculate achieved emission reductions is as follow;

$$ER_y = BE_y - PE_y \text{ (equation 11 of ACM0002 version 10.0)}$$

Where:

ER_y = Emission reductions in year y (tCO₂e/yr)

BE_y = Baseline emissions in year y (tCO₂e/yr)

PE_y = Project emissions in year y (tCO₂e/yr)

The **baseline emissions** are calculated as below,

$$BE_y = EG_y \times EF_y$$

$$BE_y = 725,621.81 \text{ MWh} \times 0.5470 \text{ tCO}_2/\text{MWh} = 396,881 \text{ tCO}_2\text{e}$$

Where:

EG_y = Net electricity delivered to the grid by the project activity in year y excluding transmission losses of the grid.

EF_y = Emission factor calculated according to selected methodology

Project emissions:

The project activity involves generation of electricity by a hydroelectric power plant which has power density higher than 10W/m² therefore emissions from reservoir is ignored as per the applied methodology.

PP has calculated power density as following which was checked and confirmed.

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

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

Where:

PD = Power density of the project activity (W/m²)

Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W)

Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero

A_{PJ} = Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2)

A_{BL} = Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2). For new reservoirs, this value is zero.

For the current project ,

$$Cap_{PJ} = 69,580,000 \text{ W}$$

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

$$A_{PJ} = 2,477,000 \text{ (m}^2\text{)}$$

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

Therefore, PD is calculated as:

$$PD = \frac{69,580,000 - 0}{2,477,000 - 0}$$

$$PD = 28.09 \text{ W/m}^2$$

Thus, $PE_y = 0$

The ex-ante emission reductions (ER_y) are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (tCO_2)

BE_y = Baseline emissions in year y (tCO_2)

PE_y = Project Emissions in year y (tCO_2)

The net emission reductions achieved during the current monitoring period are being calculated as per below equation:

$$\begin{aligned} \text{Net Emission Reductions} &= BE_y - PE_y - LE_y \\ &= 396,881 - 0 = 396,881 \text{ tCO}_2\text{e (Round down)} \end{aligned}$$

	Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
	01-October-2012 to 31-December-2012	18,393	0	0	18,393
	01-January-2013 to 31-December-2013	72,732	0	0	72,732
	01-January-2014 to 31-December-2014	34,460	0	0	34,460
	01-January-2015 to 31-December-2015	97,574	0	0	97,574
	01-January-2016 to 31-December-2016	62,650	0	0	62,650
	01-January-2017 to 31-December-2017	54,200	0	0	54,200
	01-January-2018 to 30-September-2018	56,868	0	0	56,868
	Total	396,881	0	0	396,881

	VVB confirms that GHG reductions have been quantified correctly and are in line with monitoring procedure in VCS PDD and applied methodology. The estimated emission reduction achieved from the project activity for the current monitoring period is 733,564 tCO₂e based on the number of days covered during the current monitoring period which comes out to be 2,191 days. Whereas, the actual emission reductions achieved during the current monitoring period are 396,881 tCO₂e. The actual VCUs are 45.90% lower than the estimated VCUs. This variation is majorly due to less electricity generation then expected during the years of 2014 and 2017, which was caused by the decrease in the amount of water coming to the plants due to the change in the precipitation regime in Turkey in these years and thus was not in control of project owner. Hence, Assessment team has found this acceptable.
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4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the Calibration details of the monitoring meters with the calibration certificates.
Findings	There is no CAR/CL raised in this section.
Conclusion	Assessment team has checked calibration certificates and found that meters are calibrated and calibration is valid for current monitoring period. As per the registered PDD, the calibration of the metering devices will be made by TEIAS and sealed before the commissioning of the power plant. The meters will be calibrated by TEIAS when there is an inconsistency between two devices. . Meters are calibrated as per the standard procedures and documents for the same are maintained throughout. The details about calibration are provided in appendix 5. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the remote audit. Remote audit and interview with PP representative also confirm that the operational and organizational chart as mentioned in registered VCS PDD is as per the site practice and thus assessment team confirms that the details are correct. The shutdown / break down reports/^{15/} are checked and found that the plant undergone scheduled maintenance and break down. Assessment team checked the routine maintenance log book/^{15/} and confirmed that it does not have any impact on project design and monitoring procedures.

