

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

0 - Description of project

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Key Project Information

GS ID (s) of Project (s)	GS872
Title of the project (s) covered by monitoring report	Cataloluk HEPP
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	09
Version number of the monitoring report	9
Completion date of the monitoring report	02/09/2025
Date of project design certification	09/09/2011
Date of Last Annual Report	30/12/2024
Monitoring period number	1 st Monitoring Period (1 st MP of 2 nd CP)
Duration of this monitoring period	25/11/2022 to 31/03/2024 (both days included)
Project Representative	Elestaş Elektrik Üretim A.Ş
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	AMS-I.D. Grid connected renewable electricity generation, version 18.
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
13 Climate Action (mandatory)	13.2.2 Total greenhouse gas emissions per year	16,311 tonnes of CO ₂ e	GS VERs
7 Ensure access to affordable, reliable, sustainable and modern energy for	7.2.1 Renewable energy share in the total final energy consumption	35,350.93 MWh	MWh
7 Ensure access to affordable, reliable, sustainable and modern energy for all	Balance of Payments	Approximately consumption of 7,389,432 m ³ of natural gas is expected to be avoided corresponding to 20,678,232 TL annually	m ³ and TL
7 Ensure access to affordable, reliable, sustainable and modern energy for all	7.2.1 Renewable energy share in the total final energy consumption.: Air Quality	SO ₂ emission reduction is calculated as 284.41 tons per year. NO _x emission reduction is calculated as 103.61 tons per year	tons per year
8 Decent Work and Economic Growth	8.5.1 Average hourly earnings of female and male employees, by occupation, age, and persons with disabilities	7	Number of people employed by the project

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VERs
25/11/2022	31/12/2022	446
01/01/2023	21/12/2023	10,754
01/01/2024	31/03/2024	5,111

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

Cataloluk HEPP has been developed by Elestaş Elektrik Üretim A.Ş. The project is a runoff-river reservoir type project, reducing national energy deficit and development of local industries as it allows the use of local sources for energy generation to meet the increasing demands.

The purpose of the project is to generate clean energy by harnessing the hydro power and providing the energy to the Turkish national grid.

The project boundary is considered as the National Electricity Grid of Turkey according to applied tool. The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the power plant is connected to.

The project generates electricity by avoiding CO₂ emissions from electricity generation by fossil fuel power plants connected to Turkish National Power Grid. The project, which has an average estimated annual generated energy of 31.99 GWh. The installed capacity of the project activity is 9.84 MWm/9.54 MWe. Çataloluk HEPP is located on the Tekir Creek, which is at about 55 km north of Kahramanmaraş Province. In return for annual energy generation, an estimated annual carbon reduction of 14,766 tCO₂ is expected.

During this current monitoring period, which is the 1st MP of the 2nd CP, and it is between 25/11/2022 and 31/03/2024, the total net actual electricity generation is 35,350.93 MWh, and the emission reduction is 16,311 tCO₂e.

Main goals of the Cataloluk HEPP project includes the following.

- Utilization of the hydroelectric potential of Turkey in order to meet booming electricity demand and guarantee the energy security.
- Preventing flooding risk in the region which has caused significant destruction in the region in recent years
- Increase share of HEPPs in electricity generation mix of Turkey and reduction of GHG emissions.

- Contribute to the national economic development by creating direct and indirect job opportunities during construction and operation phases.
- Reduce import dependency of fossil fuel dominated electricity sector and diversify generation mix through use of local resources.
- Contribution to sustainable development through supporting local community and local economy.

In terms of sustainable development project not only contributes to emission reduction through use of renewable resources and creating job opportunities, but it also contributes to local development by supporting educational and social events in the region. In terms of environmental impact, project is considered to have positive impact on air quality due to avoided NO_x, PM and SO_x emissions whereas no negative impact on water quality other pollutants and biodiversity has been identified. In order to avoid impact on aquatic life in the riverbed, minimum 10% of average flow of last ten years is continuously released from the weir as required by the State Hydraulic Works Authority (DSI).

