TATAR HYDROELECTRICITY POWER PLANT

Document Prepared by Darenhes Elektrik Üretim A.Ş.

Project title	*Tatar Hydroelectricity Power Plant*
Project ID	*1205*
Crediting period	*14-November-2023 to 13-November-2033*
Original date of issue	*12-January-2024*
Most recent date of issue	*28-March-2025*
Version	*v05*
***VCS Standard* Version**	*4.7*
Prepared by	*Darenhes Elektrik Üretim A.Ş.*

CONTENTS

1 PROJECT DETAILS

1.1 Summary Description of the Project

Darenhes Elektrik Üretim A.Ş. has already commissioned the Tatar Hydro Electric Power Plant (HEPP) project on the Peri Stream, within the jurisdiction of Tunceli and Elazığ Provinces. The purpose of the project is electricity production using the potential energy of Peri Stream as a renewable resource. Therefore, the electricity is going to be produced without causing airborne pollutants or Green House Gas (GHG) emissions. The operation of the Tatar Hydro Electric Power Plant (HEPP) will be delaying the addition of conventional thermal power plants to the Turkish National Electricity Grid.

The set capacity of Tatar HEPP is 128.22 MWe, with 2 turbines of 64.11 MWe each. Based on the available water and of the total capacity of the project, the project is indicated to produce 421,270 MWh of electricity per year, based on revised feasibility studies, and as indicated on the Energy Market Regulatory Authority (EMRA) issued official electricity production license of the project activity.

On the EMRA issued electricity production license, the project activity is indicated to have a set capacity of 128.22 MWe, and both on the third party feasibility report[1], and on the DSI approval letter of the Feasibility report the amount of electricity expected to be produced annually is indicated to be maximum 421,270MWh, therefore the plant load factor of the project calculates to be, 37.50 %, as shown in the below calculation:

$$\frac{421{,}270\text{MWh}}{128.22\ \text{Mwe x } 365 \text{ x } 24\ \text{h}} = \frac{421{,}270}{1{,}123{,}207.2} = 37.50\ \%$$

Based on Turkey's Combined Margin Emission Factor of 0.4568 tCO_2e/MWh, the project is expected to produce 192,425 tonnes of CO_2e GHG reductions each year.

The environmental impacts of the project will be kept at a minimum level and all the regulations that are in act in the host country, Turkey, will be obeyed during the operation stages of the Tatar HEPP project. At the planning stage these impacts have been investigated and were presented to the Ministry of Environment and Forestry (MoEF now renamed and structured as Ministry of Environment and Urban Planning -MoEUP), in the form of a EIA report2. The report was examined by an EIA evaluation committee coordinated by MoEUP and it was decided that the project could proceed, so they have granted an EIA Affirmative certificate (See Annex-3). Considering that the project will be using the water resource that is also essential for the aquatic life in the area, there

[1] Hydrocon Engineering prepared a new feasibility report, dated August 2011, and this report has DSI (State Water Works, host country's authority responsible from the surface and ground waters) , on 10.11.2011.

[2] The Environmental Impact Assessment (EIA) Report) in the original language is presented to the validating DOE.

is a fish ladder (fish passage way)[3] within the regulator for the downstream and upstream movement of the fish, to facilitate fish migration. In addition to this, the minimum water (considered as 10 % of the average flow according to the water usage agreement with DSI-State Water Works) necessary for the sustainability of the aquatic life in the river will always be released.

The Major milestones at the project development history can be summarized as shown in the following table (Table 1):

Table 1 Major Milestones of Tatar HEPP Project

Date	Milestone
February-2004	First Feasibility Study Report Was prepared
06-Feb-2005	Electricity Production License issued by Energy Market Regulatory Authority (EMRA) (Updated on 17-Nov-2011)
10-Feb-2006	Stakeholders Meeting Announced in Local news papers
15-Feb-2006	Stake Holder Consultation Meeting Held at Karakoçan Town of Elazığ
16-Feb-2006	Stake Holder Consultation Meeting Held at Elmalı Village of Mazgirt -Tunceli
October-2006	EIA Final Report submitted to the MoEF for Approval
15-Nov-2006	EIA Affirmative Certificate issued
10-Jan-2008	Expropriation Approval issued by EMRA
01-Apr-2010	Carbon Finance considered
11-Nov-2011	Construction (re)-Started
27-Jun-2011	Ekobil Contracted for Carbon Finance
Sept-2011	Revised Feasibility Study Report Submitted to DSI
10-Nov-2011	The Revised Feasibility Study Report Approved by DSI
18-Nov-2011	Water Usage Agreement amended by DSI to fit the capacity improvement
14-Dec-2011	Validating DOE Contracted
16-Feb-2012	PDD submitted to DOE
24-Feb-2012	Site Visit for Validation
23-Sept-2021	1st Monitoring Report

3

Date	Milestone
14-Sept-2022	2nd Monitoring Report

The Tatar HEPP has already been commissioned and is located downstream of two state-owned dams, namely Özlüce Dam (170 MW) and Kiğı Dam (140 MW), as well as two privately owned dams, Seyrantepe (57 MW) and Pembelik (127 MW). These dams are primarily aimed at energy production purposes. The Tatar HEPP Pembelik and Kiğı HEPP were under construction and were expected to finish before Tatar HEPP. Currently, Seyrantepe is operational. Electricity production licenses for Pembelik and Seyrantepe also belong to Darenhes A.Ş.

This project contributes to the energy sector by utilizing existing resources without causing additional environmental impact. As the project activity has already been commissioned, all necessary documents have been shared with the VVB for review and verification to ensure clarity and accuracy.

The water that is regulated by the upstream Pembelik HEPP reaches the reservoir lake of the Tatar HEPP, then it reaches the water intake body of the Tatar HEPP and is passed to the regulators via the penstock. The electricity is produced and, through the generators, it goes to the switchgear area and transformers and is connected to the Turkish electricity grid via two transmission substations, namely 154kV Seyrantepe TM and 154kV Ferrokrom TM. The excess water from the reservoir and the water used to produce electricity are transferred to the tailwater canal and are left to the Peri Stream to reach the Keban Dam.

These five dams, which were constructed behind each other, were intended to reduce the sediment flow to the Keban Dam (the first large dam in Turkey's history) and were planned in the 1970s, but it was not possible to construct them until now.

How the project activity operates, and the boundary of the project activity (indicated in a broken red line) is shown schematically below in Figure 1:

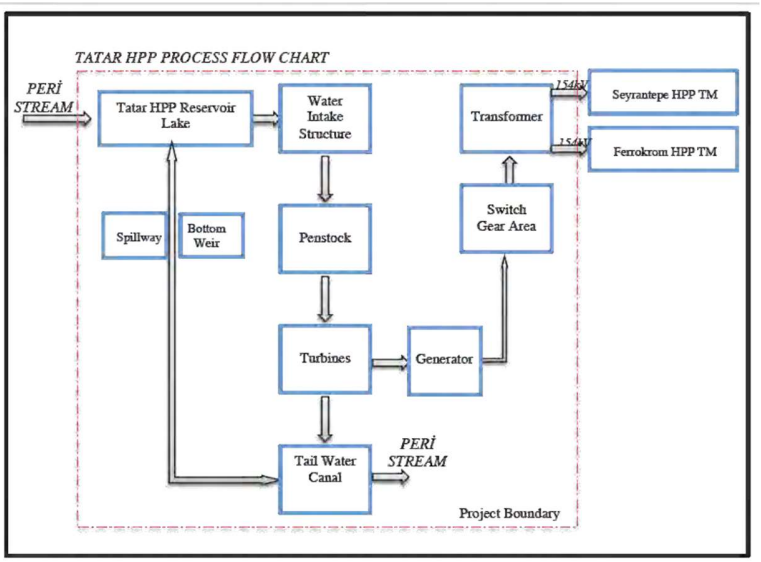

Figure 1 Flow chart showing the basic operational principles of the project activity, and the project boundary.

1.2 Audit History

Tatar HEPP is in undergoing crediting period renewal. The audit history of the project is given below table.