	Assessment team confirmed that data/ information used for determining GHG reductions and removals were sufficient in quantity and of appropriate quality. Calibration certificates of meters/ QA/QC procedure checked and found to be appropriate.
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4.6 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

5 VERIFICATION CONCLUSION

Applus+ Certification has been engaged^{/02/} by Akenerji Elektrik Üretim A.Ş to perform the 2nd verification (01-October-2012 to 30-September-2018) of the “FEKE II 69.58 MW HYDROELECTRIC POWER PLANT”.

The project participants are responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s monitoring plan in the registered PDD^{/5/} and the applied methodology ACM0002, version 10^{/16/}

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the VCS and CDM Executive Board. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Further, the verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/plant verification conducted to arrive at positive verification conclusions. The verification team can confirm that:

- the project has operated as planned and described in the monitoring report and registered PD;
- the monitoring plan is as per the applied methodology;
- the monitoring process in Monitoring Report is as per the registered PDD^{/5/};
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;

- the GHG emission reductions are calculated without material misstatements.
- A Reasonable Level of assurance was achieved as planned, during verification process.

Verification period: 01-October-2012 to 30-September-2018 (inclusive of both days)

Verified GHG emission reductions in the above verification period:

Year	Baseline emissions or removals (tCO2e)	Project emissions or removals (tCO2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO2e)
01-October-2012 to 31-December-2012	18,393	0	0	18,393
01-January-2013 to 31-December-2013	72,732	0	0	72,732
01-January-2014 to 31-December-2014	34,460	0	0	34,460
01-January-2015 to 31-December-2015	97,574	0	0	97,574
01-January-2016 to 31-December-2016	62,650	0	0	62,650
01-January-2017 to 31-December-2017	54,200	0	0	54,200
01-January-2018 to 30-September-2018	56,872	0	0	56,872
Total	396,881	0	0	396,881

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED

No.	Author	Title	References to the document	Provider
1.	State Utility	Commissioning certificate	Commissioning of the Hydroelectric power plant project	PP
2.	Applus+	Contract of the project participant with the DOE. Ref. No. A+SH_SYST_TQC_VCS_VER_8022	01-September-2022	PP
3.	PP	Grievance register		PP
4.	NA	VCS Validation report	26-July-2010	
5.	NA	VCS registered PDD	Version 3.1 dated 15-June-2010	
6.	NA	Initial Monitoring report Version 01 Final Monitoring report Version 05	07-June-2022 21-October-2022	PP
7.	NA	Emission reduction sheet version 01 Final Emission reduction sheet version 04	07-June-2022 21-October-2022	PP
8.	PP	Single Line Diagram	-	PP
9.	NA	Tools/ guidelines used in the project activity - VCS standard Version 4.3 - VCS Program Guide 4.2 - VCS verification report template version 4.1 - VCS Validation and Verification manual, version 3.2		VERRA
10.	State Utility	Monthly Facility Reports and PMUM records for complete monitoring period		PP
11.	PP	Declaration regarding no participation in other GHG program for the concerned monitoring period	16-May-2022	PP
12.	NA	Calibration details of the project activity undergoing verification	Calibration certificate	PP
13.	NA	Grievance Register maintained at site	-	PP
14.	UNFCCC	CDM validation and verification standard for project activities, Version 03.0 Glossary of CDM terms version 11.0	-	UNFCCC
15.	PP	Shutdown/breakdown details for the Project Activity	-	PP

No.	Author	Title	References to the document	Provider
		Maintenance log book		
16.	UNFCCC	CDM approved methodology – ACM0002	version 10	UNFCCC
17.	PP	Technical specifications of the Power Plant Production license dated 02-December-2010 Power Purchase Agreement	-	PP
18.	NA	Monitoring report for 1 st monitoring period Verification report for 1 st monitoring period	Version 05 dated 24-December-2012 Version 1.1 dated 24-December-2012	PP
19.	PP	Site photographs Diesel Generator working records		PP
20.	PP	A rainfall database submitted by the PP and TEIAS website - Su Raporları (teias.gov.tr)		PP

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

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

FAR ID	XX	Section no.	Date : DD Month YYYY
Description of FAR			
There is no FAR from the validation/previous verification of the project activity			
Project participant response			Date : DD Month YYYY
NA			
Documentation provided by project participant			
NA			
DOE assessment			Date: DD Month YYYY
NA			

Table 2. CL from this verification

CL ID	Section no.	Date: DD Month YYYY
Description of CL		
NA		
Project participant response		Date: DD Month YYYY
NA		
Documentation provided by project participant		
NA		
DOE assessment		Date: DD Month YYYY
NA		