Table 2. Milestones for Çataloluk HEPP

Milestone	Date
License Issuance	25/05/2005
Start of Construction	09/03/2006
EM Equipment Purchase Contract	09/08/2007
Transfer of Project Shares to Beytek	10/07/2009
Revised Feasibility Report	01/08/2008
Subcontractor agreement (Transmission Line)	02/10/2009
Water Right Utilization Agreement	18/12/2009
EIA Exemption Letter	30/12/2009
System Connection Approval	15/02/2010
Commissioning Date	07/04/2010
1 st Crediting Period	01/04/2010 - 31/03/2017
1 st MP of the 1 st CP	01/04/2010 - 30/05/2012

2 nd MP of the 1 st CP	01/06/2012 - 30/09/2015
2 nd Crediting Period	01/04/2017-31/03/2024
1 st MP of the 2 nd CP	25/11/2022 - 31/03/2024
Beytek –Elestaş Name Change	01/10/2018
Revised Generation License	25/10/2018
System Usage Agreement (in the name of Elestaş)	19/11/2018
Connection Agreement (in the name of Elestaş)	19/11/2018
First Index Protocol of the previous meters (Main: 391095-Spare: 391097)	25/02/2010
First Index Protocol of the current meters (Main: 84051677-Spare: 84051678)	07/11/2018

A.2. Location of project

The project activity, Cataloluk HEPP is located within the boundaries of Kahramanmaraş Province of Turkey. Project site located near Şahinkayası Village and Çağlayan Village.

Table 2. Project Coordinates

	Longitudes	Latitude
Weir	E 36°38'29.04	N 37°50'42.95
Powerhouse	E 36°39'37.48	N 37°49'19.35"

The location of the project activity on the host country has been demonstrated in the map below.

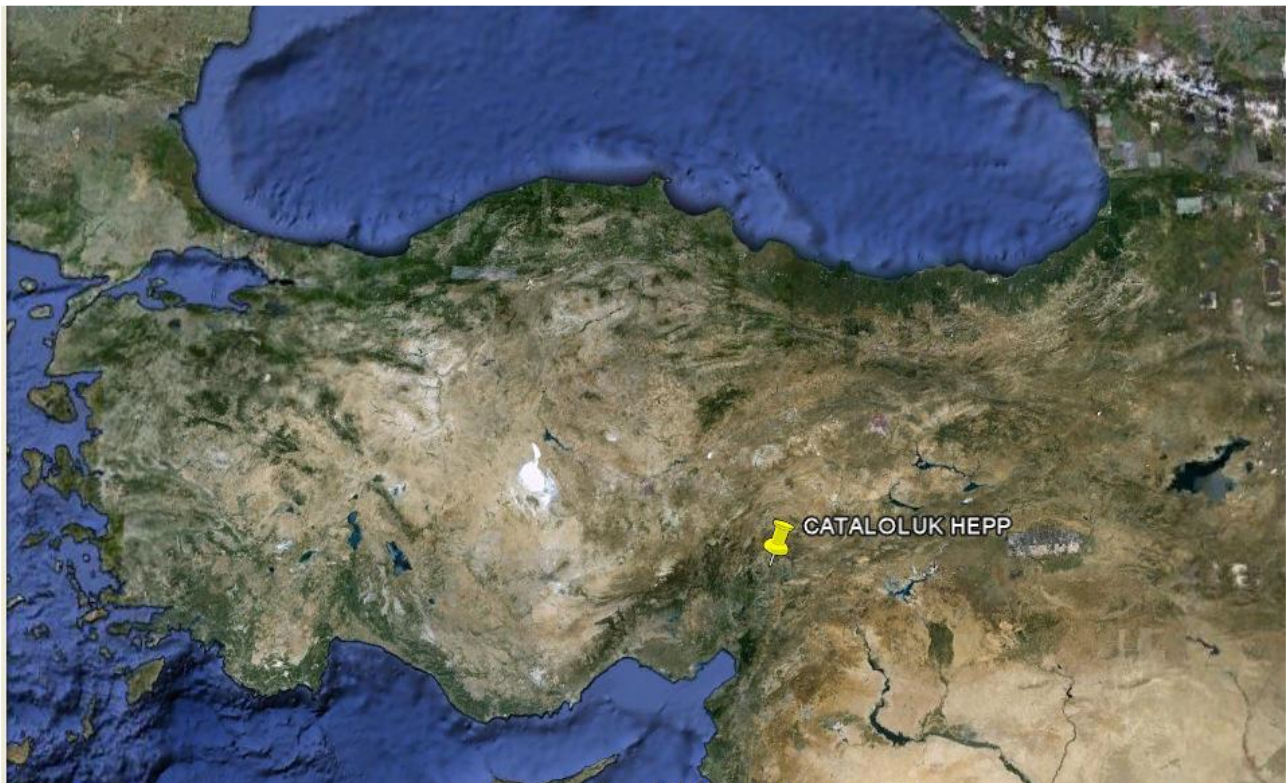


Figure 1. Location of the Cataloluk HEPP

A.3. Reference of applied methodology

The UNFCCC approved simplified baseline and monitoring methodology AMS I.D., version 18¹.