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	(14-November-2013 -- 13-November-2023)	VCS	RINA	Ten year
Verification	(14-November-2013 – 31-July-2021)	VCS	4K Earth Science Private Limited	Seven years
Verification	(01-August-2021 – 31-July-2022)	VCS	EPIC Sustainability Services Pvt. Ltd. Contact	One year
Re Validation	(14-November-2023 -- 13-November-2033)	VCS	Earthood	Ten years

1.3 Sectoral Scope and Project Type

Sectoral scope[4]	Scope 1: Energy Industries (renewable-/non - renewable sources)
Project activity type	Grid connected electricity generation from renewable sources

1.4 Project Eligibility

1.4.1 General eligibility

The Project is eligible to be a VCS Project because:

- VCS Standard v.4.7 has taken effect on 16.04.2024, accordingly the Project is eligible to use this version.
- VCS Standard v.4.7 requires project crediting period start date earliest to be 01.01.2002, besides, the Project must also complete the validation within two years of the Project Start Date. Both conditions are satisfied for the Project activity.
- VCS Standard v.4.7 accepts all six Kyoto gases. The Project Activity aims to reduce CO_2, which is one of these six Kyoto gases.
- VCS Standard v.4.7 accepts all technologies supported by an approved VCS program. The Project is a hydropower plant, the technology of which is included in the UNFCCC- CDM sectoral scope 1.
- VCS Standard v.4.7 requires the use of one of the VCS program approved project methodologies. The Project activity uses the tools and methodologies of approved by UNFCCC CDM executive board, which is a VCS approved program.
- The project does not benefit from any kind of Official Development Assistance.
- In addition to the above, the project is not a grouped project activity, nor de-bundled part of a grouped project activity

1.4.2 AFOLU project eligibility

N/A

1.4.3 Transfer project eligibility

The Tatar HEPP project meets the eligibility conditions outlined in Appendix 2 and Section 3.23 (Double Counting and Participation under Other GHG Programs) of the VCS Standard. The project is neither included in nor benefits from any emissions trading program or other mechanisms that

[4] *Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes*

involve GHG allowance trading. Furthermore, it does not utilize Official Development Assistance (ODA), nor is it part of any grouped project activity or de-bundled project activity.

To address double counting risks, the project boundaries and monitoring methodologies are clearly defined in compliance with VCS requirements. The Tatar HEPP project has undergone validation to ensure that no overlap occurs with other GHG programs or projects. The project activity solely contributes to the generation of renewable energy through hydropower, thus ensuring additionality and avoiding emissions from fossil fuel-based grid electricity..

1.5 Project Design

☒ Single location or installation

☐ Multiple locations or project activity instances (but not a grouped project)

☐ Grouped project

1.5.1 Grouped project design

This project is not a grouped project activity.

1.6 Project Proponent

Organization name	Darenhes Elektrik Üretim A.Ş.
Contact person	Altuğ Bilgin
Title	Project Owner
Address	Kuleli Sk. No:87/3 06700 G.O.P./ANKARA
Telephone	+90 216 460 00 55 ext: 85 08/
Email	altug@bilgin.com.tr

1.7 Other Entities Involved in the Project

Other entities do not involve for the Project.

1.8 Ownership

Ownership of the plant, equipment and electricity generation licence belongs to Darenhes Elektrik Üretimi A. Ş. and all emission reductions/removals are granted to the company. The production license and the operating certification of the company given by the Chamber of Commerce are provided to the validating DOE as proof of the Title.

1.9 Project Start Date

Project start date	14-November-2013
Justification	First unit was commissioned in 14/11/2013

1.10 Project Crediting Period

Crediting period	☐ *Seven years, twice renewable* ☐ *Ten years, fixed* ☒ *Other (In accordance with the VCS Standard (Version 3.3) and specifically "Section: Project Crediting Period" for non-AFOLU projects focusing on fossil-derived CO_2 emissions, the project crediting period is set to 10 years and may be renewed twice. This aligns with the maximum allowable crediting period defined under the VCS Program requirements.)*
Start and end date of first or fixed crediting period	14-November-2023 to 13-November-2033

1.11 Project Scale and Estimated GHG Emission Reductions or Removals

☒ < 300,000 tCO_2e/year (project)

☐ ≥ 300,000 tCO_2e/year (large project)

Calendar year of crediting period	Estimated GHG emission reductions or removals (tCO_2e)
14-November-2023 to 31-December-2023	25,305
2024	192,425
2025	192,425
2026	192,425
2027	192,425
2028	192,425
2029	192,425
2030	192,425

2031	192,425
2032	192,425
01-January-2033 to 13-November-2033	167,120
Total estimated ERRs during the first or fixed crediting period	1,924,250
Total number of years	10 years
Average annual ERRs	192,425

1.12 Description of the Project Activity

Tatar HEPP is located on Peri Stream, which is a branch of the Euphrates River. The catchment area of the Upper Euphrates River covers an area of about 127,000 km².

Tatar HEPP with 128.22 MWe installed capacity, is the 5th stage dam at the downstream part of the Peri Stream. A set of Five dams (Kiğı, Özlüce, Seyrantepe and Pembelik HEPPs at the upstream direction of Tatar HEPP) were designed, including the Tatar HEPP, to reduce the sediment inflow towards the Keban Dam that was the Largest Dam of the Country when it was built.

The Tatar HEPP is designed to have a maximum water level drop to maximize the firm energy production. Therefore, the difference between the maximum (915 m) and the minimum (909.5 m) operation levels of the Peri stream is not very much, but only 5.5 m. The Tatar HEPP is designed with the following operational principles in mind:

a) Maximization of the firm energy output
b) Maximization of the net fall
c) Minimization of the water discharged via spill weir.

The Tatar HEPP is designed as an impoundment hydroelectric power plant, with 128.22 MWe capacity and is expected to produce 421,270 MWh of electricity per year. The Tatar HEPP has a clay core zoned Dam, with a fish ladder, the thalweg elevation is 846 m and the elevation from the base is 854m. The elevation of the dam body from Talweg level is 74m and from the base is 82m.

The Tatar HEPP connects to the Turkish National Power Grid via two transformer substations by a 27 km long 154 kV transmission line, at the Seyrantepe HEPP and at the Ferrokrom TM. As the project is operational, a reliable, continuous, independent from imported fossil fuels, and uninterrupted high-quality power at a 154 kV voltage level is supplied to consumers in Turkey. Thus, the implementation of the project positively affects both Turkey's and the region's economy.

The project involves the collecting of water at the 815 m level with the help of a dam and a water intake body. After that, the water is transferred to the water intake body, from which it flows to the turbine units via the penstocks. The project has two turbine units, with a capacity of 64.11 MWe each. The two turbines are housed within the Hydroelectric Power Plant (HEPP) building. The water that hits these two turbines then leaves the turbines via the tail water canal and a spillway, which is located at a level of 845 m.

The following facilities have already been constructed as part of the project:

- The Tatar Dam, (equipped with a fish ladder) was constructed at approximately 920 m elevation level
- Water intake body and the settling tank
- Penstock
- Hydroelectricity Power Plant building
- Tail water canal and spillway
- The switch gear area and the transformers
- 25 km 154 kV transmission line

General technical characteristics of Tatar HEPP are given in Table 2.

Table 2 General technical characteristics of Tatar HEPP

General Characteristics	
	Peri Stream
Drainage Area	5,379 km^2
Average Annual Natural Flow	2704.22 hm^3
Flood water level	916.61 m
Characteristics of the Dam	
Place	Over the Peri stream, approximately 20 km NW of Kovancılar Town, about 2500 m upstream with respect to the Nişankaya Road's Bridge, below Tatar Village at 846m thalweg elevation.
Purpose	According to water flow direction, collecting water and diverting the Peri Stream's water to water intake structure.
Type	Clay Fill Zoned
Thalweg elevation:	846 m
Minimum operational water level :	909.5 m

Maximum operational water level:	915 m
Flooding Elevation	916.61 m
Dam Crest Level :	920 m
Height from the Thalweg :	74 m
Height from the basement :	82 m
Dead Reservoir Volume :	241.27 hm^3
Active Reservoir Volume :	58.30 hm^3
Total Reservoir Volume :	299.57 hm^3
Flood Volume :	17.44 hm^3
Spillway	
Capacity	30 m^3/s
Approaching tunnel length :	300 m
Bottom Weir	
Entrance Hydrography Peak :	5741 m^3/s
Exit Hydrography peak :	4893 m^3/s
Level of Approaching canal :	893 m
Threshold level:	898 m
Number of Gates :	3
Dimensions of the Radial Gate:	14 m x 17.25 m
Chute channel width :	52 m
Chute channel length :	405 m
Length of the energy breaking pond :	150 m
Penstock	
Penstock Length :	380 m
Pipe diameter :	7 m
Maximum Flow Rate :	189.7 m^3/s
Maximum Flow velocity:	4.93 m/s
Power House	

Tail water canal elevation :	845 m
Maximum net fall :	69 m (at maximum reservoir operation elevation)
Minimum net fall :	63.5 m (at minimum reservoir operation elevation)
Average net fall :	65.86 m
Maximum project flow rate :	173.75 m^3/s
Number of Turbines :	2
Turbine Power :	64.11 MW
Firm Energy :	32.95 MW
Capacity :	128,22 MW
Firm energy to be produced:	288.644 GWh
Secondary energy to be produced:	75.588 GWh
Total energy to be produced :	364.252 GWh
Load factor :	0.415
Amount of water that passes via the turbines:	2334.61 hm^3
Regulating ratio:	0.863
Dimensions of the Powerhouse :	60 m x 100 m
Elevation of Switchgear area :	860 m
Switch Gear Area Dimensions :	80 m x 120 m
Turbines	
Type :	Vertical axis, Francis
Number :	2
Power :	2 x 65 585kW
Design fall :	65.86 m (net)
Flow rate :	173.75 m^3/s total (86.88 m^3/s per unit)
Maximum Net Fall:	69 m
Minimum. Net Fall:	63.5 m
Revolutions per minute:	167.67 rev/min

Specific rotation number :	188.34	
Number of poles :	18 even (36 od)	
Turbine efficiency :	0.92	
Generators		
Type :	3 phased synchronous	
Number :	2	
Power :	2 x 68 535 kVA	
Frequency :	50 Hz	
Revolution number :	167.67	
Generator efficiency :	0.96	
Transformers		
	Unit Transformers	Internal use
Numbers:	2	2
Type :	External type, 3 phased	Internal type , 3 phased
Continuous power :	2 x 76150 kVA	1000 kVA
Frequency :	50 Hz	50 Hz
Connection group :	YNd11	Dyn11

Installed turbines are vertical Francis reaction turbines with spiral casings and adjustable guide vanes ensuring uniform water distribution and high efficiency.

