Gold Standard for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v.1.1**

RELATED SUPPORT – **TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

Key Project Information

KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS917
Title of the project (s) covered by monitoring report	ÇAKIRLAR RUN-OFF-RIVER HYDRO POWER PLANT
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	5
Version number of the monitoring report	4
Completion date of the monitoring report	16/02/2024
Date of project design certification	19/07/2021
Date of Last Annual Report	CP Renewal under GS4GG has been comleted on 28/02/2023. Latest Annual Report date is 19/12/2023
Monitoring period number	1st Monitoring Period of the 2nd Crediting Period
Duration of this monitoring period	20/05/2021 – 20/05/2023
Project Representative	1. ANADOLU ELEKTRİK ÜRETİM TİCARET SANAYİ A.Ş. 2. SILA DURAN sila@sekansanismanlik.com Sekans Danışmanlık
Host Country	Turkey
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	ACM0002 "Grid-connected electricity generation from renewable sources", Version 20.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 7 Ensure access to affordable, reliable, sustainable and modern energy for all	MWh of renewable energy generated	89,586.36	MWh
SDG 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all Decent Work and Economic Growth	Number of employments	14	Employees
SDG 13 Take urgent action to combat climate change and its impacts	Emission reductions	41,271	VERs

Table 2 – Product Vintages

		Amount Achieved
Start Dates	**End Dates**	**VERs**
20/05/2021	31/12/2021	12,144
01/01/2022	31/12/2022	20,400
01/01/2023	20/05/2023	8,727

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

ANADOLU ELEKTRİK ÜRETİM TİCARET SANAYİ A.Ş. (hereafter referred as the "Project Owner") built the ÇAKIRLAR RUN-OFF-RIVER HYDRO POWER PLANT (hereafter referred to as the "Proposed Project" or "Çakırlar HEPP") with 17.0 MW installed capacity in Artvin Province of Turkey, in East Black Sea Region.

The purpose of the project is to produce renewable electricity and to contribute to Turkey's growing electricity demand through a sustainable and low carbon technology. The project displaces the same amount of electricity generated by fossil fired power plants; thereby helping reduce the weight of electricity generation by fossil-fired power plants in the national grid. The annual emission reduction estimated by the project is 27,610 tonnes of CO2eq.

The project activity pursues both to contribute to providing energy needs of Turkey and to create local industry as well as providing employment. The project activity is amongst near Egrisu, Soval, Kopurten and Suluduz brooks in Artvin Province of Turkey.

Implementation of the project consisted of construction of the following main items:

- Four weirs, where water from the river is diverted into conveyance pipes;
- Total length of the conveyance pipes is 8,888 m.
- Powerhouse with Pelton type turbines.

There are two generators in the power plant connected to the facility. The power factor of the generators is 0.8309 rpm and the frequency is 50 Hz. The efficiency of the turbines is 85%.

The start date of the project activity is 01/05/2017 as the date of the agreement with the contractor company and the construction was finished by August 2009. The commissioning was started on 01/08/2009. The annual electricity production of the project is 59,928 MWh. The total capacity of the Çakırlar HEPP is 17.0 MWe.

During its operation during this monitoring period, the actualized net electricity generation is 89,586.36 MWh. The actual emission reduction has been calculated as 41,271 tonnes CO2 for this monitoring period.

The project has produced positive environmental benefits as displacing the electricity generated by fossil fuel fired power plants by utilising the renewable resources to avoid environmental pollution and GHG emissions.

Table 3 – Milestones of the project activity

Date	Events and Actions
March 2006	The first Feasibility Report
November 2006	Revised Feasibility Report (approved by DSİ)
January 08th, 2007	EIA not Required Letter' (by the Ministry of Environment and Forestry)
February 13th, 2007	Water Usage Agreement
March 15th, 2007	License granted by EMRA
April 30rd, 2007	Board's Decision on application to carbon finance
May 01st, 2007	Agreement with the contractor company (project activity start date)
May 2007	Construction Start date
August 31st, 2007	Equipment Supply Agreement
November 2007	Agreement with PDD Consultant
December 25th, 2007	Loan Agreement
September 2008	VER validation process start date for VCS
August 01st, 2009	Commissioning date of the power plant
August 14th, 2009	Completion of VCS validation process (VCS validation report date)
October 10th, 2010	MoU signed between the GS and Anadolu Elektik Üretim A.Ş.
May 25th, 2011-July 25th, 2010	Stakeholder Feedback Round Process
March 1st, 2013	Start date of the 1st crediting period
March 1st, 2013	Start date of the 1st monitoring period
May 31st, 2016	End date of the 1st monitoring period
February 20th, 2020	End date of the 2nd monitoring period
March 1st, 2020	Start date of the 2nd crediting period
May 20th, 2021-May 20st, 2023	Start and end dates of 2nd monitoring period
February 28th, 2027	End date of the 2nd crediting period

The project activity is not registered with any other compliance or voluntary market-based mechanism. The PD will not claim VERs/ GHG emission reductions for the same vintage in another standard other than GS. Additionally, there is no double counting with national climate policies or programs since no regulation exist within this scope.