- Tool 07, “Tool to calculate the emission factor for an electricity system”, Version 07.0².

A.4. Crediting period of project

The first crediting period of project is from 01/04/2010 to 31/03/2017. The second crediting period of project is from 01/04/2017 to 31/03/2024.

¹ <https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQOH4SBK>

² <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

B.1.1 Forward Action Requests

FAR#1: The VVB shall include local expert/team member having local language knowledge during next verification to ensure about the local stakeholders comments and opinions about the project and to check if there is any grievance.

Explanation: There was a Turkish Local Expert during the site visit, and the interviews with the local stakeholders have been conducted in Turkish. The VVB has checked if there is any grievance during the remote site visit which is conducted on 15/04/2025 for this monitoring period.

FAR#2: In-line with GS4GG Principles and Requirements, VVB and PP shall consider the following rule: 5.1.39: Transparent, annual update reports need to be provided for Projects that have achieved the Project Design Certification stage. An annual report shall be submitted for each monitoring year by end of next calendar year for which verification is not completed. If a verification is in progress but not completed, then an Annual Report is still required by the end of calendar year.

Explanation: The annual report of this project activity has been submitted.

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. As per Site Visit and Remote Audit Requirements para 3.2.2, a physical site visit is mandatory during first verification.

Explanation: The latest physical site visit has been conducted on 10/07/2024, and it was conducted for the renewal of crediting period. However, there were delay during the completion of the monitoring period, and also credit lost during the 2nd CP (01/04/2017-24/11/2022). The site visit for this monitoring period has been conducted remotely on 15/04/2025.

FAR#4: The VVB performing the verification in CP2 shall note that from 01/04/2017 to 24/11/2022 no carbon credit issuance during 2nd crediting period can be claimed by PP due to delay in the CP renewal.

Explanation: The VVB has been notified about this current situation. The PD does not claim carbon credits from 01/04/2017 to 24/11/2022 (FAR#4 does not include 24/11/2022).

B.2. Post-Design Certification changes

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

N/A

B.2.2. Corrections

N/A

B.2.3. Changes to start date of crediting period

The second crediting period is valid for seven years, from 01/04/2017 to 31/03/2024. However, as per Principles and Requirements, 5.1.46, Delay in the completion of re-validation 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 (for example, a delay of 1 year beyond the first cycle shall mean that no Certified Impact Statements shall be issued for the period of delay). Hence, The PP will not claim any GS VER for the date 01/04/2017 - 24/11/2022.

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

N/A

B.2.5. Changes to project design of approved project

N/A

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

Monitoring is a key procedure to verify the real and measurable emission reductions from the project. To guarantee the project's real, measurable and long-term GHG emission reductions, the monitoring plan is established.

Net electricity generation is measured and recorded via meters sealed by AEDAS for billing purposes. Therefore, no new additional protocol is needed for monitoring emission reduction. Power Plant Manager is responsible for the electricity generated, gathering all relevant data and keeping the records.

Generation data collected during crediting period is submitted to GTE who is responsible for calculating the emission reduction subject to verification. Generation data is used to prepare monitoring reports which is used to determine the vintage from the project activity. These reports are submitted to the duly authorized and appointed Designated Operational Entity 'VVB' before each verification period.

VER Team Members is expected to include the following staff:

Plant Manager: Responsible for running the plant and compliance with VER monitoring plan.

Accounting Manager: Responsible for keeping data about generation and consumption

GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık ve Ticaret A.Ş: Responsible for emission reduction calculations, preparing monitoring report and periodical verification process.

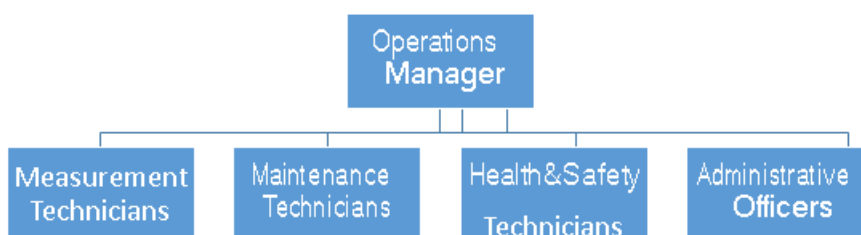


Figure 2. The management structure

AEDAS: It is the private distribution company which the project has system usage and connection agreement. The company is also responsible for the meter tests, etc. Installation of meter and data monitoring are carried out according to the regulations by AEDAŞ. Two metering devices (one of them used as spare) are used for monitoring the electricity generated by the power plant. Readings are done using main metering devices and spare metering device will be used for comparison only. Data from metering devices will be recorded by AEDAS monthly (through remote reading and submitted site records data by site employee). The emission reduction calculations are done by EPIAŞ records. The records which are held in the facility are used for cross-check of the EPIAŞ values.