Their design optimizes energy conversion and maintains stable performance under varying load conditions.

The project owner is granted a production license for 49 years[5] including the 6.5 years (indicated as 78 months in the license) of construction period and the 2 years of pre-construction period. The economic life time of a hydro power plant investment is assumed to be about 50 years, based on the experts' committee report on energy under the 8th development plan published by the State planning organization. Even if the facility can last for 50 years the major equipment needs to be replaced in every 20 years. As a result, the project life time is estimated to be about 20 years.

[5] According to the production license dated 02/06/2005.

The project is expected to produce 421,270MWh of electricity per year. The annual electricity delivered to the grid by the project, would have otherwise been generated by the operation of grid- connected power plants and by the addition of new generation sources. Based on this a combined margin emission reduction factor is calculated as detailed below in Chapter 3 of this document.

1.13 Project Location

The project is located at the East Anatolian geographical region of Turkey within the jurisdictions of Elazığ and Tunceli Provinces. The project is located at the Northern Euphrates Catchment over the Peri Stream, between 38°91' Northern Latitudes and 39°87' Eastern Longitudes, as can be seen in the following location Map (Figure 2). The coordinates of the Dam Body and the Powerhouse are given below (see Table 3):

Table 3 Coordinates of the dam body and the powerhouse

	Dam Body		Power House	
	Latitude	Longitude	Latitude	Longitude
Point 1	38°51'57.78"N	39°49'14.58"E	38°52'0.28"N	39°49'1.37"E
Point 2	38°51'55.77"N	39°49'4.80"E	38°51'58.11"N	39°48'58.24"E

Figure 2 Satellite image showing the location of the project area (http://goo.gl/maps/tE6Yi).

1.14 Conditions Prior to Project Initiation

There was no other hydroelectric power plant installation at the project location. The project activity does not generate greenhouse gas emissions, so it can be excluded that the implementation has been made only in order to generate GHG emissions with their subsequent reduction.

1.15 Compliance with Laws, Statutes and Other Regulatory Frameworks

Addition of a new power generation capacity to the grid is regulated by Energy Market Regulatory Authority (EMRA) who issues the licenses for electricity generation and is responsible for ensuring that new capacity additions are in compliance with its rules and regulations. The list of the rules and regulations of the host country that a new electricity generation project has to comply with is given below.

- Electricity Market Law (6446, 30-03-2013)[6]
- Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy (5346, 18-05-2005)[7]
- Environment Law (2872, 11-08-1983)[8]
- Occupational Health and Safety Law (6331, 30-06-2012)[9]

1.16 Double Counting and Participation under Other GHG Programs

1.16.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.16.2 Registration in Other GHG Programs

Has the project registered under any other GHG programs?

☐ Yes ☒ No

Is the project active under the other program?

[6] See: https://www.resmigazete.gov.tr/eskiler/2013/03/20130330.pdf

[7] See: https://www.resmigazete.gov.tr/eskiler/2005/05/20050518-1.htm

[8] See http://www.mevzuat.gov.tr/MevzuatMetin/1.5.2872.pdf

[9] See: http://www.mevzuat.gov.tr/MevzuatMetin/1.5.6331.pdf

☐ Yes ☒ No

1.16.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

1.17 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.17.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.17.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.17.3 Supply Chain (Scope 3) Emissions

Do the project activities specified in Section 1.12 affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

1.18 Sustainable Development Contributions

The project aims to generate electricity by using hydroelectric power to supply the increasing national electricity demand in a cleaner and sustainable manner. It reduces the air pollution caused by the grid connected power plants which are mostly fossil fuel fired.

- **SDG 7**

Firstly, the Project helps accelerate the growth of the wind power industry and stimulates the designation and production of renewable energy technologies in Turkey. Then, other entrepreneurs, irrespective of the sector, are encouraged to invest in wind power generations. It also reduces Turkey's increasing energy deficit and diversifies the electricity generation mix while reducing import dependency, especially natural gas. Importantly, rural development is maintained in the areas around the project site by providing infrastructural investments to these remote villages. The Project is expected to generate 421,270MWh/annually. The Project contributes to the following indicator 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".

- SDG 8

The employment of local people with the necessary technical qualifications for the required post is the priority and enhanced by all project activities during the wind farm operation. As a result, increased job opportunities and project business activities partially eliminated local poverty and unemployment. Construction materials for the foundations, cables and other auxiliary equipment were/are preferentially sourced locally. Moreover, as a contribution of the Project to the region's welfare, the quality of the electricity consumed in the region is increased by local electricity production, which also contributes to decreasing distribution losses.

The Project led to employment opportunities that would not have been possible in the baseline scenario. The Project provides local employment during the operation phase. The Project contributes to SDG Indicator 8.5.2 (tracking aspects such as the unemployment rate by sex, age, and persons with disabilities) in support of Target 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. Furthermore, all workers are trained on health and safety issues during each monitoring period. Health and safety Training records or certificates will be provided during each monitoring period.

- SDG 13

The annual emission reduction estimated by the Project is 192,425 tonnes of tCO_2/year. While this amount of emissions is mitigated, technology transfer is also realized as benefitting from wind energy.

The Project contributes to improving the environmental situation in the region and the country as avoiding fossil fuel-based electricity will enhance the air quality and help to reduce the adverse effects on the climate. Through renewable technologies and wind-based electricity, sustainable and climate-friendly development is promoted.

This Project is expected to remove CO_2: 192,425 tCO_2/year.

The Project contributes to the following target 13.0 and following indicator “Tonnes of greenhouse gas emissions avoided or removed”.

1.19 Additional Information Relevant to the Project

1.19.1 Leakage Management

N/A. There is no leakage risk within the project activity according to methodology ACM0002, version 22.0.

1.19.2 Commercially Sensitive Information

N/A. There is not any commercially sensitive information regarding the project, all information has been included in the public version of the project description.

1.19.3 Further Information

No further information to be added.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	The stakeholders were identified through public consultations, local government engagement, and surveys conducted within the project region. Key stakeholders include local residents, municipal authorities, and environmental NGOs.
Legal or customary tenure/access rights	The project location and associated resources do not infringe on any legal or customary land rights. Access to water resources has been coordinated with the State Water Works (DSI) under a formal agreement.
Stakeholder diversity and changes over time	Stakeholder groups consist of diverse populations, including local farmers, fishermen, and small business owners. Changes over time include increased engagement from younger demographics and the integration of women in consultation processes.
Expected changes in well-being	The project is expected to improve the livelihoods of local stakeholders by providing employment opportunities and enhancing

	energy access in rural areas. Measures are in place to minimize potential disruptions during construction phases.
Location of stakeholders	Stakeholders are primarily located in the villages of Tunceli and Elazığ provinces, near the Peri Stream. These areas include Tatarköy, Obuzbaşı, and Alayağmur villages, which are directly impacted by the project's activities.
Location of resources	At the Euphrates catchment area in general villages are preferred to be established at the close proximity of the rivers. As a result, whenever there is a hydroelectric power project developed there are some settlements that are effected. These can be listed as follows: • Tatarköy village: 13 houses and 1 school • Obuzbaşı vilage 3 8 houses • Alayağmur village 37 houses • Uçankuş distrcit 9 houses • *Kilizkumu district (Zil region); 8 houses*