A.2. Location of project

Çakırlar HEPP is located in the Black Sea Region of Turkey. The project is in Eastern Black Sea basin, between Eğrisu, Soval, Kopurten and Suluduz creeks, within the province of Artvin. The geographical location of the project on Turkey map is 41° 08’ 21’’ - 41° 09’ 23’ North, and 41° 31’ 05’’ - 41° 33’ 54’ East[1].

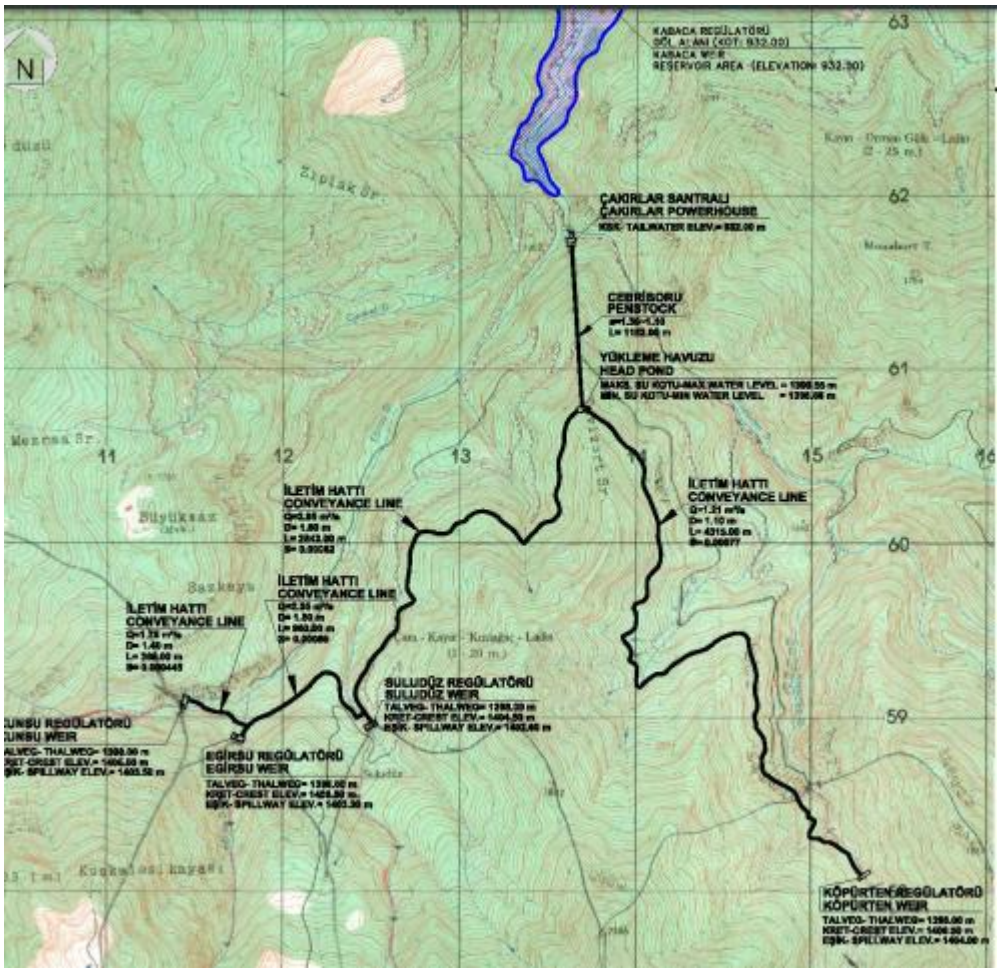

Figure 1. Site Layout

[1] Please see the registered PDD.

Figure 2. The project location on Turkey Map

A.3. Reference of applied methodology

Applied approved baseline and monitoring methodologies:

- Large scale consolidated methodology "ACM0002: Grid-connected electricity generation from renewable sources" - Version 20.0[2]

The methodology refers to:

- Tool to calculate the emission factor for an electricity system, Version 07.0[3]
- Tool for the demonstration and assessment of additionality, Version 07.0.0[4]

[2] https://cdm.unfccc.int/UserManagement/FileStorage/AG07ZJQ3EXD42LT5YV9HR16M8KINPO
[3] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf
[4] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

- Tool "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[5]

A.4. Crediting period of project

The first crediting period is 7 years and renewable twice.

Start date of the first crediting period: 01/03/2013
End date of the first crediting period: 29/02/2020

Start date of the second crediting period: 01/03/2020
End date of the second crediting period: 28/02/2027

In-line with GS4GG Principles and Requirements, delay in the completion of revalidation beyond the last date of current certification cycle shall result in a reduction of any issuance of Certified Products and/or Impact Statements available during following certification cycle. Thus, PD cannot claim credits during the delay period from 01/03/2020 to 20/05/2021.

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

The start date of the project is 01/05/2007 which is defined as the date of the agreement with the contractor company.

Çakırlar HEPP project includes 17.00 MW hydroelectric power plant, weirs, conveyance pipes and powerhouse construction and operation. The project consists of a two turbine hydroelectric power plant, each with a power of 8,519 MW. The first hand turbines used

[5] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf

in the project were supplied by Vatech Bouvier Hydro SAS from France. The turbines were of the vertical axis Pelton type.