First index protocol of the meters below is done on 07/11/2018. Information about the electricity meters are provided in the table below.

Table 4. Information about the electricity meters

Meter	Main Meter	Spare Meter
Brand	ITRON	ITRON
Model	SL761X	SL761X
Standard/Class	0.5S	0.5S
Serial Number	84051677	84051678
First Index Protocol	07/11/2018	07/11/2018
Test Date	28/03/2018	28/03/2018
Calibration Frequency	10 years	10 years
Calibration Due	07/11/2028	07/11/2028

All data will be kept for at least two years after the crediting period for QA/QC purposes. The calibration and maintenance of the meters will be carried out in line with the by law on Metering and Metering Devices. There is only one test report because in the connection agreement signed between the Project Owner and TEİAŞ, there is no such a statement for conducting tests to meters in a regular time period.

SECTION D. DATA AND PARAMETERS

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

SDG13

Data/parameter	EF_{grid,CM,y}
Unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor for the project electricity system in year y
Source of data	Ministry of Energy and Natural Resources, OM & BM values
Value(s) applied	$CM = (BM \times 0.75) + (OM \times 0.25)$ As given by the Ministry of Energy and Natural Resources, built margin is 0.3680, and operating margin is 0.7424. $(0.3680 \times 0.75) + (0.7424 \times 0.25) = 0.4616 \text{ tCO}_2/\text{MWh}$
Choice of data or Measurement methods and procedures	The coefficients are taken as 0.75 and 0.25 for BM and OM, respectively according to the Tool 07, Tool to calculate the emission factor for an electricity system, ver 07.0.
Purpose of data	To calculate baseline emission according to SDG 13.
Additional comment	-

D.2 Data and parameters monitored

SDG 7

Data/parameter	EG_{PJ,facility,y}
Unit	MWh

Description	Quantity of net electricity generation supplied by the project plants/units to the grid in year y		
Source of data	Electricity Meters		
Value(s) applied	35,350.93 MWh		
Choice of data or Measurement methods and procedures	EPIAS records and meter reading records provides the exact electricity generation of the facility and the imports from the grid.		
	The internal consumption of the facility was subtracted from the gross generation. EPIAS data are used for the quantity of net electricity delivered to the grid, and it has been cross checked with the meter reading records.		
	Meter	Main Meter	Spare Meter
	Brand	ITRON	ITRON
	Model	SL761X	SL761X
	Standard/Class	0.5S	0.5S
	Serial Number	84051677	84051678
	First Index Protocol	07/11/2018	07/11/2018
	Test Date	28/03/2018	28/03/2018
	Calibration Frequency	10 years	10 years
Calibration Due	07/11/2028	07/11/2028	
	There is only one test report because in the connection agreement signed between the Project Owner and TEİAŞ, there is no such a statement for conducting tests to meters in a regular time period.		
Purpose of data	ER calculations		
Additional comment	7.2.1 Renewable energy share in the total final energy consumption		

Data/parameter	A _{PJ}
Unit	m ²
Description	Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.
Source of data	Google Earth image of the project site (provided to the VVB)
Value(s) applied	233,567.93 m ²
Choice of data or Measurement methods and procedures	Calculation using topographical surveys or maps
Purpose of data	To calculate power density
Additional comment	-

Data/parameter	Cap
Unit	W
Description	Installed capacity of the hydro power plant after the implementation of the project activity
Source of data	Generation license
Value(s) applied	9,540,000
Choice of data or Measurement methods and procedures	-

Purpose of data	To calculate power density
Additional comment	-

Data/parameter	Air Quality												
Unit	m³												
Description	SO₂ emissions by thermal power plants-NOₓ emissions by thermal power plants												
Source of data	National Electricity Generation in 2021 from TEIAS³, NOₓ and SO₂ emissions from UNFCC documents⁴												
Value(s) applied	SO₂ emission reduction corresponding to 35.37 GWh of actual generation for this monitoring period is calculated as 284.59 tons per year. NOₓ emission reduction corresponding to 35.37 GWh of actual generation for this monitoring period is calculated as 103.67 tons per year (The 2020 values of emission factors and electricity. Calculated for this monitoring with the actual generation in this MP and the data from TEIAS for this project activity). <table><tr><td></td><td>SOₓ</td><td>NOₓ</td></tr><tr><td>2022</td><td>7,97</td><td>2,90</td></tr><tr><td>2023</td><td>187,53</td><td>68,31</td></tr><tr><td>2024</td><td>89.10</td><td>32.46</td></tr></table>		SOₓ	NOₓ	2022	7,97	2,90	2023	187,53	68,31	2024	89.10	32.46
	SOₓ	NOₓ											
2022	7,97	2,90											
2023	187,53	68,31											
2024	89.10	32.46											