2.1.2 Stakeholder Consultation and Ongoing Communication

Date of stakeholder consultation	The first meeting was held on 15 February 2006 at 10:00 o'clock in the town hall of the Karakoçan Municipality, Elazığ, and the second meeting was held the next day on 16th February 2006, at 14:00 o'clock, next to the Elmalık village Gendarme station, in Munzur Kebap Restaurant (the Place of Hüseyin Usta) in Elmalık village Mazgirt/TUNCELİ.
Stakeholder engagement process	The project owner has organized two stakeholders meetings within the framework of the EIA process. The first meeting was held on 15 February, 2006 at 10:00 o'clock in the town hall of the Karakoçan Municipality, Elazığ, and the second meeting was held the next day on 16th February 2006, at 14:00 o'clock, next to the Elmalık village Gendarme station, in Munzur Kebap Restaurant (the Place of Hüseyin Usta) in Elmalık village Mazgirt/TUNCELİ. Both meetings were declared in National and Local news papers, were announced on the local boards of the Municipalities and District governors house, at the Muhtar's (village head's)

	announcement boards and were announced from the general announcement loud speakers of relevant settlements. On the meeting days the project owner have organized transportation to bring local stakeholders from their villages. In the meetings the issues related to the project and its environmental aspects have been explained and questions that have raised by the local stakeholders have been answered by the qualified staff of Selin İnşaat Ltd. Şti. that have conducted the EIA process.
Consultation outcome	Here is a summary of those questions and answers: Question From Public: The transit shed place for the deposition of the excavated earth and rock determined by the project owner was a place where they were grazing their animals. If that particular site would have been used for temporary dumping they would be forced to move their animals to would be forced to move their animals to a distant meadow and this was not convenient for the Nişankaya village people. Therefore, they asked the project owner to re-consider their plan and find a place that would not affect their case. Answer by SELİN: The site determined for this purpose would be re-considered at the final design stage and the view of the Nişankaya village people are considered seriously. Question From Public: Public asked information about the expropriation process. They asked about when their land is expropriated and when which parts of the land and settlements would be staying under water. Answer by SELİN: It is explained that the construction would start around December 2006, and the expropriation process cannot start before the EIA Affirmative certificate is granted to the Project Owner. It is also explained that the expropriation process would be realized according to the regulations by EMRA, but the project owner would pay the amount determined. As the land owners explained their worries about the moneys they would get for their properties, they have been explained that a committee of experts would do the entire process, and would determine the fair land or property values.
Ongoing communication	Regular communication with stakeholders is maintained through community meetings, newsletters, and a dedicated helpline. Updates regarding the project progress and potential impacts are shared bi-annually, ensuring transparency and addressing concerns promptly.

Stakeholder input	During the consultation process, stakeholders provided valuable input regarding land use and potential environmental impacts. As a result, the project design was revised to include a fish ladder to ensure the sustainability of aquatic life and alternative locations were identified for material storage to minimize disruption to grazing areas.

2.1.3 Free Prior and Informed Consent

Obtaining consent	Consent for the project activities was obtained through stakeholder meetings held in Tunceli and Elazığ provinces. Local communities, including affected villages such as Tatarköy and Obuzbaşı, were consulted. Transparent agreements were reached, addressing their concerns about land use and environmental impacts. No unresolved conflicts were identified during the process."
Outcome of FPIC	The outcome of the FPIC process ensured that all stakeholders, including local communities and customary rights holders, were informed about the project details. Agreements were made to ensure fair compensation for land use, and measures were incorporated to prevent physical or economic displacement. The project has adhered to all FPIC requirements, ensuring that no land was encroached upon without consent.

2.1.4 Grievance Redress Procedure

Development process	Complaints are conveyed to the local headman. If necessary, the headman will inform the plant by visiting or calling. Eşref Sönmez, the local headman of Nişankaya Village—the nearest settlement to the power plant—is responsible for collecting all complaints from village residents and forwarding them to the appropriate authorities. A grievance mechanism was established with the support of the Mukhtar for stakeholders to forward their requests or concerns regarding the project activities. In Turkey, mukhtars are the most relevant persons in the villages for establishing a grievance mechanism. Their offices are some of the few places the locals visit very often for different purposes, such as requesting some official letters. Whenever a problem arises in the village as the first thing, locals go to the mukhtars office to express their concerns, situations to find solutions and reflect on their issues with the Mukhtar. It has been decided that the Mukhtar will also take an active role in

	monitoring the requests of the participants so that a grievance mechanism situating the Mukhtar at the centre was established for this project activity. Mukhtar was provided all the contact information of the responsible persons from the project activity. Whenever a complaint arises from the local people or Mukhtar himself arises a concern regarding the project activity, he can directly contact the relevant responsible persons.
Grievance redress procedure	The grievance redress procedures were developed through multiple stakeholder meetings, taking into account the perspectives of each group involved. This procedure includes: • Submission of Complaints: Complaints may be submitted verbally or in writing to the local headman or directly to project representatives. • Logging and Acknowledgment: All grievances are recorded in a log, and the complainant receives confirmation of receipt. • Resolution and Communication: A proposed solution or corrective action is shared with the complainant, and, if accepted, is documented. • Follow-up and Escalation: The project team follows up to ensure the resolution remains effective. If unresolved, the complaint may be escalated to higher authorities or a third party.

2.1.5 Public Comments

Public comments have been explained in section 2.1.2.

Comments received	Actions taken
Local residents expressed concerns regarding the temporary use of grazing land for construction material storage. Additionally, questions were raised about the expropriation process and compensation for affected properties.	In response to the concerns, the storage location for construction materials was revised to minimize disruption to grazing activities. For expropriation concerns, a detailed explanation of the process and timelines was provided, including assurances of fair compensation based on expert evaluations.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

The management team of Darenhes Elektrik Üretim A.Ş. has extensive experience in implementing similar renewable energy projects, including hydropower plants in Turkey. The team has successfully executed projects such as the Pembelik and Seyrantepe hydropower plants, demonstrating expertise in project design, stakeholder engagement, and environmental compliance.

To ensure the project's success, the management team has collaborated with local authorities, environmental consultants, and engineering firms to address technical and social challenges effectively. Where necessary, external experts were recruited to provide specialized knowledge, particularly in environmental impact assessment and community consultation processes.

The team's track record and proactive approach to stakeholder engagement and risk management ensure that the Tatar HEPP project aligns with best practices and meets all regulatory requirements.

2.2.2 Risk Assessment

	Risks identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified	In the project area and during stakeholder consultations, no evidence was found indicating any natural or human-induced threat to stakeholders' wellbeing. Regular monitoring and assessments are conducted to ensure that potential risks are promptly identified.
Risks to stakeholder participation	No risk identified	The project employs transparent communication channels and inclusive methods to encourage stakeholder engagement. As a result, no barriers or risks to participation have been reported.
Working conditions	No risk identified	The project adheres to local regulations and international best

		practices to provide safe and fair working conditions. Internal audits and employee feedback indicate that no specific risks have been identified.
Safety of women and girls	No risk identified	The project implements a zero-tolerance policy against harassment and discrimination to protect the safety of women and girls. No risks or complaints have been recorded in this regard.
Safety of minority and marginalized groups, including children	No risk identified	The project conducts regular community engagement and monitoring to ensure the safety of minorities and vulnerable groups (including children). No concerns or risks have been raised, and proactive measures remain in place.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	No risk identified	The project manages waste and handles hazardous materials in accordance with relevant regulations, and conducts regular environmental monitoring. No pollutant-related impacts or risks have been detected to date.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified[10]	Mitigation or preventative measure(s) taken
Discrimination	No risk identified	The project adheres to relevant national labor laws and anti-discrimination regulations, ensuring an inclusive and

[10] The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

		respectful environment. No instances of discrimination have been reported or observed.
Sexual harassment	No risk identified	In compliance with national legislation and internal policies prohibiting harassment, the project maintains clear reporting channels and a zero-tolerance stance. No related complaints have been.raised.
Equal pay for equal work	No risk identified	The project's wage structure is aligned with national labor regulations, providing equal pay for equal roles and responsibilities. No discrepancies have been identified.
Gender equity in labor and work	No risk identified	The project supports gender equity through hiring practices and working conditions compliant with national labor standards. No issues related to gender imbalance or unfair treatment have arisen.
Forced labor	No risk identified	All contracts and labor practices are carried out in accordance with national laws prohibiting forced labor. There have been no indications or reports suggesting forced labor.
Child labor	No risk identified	The project complies with minimum age requirements established by national labor regulations. No individuals under the legal working age are employed.
Human trafficking	No risk identified	The project's operations are conducted under strict adherence to national laws and international standards preventing human trafficking. No risks or concerns have been identified in this regard.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The project is conducted in compliance with applicable national laws and international standards on human rights. No violations or complaints have been reported, and a grievance mechanism is in place should any issues arise.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risk identified	The project area does not overlap with recognized indigenous territories or sites of cultural heritage significance. Relevant regulations on cultural preservation are respected, and there have been no concerns or disputes raised by local communities.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	All land used for the project has been acquired in accordance with national property laws and regulations. No disputes or issues related to property rights have been reported, and ongoing monitoring ensures continued compliance.