In the powerhouse, there are two generators attached to the facility. Generators have power factor of 0.8309 rpm, a frequency of 50 Hz. The efficiency of the turbines is 85%.

The total annual electricity generation of the project is calculated as 59,928 MWh/year and during this monitoring period, net electricity production was MWh.

Table 4 – The technical details of the 2 turbines involved in the project

Parameter	Value
Turbine Brand	VATECH HYDRO
Type	Pelton, vertical
Power	8244 kW
Revolution	750 rpm
Normal head	449.33 m
Normal flow	1.08 m^3/s

Table 5 – The technical details of the generators involved in the project

Parameter	Value
Turbine Brand	INDAR
Type	LSA 1120-L/8 (3-phased)
Power	9775 kVA
Voltage	6300 V
Frequency	50 Hz
Power factor	0.85

In the feasibility study and the Internal Rate of Return (IRR) calculation, the project lifetime was assumed to be 20 years. Theoretically, the remaining lifetime of the project activity is 9 years. However, the project owner hopes that the actual project lifetime could extend beyond 20 years, potentially up to 30 years. This extension

would require significant additional investment after the 20th year to replace and refurbish key components of the plant. In summary, the project currently has a remaining lifetime of 9 years, but this period could be extended with additional investments.Within the scope of the project, it is important to emphasize that no modifications have been made to the project design, and no major outages have occurred to date.

B.1.1. Forward Action Requests

FAR #1: In-line with GS4GG Principles and Requirements, delay in the completion of revalidation beyond the last date of current certification cycle shall result in a reduction of any issuance of Certified Products and/or Impact Statements available during following certification cycle. Thus, PD cannot claim credits during the delay period from 01/03/2020 to 20/05/2021.

At the time of performance review for second crediting period, VVB shall check the start date of monitoring period. The start date of monitoring period for 2nd crediting period will be the date when the project was submitted for design renewal i.e 20/05/2021. However, the start date of crediting period will remain the same as in the registered GS-PDD.
Answer: The 1st Monitoring Period of the 2nd Crediting Period is between 20/05/2021 – 20/05/2023. The start date of the crediting period is 01/03/2020 as in the registered GS-PDD.

FAR #2: As remote audit conducted, VVB shall resume site visit when COVID-19 situation eases In-line with relevant Interim Measures. Location, availability and easy access of the logbook shall be verified on-site.
Answer: The logbook and the grievance mechanism has been verified during the site visit by the VVB.

FAR #3: In-line with GS4GG Principles and Requirements, VVB and PP shall consider the following rule after Design Renewal Certification is achieved: 5.1.29: 1st verification shall be completed within two years after the certification is achieved.
Answer: The start date of the 1st monitoring period for the 2nd crediting period is 20/05/2021.

FAR #4: VVB shall check copy of the updated Terms and Conditions and Cover Letter using latest version of GS4GG templates have been uploaded on SC app.
Answer: The Terms and Conditions and Cover Letter have been signed and submitted by the project owner.

FAR #5: As per GS Requirements, if follow-up site visits are not conducted within three years after the previous site visit, VVB shall not verify the monitoring period falling before three years of the site visit date.
Answer: After CP Renewal under GS4GG was completed on 28/02/2023, the verification process started. The site-visit was conducted on 13/07/2023.

FAR #6: At the time of next verification, VVB shall check and confirm that stream bed between the weirs/regulator and HEPP is long enough for no requirement of fish passage.
Answer: It was confirmed by VVB during the site visit that fish passage was not necessary.

B.2. Post-Design Certification changes

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

There are no project or methodology deviations applied during this monitoring period.

B.2.2. Corrections

There are no corrections applied during this monitoring period.

B.2.3. Changes to start date of crediting period

There are no changes applied to the start date of the crediting period during this monitoring period.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

There are no changes applied to the start date of the crediting period during this monitoring period.

B.2.5. Changes to project design of approved project

There are no changes to project design during this monitoring period.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

The objective of the monitoring plan is to ensure the complete, consistent, clear, and accurate monitoring and calculation of the emission reductions during the whole crediting period. The Project Owner is responsible for the implementation of the monitoring plan.

The Project Owner is responsible for the overall management of the monitoring procedures including recording and data collection. One plant manager and thirteen technicinas operates the power plant.The consultant calculates the emission reductions based on these monitored data and prepare monitoring report.

All monitoring procedures and requirements of the proposed project activity are in accordance with the methodology ACM0002 "Grid-connected electricity generation from renewable sources" Version 20.0.

Metering

The main source for electricity generation metering will be the TEIAS meters installed and sealed by TEIAS. Since the TEIAS meters are sealed by TEIAS and are also the basis of invoicing, high accuracy and reliability is ensured. Also, the TEIAS meters have the ability to measure both the amount of electricity exported to the grid as well as the amount of electricity imported by the project activity, which provides an accurate and reliable measurement of the net electricity.