³ <https://www.teias.gov.tr/tr-TR/turkiye-elektrik-uretim-iletim-istatistikleri>

⁴ https://unfccc.int/documents/627786?gad_source=1&gclid=CjwKCAjw34qzBhBmEiwAOUQcFxr1Z6hgWDvOCcdLovBOmcmQ279tWC0ubf5r1P1YqtZv_c2vw7-2xoCIKoQAvD_BwE

		Total	284,59	103,67
Choice of data or Measurement methods and procedures	Electricity generated by Çataloluk HEPP and NO _x and SO ₂ emission data from GHG inventory of Turkey will be used as reference in calculation of the emission reduction.			
Purpose of data	7.2.1 "Renewable energy share in the total final energy consumption" and following target: 7.2 "By 2030, increase substantially the share of renewable energy in the global energy mix".			
Additional comment	-			

Data/parameter	Balance of Payments
Unit	Million m ³ for NG Million TL for cost
Description	Currency saving due to avoided fuel import
Source of data	Natural gas price data in 2022 ⁵ Natural gas consumption data in 2022 from TEIAS ⁶ Electricity generation data in 2022 from TEIAS ⁷
Value(s) applied	Approximately consumption of 7,394,114 m ³ of natural gas is expected to be avoided corresponding to 20,691,336 TL ⁸ annually. Calculated during for this monitoring period with

⁵ <https://portal.enerya.com.tr/DogalGazBirimFiyatlari/index.xhtml?city=07>

⁶ <https://www.teias.gov.tr/tr-TR/turkiye-elektrik-uretim-iletim-istatistikleri>

⁷ <https://www.teias.gov.tr/tr-TR/turkiye-elektrik-uretim-iletim-istatistikleri>

⁸ Calculated in the ER Excel Sheet

	the actual electricity generation and the data from TEIAS for this project activity.		
		NG	Savings in TL
	2022	207.075,53	579.470.220,09
	2023	4.872.144,75	13.633.976.014,97
	2024	2.314.904,28	6.477.917.021,27
	Total	7.394.125	20.691.363.256,33
Choice of data or Measurement methods and procedures	Calculating NG and currency saving due to avoided NG import corresponding to electricity generation by project.		
Purpose of data	To monitor the contribution to SDG 7 and to Principle 3 & 6.1.		
Additional comment	-		

SDG 13

Data/parameter	Emissions Reductions in tCO ₂ per year
Unit	tCO ₂ e
Description	Reduction of CO ₂ emissions due to implementation of project activity
Source of data	Electricity generated by Çataloluk HEPP and calculated combined margin (CM) emission factor will be used as reference in calculation of the emission reduction.
Value(s) applied	16,311 tCO ₂ e
Choice of data or Measurement	Data from metering devices will be recorded by AKEDAS monthly (through remote reading and submitted site records data by site employee). The emission reduction calculations

methods and procedures	are done by AKEDAŞ records. The records of AEDAŞ are used for cross-check of the EPIAŞ values.
Purpose of data	To calculate the baseline emission value; and also to monitor the contribution to SDG 13 (Take urgent action to combat climate change and its impacts)
Additional comment	-

SDG 8

Data/parameter	Quantitative employment and income generation										
Unit	Number of locally recruited staff and their social security records										
Description	Ensuring that the staff receives their full salaries on time.										
Source of data	Social Security Records to be provided by the Project Owner										
Value(s) applied	The project has created 7 job opportunities. <table border="1"> <thead> <tr> <th></th><th>Employment</th></tr> </thead> <tbody> <tr> <td>2022</td><td>7</td></tr> <tr> <td>2023</td><td>7</td></tr> <tr> <td>2024</td><td>7</td></tr> <tr> <td>Total</td><td>7</td></tr> </tbody> </table>		Employment	2022	7	2023	7	2024	7	Total	7
	Employment										
2022	7										
2023	7										
2024	7										
Total	7										
Choice of data or Measurement methods and procedures	The project owner is committed to ensuring that the staff receives their full salaries on time. Number of employees and the evidence for their wages being paid will be checked from the social security records, which will be provided by the Project Owner. Working hours of the employee will also be checked in order to see whether they are appropriate as										

	stated in GS4GG SG Principles (not exceeding 48 hours per week on a regular basis). National laws and regulations⁵⁰ are followed by the Project Owner. Overtime compensations, health insurance, annual leaves, contract termination rules are handled according to the laws and regulations mentioned. Both men and women are recruited by the Project Owner and no discrimination is done, as required by law⁵¹. Participation and inclusion of all employees will be ensured throughout the lifetime of the project activity. In case of employment, women will have the same opportunities and rights as men do, their employment will be done according to national laws and regulations on employment⁵² therefore social security records can be checked. No child will be recruited for the project activity by the Project Owner, which will be checked from employment records as well. Employees are able to join labour organisations as there are not any restrictions enforced by the Project Owner. The project owner is committed to ensuring that the staff receives their full salaries on time. Number of employees and the evidence for their wages being paid will be checked from the social security records, which will be provided by the Project Owner. Working hours of the employee will also be checked to see whether they are appropriate as stated in GS4GG SG Principles (not exceeding 48 hours per week on a regular basis)
Purpose of data	To monitor the contribution to SDG 8 and Safeguarding principle 1 & 2
Additional comment	-

Data/parameter	Principle 6.1 Labour Rights -Quality of Employment
Unit	-
Description	Occupational injury , fair wage and working hours
Source of data	Training attendance list and/or certificates
Value(s) applied	All staff to be trained for health and safety issues The name of the training: "Work Health and Safety Training" The dates of the training: 16-17/10/2024
Choice of data or Measurement methods and procedures	All employees will attend trainings on health & safety. Training attendance list and/or certificates will be present for monitoring. Complaints will be monitored in order to sustain an environment where human rights are never violated and to ensure inclusion and participation of all employees. Trainings related to emergency response procedures will also be provided to the employees.
Purpose of data	To monitor the contribution to Principle 3 & 6.1.
Additional comment	The project owner will address human rights violations through complaint procedures and involve all employees in activities. The project proponent will maintain accident/incident records and HSE records for on-site injuries. They will define emergency response procedures and provide regular training to workers. Training records will be monitored to ensure compliance.

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

N/A. The information about the last monitoring period is not available in the GS Assurance Platform.

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 7: Affordable and Clean Energy

There is no clean energy generation for baseline situation of the project site.

Quantity of net electricity generation supplied by the project plant to the grid in the related year has been calculated by subtracting the value of "Electricity consumption from the grid (MWh)" from "Electricity supplied to the grid (MWh)"

Calculation of Electricity Generation of Cataloluk HEPP:

Electricity Generation of Cataloluk HEPP = Electricity supplied to the grid (MWh) - Electricity consumption from the grid (MWh)

Electricity Generation of Cataloluk HEPP for this verification period = 35,350.93 MWh

SDG 8: Decent Work and Economic Growth

There is no employment opportunity as project created within the project area and nearby settlements for baseline situation.

SDG 13: Climate Action

There is no similar activity to combat with climate change on project site and nearby area for baseline situation.

The emission reduction is equal to the baseline emissions minus project emissions and leakage emissions. Leakage emissions in this project are considered to be negligible. There are no project emissions in this kind of project. The general equation is as follows:

$$ER_y = BE_y - PE_y - L_y \quad (1)$$

Where:

ER_y = Emission reduction

BE_y = Baseline emissions

PE_y = Project emissions

L_y = Leakage

y = Refers to a given period

The electricity meters are measuring two parameters: The electricity supplied to the grid (EG_{export}) and the electricity consumption from the grid (EG_{import}). To achieve the net amount of supplied electricity, the difference has to be calculated:

$$EG_y = EG_{\text{export}} - EG_{\text{import}} \quad (2)$$

Where:

EG_y = Net electricity supplied to the Grid in MWh

EG_{export} = Electricity supplied to the Grid in MWh

EG_{import} = Electricity consumption from the Grid in MWh

According to the applied methodology version the emission reduction is the baseline emissions calculated as the net electricity supplied to the grid multiplied by the grid emission factor.

$$BE_y = EG_y \times EF_{\text{grid,CM},y} \quad (3)$$

Where:

BE_y = Baseline emissions in tonnes CO_2e

$EF_{\text{grid,CM},y}$ = 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" [$\text{tCO}_2\text{e/MWh}$].