2.3.5 Benefit Sharing

Process used to design the benefit sharing plan	N/A

Summary of the benefit sharing plan	N/A
Approval and dissemination of benefit sharing plan	N/A

2.4 Ecosystem Health

As also stated in the Environmental Impact Assessment report of the Tatar HEPP, According to the items numbered 14 and 33 of the Annex I of the "Environmental Impact Assessment (EIA) regulation" published in the official Gazette dated 16.12.2003 and number ed 25318 Tatar HEPP is listed amongst the project where an EIA needs to be implemented. Accordingly the project has undergone an environmental impact assessment study and received EIA Affirmative Certificate on 15 November 2006.

The following is the summary of the impacts and the mitigation actions outlined in the EIA Report approved by the EIA Report Evaluation Committee members:

Air Quality: Necessary precautions, such as watering roads, careful loading and unloading and covering the top of loaded trucks by tarpaulin; is taken in order to minimize the dust formed during excavation.

Water & Wastewater Management: Water for domestic use is supplied by tankers to the site and wastewater is collected in septic tanks which is emptied regularly. The wastewater is discharged in accordance with Water Pollution Control Regulations.

The waste oil: Any kind of waste oil that may result during construction n or operation stages, are collected in impermeable containers and transferred to recycling centres in accordance with Hazardous Waste Control Regulations and Waste Oil Control Regulations.

Solid Waste: Solid waste is collected and recyclables are separated to be sent to recycling centres. The rest are disposed to the nearest landfill site in coordination with Kovancılar Municipality.

Biodiversity: The field surveys and studies performed in the region h as shown no species under conservation by international conventions. Necessary precautions is taken if any such flora or fauna elements are seen on the site. Also a fish passage/ladder is constructed to ease up and down stream movements of the fish living in Peri Stream.

Expropriation: At the Euphrates catchment area in general villages are preferred to be established at the close proximity of the rivers. As a result, whenever there is a hydroelectric power project developed there are some settlements that are effected.

These can be listed as follows:

- Tatarköy village: 13 houses and 1 school
- Obuzbaşı village: 38 houses
- Alayağmur village: 37 houses
- Uçankuş district: 9 houses
- Kilizkumu district (Zil region): 8 houses

	Risks identified	Mitigation or preventative measure(s) taken
Impacts on biodiversity and ecosystems	No risk identified	The project area is not located near sensitive habitats or protected areas. Regular environmental monitoring has shown no evidence of biodiversity loss or disturbance to ecosystems.
Soil degradation and soil erosion	No risk identified	The project follows standard best practices for soil management, including erosion control measures. No signs of soil degradation or erosion have been observed.
Water consumption and stress	No risk identified	Water use is minimal and adheres to local regulations. There have been no reported impacts on local water resources or evidence of water stress in the area.

2.4.1 Rare, Threatened, and Endangered Species

Is the project located in or adjacent to habitats for rare, threatened, or endangered species?

☐ Yes ☒ No

2.4.2 Introduction of Species

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	No risk identified	No risk identified

2.4.3 Ecosystem Conversion

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	No risk identified	No risk identified

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	Grid-connected electricity generation from renewable sources	22.0
Tool	Tool 01	Tool for the demonstration and assessment of additionality	7.0.0
Tool	Tool 07	Tool to calculate the emission factor for an electricity system	07.0
Tool	Tool 11	Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period	03.0.1

3.2 Applicability of Methodology

The ACM0002 (version 22.0.0) methodology is applicable to grid-connected renewable power generation project activities that: (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).

Methodology ID	Applicability condition	Justification of compliance
ACM0002 v.22.0	This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant; b) Involve a capacity addition to (an) existing plant(s) c) Involve a retrofit of (an) existing operating plants/units	The Tatar HEPP project activity is the Installation of a new hydro power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield power plant). Thus, it meets the said applicability condition.

	d) Involve a rehabilitation of (an) existing plant(s)/unit(s) e) Involve a replacement of (an) existing plant(s)/unit(s) or f) Install a Greenfield power plant together with a grid-connected Greenfield pumped storage power plant. The greenfield power plant may be directly connected to the PSP or connected to the PSP through the grid.	
	The methodology is applicable under the following conditions: a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit. b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	a) The project activity is the installation of 2 hydro turbine generators (as previously discussed). Hence, meets this criterion. b) Not applicable as the project is not a capacity addition.

	In case of hydro power plants, one of the following conditions shall apply: a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs, or b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (7), is greater than 4 W/m2, or c) The project activity results in single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m2 or The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m2, all of the following conditions shall apply: i. The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m2 ii. (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity iii. Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m2 shall be: • Lower than or equal to 15 MW, and • Less than 10 per cent of the total installed capacity of integrated hydro power project	a) Not applicable, as the project activity has already been commissioned and involves the addition of a new hydro power plant, resulting in the creation of a new reservoir. b) Not applicable, as the project activity has already been commissioned and involves the addition of a new hydro power plant, resulting in the creation of a new reservoir. c) The project activity results in new reservoirs and the power density of the project activity is 11.84 W/m2 which is greater than 4 W/m2 as shown in the following calculation: $$\frac{Installed\ Capacity}{Reservoir\ Area} = \frac{128{,}200{,}000\ W}{10{,}830{,}000\ m^2} = 11.84\ W/m^2$$ d) Not Applicable as the project activity is going to result in only one single reservoir.

	In the case of integrated hydro power projects, project proponent shall: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project, or b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	Water flow spills directly to the downstream from upstream.
	The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units	Project activity does not involve: a) Switching from fossil fuels to renewable energy sources at the site of the project activity. b) Biomass fired plants. Hence this criterion is not applicable. Project activity is resulting in the creation of a new reservoir but the power density is not less than 4 W/m^2. But instead it is greater than 4 W/m^2.

	In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	Not applicable as the project activity is the installation of a new hydro power plant and all the equipment that will be installed will be brand new.
	In addition, the applicability conditions included in the tools referred to above apply.	Applicability conditions of the applied tool are justified.

Tool ID	Applicability condition	Justification of compliance
Tool to calculate the emission factor for an electricity system (Version 07.0.0)	a) This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects) b) Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity	a) This condition is applicable to the Project Activity since the project activity substitutes grid electricity, and thus, the Project results in savings of electricity that the grid would have provided. b) The emission factor used for this Project Activity has been calculated for grid power plants only. c) This Project is not a CDM Project. d) This Project Activity doesn't employ biofuels.

	generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity. c) In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country. d) Under this tool, the value applied to the CO_2 emission factor of biofuels is zero	
Tool for the demonstration and assessment of additionality (Version 7.0.0)	a) The use of the "Tool for the demonstration and assessment of additionality" is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool. b) Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory	a) The additionality of this Project Activity was evaluated at the First Crediting Period employing the Tool for the demonstration and assessment of additionality (Version 5.2). Thus, no new additionality assessment was carried out during this Crediting Period Renewal. b) The additionality of this Project Activity was evaluated at the First Crediting Period. Thus, no new additionality assessment was carried out during this Crediting Period Renewal.
Assessment of the validity of the original/current baseline and update of the	a) This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism. The tool	a) a) Detailed assessment of the validity of the original baseline as per the Tool was carried out this PDD.

baseline at the renewal of the crediting period (Version 03.0.1)	consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period.	

3.3 Project Boundary

The project boundary includes net electricity generated and supplied to the Turkish national grid. The internal consumption and the GHG due to the temporary use and burning of the diesel fuel by the auxiliary power generators. Please see Figure 1.

Source		Gas	Included?	Justification/Explanation
Baseline	Electricity generation in baseline (Turkey's Grid)	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
		Other	N.A.	N.A.
Project	Emission from the reservoir of the proposed project	CO_2	No	Minor emission source
		CH_4	No	Minor emission source (Power density greater than 10W/m2)
		N_2O	No	Minor emission source
		Other	N.A.	N.A.
	Back-up or Emergency Diesel Generator	CO_2	Yes	Neglected[11]
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
		Other	N.A.	N.A.

3.4 Baseline Scenario

Since the project activity has already, been commissioned, it involves the operation of a new grid-connected hydroelectric power plant that generates renewable energy. The baseline scenario is therefore defined as follows, based on ACM0002 (Version 22.0.0):

[11] ACM0002 Version 22.0.0 indicates that "...The use of fossil fuels for the back up or emergency purposes (e.g. diesel generators) can be neglected."

> "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the Tool to calculate the emission factor for an electricity system (v.7.0.0)."

Since the project activity is going to be connected to the Turkish national grid, via the Seyrantepe HEPP TM and Ferrokrom TM (see Figure 1), the baseline scenario of the project activity is the supply of the equivalent amount of annual power output by the existing Turkish national grid which is the continued operation of existing power plants and the addition of new sources to meet electricity demand.