The existing main meters and backup meters are "LANDIS" and "ELSTER" branded, respectively. The serial numbers are "56753526" and "374149" for the main meter and spare meter, respectively. Both meters have an accuracy class of 0.5S.
The Project Owner enters the expected electricity generation on daily basis to the website of EPIAS which is the financial settlement center of TEIAS. The website of EPIAS is accessible to project owner with their unique user ID and password. The difference between the expected and generated electricity (imbalance) is costed the project owner at the end of each month. The electricity generation data is reported monthly. EPIAS records are used as the source of net generated electricity value and meter reading forms or OSF forms issued by TEIAS will be used for the crosscheck.

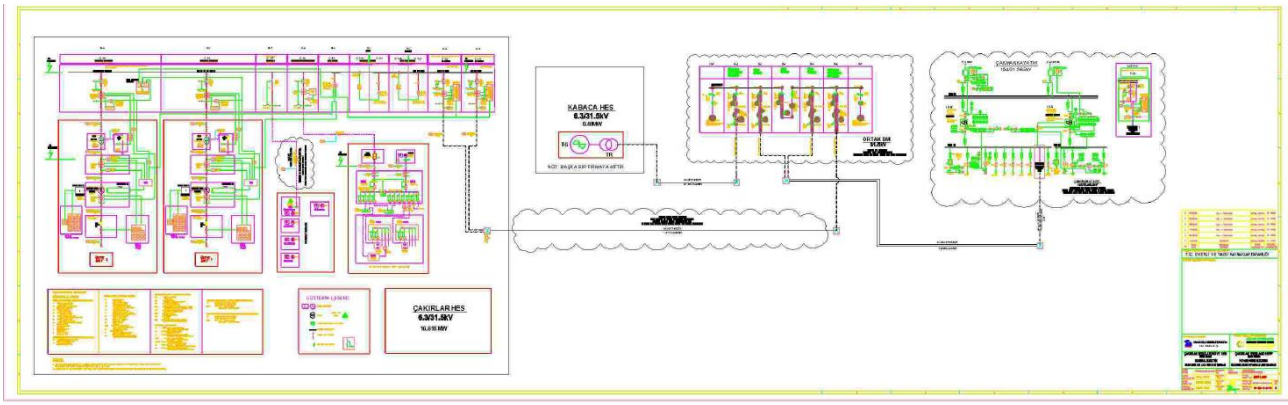

Figure 3. Single Line Diagram

Meter readings

Once a month, the project participant will perform data readings. The monthly results will be recorded by the project participant both manually and electronically.

Data storage

Data will be stored electronically, during the crediting period and at least two years after the last issuance of credits for the project activity in the concerning crediting period. The Project Participant will be responsible for storage of data received from the measuring devices.

Responsibilities for monitoring

The Project Owner is responsible for the operation and maintenance of the project activity and the installed equipment. The project owner is also responsible for the administration of the data, setting up a VER team who is responsible for monitoring all data required to estimate emission reductions. Emission reductions are calculated by the VER consultant, Sekans Enerji.

Quality assurance and quality control

The main source of measurement is the TEIAS meters, which are sealed by TEIAS and since it is subject to monthly invoicing high reliability and accuracy is secured. In accordance with the requirements of TEIAS, there are four meters installed at the site where the two of them are called the main meters and the other ones are as secondary meters. TEIAŞ is the main responsible for calibration and maintenance of the devices. TEIAŞ performs the necessary maintenance and calibration. Since the electricity

generation data is used for the billing and accounting between TEIAŞ and the project participant the data is of high quality.

The primary source is the EPIAS records. Net electricity exported is crosschecked with Meter Reading Forms. EPIAS is the financial settlement center of TEIAS. The Meter Reading Forms are filled in by the project owner and approved by the governmental officers. Additionally, remote reading by the governmental body is also available. The website of EPIAS is accessible to Project Owner with their unique user ID and password. Once accessed, the Project Owner is able to call electricity generation for invoicing TEIAS. The electricity generation data is reported on a monthly basis.

Corrective actions and emergency preparedness

The Project Owner regularly checks the monitoring system for errors. In the case of errors, corrective actions will be undertaken by the Project Participant, or if required, by the supplier of the monitoring equipment.

Data will be stored electronically, during the crediting period and at least two years after the last issuance of credits for the project activity in the concerning crediting period. The Project Owner is responsible for storage of data received from the measuring devices. The site manager is responsible for data aggregation.

During the monitoring period, no breakdown or serious maintenance work has been experienced. Ordinary maintenance activities have been executed.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Relevant SDG Indicator/Safeguarding Principle	13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions
Data / Parameter	**$EF_{grid, CM, y}$**
Unit	tCO_2/MWh

Description	Emission factor of the Turkish grid determined ex-ante. It's been published by the Ministry of Energy for 2018.
Source of data	Ministry of Energy. Please see: https://enerjiapi.enerji.gov.tr/Media/Dizin/ETKB/Duyurular//0c6b62ea-bf2f-4fea-b9b3-28bc6f48ddf2_Bilgi_Formu_-_Web_Sitesi.pdf
Value(s) applied	0.4607
Choice of data or measurement methods and procedures	Methodology ACM0002, Version 20.0
Purpose of data/parameter	Calculation of baseline emissions and to demonstrate contribution to the SDG13-13.2.2
Additional comments	The emission factor of the Turkish grid is calculated ex-ante and has been fixed for the first crediting period.