EG_y = Net electricity supplied to the Grid in MWh

y = Refers to a given period

$$BE_y = EG_y \times EF_{\text{grid,CM},y}$$

$$BE_y = 35,350.93 \text{ MWh} \times 0.4616 \text{ tCO}_2/\text{MWh}$$

$$BE_y = 16,311.00 \text{ tCO}_2$$

Therefore, emitted CO_2 is 16,311.00 tCO_2 for the whole monitoring period.

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

SDG 7: Affordable and Clean Energy

The project has been generated net 35,350.93 MWh clean electricity for the whole monitoring period while it is calculated as 26,136.20 MWh per annum.

SDG 8: Decent Work and Economic Growth

The project has created 7 employment opportunities, all of them are local.

SDG 13: Climate Action

The project has mitigated 16,311.00 tCO₂ in the whole monitoring period.

Baseline emission is calculated according to the formula below.

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

Where:

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

EF_{grid,CM,y} = Emission factor calculated according to selected methodology (Emission factor has been calculated ex-ante in PDD which is also used in calculating the baseline emissions. EF value used is 0.6482 tCO₂/MWh. Sample calculation is given below)

$$EF_{grid,CM,y} = (EF_{grid,OM,y} * 0.75) + (EF_{grid,BM,y} * 0.25)$$

If the power density (PD) of the project activities is greater than 10 W/m²; Project Emissions PE_{HP,y} = 0.

Power density 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 single or multiple reservoirs 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 single or multiple reservoirs 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.

Although about half of the reservoir area is already riverbed, A_{BL} has been assumed as zero. A_{PJ} had been estimated as 233,567.9339 m^2 in the as per the reservoir map.

For project HEPP,

$$Cap_{PJ} = 9,540,000 \text{ W}$$

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

$$A_{PJ} = 233,567.93(m^2)$$

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

Therefore, PD is calculated as;

$$PD = \frac{9,540,000 \text{ W} - 0}{233,567.93 \text{ m}^2 - 0}$$

$$PD = 41 \text{ W/m}^2$$

Since 41 W/m^2 is greater than 10 W/m^2 , project emissions are considered 0.

Thus;

$$PE_y = 0$$

As it can be seen in detail in excel spread sheet used for calculations, realized baseline emissions are calculated as follows:

$$EG_y = 35,350.93 \text{ MWh}$$

$$EF_{grid,CM,y} = 0.4616 \text{ tCO}_2/\text{MWh}$$

$$BE_y = (35,350.93 \text{ MWh}) \times (0.4616 \text{ tCO}_2/\text{MWh}) = 16,311.00 \text{ tCO}_2e$$

Vintage wise breakdown of electricity generation is:

Net Generation in 2022 (MWh)	968,20
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Net Generation in 2023 (MWh)	23,308.27
Net Generation in 2024 (MWh)	11,074.47
Total Net Generation during Monitoring Period (MWh)	35,350.93

Vintage wise breakdown of emission reduction is:

Net Emission Reduction in 2022 (tCO ₂)	446.00
Net Emission Reduction in 2023 (tCO ₂)	10,754.00
Net Emission Reduction in 2024 (tCO ₂)	5,111.00
Total Emission Reduction during Monitoring Period (tCO₂)	16,311.00

E.3. Calculation of leakage

The energy generating equipment is not transferred from or to another activity. Therefore, leakage is also considered as "0".

$$LE_y = 0$$

As a result, Total Emission Reduction is:

$$ER_y = BE_y$$

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	CO ₂ emission reduction	16,311.00 tCO ₂	0 tCO ₂	16,311.00 tCO ₂
7	Production of clean energy	0 MWh	35,350.93 MWh	35,350.93 MWh
8	Creating employment opportunities	No employment	7 employments	7 employments

7	Balance of Payments	Approximately 6,686,893 million m ³ of natural gas is expected to be avoided corresponding to 18,712,283 million TL annually	of Approximately 7,394,114 m ³ of natural gas is expected to be avoided corresponding to 20,691,336 TL annually	Approximately 7,394,114 m ³ of natural gas is expected to be avoided corresponding to 20,691,336 TL annually
7	Renewable energy shares in the total final energy consumption: Air Quality	SO ₂ emission reduction is calculated as 257.37 tons per year. emission reduction is calculated as 93.76 tons per year	SO ₂ emission reduction is calculated as 284.59 tons per year. NO _x emission reduction is calculated as 103.67 tons per year	SO ₂ emission reduction is calculated as 284.59 tons per year. NO _x emission reduction is calculated as 103.67 tons per year

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 ⁹ achieved during this monitoring period
13	19,945.00 tCO ₂	16,311.00 tCO ₂
7	43,208.41 MWh clean energy	35,350.93 MWh clean energy
8	7 employments	7 employments
7	Balance of Payments	Approximately 7,389,432 m ³ of natural gas is expected to be avoided corresponding to 20,678,232 TL annually

⁹ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

7	Renewable energy shares in the total final energy consumption: Air Quality	SO ₂ emission reduction is calculated as 284.41 tons per year. NO _x emission reduction is calculated as 103.61 tons per year
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E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

Average yearly emission reductions have been calculated by proportioning expected annual generation to the days included by this monitoring period. Average yearly emission reduction has been multiplied by monitoring period (494 days in this MP) to calculate estimated emission reduction.

(Expected annual generation x emission factor) x (days included / 365)

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

Estimated and realized renewable electricity generation of the project has a slight difference due to hydro potential fluctuations as it could be in nature. The project has been expected to generate electricity of 31,990.00 MWh/year and 43,208.41 MWh for the whole monitoring period (details of calculation is present in verification calculation excel sheet). For actual values, the project generated 26,136.20 MWh of clean energy per annum and 35,350.93 MWh for the whole monitoring period.

The project has been expected to reduce CO₂ emissions of 14,766 tCO₂/year and 19,945 tCO₂ for the whole monitoring period (details of calculation is present in verification calculation excel sheet). For actual values, the project reduced 12,059 tCO₂ per annum and 16,311 tCO₂ for the whole monitoring period.

SDG 7:

% difference in Electricity Generation: $[(35,350.93 - 43,208.41) / 43,208.41] \times 100 = -18.2\%$ which means the project generated 18.2% less electricity than expected.

SDG 13:

% difference in Emission Reduction: $[(16,311 - 19,945) / 19,945] \times 100 = -18.2\%$ which means the project generated 18.2% less electricity than expected.

SDG 8:

Estimated employment → 7 people
 Actual employment → 7 people

For the difference observed between the estimated and achieved values of the electricity generation and emission reduction values; the estimated electricity generation on the generation license is not the “maximum” value, it is the “estimated” value. Hence, the lower and higher values are acceptable, and reasonable. Estimated and realized renewable electricity generation of the project has a slight difference due to potential fluctuations as it could be in nature. Also, the annual generation estimations are based on a whole year and the monitoring report involves partial years, so the differences are acceptable. This does not impact the baseline scenario or additionality of the project.

SECTION F. SAFEGUARDS REPORTING

Principles	Mitigation Measures added to the Monitoring Plan
Principle 9.4: Release of Pollutants Water Quality and Quantity	Wastewater will be collected in a septic tank and then transported to a treatment plant where it will be treated to meet standards in accordance with guidelines and national regulations. Waste collection methods during site visits will be assessed and waste disposal records and truck invoices will be maintained for each MP.

Verification of these parameters will be carried out once in every monitoring period. There are no records for this monitoring period.

Principle 8.1: Impact on Natural Patterns/Flows	Water	Release of minimum flow to protect aquatic life. There are no records for this monitoring period.
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Principle 9.10 Conservation Value Areas and Critical Habitats (Minimum flow of water)	High	The considered minimal water flow should be assessed for all aspects materially related to the minimal water flow, e.g. natural habitat (riverine and floodplain ecosystems), vertical disconnectivity (underground water recharging). The verification VVB shall audit the installed stations and assess the correctness of the flow rate measurements as part of the verification report. There are no records for this monitoring period.
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Principle 9.5: Hazardous and Non-Hazardous Waste Other Pollutants (waste oil)	Hazardous	Waste oil will be managed properly. Disposal methods will be assessed during site visits and waste oil disposal records will be checked. Waste oil from equipment will be collected properly in line with the relevant regulation and disposed via accredited abatement companies. Waste oil will be disposed in line with regulation # 26952 on control of waste oils. Verification of these parameters will be carried out once in every monitoring period. The waste declaration form for the year 2023 has been provided to VVB.
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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.

A remote site visit has been conducted with the local stakeholders on 15/04/2025. Stakeholders are welcomed to directly contact the plant staff in case they have an input. They can also directly call company representatives. There were no negative comments about the project activity from the stakeholders.

There are complaint and demand books for Çataloluk HEPP in the offices of the mukhtars of Çağlayan and Şahinkayası villages, which is regularly checked. During this monitoring period, no grievances or inputs were received.

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

No such demand was made in this monitoring period.

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

No legal contest had arisen with the project in this 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