Based on ACM0002 v.22.0, baseline emissions are equal to power generated by the project activity that is delivered to the Turkish national grid, multiplied by the baseline emissions factor. This baseline emissions factor (EFy) is calculated as the Combined Margin (CM), of which the breakdown and detailed description is given below in chapter 4.1.

3.5 Additionality

This step is not applied since the additionality was demonstrated during first crediting period using CDM tool applicable at time of project submission.

The project is not being implemented to comply with any law or other regulatory framework. It is a voluntary project.

3.5.1 Regulatory Surplus

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?

☒ Annex 1 country ☐ Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

☐ Yes ☒ No

If the project is located inside a Non-Annex 1 country and the project activities are mandated by a law, statute, or other regulatory framework, are such laws, statutes, or regulatory frameworks systematically enforced?

☒ Yes ☐ No

3.5.2 Additionality Methods

This step is not applied since the additionality was demonstrated during first crediting period using CDM tool applicable at time of project submission.

The project is not being implemented to comply with any law or other regulatory framework. It is a voluntary project.

3.6 Methodology Deviations

The UNFCCC methodology of ACM0002/ Version 22.0. and its related tools have been applied without any deviations.

4 QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

For the emission factors that were used to calculate estimated emission reductions, the publication of the Turkish Ministry of Energy and Natural Resources, which indicates Turkey's National Electric Grid Emission Factor for the year 2022, was used. The publication includes calculated Emission Factor values that are Operating Margin (OM), Growth Based Margin (Build Margin-BM) and Combined Margin (CM) Emission Factors, for the relevant year with the usage of the IPCC's Clean Development Methodology Tool 07-V07.0. For this calculation, information regarding the data set is given below in detail;

- TEİAŞ Turkey's electricity generation-consumption and loss statistics,
- Common prepared report under Turkey's National Greenhouse Gas Inventory Reporting Format. - Common Reporting Format (CRF) tables for electricity generation (1.A.1.a.i) emission values
- Chronological order of power generation plants from TEİAŞ Load Dispatch Department with commissioning dates, plant names, fuel types, installed power values, electricity generation for the calculated year
- Checking off Volunteers from the websites of Gold Standard (GS) and Verified Carbon Standard (VCS) for the ownership status of the carbon reduction certificate and,
- From Clean Development Mechanism (CDM) Tool 009- V3.0, Power plant efficiency figures are used
- Tool 11 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)

According to this publication[12];

- Operating Margin-OM; 0.7108 tCO_2/MWh
- Build Margin-BM; 0.3721 tCO_2/MWh

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel-fired power plants that are displaced due to the project activity, calculated as follows:

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

Where:

BEy = Baseline emissions in year y (tCO_2/yr).

EGy = Electricity supplied by the project activity to the grid (MWh).

EFgrid,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". (tCO_2/MWh) (v.7.0.0).

The project activity is the installation of a new grid-connected renewable power plant so, $EG_{baseline} = 0$

Calculation of the Operating Margin Emission Factor

For OM factor calculation, the Chronological order of power generation plants from TEİAŞ Load Dispatch Department with fuel types, electricity generation for the calculated year were used as input data. By using all of the data which were mentioned above, the Turkish Ministry of Energy and Natural Resources calculated $EF_{grid,OMsimple,y}$

$$EF_{grid,OMsimple,y} = 0.7108\ (tCO_2/MWh)$$

Calculation of the Build Margin Emission Factor

For BM factor calculation, the Chronological order of power generation plants from TEİAŞ Load Dispatch Department with commissioning dates, plant names, fuel types, installed power values,

12 https://enerji.gov.tr//Media/Dizin/EVCED/tr/ÇevreVeİklim/İklimDeğişikliği/TUESEmisyonFktr/Belgeler/Sebeke_EF_Bilgi_Formu_2022.pdf

electricity generation for the calculated year were used as input data. Consequently, the Turkish Ministry of Energy and Natural Resources calculated $EF_{grid,BM,y}$.

$EF_{grid,BM,y}$ = 0.3721 tCO_2/MWh

Calculating of the Combined Margin Emission Factor

Emission factor calculations have been corrected with the relevant weighted calculations as stipulated by the methodology for the second crediting period. According to "Tool to calculate the emission factor for an electricity system" (Version 07), Article 86 clause (b), calculation of the combined margin for renewable energy projects (except wind and solar) second crediting period, the following values need to be used for w_{OM} and w_{BM}.

"All other projects [...] w_{OM} = 0.25 and w_{BM} = 0.75 for the second and third crediting period, unless otherwise specified in the approved methodology which refers to this tool."

The data used to calculate the combined margin for the year 2022 were published by Turkey's Energy and Natural Resources Ministry. The data -which includes build margin and operating margin factors have been obtained from the ministry's most recent factsheet. This document contains the latest available data in the country and is issued by the highest authority to make such calculations and determine the factors.

$EF_{grid,CM,y}$ = 0.7108 tCO_2/MWh * 0.25 + 0.3721 tCO_2/MWh * 0.75 = 0.4568 tCO_2/MWh

$EF_{grid,CM,y}$= 0.4568 tCO_2/MWh

Then:

$ERy = BE_y - PE_y = EG_{facility,y} * EF_{grid,CM,y}$ = 421,270 MWh/year * 0.4568 tCO_2/MWh = 192,425 tCO_2/year

Baseline scenario is identified and described in this section. Emission reductions due to project activity is calculated according to "Tool to calculate the emission factor for an electricity system" (Tool 07) version 07.0.

A brief explanation of this methodology is given in Tool as:

This methodological tool determines the CO_2 emission factor for the displacement of electricity generated by power plants in an electricity system, by calculating the "combined margin" emission factor (CM) of the electricity system.

The methodological tool 11 "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) is adopted to assess the continued validity of the baseline and to update the baseline. This Tool provides a stepwise procedure to determine the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism. According to this tool the following steps are applied.

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

The validity of the current baseline is assessed using the following Sub-steps:

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

During the First Crediting Period, the baseline scenario for the project was defined as:

"Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants."

The current baseline of the project is the same as the first crediting period and complies with the existing legal framework. No additional laws that impacted the project activity came into force, and the project activity is still in line with the available law and regulations.

Step 1.2 Assess the impact of circumstances.

There has been no major deviation or change in the market characteristic during the first crediting period.

Long-term electricity demand and supply projections for Turkey are assessed to describe the baseline and its development for the project activity.

Turkey's long-term electricity demand and supply projections are assessed to describe the baseline and development for the project activity.

Demand for electricity in Turkey is growing rapidly, with an average of 3.3%[13] for the next ten years. TEİAŞ, responsible for grid reliability, has prepared an electricity demand projection for the next ten years period (2023-2032) for Turkey and announced it on March 2023, given in Figure 3 and Figure 4, reflecting the continuation of current demand growth.

[13] See, https://www.teias.gov.tr/tr-TR/ilgili-raporlar 10 Yıllık talep tahminleri raporu https://webim.teias.gov.tr/file/f09f9857-4844-42b0-a0fa-74cdacfe4013?download

Table 4: Low and High Demand Projection Scenarios for Ten Years Period (GWh)

Scenarios	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
High Scenario	352,031	365,853	380,379	395,303	410,760	424,957	440,516	457,446	474,873	493,720
Low Scenario	316,188	326,097	334,933	341,875	351,023	358,991	368,225	378,307	388,812	400,349

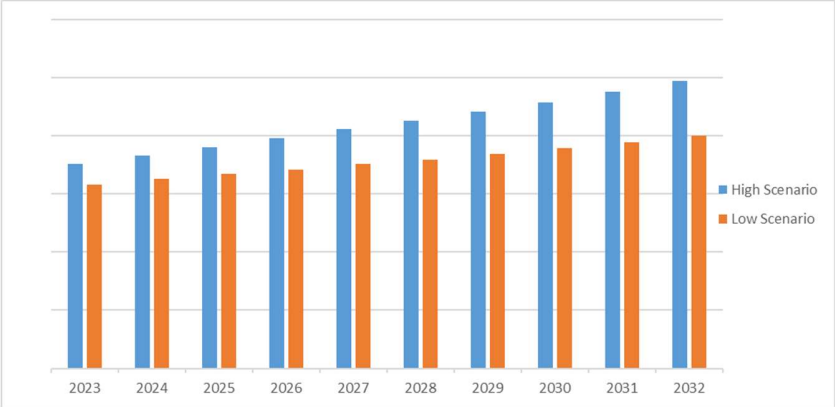

Figure 3: Electricity Demand Projections for Ten Years

This projection also forecasted electricity supplies considering all operational power plants under construction and newly licensed. Generation projection based on project generation is given in Figure 5.

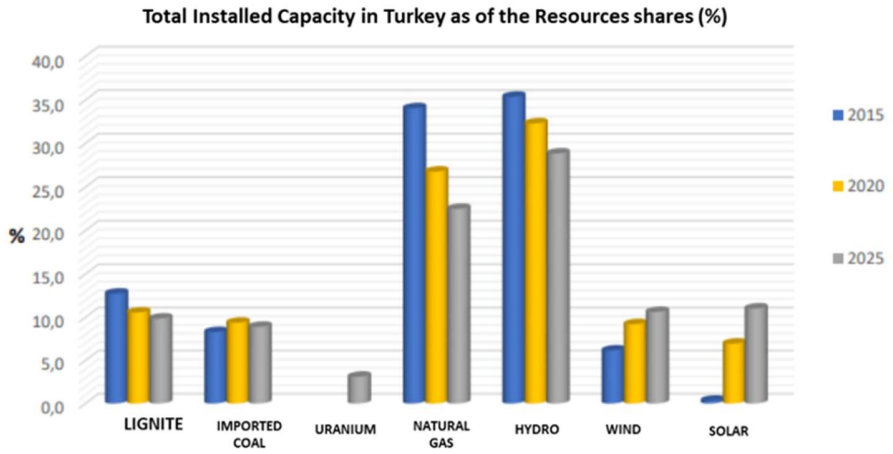

Figure 4: Total Installed Capacity in Turkey as of the Resources shares (%)[14]

According to the 5-year projection, it is clear that fossil fuels will remain the primary source for electricity generation (53.8% in 2025). Natural gas will continue to dominate the market while total imported fuel will still be 22.5%. Hydro will account for 28.8% of the mix, whereas all non-

[14] See, https://www.epdk.gov.tr/Detay/Icerik/3-0-66/elektrikuretim-kapasite-projeksiyonlari# = (page 111)

hydro renewable combined (geothermal/biogas/waste/wind) will be accountable for 25% of all electricity generation. This projection is consistent with continuing fossil fuel-dependent characteristics of the Turkish electricity sector.

Table 5 By Primary Energy Resources, Installed Capacity of Turkey (2009-2023)[15]

Unit :MW

	Coal	Fuel Oils	Natural Gas	RES (renewable energy sources) + Waste + Waste Heat	Multi Fuel	Hydro	Geothermal	Wind	Solar	TOTAL
2009	105,90.3	1,699.1	11,825.6	86.5	5,37.6	14,553.3	77.2	791.6	-	44,761.2
%	23.66	3.80	26.42	0.19	11.48	32.51	0.17	1.77	-	100.0
2023	21,099.1	135.4	21,285.6	2,446.4	4,874.3	31,962.4	1,691.3	11,806.1	15,613.4	110,914.0
%	19.02	0.12	19.19	2.21	4.39	28.82	1.52	10.64	14.08	100.0

In the shed of the above analysis for the baseline scenario (continuation of the current situation), which is given by Table 5, it can be concluded that:

- Conclusion-1: Energy demand in Turkey has been increasing at significant rates for ten years, and it is expected to continue for at least the next ten years.

- Conclusion-2: Even all operational plants, construction phase plants, and licensed ones are considered to lack supply projected after the year 2028. So, there is a significant need for electricity generation investments to satisfy demand. New power plants would otherwise generate the project activity to avoid power shortages in the coming years.

- Conclusion-3: Fossil fuels will dominate the generation mix for at least a midterm period (till the end of 2025) with a 53,8% share. Hydro-included renewable will remain low with a 28,8% share, and non-hydro energy contribution will stay negligible, with only 25% of the total share by the end of that period. This also shows that most new capacity additions will be fossil fuel-fired power plants.

The combination of the trends above indicates that the continuation of energy generation of Tatar HPP would decrease the power amount from new grid-connected thermal plants.

[15] See, https://webim.teias.gov.tr/file/0a1b8b6f-eac9-406c-97c6-abb98220e29d?download

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

The technical lifetime of the project activity (including wind turbines) is defined as 25 years. Equipment only requires regular maintenance. The baseline scenario identified at the validation of the project activity was the continuation of grid-connected electricity generation from renewable sources. Under this scenario, no investment from the project's proponent or a third party (or parties) has been envisioned later specifically for the project.

Step 1.4 Assessment of validity of the data and parameters.

The emissions reduction calculations are based on two main parameters: The energy produced and the grid emission factor. The latter will be updated as explained in the next paragraph.

The emission factors and values for the calculation of the baseline emissions have been determined for the whole crediting period and parameters not monitored have been changed. Therefore, Step 2 has been applied.

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

This step is applicable since Step 1.4 showed that the current baseline needs to be updated accordingly with the new officially published national emission factor data.

Step 2.1: Update the current baseline

As confirmed in Step 1, during the First Crediting Period, the baseline scenario for the project had been defined as:

"Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants."

The current baseline of the project is the same as the first crediting period and complies with the existing legal framework. No additional laws that impacted the project activity came into force, and the project activity is still in line with the available law and regulations. No additional laws that impacted the project activity came into force, and the project activity is still in line with the available law and regulations. This conforms to the provisions of the latest version of the approved applicable methodology to the project activity, namely: ACM0002 version 22.0, "Grid-connected electricity generation from renewable sources".

Step 2.2: Update the data and parameters

The new national circumstances have an impact on the emission factor of the grid and thus on the project's current baseline emissions. Accordingly, the grid emission factor is updated according to the publication of Turkish Ministry of Energy and Natural Resources which is indicating Turkey's National Electric Grid Emission Factor for the year of 2022.[16]

[16] See: hhttps://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Sebeke_EF_Bilgi_Formu_2022.pdf

So, that were used to calculate estimated emission reductions, publication of Turkish Ministry of Energy and Natural Resources which is indicating Turkey's National Electric Grid Emission Factor (0.4568 tCO_2/MWh) was used for the second crediting period of this project.

4.2 Project Emissions

The project activity involves the generation of electricity by development of a hydro power plant. Tatar HPP has 10,830,000 m^2 reservoir area and 128,220,000 W capacity. Its density is calculated as 11.84 W/m^2 which is above 10 W/m^2 threshold. The generation of electricity does not result in greenhouse gas emissions and therefore is taken as 0 tCO_2/year.

4.3 Leakage Emissions

There are no leakage emissions related to the project activity.

4.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals

Emission reductions achieved by the project activity are calculated as per formula of ACM0002 Version 22:

$$ERy = BEy - PEy \quad \text{(Equation 17)}$$

Where:

ERy = Emission reductions in year y (tCO_2/yr).

BEy = Baseline emissions in year y (tCO_2/yr).

PEy = Project emissions in year y (tCO_2/yr).

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/or the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BEy = (EGfacility,y) \times EFgrid,CM,y \quad \text{(Equation 11)}$$

Net GHG emission reductions/removals are:

Vintage period	Estimated baseline emissions (tCO_2e)	Estimated project emissions (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated reduction VCUs (tCO_2e)	Estimated removal VCUs (tCO_2e)	Estimated total VCUs (tCO_2e)
Year 2023 (14-November-2023 to 31-December-2023)	25,305	0	0	0	0	25,305
Year 2024	194,425	0	0	0	0	194,425
Year 2025	194,425	0	0	0	0	194,425
Year 2026	194,425	0	0	0	0	194,425
Year 2027	194,425	0	0	0	0	194,425
Year 2028	194,425	0	0	0	0	194,425
Year 2029	194,425	0	0	0	0	194,425
Year 2030	194,425	0	0	0	0	194,425
Year 2031	194,425	0	0	0	0	194,425
Year 2032	194,425	0	0	0	0	194,425
Year 2033 (01-January-2033 to 13-November-2033)	137,120	0	0	0	0	167,120
Total	1,924,250	0	0	0	0	1,924,250

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh

Description	For the combined margin CO_2 emission factor that were used to calculate estimated emission reductions, publication of Turkish Ministry of Energy and Natural Resources which is indicating Turkey's National Electric Grid Emission Factor for the year of 2022 was used.
Source of data	Please see: https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Sebeke_EF_Bilgi_Formu_2022.pdf
Value applied	0.3721
Justification of choice of data or description of measurement methods and procedures applied	The baseline emissions are the product of electrical energy baseline expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.
Purpose of data	Calculation of baseline emissions
Comments	-

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO_2/MWh
Description	For the combined margin CO_2 emission factor that were used to calculate estimated emission reductions, publication of Turkish Ministry of Energy and Natural Resources which is indicating Turkey's National Electric Grid Emission Factor for the year of 2022 was used.
Source of data	Please see: https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Sebeke_EF_Bilgi_Formu_2022.pdf
Value applied	0.7180
Justification of choice of data or description of measurement methods and procedures applied	The baseline emissions are the product of electrical energy baseline expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.
Purpose of data	Calculation of baseline emissions