D.2. Data and parameters monitored

Relevant SDG Indicator/Safeguarding Principle	SDG 7.2.1 Renewable energy share in the total final energy consumption
Data / Parameter	**EGPJ, grid, y**
Unit	MWh/yr
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data	EPIAS, formerly PMUM (Market Financial Settlement Center) records (Meter reading records-OSF forms for cross-checking of main meters)
Value(s) applied	**Period** / **Generation (MWh)** 20.05.2021 – 31.12.2021 / 26,360.88 01.01.2022 – 31.12.2022 / 44,282.01 01.01.2023 – 20.05.2023 / 18,943.46 **Total** / **89,586.36**
Measurement methods and procedures	The net electricity is measured continuously by power meters at the grid interface and recorded monthly. EPIAS records are the source of the exact electricity generation of the project and the imports from the grid. The quantity of net electricity delivered to the grid is crosschecked with

<table>
<tr><td></td><td>the meter reading forms which are provided to the company by TEIAS.

Power meters belong to the Project Activity:

<table>
<tr><th>Çakırlar HEPP</th><th>Primary Meter</th><th>Secondary Meter</th></tr>
<tr><td>Brand/Model</td><td>LANDIS</td><td>ELSTER</td></tr>
<tr><td>Serial Number</td><td>56753526</td><td>374149</td></tr>
<tr><td>Accuracy of Meters</td><td>0.5S</td><td>0.5S</td></tr>
<tr><td>The Latest Calibration Date of the Meter</td><td>15/11/2021</td><td>15/02/2021</td></tr>
</table>

The power meters that were changed on 15/11/2021:

<table>
<tr><th></th><th>Primary Meter</th></tr>
<tr><td>Brand/Model</td><td>ELSTER</td></tr>
<tr><td>Serial Number</td><td>00374150</td></tr>
<tr><td>Accuracy of Meters</td><td>0.5S</td></tr>
</table>
</td></tr>
<tr><td>Monitoring frequency</td><td>The electricity is measured continuously and recorded at least monthly.</td></tr>
<tr><td>QA/QC procedures</td><td>Secondary meter is used for crosschecking the accuracy and both meters are calibrated if required. In addition, the meters are calibrated every ten years.</td></tr>
<tr><td>Purpose of data</td><td>To measure the electricity produced and supplied to the grid and thus calculation of emission reductions.</td></tr>
<tr><td>Additional comments</td><td>-</td></tr>
</table>

Relevant SDG Indicator/Safeguarding Principle	13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions
Data / Parameter	**ER_y**
Unit	tCO2/y
Description	Emission reductions by the project activity in year y (tCO2/yr) In accordance with ACM0002, baseline emissions include CO2 from electricity generation in powerplants that are displaced due to the project activity. And baseline emissions correspond to emission reductions and are calculated as the net electricity generated by the project activity, multiplied with combined margin CO2

<table>
<tr><td></td><td>emission factor for grid connected power generation in year y.</td></tr>
<tr><td>Source of data</td><td>Both measured and calculated

Emission reductions will be calculated as considering the EPIAS records for the net electricity generated and the emission factor for the grid, 0.4607 tCO2/MWh, published by the Ministry of Energy.</td></tr>
<tr><td>Value(s) applied</td><td><table>
<tr><th>Period</th><th>VERs (tCO2)</th></tr>
<tr><td>20.05.2021 – 31.12.2021</td><td>12,144</td></tr>
<tr><td>01.01.2022 – 31.12.2022</td><td>20,400</td></tr>
<tr><td>01.01.2023 – 20.05.2023</td><td>8,727</td></tr>
<tr><td>Total</td><td>41,271</td></tr>
</table></td></tr>
<tr><td>Measurement methods and procedures</td><td>Methodology ACM0002, Version 20.0</td></tr>
<tr><td>Monitoring frequency</td><td>Yearly</td></tr>
<tr><td>QA/QC procedures</td><td>According to the methodology applied, the electricity supplied to the national grid by the project and the electricity consumed by the project activity shall be monitored. The net electricity is the difference of the electricity supplied and consumed by the project and shall be taken into account for emission reduction calculations.</td></tr>
<tr><td>Purpose of data</td><td>Calculation of combined margin CO2 emission factor and thus the baseline emissions.

To demonstrate contribution to SDG Target 13.3.: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.</td></tr>
<tr><td>Additional comments</td><td>-</td></tr>
</table>

Relevant SDG Indicator/Safeguarding Principle	8.5.2. Unemployment rate, by sex, age and persons with disabilities
Data / Parameter	**a) Number of employment** **b) Quality of employment**
Unit	a) Number b) N/A
Description	a) Number of people permanently working for the operation of the project b) Health & Safety trainings given to the personnel
Source of data	a) Social Security System (SGK) b) Certificates and Attendance Lists

Value(s) applied	a) 2021: 14 employees 2022: 14 employees 2023: 14 employees b) All employees have been trained on Health & Safety trainings during 2021,2022,2023.
Measurement methods and procedures	a) Social Security System (SGK) records b) Attendance lists and/or certificates
Monitoring frequency	Yearly
QA/QC procedures	SGK records of employees are provided during each monitoring period.
Purpose of data	SDG 8.5.By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
Additional comment	-