Table 3. CAR from this verification:

CAR ID	01	Section no.	3.1	Date: 02-September-2022
Description of CAR				
PP shall follow VCCP DD template version 4.1 and correct the following:				
1. Page nos. on the content page 2. Thousands shall be separated by 'comma' e. g. refer value of ele. Generation in section 1.1 of MR. 3. Section 1.6 shall 'Indicate the project crediting period, specifying the day, month and year for the start and end dates and the total number of years.' 4. Font and font size shall be made consistent throughout the VCS MR e.g. refer table 2 in section 1.11. 5. PP shall use correct terminology for credits. Under VERRA credits are referred as VCUs and not VERs.				
Project participant response				Date: 05-September-2022

1. Page numbers on the content page are corrected. 2. Separation of thousand were provided for the whole document. 3. End dates were added to section 1.6. 4. Font and font size were corrected for the while document. 5. Terminology was corrected as VCUs.	
Documentation provided by project participant	
-	
VVB assessment	Date: 07-September-2022
1. Page nos. on the content page are still incorrect. E.g. section 4.3 page no. is 20 while the actual page no. is 19. Hence this part of CAR is open. 2. The revised MR version 02 dated 05-September-2022 was checked to confirm that numbers are now correctly mentioned which is checked and confirmed. Hence this part of CAR is closed. 3. Section 1.6 of the revised MR version 02 dated 05-September-2022 is checked to confirm that dates are correctly mentioned. Hence this part of CAR is closed. 4. Section 1.11 of the revised MR version 02 dated 05-September-2022 is checked to confirm that font and font size are correctly mentioned. Hence this part of CAR is closed. 5. The revised MR version 02 dated 05-September-2022 was checked to confirm that carbon credits are now correctly mentioned as VCUs. Hence this part of CAR is closed.	
CAR is open.	
Project participant response	Date: 09-September-2022
1. Page numbers on the content page were corrected.	
Documentation provided by project participant	
Monitoring report	
VVB assessment	Date: 19-September-2022
1. Revised MR version 03 was checked to confirm that page numbers are corrected.	
CAR is closed.	

CAR ID	02	Section no.	3.3	Date: 02-September-2022
Description of CAR				
PD has applied methodology deviation in section 2.1.1. However, it was checked and found to be project description deviation as it is related to monitoring procedure and not the applied. Methodology. Corrective action sought.				
Project participant response				Date: 05-September-2022
Project deviation was carried to related section.				
Documentation provided by project participant				
-				
VVB assessment				Date: 07-September-2022
The revised MR version 02 dated 05-September-2022 was checked and PD has revised section 3 to include the details under project description deviation as required. Further, the deviations as mentioned in the earlier monitoring report version 05 dated 24/12/2012 are now included in the current revised monitoring report which is checked and confirmed.				
Hence this CAR is closed.				

CAR ID	03	Section no.	4.1	Date: 02-September-2022
Description of CAR				

Table 2 mentions crediting period as 01-January-2021 to 31-December-2030 while current monitoring period is 01-October-2012 to 30-September-2018. Correction is sought.	
Project participant response	Date: 05-September-2022
Monitoring period was corrected as 01-October-2012 to 30-September-2018 for table 2.	
Documentation provided by project participant	
-	
VVB assessment	Date: 07-September-2022
Table 2 of the revised MR version 02 dated 05-September-2022 was checked to confirm that crediting period is now correctly mentioned which is checked and confirmed. Hence this part of CAR is closed.	

CAR ID	04	Section no.	4.2	Date: 02-September-2022
Description of CAR				
Section 1.11 provides, Table 2: Sustainable Development Contributions. The concerned SDGs identified as a part of table are not part of registered PD version 3.1 dated 15/06/2010. Further, VERRA has asked for the Projects registered before 20 January 2023 to demonstrate contributions to at least three SDGs by 20 January 2025. It is not clear to VVB why PP has chosen to apply the same.				
Project participant response			Date: 05-September-2022	
Table 2 has been updated on voluntary basis considering the project owner will show compliance towards three minimum SDG's				
Documentation provided by project participant				
Monitoring report				
VVB assessment			Date: 07-September-2022	
The registered VCS PDD does not specify Sustainable Development contribution however, PP has decided to implement monitoring during current monitoring period which is acceptable. However, if PP has chosen to monitor these SDGs then sr. no. SDG 6.3 is not part of monitoring plan in the VCS MR. Correction is sought.				
CAR is open.				
Project participant response			Date: 09-September-2022	
SDG 6.3 was removed.				
Documentation provided by project participant				
Monitoring report				
VVB assessment			Date: 19-September-2022	
PP has decided to include 3 SDGs – 7 , 8 and 13 as a part of Sustainable Development Contribution which were found appropriate and accepted.				
CAR is closed.				

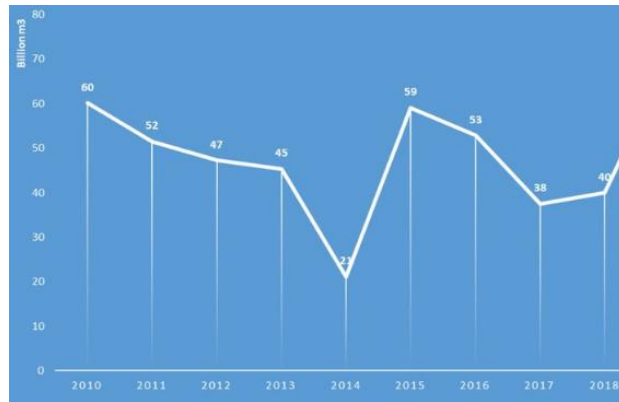
CAR ID	05	Section no.	4.4	Date: 02-September-2022
Description of CAR				
Baseline emissions for 01-January-2018 to 30-September-2018 as mentioned in section 5.4 are 56,872 while emission reduction spread sheet mentions this value as 56,871 tCO2e.				
It is unclear why PP has provided worksheet – ‘ER Estimation Sheet’ for year 2021 to 2030, as this is monitoring report.				
Project participant response				Date: 05-September-2022
Section 5.4 and ER Sheet has been corrected.				
Documentation provided by project participant				

-	
WB assessment	Date: 07-September-2022
The revised MR version 02 dated 05-September-2022 was checked to confirm that, Baseline emissions for 01-January-2018 to 30-September-2018 are now consistent between revised MR and ER spreadsheet.	
PP has revised ER spreadsheet and worksheet – ‘ER Estimation Sheet’ for year 2021 to 2030 is now removed which is checked and confirmed.	
CAR is closed.	

CAR ID	06	Section no.	4.4	Date: 07-September-2022
Description of CAR				
Section 5.4 mentions, ‘.... actual emission reductions achieved are 396,881 tCO₂e, which is approximately 45% less than the estimated emission reductions for the same monitoring period, which is mainly due to some breakdowns and routine maintenance works.’. However, PP has neither submitted breakdown and routine maintenance works to the VVB nor it is mentioned in the revised MR. Corrective action sought.				
Project participant response				Date: 09-September-2022
PP confirmed there was not any breakdown and any maintenance work except for regular yearly maintenances. This statement has been transparently mentioned in section 4.4 of the MR.				
Documentation provided by project participant				
Monitoring report				
VVB assessment				Date: 19-September-2022
PP has removed statement – ‘...which is mainly due to some breakdowns and routine maintenance works..’ from section 5.4 and has added a line ‘...The project underwent continuous operation and maintenance other than scheduled breakdowns...’ in section 4.3. PP shall clarify even with continuous operation why there is decrease by 45% in the emission reductions which corresponds to running the plant at almost half of its capacity throughout the monitoring period. CAR is open.				
Project participant response				Date: 20-September-2022

This deviation occurred due to less electricity generation then expected during the years of 2014 and 2017, which was caused by the decrease in the amount of water coming to the plants due to the change in the precipitation regime in Turkey in these years.

Below graph taken from TEİAŞ (Turkish Electricity Transmission Corporation) reveals the decrease in precipitation in the years of 2014 and 2017 in Turkey.



Documentation provided by project participant

Monitoring Report

VVB assessment

Date: 22-September-2022

PP has submitted TEİAŞ data which was cross checked against average rainfall data in Turkey available at <https://tradingeconomics.com/turkey/precipitation> which confirmed that Turkey has experienced significantly less rainfall for the year 2013 and 2017 which have an impact on electricity generation from the hydro plant. This has led to reduced power generation leading to less emission reductions. The submitted excel datasheet by PP was checked to confirm that there was lesser rainfall during the said period. Hence , PP response is accepted and the CAR is closed.

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	PANKAJ	KUMAR	TQC-Outsourced entity	Yes	No	Yes	Yes
2.	Lead Auditor in Training	OR	Deepak	Pundlik	TQC-Outsourced entity	Yes	No	Yes	Yes

Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TR) / Technical Expert (TE)	EI	Meesa	Srikanth	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

Short CVs of the Team:

- Mr. Pankaj Kumar** has done M. Sc in Environment Management from Forest Research Institute, Dehradun and B. Sc. (Hons.) in Environment & Water Management from Magadh University, Bihar, India. He has also done Post Graduate Diploma in Environmental Law from NLSIU, Bangalore. He has more than 12 years of working experience in GHG Assessments and has participated during his career in Agencies and DOEs like MITCON, Agrinergy, Carbon Check and is empanelled with Applus+ Certification since 2015 for the performance of CDM/VCS/GS project assessments. He has extensive experience in the Renewable, Waste Management and Energy Demand Scopes of UNFCCC CDM and has done more than 100 Validations and Verifications of PAs and PoAs as Lead Auditor, Technical Expert and Technical Reviewer, mainly in Asia, Africa, USA, Asia Pacific and Americas under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He is an experienced, qualified and result oriented Environment and climate change professional having 16 yrs. of relevant experience in Climate Change (Mitigation & Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Climate finance, adaptation planning, capacity building, validation and verification of GHG project. He can also provide technical support for environmental investigative, remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and

Carbon foot printing. Mr. Pankaj Kumar is based in Patna, India. Mr. Pankaj Kumar may participate as part of the Audit Team as Lead Auditor and Technical Expert for the assessment.

2. **Mr. Deepak Pundlik** has experience in climate change, waste management and environmental management. After completing Masters in Environment Sciences from Pune university, He has worked in waste management field. As a GHG consultant He handled more than 50 projects under renewable energy, waste management sectors during his stint with companies - MITCON and Thermax. Post Thermax, Deepak was involved in organic farming research project with Tata Institute of Social Sciences. As a GHG auditor, He has validated/verified projects under CDM/VCS/GS and GCC mechanisms from renewable energy, energy demand, waste management sectors.
3. **Mr. Srikanth Meesa** is a climate change professional with more than 15 years of experience in the fields of climate change, GHG auditing, carbon footprint assessments, water and energy audits, scope-3 emissions, net zero strategies, sustainability & ESG sectors and water and wastewater treatment sectors. He has completed his masters in Environmental Engineering& Management from I.I.T Delhi and Bachelors in Civil Engineering from Osmania University. Furthermore, he has extensive experience i.e., more than 14 years on the auditing of CDM, VERRA, GS, JCM projects of various sectoral scopes across the world. He has worked with reputed certification bodies such as TUV NORD, DNVGL, TUV SUD and LR. He also has consulting experience on sustainability reports& road-maps, stakeholder consultation and LCA studies while working at Thinkstep (Now called Sphera). Currently, he is associated with Global Green Solutionz and empanelled with Applus+ Certification to carry out GHG audits in the aforementioned schemes. Mr. Srikanth Meesa is based at Hyderabad, India. Mr. Srikanth Meesa may participate review team.

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
DNA	Designated National Authority
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
HEPP	Hydro Electric Power Plant
PD	Project Document
PP	Project Participant
MR	Monitoring Report
PPA	Power Purchase Agreement
TEIAS	Türkiye Elektrik İletim A. Ş.(Turkish Electricity Transmission Corporation)
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Unit
VVB	Validation and Verification Body

APPENDIX 5: CALIBRATION DETAILS

Brand	Type	Serial Number	Accuracy Class	Calibration Date	Validity	Calibration Frequency
ELSTER	A1500	00416326 (main- unit 1)	0.5S	20-May-2010	19-May-2020	10 years
ELSTER	A1500	00416327 (spare- unit 1)	0.5S	20-May-2010	19-May-2020	10 years
ELSTER	A1500	00416328 (main- unit 2)	0.5S	20-May-2010	19-May-2020	10 years
ELSTER	A1500	00416329 (spare- unit 2)	0.5S	20-May-2010	19-May-2020	10 years

Calibration of the metering devices was made by TEIAS and sealed during first operation of the plant. The meters were calibrated by TEIAS when exists significant inconsistency between two devices using a fixed template⁸ or upon request by either project owner or TEIAS⁹.

⁸ <https://www.teias.gov.tr/>

⁹ <https://www.epdk.gov.tr/>