Comments	-

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2/MWh
Description	For the combined margin CO_2 emission factor that were used to calculate estimated emission reductions, publication of Turkish Ministry of Energy and Natural Resources which is indicating Turkey's National Electric Grid Emission Factor for the year of 2022 was used.
Source of data	Please see: https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Sebeke_EF_Bilgi_Formu_2022.pdf
Value applied	0.4568 (this value will be used for second crediting period)
Justification of choice of data or description of measurement methods and procedures applied	The baseline emissions are the product of electrical energy baseline expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.
Purpose of data	Calculation of baseline emissions
Comments	-

5.2 Data and Parameters Monitored

Data / Parameter	$EG_{PJ,y}$
Data unit	MWh/y
Description	Net electricity generation
Source of data	Registered PDD. (During performance certification monthly meter reading will be used as source of data).
Description of measurement methods and procedures to be applied	Measurements made by electricity meters that belong to the grid operator , TEIAŞ. The meters are in compliance with the collected data. Data is used to calculate the net electricity supplied to the grid,
Frequency of monitoring/recording	Monthly

Value applied	421,270
Monitoring equipment	Measurements are carried out in compliance with the communiqué for Metering Devices to be used in the Electricity Market. The minimum accuracy of the meters are Class02, that is to say should be within the ± 0. 2% (± 0. 002) range. The monthly reported meter readings by the main meter, are cross checked against the back up meter. If the reading difference is less than 0. 002 (± 0. 2%) than the meter readings are considered to be OK, if not than the meters are checked. The monthly reported readings are also be cross checked against the monthly EPİAŞ screen shots. The EPİAŞ data of electricity sales are also the proof for quality and reliability of data. Current meters details are as: Main Meter: Control Meter 9420077: 9420078 9420079: 9420080 These meters were changed in 2020 and they are valid until 2030.
QA/QC procedures to be applied	According to Article 2 of the Communiqué of Meters in Electricity Sector : 'The meters to be used in the electricity market shall be compliant with the standards of Turkish Standards Institute or IEC and have obtained "Type and System Approval" certificate from the Ministry of Trade and Industry.' Therefore, the Ministry of Trade and Industry (Ministry) is responsible for controlling and calibrating the meters. Also, according to Article 11 of this Communiqué, meters shall be in the class of 0.2s, which means the error interval for measuring is in the acceptable range according to rules. Paragraph b) of the Article 9 of the 'Regulation of Metering and Testing of Metering Systems' (Regulation) of Ministry states that: 'b) Periodic tests of meters of electricity, water, coal gas, natural gas and current and voltage transformers are done every 10 years.' Therefore, periodic calibration of the meters will be done every 10 years. Also, according to Article 67 (page 20) of this regulation, the calibration shall be done in calibration stations that have been tested and approved by the Ministry of Trade and Industry. Article 10 d) of Communiqué requires the meters shall be three phases four-wire and Article 64 of Regulation clearly states how calibration shall be performed for this kind of meters.

	As above mentioned, the data acquisition and management and quality assurance procedures that are anyway in place, no additional procedures have to be established for the monitoring plan. EPİAŞ data is used as a main source, and cross-check is done by using the TEİAŞ receipts.
Purpose of data	To exhibit renewable electricity generation performance of the plant
Calculation method	Continuously measurement
Comments	Plant Manager will be responsible for monitoring data.

Data / Parameter	Cap_{PJ}
Data unit	W
Description	Installed capacity of the hydropower plants after the implementation of the Project Activity.
Source of data	Project site
Description of measurement methods and procedures to be applied	Turbine Supplier information on the equipment
Frequency of monitoring/recording	Once for each monitoring period
Value applied	128.22 MWe
Monitoring equipment	N/A
QA/QC procedures to be applied	Supplier information on the related equipment and existence of the equipment is checked
Purpose of data	Data is used to calculate power density.
Calculation method	N/A
Comments	-

Data / Parameter	A_{PJ}
Data unit	m^2
Description	Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.
Source of data	Project site
Description of measurement methods and procedures to be applied	The reservoir area corresponding to maximum operational level has been determined as a certain value according to the topographical maps. And a correlation graphic that exhibits the relationship between the water depth, reservoir area and the volume of the reservoir is plotted against a graphic. In order to make verification of the reservoir area, the monthly maximum water depth recordings is taken and the corresponding reservoir area is determined using the same graphic
Frequency of monitoring/recording	Once for each monitoring period
Value applied	10,830,000
Monitoring equipment	N/A
QA/QC procedures to be applied	The depth readings done on daily basis.
Purpose of data	Data is used to calculate power density.
Calculation method	N/A
Comments	-

5.3 Monitoring Plan

The Monitoring Plan for the project consists mainly of the net electricity generation by the project activity. Based on the baseline scenario presented above, this amount of electricity would have been produced by the Turkish National Grid.

The electricity produced is sold to TEIAS Therefore TEIAS measures the electricity produced by 4 meters (Please see Table). First meters were calibrated in 2012 and they were valid until 2022. However, those meters were changed by TEIAS on 12.04.2020. New sets of meters are valid until year 2030.

Table 6 :Information about Meters

Meter	Main Meters		Back-Up Meters	
Function	Group 1	Group 2	Group 1	Group 2
Located	At the plant	At the plant	At the plant	At the plant
Serial No	471008	471010	471009	471011
Calibration	2012	2012	2012	2012
Validity[17]	2022	2022	2022	2022
Meter	**Main Meters**		**Back-Up Meters**	
Function	Group 1	Group 2	Group 1	Group 2
Located	At the plant	At the plant	At the plant	At the plant
Serial No	9420077	9420079	9420078	9420080
Make	EMH	EMH	EMH	EMH
Class	Active (P): 0.2 S Reactive (Q): 0.5	Active (P): 0.2 S Reactive (Q): 0.5	Active (P): 0.2 S Reactive (Q): 0.5	Active (P): 0.2 S Reactive (Q): 0.5
Calibration Date	23/05/2024	23/05/2024	23/05/2024	23/05/2024
Calibration	2020	2020	2020	2020
Validity	2030	2030	2030	2030

These meters are placed on the switchgear station where the power plant gets connected to the Turkish national grid. Those meters provide official data which read and recorded monthly by TEİAŞ officers either remotely or on site for the purpose of recording amount of electricity sold to the grid TEİAŞ also conducts the calibration and maintenance of these meters and thus, ensures the accuracy and quality of the measurements. The quality standards that the meters need to comply is "The ICE/TSE 62053 22: Electricity metering equipment (a. Particular requirements Part 22: Static meters for active energy (Classes 0. 2 S and 0. 5 S)" The calibration of the meters is done and the meters are checked continuously if there is a difference of 0.2 % in the readings of the main and the auxiliary meters, the calibration is repeated. The net electricity produced

[17] Within the scope of the regulation in Turkey (https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=6381&MevzuatTur=7&MevzuatTertip=5), the stamp year is taken as basis year and the year it is stamped (2012) is counted as the first year, regardless of the date and the remaining period is calculated from the year it was stamped(2012+10 years).

($EG_{PP\ net,\ y}$) in year y is calculated by subtracting the total electricity consumed by the hydroelectric power plant ($EG_{PP\ self\ consumption,\ y}$), from the gross electricity generation ($EG_{PP\ gross,\ y}$). After obtaining the net electricity production value, the emission reductions are calculated by multiplying the net electricity with the Combined Margin calculated above. The monitoring are conducted by the Verified Emission Reduction (VER) Monitoring Team. The VER Team Members, and their position and duties for the monitoring is outlined in the following table (Table):

Table 7 Positions and responsibility of the VER Monitoring Team Members

Position	Responsibility
Tatar HEPP Manager	• Day to day operation of the Tatar HEPP, • Compliance of the project activity with the host country rules and regulations • Coordination of the data collection and recording for the VCS monitoring report.
Chief Electrical Engineer	• Day to day follow up of electrical equipment • Recording and monitoring of the electricity generation data
Accounts Manager	• Data keeping for power sales • Keeping the track record of EPİAŞ data
Chief Mechanical Engineer	• Day to day operation of the power plant • Keeping records of malfunctions and repairs

The power generation meter readings are performed by using the main metering devices and the backup/control metering devices for accuracy checks only. Data from metering devices are recorded by TEİAŞ on monthly agreed protocols and form the basis for electricity sales. In addition to the readings of the two metering devices, generation data of the Tatar HEPP can be cross checked via the TEİAŞ/EPİAŞ web site which is accessible by a password available to the electricity generation companies. The electricity generation data at the Market Financial Reconciliation Centre (MFRC/EPİAŞ) web page is exhibit the net electricity generated less transmission loss, to be able to produce comparable numbers, the figures taken from EPİAŞ web site needs to be multiplied by the transmission loss factor of the grid.

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

N/A

APPENDIX 1: RESERVOIR AREA

TATAR HEPP WATER ELEVATION- VOLUME- AREA GRAPHIC THAT INDICATES RESERVOIR AREA AT MAXIMUM OPERATION ELEVATION.