Data / Parameter	Safeguarding Principle 8.1.: Impact on Natural Water Patterns/Flows

Unit	N/A
Description	The project owner guarantees to comply with the 'minimum water rule" and the 150 lt/sec stated by the Environmental Due Diligence Report[6], whichever is the highest. Average water flow and the actual water flow between the regulator and the tail race (m3/sec) comparisons are based on records on all four tributary streams of Çakırlar River (Egrisu, Köpürten, Kunsu, Suludüz,).
Source of data	State Water Works (DSI) measurements
Value(s) applied	The minimum water released by the plant is above 150 lt/sec at all times during the monitoring period within statistical significance (The released water from the plant is both above the 150 lt/sec and "minimum 10 percent rule", an estimated rule by the Environmental Due Diligence study and 150 lt/sec)[7].
Measurement methods and procedures	Streamgage gauging stations of DSI
Monitoring frequency	Continuous Measurement
QA/QC procedures	N/A
Purpose of data	To monitor compliance to Safeguarding Principle 8.1
Additional comment	-

Data / Parameter	Safeguarding Principle 8.2. : Erosion and/or Water Body Instability
Unit	N/A
Description	Soil erosion
Source of data	Visual inspection
Value(s) applied	The project activity has developed activities for prevention of soil erosion. The project owner is committed to minimize deforestation and commit to reforestation. The Project Developer replaced the trees cut during the construction of the Project. Riverbed and Riverside have been protected.

[6] The official writing of DSI is available to the VVB.
[7] The monitorings are avaialbe to the VVB.

Measurement methods and procedures	N/A
Monitoring frequency	Once for each monitoring period
QA/QC procedures	N/A
Purpose of data	To monitor compliance to Safeguarding Principle 8.2
Additional comment	-

Data / Parameter	Safeguarding Principle 9.5 Hazardous and Non-hazardous Waste
Unit	N/A
Description	Hazardous wastes and waste oil
Source of data	Waste transfer records
Value(s) applied	No hazardous waste would be disposed to the environment.
Measurement methods and procedures	Hazardous wastes are handled appropriately in closed containers and transported by licensed transporters to the licensed processing and disposal facilities.
Monitoring frequency	Yearly
QA/QC procedures	N/A
Purpose of data	To monitor compliance to Safeguarding Principle 9.5
Additional comment	-

D.3. Comparison of monitored parameters with last monitoring period

Previous Monitoring Period Summary:

Grievance Mechanism: Four grievances were received from the local community, and all were resolved through the established grievance mechanism.

Environmental Flow: No environmen
tally disruptive incidents were reported in the project area.

Electricity Production: The total electricity supplied to the grid was 95.664 GWh, measured monthly.

Installed Capacity: The installed capacity of the power plant was 17,000 W, verified annually through equipment records.

Air Quality: No dust emission measurements were taken during this period as no complaints regarding air quality were reported.

Water Quality (Fees): Service fees for wastewater collection and transportation were paid to the municipality approximately every six months.

Water Quality (Flow): The minimum water release was maintained above 150 l/sec daily, ensuring compliance with environmental regulations.

Employment & Income Generation: A total of 12 local employees were hired during the monitoring period.

Biodiversity (Water Flow): The minimum water flow of 150 l/sec was ensured annually to protect aquatic biodiversity.

Quality of Employment (Training): 20 employees received health and safety training during the period.

Livelihood of the Poor: The project owner provided financial aid of 8,064 TL to support local charitable events and institutions.

Current Monitoring Period Summary:

Employment (Permanent): The project had 14 permanent employees from 2021 to 2023, with annual reporting.

Quality of Employment (Training): All employees received health and safety training annually during 2021, 2022, and 2023.

Emission Reductions: The project achieved a total of 41,271 tCO2 emission reductions across the monitoring period (from May 2021 to July 2023).

Natural Water Patterns: Continuous measurements confirmed that the minimum water release remained above 150 l/sec throughout the period.

Soil Erosion: Activities for soil erosion prevention were completed, including reforestation and protection of riverbanks.

Hazardous Waste: No hazardous waste was disposed of into the environment. All waste was managed and transported in closed containers by licensed facilities.

Electricity Production: The total electricity supplied to the grid was 89.586 GWh, measured continuously through primary and secondary meters.

D.4. Implementation of sampling plan

N/A

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

SDG 13

According to the methodology baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are calculated as follows:

$$BE_y = EG_{PJ,y} * EF_{grid,CM}$$

where:

BE_y	Baseline emissions in year y (tCO2/year)
$EG_{PJ,y}$	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid,CM}$ Combined margin CO2 emission factor for grid connected power generation calculated using the latest version of the "Tool to calculate the emission factor for an electricity system". The combined margin is calculated ex-post and has been fixed for the first crediting period.

The emission factor ($EF_{grid,CM}$) is taken as 0.4607 tCO2eq/MWh for the second crediting period as per the registered PDD.

BE_y = 89,586.36 MWh/y * 0.4607 tCO2eq/MWh = 41,271 tCO_2/y

Table 6 - Baseline Emissions

Month	(A) Electricity supplied to the grid [MWh]	(B) Electricity consumed from the grid [MWh]	(C) = (A) - (B) EG (ID 8) Net electricity supplied to the grid [MWh]	EF [tCO_2/MWh]	Baseline emission: ER = EG * EF [$t\ CO_2$-eq]
May-21 (20-31/05/2021)	3,335.70	0.00	3,335.70	0.4607	1,537
Jun-21	5,153.77	0.00	5,153.77	0.4607	2,374
Jul-21	2,006.60	1.86	2,004.74	0.4607	924
Aug-21	1,097.70	10.03	1,087.68	0.4607	501
Sep-21	4,953.01	0.07	4,952.94	0.4607	2,282
Oct-21	5,865.09	0.01	5,865.08	0.4607	2,702
Nov-21	2,462.02	0.00	2,462.02	0.4607	1,134
Dec-21	1,499.04	0.08	1,498.95	0.4607	691
Jan-22	711.41	0.07	711.34	0.4607	328
Feb-22	756.61	0.01	756.60	0.4607	349
Mar-22	1,001.97	0.13	1,001.84	0.4607	462
Apr-22	8,203.25	0.03	8,203.22	0.4607	3,779
May-22	9,672.10	0.02	9,672.08	0.4607	4,456
Jun-22	8,657.72	0.03	8,657.69	0.4607	3,989
Jul-22	5,527.25	0.01	5,527.24	0.4607	2,546
Aug-22	1,297.04	0.00	1,297.04	0.4607	598
Sep-22	1,646.10	0.00	1,646.10	0.4607	758
Oct-22	3,227.19	0.00	3,227.19	0.4607	1,487
Nov-22	2,407.52	0.02	2,407.50	0.4607	1,109
Dec-22	1,174.17	0.01	1,174.16	0.4607	541
Jan-23	749.36	0.18	749.19	0.4607	345

Feb-23	477.53	0.26	477.28	0.4607	220
Mar-23	5,865.45	0.03	5,865.43	0.4607	2,702
Apr-23	8,112.38	0.03	8,112.35	0.4607	3,737
May-23 (20-31/05/2023)	3,739.22	0.00	3,739.22	0.4607	1,723
2021 Vintage (20.05.2021-31.12.2021)	26,372.94	12.06	26,360.88	0.4607	12,144
2022 Vintage (01.01.2022-31.12.2022)	44,282.33	0.32	44,282.01	0.4607	20,400
2023 Vintage (01.01.2023-20.05.2023)	18,943.95	0.49	18,943.46	0.4607	8,727
Total	89,599.22	12.86	89,586.36	0.4607	41,271

SDG 7

The baseline value for renewable energy generation is 0. In the absence of the project activity, there wouldn't be renewable energy generation.

SDG 8

The baseline value for number of employment and training is 0. In the absence of the project activity, there wouldn't be employment of new staff.

The positions at the hydroelectric power plant require skilled workers, which is achieved by adequate training. The project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments.

E.2. Calculation of project value or estimation of project situation of each SDG Impact

SDG 13

In accordance with the methodology ACM0002 Version 20.0, "Grid-connected electricity generation from renewable sources", no project emissions need to be considered. Project emissions apply only for geothermal power plants, solar thermal power plants and for some hydro power plants. Therefore,

$PE_y = 0$.

SDG 7

The project value for renewable energy generation is 89,586.36 MWh.

SDG 8

The project value for employment is 14. In total, 14 employees are working for PP at the site.

E.3. Calculation of leakage

In line with the requirements of ACM0002 Version 20.0 "Grid-connected electricity generation from renewable sources", no leakage emissions are considered. The main emissions potentially giving rise to leakage in context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g., extraction, processing and transport). These emission sources are neglected.

$LE_y = 0$.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

In accordance with ACM0002, the baseline emissions are calculated as the net electricity generated by the project activity multiplied with the baseline emission factor of the project grid.

$$\boldsymbol{BE_y = EGPJ,y \times EF_{grid,\mathrm{CM}}} \qquad \text{Equation (1)}$$

where:

- BE_y = Baseline Emissions in year y (tCO_2e)
- $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

- $EF_{grid,CM}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system"(tCO_2/MWh)

BE_y = 89,586.36 MWh/y * 0.4607 tCO2eq/MWh = 41,271 tCO_2/y

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Climate Action	41,271 tCO2	0	41,271 tCO2
7	Affordable and Clean Energy	0	89,586.36 MWh	89,586.36 MWh
8	Decent Work and Economic Growth (Number of employment)	0	14	14

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[8] achieved during this monitoring period
13	55,296 tCO2	41,271 tCO2
7	120,020.19 MWh	89,586.36 MWh
8	21	14

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

[8] Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

SDG13

Estimated annual emission reduction in ex ante calculation of registered PDD is 27,610 tCO2, which corresponds to 55,296 tCO2 for 731 days. And actual emission reduction achieved during this monitoring period is 41,271 tCO2 (for 20/05/2021-20/05/2023, 731 days).

SDG 7

Estimated annual electricity generation in ex ante calculation of registered PDD is 59,928 MWh, which corresponds to 120,020.19 MWh for 731 days. And the net electricity generation achieved during this monitoring period is 89,586.36 MWh (for 20/05/2021-20/05/2023, 731 days).

SDG8

The baseline value for the number of employments is 0. In the absence of the project activity, there wouldn't be employment of new staff. For the project activity, 14 employees have been hired.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

SDG 7

The difference between achieved electricity generation and amount estimated ex ante -25.4 % during the monitoring period. This marginal spread from the estimation is probably due to weather conditions.

Table 7 - Comparison of electricity generation

Vintage	Period	Total Days	Amount achieved during this monitoring period (MWh)	Amount estimated ex ante (MWh)	Difference (MWh)	Difference (%)
2021	**2021 Vintage (20.05.2021-31.12.2021)**	226	26,360.88	37,106.10	-10,745.22	-29.0%
2022	**2022 Vintage (01.01.2022-31.12.2022)**	365	44,282.01	59,928.00	-15,645.99	-26.1%

2023	**2023 Vintage (01.01.2023-20.05.2023)**	140	18,943.46	22,986.08	-4,042.62	-17.6%
Total		**731**	**89,586.36**	**120,020.19**	**-30,433.83**	**-25.4%**

SDG13

The difference between achieved electricity generation and amount estimated ex ante -25.4 % during the monitoring period. This marginal spread from the estimation is probably due to weather conditions.

Table 8 - Comparison of emission reductions

Vintage	Period	Total Days	Amount achieved during this monitoring period (tCO2e)	Amount estimated ex ante (tCO2e)	Difference (tCO2e)	Difference (%)
2021	**2021 Vintage (20.05.2021-31.12.2021)**	226	12,144	17,096	-4,952	-29.0%
2022	**2022 Vintage (01.01.2022-31.12.2022)**	365	20,400	27,610	-7,210	-26.1%
2023	**2023 Vintage (01.01.2023-20.05.2023)**	140	8,727	10,590	-1,863	-17.6%
Total		**731**	**41,271**	**55,296**	**-14,025**	**-25.4%**

SDG 8

If the project hadn't been realized, there wouldn’t be employment opportunity for employees. Therefore, achieved impact for this SDG is 14.

SECTION F. SAFEGUARDS REPORTING

Data / Parameter	Safeguarding Principle 8.1.: Impact on Natural Water Patterns/Flows
Unit	N/A
Description	The project owner guarantees to comply with the ‘minimum water rule” and the 150 lt/sec stated by the

	Environmental Due Diligence Report[9], whichever is the highest. Average water flow and the actual water flow between the regulator and the tail race (m3/sec) comparisons are based on records on all four tributary streams of Çakırlar River (Egrisu, Köpürten, Kunsu, Suludüz,).
Source of data	State Water Works (DSI) measurements
Value(s) applied	The minimum water released by the plant is above 150 lt/sec at all times during the monitoring period within statistical significance (The released water from the plant is both above the 150 lt/sec and "minimum 10 percent rule", an estimated rule by the Environmental Due Diligence study and 150 lt/sec)[10].
Measurement methods and procedures	Streamgage gauging stations of DSI
Monitoring frequency	Continuous Measurement
QA/QC procedures	N/A
Purpose of data	To monitor compliance to Safeguarding Principle 8.1
Additional comment	-

Data / Parameter	Safeguarding Principle 8.2. : Erosion and/or Water Body Instability
Unit	N/A
Description	Soil erosion
Source of data	Visual inspection
Value(s) applied	The project activity has developed activities for prevention of soil erosion. The project owner is committed to minimize deforestation and commit to reforestation. The Project Developer replaced the trees cut during the construction of the Project. Riverbed and Riverside have been protected.
Measurement methods and procedures	N/A
Monitoring frequency	Once for each monitoring period

[9] The official writing of DSI is available to the VVB.
[10] The monitorings are avaialbe to the VVB.

QA/QC procedures	N/A
Purpose of data	To monitor compliance to Safeguarding Principle 8.2
Additional comment	-

Data / Parameter	Safeguarding Principle 9.5 Hazardous and Non-hazardous Waste
Unit	N/A
Description	Hazardous wastes and waste oil
Source of data	Waste transfer records
Value(s) applied	No hazardous waste would be disposed to the environment.
Measurement methods and procedures	Hazardous wastes are handled appropriately in closed containers and transported by licensed transporters to the licensed processing and disposal facilities.
Monitoring frequency	Yearly
QA/QC procedures	N/A
Purpose of data	To monitor compliance to Safeguarding Principle 9.5
Additional comment	-

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

The grievance mechanism is in place, and this was also confirmed by the interviewed local villagers and Kabaca Village Mukhtar (Village Head) during the site visit of the last verification. As the contact information of the plant responsible exists at the Mukhtar, any complaint or a request can be directed to the Project Owner. No complaint or any negative inputs have been received during this monitoring period.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

Since there is no request or complaint from the stakeholders, no mitigation is monitored specially.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period.

No legal contest or dispute has arisen with the project during the monitoring period.

Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption