ALKUMRU HYDROELECTRIC POWER PLANT

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Alkumru Hydroelectric Power Plant (Alkumru HPP from this point onward) is constructed at the Eastern Anatolia Geographical district of Turkey over the Botan River that is one of the major tributaries of the Tigris.

The Alkumru HPP produces electricity by using the potential energy of the Botan river, a major tributary to the River Tigris. Energy is produced using the head difference between the 647 m maximum water level and 541.80 m tail water levels. Based on the Electricity Studies Institution's report dated 1991, the Alkumru HPP is proposed to be developed with 222 MW capacity and with an annual energy production capacity of 812.48 GWh, and after completion of the upstream Çetin and Pervari Hydroelectric Power plants the annual electricity production was envisaged to be 817.26 GWh. The initial feasibility report submitted to State Hydraulic Works (DSI) of the Republic of Turkey proposed the project to be 240 MW with an annual electricity production of 822.13 GWh. The investment decision for the project activity considers these parameters.

Later, with a minor design change the and an adjustment in the turbines the project owner revealed that with the same amount of water flow, the project capacity can be increased to 261.27 MW and the annual electricity production is calculated to be 875.84 GWh. The design change is presented to the Electricity Market Regulatory Agency and the terms of the electricity production license have been amended.

With these conditions project owner also presented a fish passage project so that the fish populations are not effected from the dam blocking the river, and it is agreed to release 14m3/s of water at all times to the river bed to support aquatic life. However, the design of the project turbines are realized not to be suitable to release the required amount of water, therefore an other addition is made at the tail water part of the project and a new horizontal Francis turbine with 14.250 MWe capacity is added to the project. This way by the third year of the project activity the electricity production was estimated to increase to 881,210 MWh, with the total project capacity of 275.520 MWe. During this second monitoring period that covered the time span between December, 2013 to September 2020 the estimated maximum production levels have been reached and passed for years 2016 (933,639.73 MWh) and year 2019 (1'016'914.41 MWh).

The Alkumru HPP has a reservoir area of 10.99 km2 and a dam that is designed to be clay cored, sand, gravel rock filled. The project activity uses the elevation between the 611.80 minimum operation elevation and 647 m maximum operation elevation.

Table 1: Major Milestones of Alkumru HPP

Date	Milestones	Reference
October-06	Feasibility Study Report	Feasibility Study Report
10 Sep. 2007	Water Usage Agreement signed with DSI	Water Usage Agreement
Sep. 27, 2007	Electricity Production License issued by Energy Market Regulatory Authority (EMRA) and the license modification	EMRA License
Jan., 2008	Project granted EIA Affirmative certification	EIA Affirmative certification
Aug. 15, 2008	Construction Started	Memorandum by Limak Insaat (owner: Limak Hidroelektrik / contractor: Limak Insaat)
Dec. 18, 2008	Signing of the E&M contract	The E&M contract
June 19, 2009	TEIAS system connection agreements signed	TEIAS Connection agreement
Aug. 19, 2009	The start of the construction of the TEIAS electricity transmission line	The subcontractor agreement for construction of the transmission line
April 13, 2010	EMRA Approved capacity upgrade	The updated special terms of license agreement
May 17, 2010	Water Usage Agreement Updated.	DSI agreement amendment
Dec. 14, 2010	TEIAS system agreements signed	TEIAS system usage agreement
16 Dec. 2010	Expropriation Moderation and Information Meeting 1 Held in the Project site	Summary of Expropriation by the Company Lawyers
Dec. 22, 2010	The completion of the construction of the TEIAS electricity transmission line and the preliminary acceptance by the Ministry of Energy	Substantial completion protocol-transmission line
Mar. 10, 2011	The preliminary acceptance of the Dam and the HEPP for two units and the start of the electricity generation	Alkumru HPP Preliminary acceptance protocol for units 1 and 2
April 12, 2011	The preliminary acceptance of the Dam and the HEPP for the third unit	Alkumru HPP Preliminary acceptance protocol for unit 3
12 May 2011	Expropriation Moderation and Information Meeting 2 Held in the Project site	Summary of Expropriation by the Company Lawyers
Oct. 1, 2012	Feasibility report finalized	FSR
Oct. 12, 2012	Ministry of Environment approved the design upgrade	Environment and Urban Planning Correspondence with Ministry of
09/10/2013	The System Usage agreement renewed to cover all four components.	TEIAS system usage agreement
Jan. 17, 2014	The preliminary acceptance of the Dam and the HEPP for the fourth unit. Total Capacity reached 275.52 MWe.	Alkumru HPP Preliminary acceptance protocol for unit 4

The following figure (Figure 1) schematically summarizes how the project activity is operating and what needs to be considered within the physical project boundary.

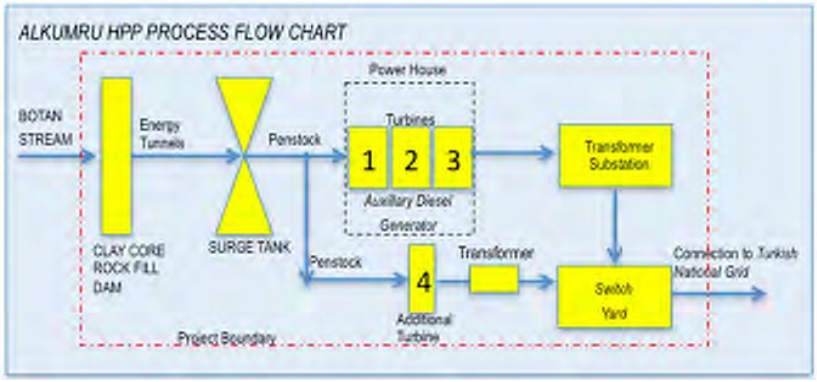

Figure 1: Flow chart showing the basic operational principles of the project activity.

During this monitoring period (December 1, 2013 to September 30, 2020, both days inclusive), the Alkumru HPP produced a total amount of **2'854'350 CO_{2e} tonnes** of emission reductions.

1.2 Sectoral Scope and Project Type

The project category is Sectoral Scope 1: Energy industries (renewable-/non -renewable sources). The project type is grid connected electricity generation from renewable sources. The project is a non- grouped, stand-alone project..

1.3 Project Proponent

Organization name	Limak Hidroelektrik Santral Yatırımları Anonim Şirketi
Contact person	Sinan Tokmar
Title	Hafta Sokak No:9 GOP. Çankaya,Ankara-Turkey
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Telephone	Tel: 90 312 446 88 00 and F:90 312 437 38 46
Email	stokmar@limak.com.tr

1.4 Other Entities Involved in the Project

Organization name	Ekobil Environmental Services and Consulting Ltd1.
Role in the Project	Preparation of the Monitoring Report and Contracting of the VVB

[1] Registered to the Ankara Chamber of Trade, with the full name of "Ekobil Çevre Hizmetleri Danışmanlık Eğt.Tar. Hayv. Mad. İnş. İth. İhr.Tur. ve Tic. Ltd. Şti

Contact person	G. Aslı Sezer Özçelik
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1.5 Project Start Date

Project start date is: 10-March-2011

1.6 Project Crediting Period

The project-crediting period is 10 years: 10.03.2011 to 09.03.2021 (both dates inclusive). The crediting period is renewable twice.

1.7 Project Location

The Project Activity is located on the Botan River in the Eastern Anatolia region of Turkey, within the Siirt city borders. It is located between the elevations of 647 m and 541.80 between 42°05'04''–42°05'54'' east latitudes and 37°57'0''–37°57'46'' North latitudes (Figure 2).

The Following (Table 2) gives the coordinates of the Alkumru HPP Dam location and Power house location.

Table 2: Coordinates of the Weir and Power house:

	Latitude	Longitude
Dam	37°57'36.94"N	42° 5'34.94"E
Powerhouse	37°57'25.24"N	42° 5'30.08"E

Below figure indicates the project location.

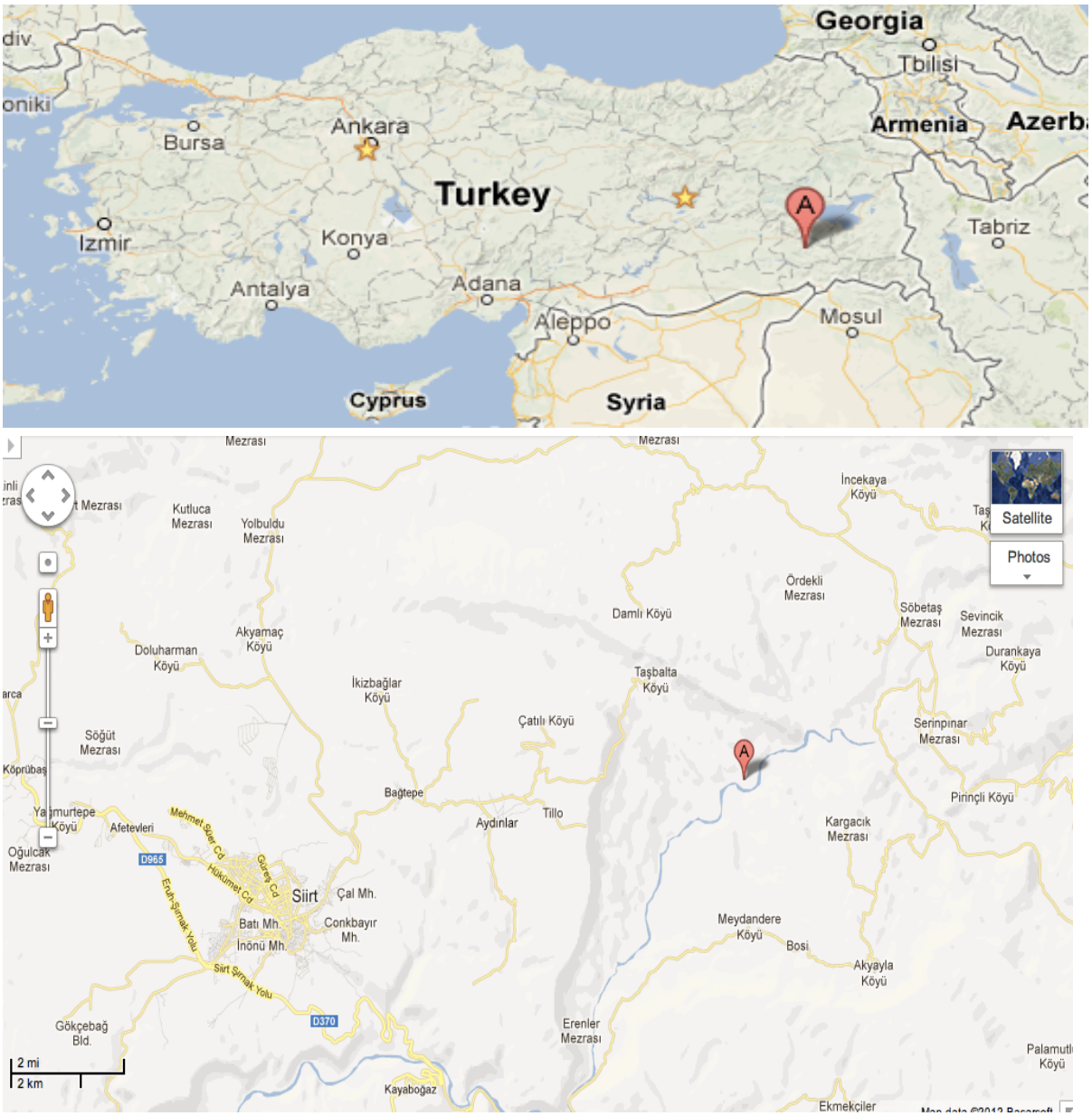


Figure 1: Map showing the location of Alkumru HPP on the Botan River, Siirt, Turkey (The project is indicated as a red balloon-http://goo.gl/maps/6sAMS).

1.8 Title and Reference of Methodology

The following UNFFCC methodology and its related tools are utilised:

Approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources.” Version 13.0.0.

The Approved Methodology refers to the following tools:

“Tool for the demonstration and assessment of additionality” (Version 06.0.0)

"Tool to calculate the emission factor for an electricity system". (Version 02.2.1)

"Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" (Version 02).

1.9 Participation under other GHG Programs

Not applicable:

- Emission Trading Programs and Other Binding Limits: The project reduces GHG emissions from activities that are not included in an emissions trading program or any other mechanism that includes GHG allowance trading, therefore the net GHG emission reductions or removals generated during this monitoring period are not to be used for compliance under such programs or mechanisms. The host country does not have binding emissions limits and the project is not eligible to produce any compliance emissions reductions.
- Other Forms of Environmental Credit: The project has not sought or has not received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period. Additionally, the project activity is not eligible to create another form of GHG-related environment credit.
- Participation under Other GHG Programs: The project is not registered under any other GHG programs and, the project activity does not have any GHG credits claimed under such programs.

1.10 Other Forms of Credit

- Emission Trading Programs and Other Binding Limits: The project is neither eligible nor participating to any other form of emission program.
- Other Forms of Environmental Credit: The program is eligible to create I-REC aspect certificates however we didn't seek or applied to the I-REC registry, during this monitoring period.

1.11 Sustainable Development

The project aims to generate electricity by utilizing the energy of the Botan river, a major tributary to the River Tigris 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.

The Alkumru HPP is developed with 275.52 MWe capacity and with an annual energy production capacity of 812.48 GWh, and after completion of the upstream Çetin and Pervari Hydroelectric Power plants the annual electricity production was envisaged to be 817.26 GWh. The project is a green field project and in the absence of the project activity an equivalent amount of electricity would have been generated in the fossil fuel based national grid.

The following is a list of the project's contribution to the UN SDG:

SDG 7 on access to affordable, reliable, and sustainable energy, as the project is not relying on imported fossil fuels, it is supporting the electricity back bonne of the host country by providing reliable, affordable and continuous renewable energy to the host country grid.

SDG-8 decent work and economic growth. As the project is providing a decent and secure work environment. The project location is an area where the only job opportunity is animal husbandry or agriculture. But the project has not only provided temporary jobs during the construction phase but also permanent jobs and opportunity to improve one's carrier during the operational phase.

SDG-9 on industry and infrastructure as the project involves building resilient infrastructure and fostering innovation. The Alkumru HPP have supported the Turkish national electric Grid and is also helping avoid floods downstream of the project activity.

SDG 13 on urgent action to combat climate change, as the project is replacing the fossil fuel based national grid and it is producing emission reductions.

SDG 15-supporting life on land: the project is providing a landing and feeding ground for migratory water birds such as egret and waders, and for storks who feed along the shores of the reservoir lake. In addition to this the project are is patrolled by security personnel to avoid illegal hunters.

2 SAFEGUARDS

2.1 No Net Harm

Since the project activity has a capacity higher than 50 MW, it has undergone a full Environmental Impact Assessment Process. During this process a third-party Environmental Consultancy, studies the project design and studies the potential environmental impacts of the project, based on the format (parameters) provided by a committee convened under the secretariat of the Ministry of Environment and Urban Planning (was Ministry of Environment and Forestry at the time of preparation of the projects EIA report). The EIA report that also involves a stakeholder consultation process, and that studies the impacts of the project is presented to the same committee and the project is evaluated. If the committee is satisfied that all the precautions are taken and the project is complying with the environmental rules and regulations, the project is than granted an Environmental Impact affirmative certification. The certification provided to the project be found as at the annex of the registered PD of the Project Activity.

Taking into consideration the operational phase only, some of the environmental parameters discussed in this report can be summarized as follows:

Water Quality

Domestic waste water that will be generated as a result of the use of personnel (bathroom, toilet, kitchen) will be treated and filtered. This domestic wastewater arising from the personnel to be employed will then be discharged into Botan Stream. Regarding this issue, a discharge permit is obtained in accordance with the Water Pollution Control Regulation.

Solid Waste

Solid waste that occurs during the operational activities is mainly food scraps and packaging waste, just like ordinary domestic household waste. This is collected into the containers that are sealed and covered. then they are sent to the nearest waste damping. Site as agreed at the protocol signed between. The project owner and the Aydınlar Municipality. Plastic, glass, paper and scrap iron waste will be generated during the operations. These wastes, which can be recycled, will be collected in a separate area and will be given to authorized organizations for recovery. Wastes that can be recycled will be collected in separate containers and will be given to organizations that collect these wastes for recycling.

Air Quality

No dust emission is expected during the operation phase. There will be gas emissions due to the operation of the heaters during winter season. The emissions related to heaters will be below the emission limits allowed by the regulations.

Waste Oils Hazardous Waste :

In the kitchen, a grease trap will be placed in the sink drain. This will prevent the oil from causing blockages in the waste water infrastructure system of the power plant site avoiding. problems in the water treatment facility. Also, may there be waste frying oils in the kitchen. Vegetable waste oils resulting from frying operations all these are collected in a separate container and are given to licensed recycling facilities in accordance with the "Regulation on Control of Waste Vegetable Oils".

Waste motor oils accumulated during the maintenance machinery and equipment in the maintenance workshop will also be collected in impermeable barrels and will be given to licensed waste oil recovery facilities or their producers in accordance with the "Waste Oil Control Regulation". Leakage pans will be used during oil changes, oil will be absorbed by sawdust on the floor with oil leakage, and dirty sawdust will be emptied into containers where hazardous wastes are collected.

Only standard passenger vehicles are used in the operations. The maintenance of the vehicles will be done at the authorized services in the region. For this reason, there is no waste motor oil is expected. At the operations.

Old batteries from vehicles during maintenance are collected separately and delivered to authorized dealers and replaced with new ones. At this stage, "Waste Batteries and Accumulators Control Regulation" is complied with.

During maintenance Works, waste oil, paint, or similar wasted or contaminated materials such as dirthy gloves, rags, soil, sawdust are handeled in accordance with the "Hazardous Wastes Control Regulation"; and they are disposed of by sending. these to licensed disposal facilities through licensed carriers.

Noise

Noise occur during operation of turbines and generators. However, these equipments does not create environmental noise as they are located in a closed area inside the HEPP building. The outer cover of the HEPP building is covered with noise reducing insulation material.

Flora and Fauna

Neither a local endemic plant species nor a plant species protected by international agreements have been encountered in and around the project site. Similarly, none of the identified fauna or flora species are included in the BERN Convention Annex list.

With the construction of the dam a reservoir lake is formed and, the river habitat has transformed into a lake habitat. Since some of the flora is submerged, there is some loss of biomass. The new lake ecosystem also has a positive effect by contributing to the vegetation in the area. In addition, the hiding, feeding and sheltering space for waterfowl and mammals have expanded. New species will enter the area and will create shelters for different species. With the formation of stagnant water in the lake area, the nutrient amount of the aquatic ecosystem have increased, and bird species, especially water birds, started to come to the area for resting, feeding,

sheltering and even for breeding and nesting. These direct and indirect impacts will result in a new vegetation cover that will emerge due to water on the reservoir shore.

2.2 Local Stakeholder Consultation

For the project activity a local stake holders consultation meeting was held in Aydınlar town of Siirt Province, on October 25th, 2007, at 11:00 am, in the Public Educational Center Meeting Hall of Aydınlar Town, Siirt. The meeting was announced at the bulletin boards of the governor house, municipality and at the village boards of Taşlı Village (via its muhtar Osman Çarp), Meydanderesi village (via its muhtar Ali Nur) Kılbasan Village (via its muhtar İzzettin Aygün), and Taşbalta Village (via Yılmaz Alanç). On the day of the meeting, Limak Hidroelektrik Santral Yatırımları A.Ş. has sent mini- busses to the villages and helped the stakeholders reach to the meeting hall. The consultant company that prepared the EIA report, moderated the meeting and provided information about the project and its environmental impacts to the local stakeholders and answered their questions.In general most of the questions were related to the expropriation process and the amount of compensation money. None of the attendants mentioned any doubts about the negative impacts of the project to the surrounding environment. Both the project owner company representatives and the environmental consultants answered these questions emphasizing that the expropriation process would be conducted in line with the host country rules and regulations.

The questions asked can be grouped as expropriation related questions, employment opportunity related questions and environmental impact assessment related questions. The expropriation issues are followed up by another series of meetings And one to one interaction with stakeholders. Regarding the employment issues there was temporary jobs created for the local inhabitants and the environmental impacts are studied and the project was granted all of its environmental permits.

On-going communication with local stakeholders:

The project site is located in South Eastern Turkey where the literacy rates are relatively lower compared t other parts of the country. As such there is and ad-hoc basis ongoing communication between the project office and the local stakeholders. The local stakeholders have the telephone numbers of the project site management, in general they communicate with help of the village headman (Muhtar). In addition to this at every occasion such as the religious or national holidays, the project site personnel and the local inhabitants get together.

One such example is the visit of the Atatürk High School to the project site (see picture 1 to 3 in Appendix 3). Schools like the Atatürk High School visit the facility and learn about the hydro power plant technologies.

In addition to this as can be seen from the visitors log book the stakeholders are free to visit the. Site s they need to or wish so. (See picture 4 at Appendix 3).

There is also a hot line that is active at all times that the local stakeholders can reach out and mention. Their requests or complains.

2.3 AFOLU-Specific Safeguards

The project activity is a stand alone green field project and is not an AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project start date is 10 March 2011. Since that date, there is no special event that may have impact on monitoring of GHG emission reductions. The following table summarizes the project milestones:

Table 3: Significant dates for the project monitoring period:

Date	Milestone
14.12.2012	Final Validation Report
10.03.2011	Date of commissioning of the plant Unit 1 and 2 became operational
12.04.2011	Third Unit became operational
13.06.2008	Factory Calibration date of meters
19 to 22.01.2011	Test of Meters prior to project commissioning
12.06.2018	End of Calibration validity
30.11.2013	End of the first monitoring period
17.01.2014	The fourth unit became operational

3.2 Deviations

2.3.1 Methodology Deviations

N/A. There is no deviations from the implemented methodology.

2.3.2 Project Description Deviations

As was mentioned in the first Monitoring report, the measurement point and measurement descriptions of the internal consumption data (EGPP-self consumption, y) that is used to calculate net electricity generation is deviated from the monitoring plan envisaged and presented in the validated Project Description. Details of this deviation and how the internal consumption is accounted for is explained in section 2.5 at the related parameter (EGPP-self consumption, y) and in Appendix 2.

No further deviations from the previous monitoring period.

3.3 Grouped Projects

N/A Project is not a grouped project activity.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$FC_{i,y}$
Data unit	Volume Unit (cubic meter)
Description	Amount of fuel consumed by relevant power plants in Turkey in years, 2008, 2009, 2010.
Source of data	Official publications at the Turkish Electricity Transmission Company (TEIAŞ) Web Site (http://www.teias.gov.tr/TürkiyeElektrikİstatistikleri/ istatistik2010/front%20page%202010-çiçek%20kitap/yakıt46-49/47.xls)[2]
Value applied	Please see Annex 2-Table-1 in the validated PDD
Justification of choice of data or description of measurement methods and procedures applied	Data used is taken from the TEİAŞ website, which is the website of the Turkish Electricity Distribution Company. The data published on the TEİAŞ website is the most up-to date and reliable data available for the Turkish grid
Purpose of Data	Data used for the calculation of $EF_{grid,OM,Simple,y}$
Comments	

Data / Parameter	NCVi,y
Data unit	GJ/Mass or Volume Unit
Description	Net Calorific Values for fossil fuel type i in year, for the years 2008, 2009 and 2010
Source of data	Regional or national average default values that are reliable and documented in national energy statistics of the Turkish Electricity Transmission Company Web Site (http://www.teias.gov.tr/istatistik2010/front%20page%202010-

[2] If the provided link does not work please try the following link and look for the tittle and number of the excel sheet referred in the reference. "http://www.teias.gov.tr/TürkiyeElektrikİstatistikleri/istatistik2010/İstatistik%202010.htm"

	çiçek%20kitap/yakıt46-49/49.xls http://www.teias.gov.tr/istatistik2010/front%20page%202010-çiçek%20kitap/yakıt46-49/47.xls)
Value applied	Please see Annex-2-Table 5 in the validated PDD.
Justification of choice of data or description of measurement methods and procedures applied	Data used is taken from the TEİAŞ website, which is the website of the Turkish Electricity Distribution Company. The data published on the TEİAŞ website is the most up-to date and reliable data available for the Turkish grid.
Purpose of Data	Data used for the calculation of EFgrid,OM,Simple,y. As data on the NCV is not published directly on the TEİAŞ website, this data is calculated using the heating values of fuels and the volume or mass of fuels consumed for each year.
Comments	

Data / Parameter	EFCO2,i,y
Data unit	tCO2/GJ
Description	Amount of fuel consumed by relevant power plants in Turkey in years, 2008, 2009, 2010.
Source of data	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories, (http://www.ipcc nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/ V2_2_Ch2_Stationary_Combustion.pdf).
Value applied	Please see Annex 2-Table-2 in the validated PDD.
Justification of choice of data or description of measurement methods and procedures applied	According to the “Tool to calculate the emission factor for an electricity system” version 02.2.1 , if values provided by the fuel supplier of the power plants in invoices or regional or national average defaults values are not available the IPCC default values at the lower limit of uncertainty must be used.
Purpose of Data	Data used both for the calculation of EFgrid,OM,Simple,y and EFEL,m,y
Comments	

Data / Parameter	EGy
Data unit	MWh

Description	Net electricity generated in the project electricity system in other words, net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must-run power plants / units, in year
Source of data	Turkish Electricity Transmission Company Web Site http://www.teias.gov.tr/istatistik2010/front%20page%202010-çiçek%20kitap/uretim%20tuketim(22-45)/40(06-10).xls www.teias.gov.tr/istatistik2009/30(84-09).xls[5],[3]
Value applied	Please see Annex 2-Table 3 and Table 4, in the validated PDD.
Justification of choice of data or description of measurement methods and procedures applied	Data used is taken from the TEİAŞ website, which is the website of the Turkish Electricity Distribution Company. The data published on the TEİAŞ website is the most up-to-date and reliable data available for the Turkish grid.
Purpose of Data	Data used for the calculation of EFgrid,OM,Simple,y
Comments	

Data / Parameter	EGm,y
Data unit	MWh
Description	Net electricity generated and delivered to the grid by power unit m in year y
Source of data	Turkish Electricity Transmission Company Web Site (www.teias.gov.tr). Data is extracted from the relevant annexes of the capacity projection reports for the years 2009[4] and 2010[5], and the projects that are listed in Gold Standard Registry, VCS project Database, and Blue Registry (VER+ Standard) are deducted.
Value applied	Please see Annex 2-Table 8a and Table 8b, in the validated PDD.
Justification of choice of data or description of measurement methods and procedures applied	Data used is taken from the TEİAŞ website, which is the website of the Turkish Electricity Distribution Company. The data published on the TEİAŞ website is the most up-to-date and reliable data available for the Turkish grid.
Purpose of Data	Data used for the calculation of EFgrid,BM,y
Comments	

[3] If the provided link does not work please try the following link and look for the tittle and number of the excel sheet referred in the reference. "http://www.teias.gov.tr/TürkiyeElektrikİstatistikleri/istatistik2010/İstatistik%202010.htm"
[4] http://www.teias.gov.tr/projeksiyon/KAPASITE%20PROJEKSIYONU%202010.pdf
[5] http://www.teias.gov.tr/projeksiyon/KAPASITEPROJEKSIYONU2011.pdf

Data / Parameter	ηm,y
Data unit	%
Description	Specific electrical efficiency for all relevant energy sources (natural gas, lignite, coal/anthracite, fuel/motor oil).
Source of data	Default values provided at the Annex 2 of the "Tool to calculate the emission factor for an electricity system" version 02.2.1
Value applied	See Table 14, in the validated PDD.
Justification of choice of data or description of measurement methods and procedures applied	There is no up to date country specific data, and this is the most conservative approach.
Purpose of Data	Data used for the calculation of EFgrid,BM,y
Comments	

4.2 Data and Parameters Monitored

Data / Parameter	EGPP-self consumption, y
Data unit	MWh
Description	Quantity of electricity imported by the power plant from the Grid for self consumption, in year y
Source of data	Please see Appendix 2 for a detailed explanation of the source of the data.
Description of measurement methods and procedures to be applied	Please see Appendix 2 for a detailed explanation of the measurement and recording process. Note that the source of the internally consumed electricity have changed on 17-01 2014 by the commissioning of the 4th unit.
Frequency of monitoring/recording	For all the meters involved, measurement is made continuous and recording is made monthly.
Value monitored	4'783.27
Monitoring equipment	All meters are in compliance with the communiqué for Metering Devices to be used in the Electricity Market[6]. They have an accuracy class of Class002 indicating an accuracy range of

[6] The latest version of the communiqué (in Turkish) can be found in the following link: https://www.epdk.gov.tr/Detay/DownloadDocument?id=+6B2PMv4N4A= , also the periodic calibration is indicated as 10 years in article 9 of the following regulation: https://www.mevzuat.gov.tr/File/GeneratePdf?mevzuatNo=6381&mevzuatTur=KurumVeKurulusYonetmeligi&mevzuatTertip=5

	0,2%. And they have a calibration duration of 10 years as implied by the relevant regulation.[7]
QA/QC procedures to be applied	Measurements to be carried out in compliance with the communiqué for Metering Devices to be used in the Electricity Market.
Purpose of the data	Data to be used to calculate net electricity supplied to the grid. The internal consumption was recorded as explained until 17-01-2014, the commissioning date of the 4th turbine.
Calculation method	N/A
Comments	Please see Appendix-2 for the details of how the data is obtained.

Data / Parameter	EGPP-gross, y
Data unit	MWh
Description	Quantity of electricity produced by the power plant, in y
Source of data	The primary source of data is the Main TEIAS meters located at the Alkumru HPP Powerhouse. The data read through these meters are recorded at the monthly reading protocols, the column related to electricity supplied to the Grid. There are four main meters, each record the generation of electricity from each line that transmit the electricity generated by each unit of generators, and there are four back-up meters, for each one of these main meters. The secondary source of data will be the PMUM/MFRC web site screen shots, the column with the heading ISVM[8].
Description of measurement methods and procedures to be applied	Measurements are to be made by electricity meters. That belong to the grid operator TEIAŞ. The meters are in compliance with the collected data. Data will be used to calculate the net electricity supplied to the grid,
Frequency of monitoring/recording	Recorded continuously, reported monthly on TEIAS Meter Reading Protocols, Reported annually on the VCS Monitoring Report.
Value monitored	5'292'091.90
Monitoring equipment	All Meters are be Elster 1500, and their corresponding serial numbers are as tabulated below:

	Unit 1	Unit 2	Unit 3	Unit 4

[7] Regulation on Type Approval of Measures and Measuring Instruments. Official Journal Date : 17.10.2008 Official Journal Number : 27027
[8] ISVM: İletim Sistemine Veriş Miktarı-Amount Supplied to the Grid

	<table><tr><td>Main Meter Serial No:</td><td>00419607</td><td>00419609</td><td>00419611</td><td>480673</td></tr><tr><td>Back Up Serial No:</td><td>00419608</td><td>00419610</td><td>00419612</td><td>480672</td></tr></table> All meters are in compliance with the communiqué for Metering Devices to be used in the Electricity Market9. They have an accuracy class of Class002 indicating an accuracy range of 0,2%.
QA/QC procedures to be applied	Measurements will be 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 readings are cross checked against the monthly PMUM/MFRC screen shots, to exhibit the quality and reliability of data.
Purpose of the data	Data is used to calculate net electricity supplied to the grid.
Calculation method	Direct, continuous measurement
Comments	Please see table 4 at Appendix 2 for a list of all meters involved in measuring the gross electricity. production and their calibration and testing status.

Data / Parameter	CapPJ
Data unit	W
Description	Installed capacity of the hydropower plant after the implementation of the Project Activity.
Source of data	Scada system or name plate of each generator unit
Description of measurement methods and procedures to be applied	Observed via the SCADA system of the Project Activity
Frequency of monitoring/recording	Once for each monitoring period
Value monitored	275,520,000
Monitoring equipment	SCADA system of the Project Activity

[9] The latest version of the communiqué (in Turkish) can be found in the following link: https://www.epdk.gov.tr/Detay/DownloadDocument?id=+6B2PMv4N4A=

QA/QC procedures to be applied	Can be confirmed also by the parameter readings on the design plates of each turbine and by summing the four units.
Purpose of the data	To calculate power density
Calculation method	N/A
Comments	

Data / Parameter	APJ
Data unit	m2
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	Indirectly measured based on depth readings from the SCADA system
Description of measurement methods and procedures to be applied	SCADA System of the project
Frequency of monitoring/recording	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 will be taken and the corresponding reservoir area will be determined using the same graphic, Presented in Annex 1.
Value monitored	11,530,000
Monitoring equipment	SCADA system water level readings
QA/QC procedures to be applied	Can be checked and compared to satellite imagery available by Google Earth.
Purpose of the data	Power density calculation
Calculation method	Obtained by checking the corresponding depth from the graph provided in Annex-1.
Comments	

4.3 Monitoring Plan

Objectives of the monitoring program

The Monitoring plan is developed to ensure that the Project Activity is well organized from the start in terms of the collection and archival of complete and reliable data that is needed to ensure reliable and accurate measurements of actual emission reductions.

Data to be monitored

Given that the emission factor is calculated on an ex-ante basis, the first data to be monitored is the electricity net supplied to the grid. This parameter is obtained indirectly as a subtraction of electricity imported from electricity exported to the grid.

The second data to be monitored is the installed capacity of the Project Activity. Using the SCADA system installed capacity will be measured automatically.

The third data to be monitored is the reservoir area of the Project Activity. 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 will be taken and the corresponding reservoir area will be determined using the same graphic, Presented in Annex 1.

Monitoring procedures

The monitoring will be 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 4):
Table 4: Positions and responsibilities of the VER monitoring team members

Position	Responsibility
Alkumru HPP Manager	Day to day operation of the Alkumru HPP, 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 PMUM/MFRC data
Chief Mechanical Engineer	Emission reduction calculations
Carbon Consultant	Scripting of the periodic monitoring report Follow up of the verification process

The power generation meter readings are performed by using the main metering devices and the back-up metering devices that are used for accuracy checks only. Data from metering devices will be recorded by TEİAŞ on monthly agreed protocols and will form the basis for invoicing. In addition to the readings of the three metering devices, generation data of the Alkumru HPP can be cross checked, via the openly published real time production data at the EPIAS transparency platform web site which is accessible to everyone from the following address: https://seffaflik.epias.com.tr/transparency/uretim/gerceklesen-uretim/gercek-zamanli-uretim.xhtml

(If one selects https://seffaflik.epias.com.tr/transparency/ and from the left side menu one can choose Generation and Ex-post Generation, then from the screen one can choose the date interval and the Alkumru Power Plant)

In addition to this there is the PMUM System that is accessible to the project owner via a spec,fic password. The monthly screen shot/print outs of the PMUM data is provided to the verifying DOE during the verification process for cross checking. Electricity generation data at the Market Financial Reconciliation Centre (MFRC/PMUM) web page will exhibit the net electricity generated less transmission loss, to be able to produce comparable numbers, the figures taken from PMUM web site or the EPIAS transparency platform may need to be multiplied by the transmission loss factor of the grid, that is a correction factor that will bring the numbers equal to those used in emission calculations. The numbers considered in emission calculations are always conservative.

The measurement point and measurement descriptions of the internal consumption data (*EGPP-self consumption, y*) that is used to calculate net electricity generation is deviated from the monitoring plan envisaged and presented in the validated Project Description. Details of this deviation and how
the internal consumption is accounted for is explained in section 2.5 at the related parameter (*EGPP-self consumption, y*) and in Appendix 2.

The internal consumption ıs recorded this way until the commissioning of the 4th turbine that is constructed to utilize the energy of the water discharged to support life in the river. After the removal of the construction camp site the internal consumption is recorded by two way meters that measure the electricity export and by an other set of dedicated meters as explained in the Appendix 2..

Monitoring equipment

Electricity meters

The main and back-up electricity meters are bi-directional for quantifying the electricity delivered by the Project Activity to the grid.

The meters are in compliance with the standards of the Turkish Standards Institute and will have obtained a "Type and System Approval" certificate from the Ministry of Trade and Industry. In case there are modifications to the standards, the modified standard shall be valid; and in case a valid standard is cancelled or abolished, the new standard shall be valid. The standards that will be used are TS-620 EN 60044-1 and TS718 IEC60044.2 for main and back-up meters, respectively. The sensitivity of the main and secondary meters are CI = 0.2 for active and reactive energy. The meters shall be factory calibrated by the manufacturer before installation. Records of the meter (type, made, model and calibration documentation) will be retained in the quality control system.

Data collecting and recording

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 will be sold to TEİAŞ. Therefore, TEİAŞ measures the electricity produced by three main meters and three Back-up meters:

Meters:

A. Main Electricity Meters:

a. Unit 1 Main Meter: ELSTER A 1500: Serial Number: 00419607

b. Unit 2 Main Meter: ELSTER A 1500: Serial Number: 00419609

c. Unit 3 Main Meter: ELSTER A 1500: Serial Number: 00419611

d. Unit 4 Main Meter: ELSTER A 1500: Serial Number: 00480673

B. Back-up Electricity Meters:

a. Unit 1 Back-up Meter: ELSTER A 1500: Serial Number: 00419608

b. Unit 2 Back-up Meter: ELSTER A 1500: Serial Number: 00419610

c. Unit 3 Back-up Meter: ELSTER A 1500: Serial Number: 00419612

d. Unit 4 Back-up Meter: ELSTER A 1500: Serial Number: 00 480672

C. Electricity Meters dedicated to follow up internal consumption only:

a. Unit 1 Internal Consumption Meter: ELSTER A 1500: Serial Number: 00401585

b. Unit 3 Internal Consumption Meter: ELSTER A 1500: Serial Number: 00401584

c. Unit 4 Internal Consumption Meter: ELSTER A 1500: Serial Number: 00401587

These meters are placed at the Alkumru HPP powerhouse where the power plant gets connected to the Turkish national grid. Those meters provide official data, which are read and recorded monthly by TEİAŞ officers for invoicing. 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.c) – 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 will be checked continuously if there is a difference of 0.2 % in the readings of the main and the auxiliary meters, the calibration is repeated.

At the end of each month, the monthly generation is read remotely and e-mailed to the project owner. In case of failure of the main meter, the control meter is used to determine the invoiced generation amount. These readings can be on site as well as remotely by the systems that will be put in place by the grid operator TEIAS.

The net electricity produced (EGPP-net, y) in year y is calculated by subtracting the total electricity consumed by the hydroelectric power plant (EGPP-self consumption, y) , from the gross electricity generation (EGPP-gross, y) . After obtaining the net electricity production value, the emission reductions will be calculated by multiplying the net electricity with the Ex-ante Combined Margin Emission Factor calculated above.

Measuring Installed Capacity

By means of the SCADA system established in the plant all kinds of technical parameters related with turbines and generators including installed capacity will be measured and stored in the system on real time basis. The installed capacity of the plant will be measured from SCADA once a year while the plant is operated with full load and the related data will be stored as per the monitoring program.

Measuring Reservoir Area

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 will be taken and the corresponding reservoir area will be determined using the same graphic, Presented in Annex 1.

Data management

At the end of each month, electricity supplied to the grid will be entered into an electronic spread sheet. The data to be measured for installed capacity and reservoir area will be entered into an electronic spread sheet at the end of each year. The electronic files will be backed up on both hard drives and on a Compact Disc (CD).

Quality Control and Assurance (QC/QA)

All of the main and back-up meters are owned and installed by the grid operator, TEIAS. The Calibrations of the electricity meters are valid for the next 10 years after calibration,

The grid operator's Metering Officer should be notified of any failure of one of the meters. TEIAS is the only one entity, authorized to deal with fixing, calibrating, or changing the meters, which will be done either by the grid operator or by a company authorized by the grid operator. The Project Owner will keep electricity sale and purchase records, to which the recorded data will be compared.

All written documentation such as maps, drawings, the EIA and the Feasibility study, will be stored and will be made available to the verifier so that the reliability of the information may be checked.

All data records will be kept for at least 2 years from the last project-credited year.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The baseline emissions (BEy) are calculated based on the following formula:

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

Bey = Baseline emissions in year y (tCO2/yr)

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

$EF_{grid,CM,y}$ = Combined margin CO2 emissions factor in year y (tCO2/MWh)And

And

$EG_{PJ,y} = EG_{Facility,y}$

$EG_{Facility,y}$ = Quantity of net electricity generation supplied by the project plant to the grid in year y (MWh/y)

The Combined margin CO_2 emissions factor in year y (tCO_2 /MWh), $EF_{grid,CM,y}$, is fixed ex-ante for the duration of the crediting period, and is 0.53985 tCO_{2e}/MWh.

The following table shows the original data as reported in the monthly meter reading records, which are the result from remote meter readings sent by TEIAS staff being e-mailed to Alkumru HPP Operation management, at the end of each month. The meter reading records serve as basis for all sub-sequent

processes, especially settlement and billing for electricity supplied to the grid. The collected data is kept by Limak Hidroelektrik Santral Yatırımları A. Ş. during the crediting period and until two years after the last issuance of VCUs for the Alkumru HPP project activity for the crediting period under consideration. The following table (table 5) is the Baseline emissions of the project calculated for the monitoring period

(1 December 2013 to 30 September 2020 –both days inclusive).

		A-Gross Electricity Production	B-Self Electricity Consumption	C-Net electricity production C=A-B	Baseline Emissions = $EG_{PP-net,y}$ * EF_{CM}	National Grid Emission Factor
	Symbol	$EG_{PP-gross, y}$	$EG_{PP-self\ consumption, y}$	$EG_{PP-net, y}$	BE1	EF_{CM}
YEAR	Units	MWh	MWh	MWh	tCO_2e	tCO_2e/MWh
2013	December	31'492.30	56.39	31'435.91	16'970.68	0.53985
				Total in 2013 (December 1st to December 31st)	**16'970.00**	
2014	January	11'041.66	11.22	11'030.44	5'954.78	
	February	50'349.00	59.00	50'290.00	27'149.06	
	March	52'051.00	68.00	51'983.00	28'063.02	
	April	73'151.00	35.17	73'115.83	39'471.58	
	May	113'604.00	46.00	113'558.00	61'304.29	
	June	49'806.00	5.00	49'801.00	26'885.07	
	July	34'707.70	4.61	34'703.09	18'734.46	
	August	36'259.00	5.60	36'253.40	19'571.40	
	September	28'090.00	9.30	28'080.70	15'159.37	
	October	5'233.00	2.77	5'230.23	2'823.54	
	November	12'723.00	61.31	12'661.69	6'835.41	
	December	40'225.00	63.00	40'162.00	21'681.46	
				Total in 2014 (January 1st to December 31st)	**273'633**	
2015	January	65'254.61	36.18	65'218.43	35'208.17	
	February	41'612.92	30.36	41'582.56	22'448.34	
	March	52'098.21	9.27	52'088.94	28'120.21	
	April	120'972.50	55.35	120'917.15	65'277.12	
	May	155'418.71	92.36	155'326.35	83'852.93	
	June	104'478.17	52.34	104'425.83	56'374.28	
	July	50'917.91	68.76	50'849.15	27'450.91	
	August	55'857.90	24.78	55'833.12	30'141.51	
	September	32'967.31	20.85	32'946.46	17'786.15	
	October	4'350.09	17.49	4'332.60	2'338.95	
	November	12'691.82	19.10	12'672.72	6'841.37	
	December	29'505.39	56.23	29'449.16	15'898.13	
				Total in 2015 (January 1st to December 31st)	**391'738**	
2016	January	67'232.62	153.15	67'079.47	36'212.85	
	February	88'773.49	143.45	88'630.04	47'846.93	
	March	93'786.90	187.86	93'599.04	50'529.44	

	April	138'257.80	75.60	138'182.20	74'597.66
	May	198'257.54	1.69	198'255.85	107'028.42
	June	113'219.79	91.65	113'128.14	61'072.23
	July	52'492.87	135.34	52'357.53	28'265.21
	August	38'930.50	55.08	38'875.42	20'986.90
	September	31'332.27	59.82	31'272.45	16'882.43
	October	17'784.43	59.65	17'724.78	9'568.72
	November	45'412.61	1.68	45'410.93	24'515.09
	December	48'158.91	85.69	48'073.22	25'952.33
				Total in 2016 (January 1st to December 31st)	**503'458**
2017	January	16'395.15	89.50	16'305.65	8'802.61
	February	30'699.89	62.08	30'637.81	16'539.82
	March	55'850.73	176.12	55'674.61	30'055.94
	April	143'074.04	82.67	142'991.37	77'193.89
	May	204'485.54	9.23	204'476.31	110'386.54
	June	106'521.05	86.11	106'434.94	57'458.90
	July	59'166.12	66.68	59'099.44	31'904.83
	August	43'539.97	46.23	43'493.74	23'480.10
	September	25'044.70	29.46	25'015.24	13'504.48
	October	7'298.66	0.32	7'298.34	3'940.01
	November	9'052.63	0.03	9'052.60	4'887.05
	December	19'787.60	69.21	19'718.39	10'644.97
				Total in 2017 (January 1st to December 31st)	**388'799**
2018	January	31'959.90	122.60	31'837.30	17'187.37
	February	47'673.09	21.30	47'651.79	25'724.82
	March	113'057.39	139.96	112'917.43	60'958.47
	April	59'587.57	149.96	59'437.61	32'087.39
	May	117'854.09	37.36	117'816.73	63'603.36
	June	70'980.92	121.33	70'859.59	38'253.55
	July	36'203.99	45.17	36'158.82	19'520.34
	August	50'586.26	86.01	50'500.25	27'262.56
	September	25'169.35	48.41	25'120.94	13'561.54
	October	9'989.87	97.20	9'892.67	5'340.56
	November	21'579.76	3.20	21'576.56	11'648.11
	December	71'965.98	29.57	71'936.41	38'834.87
				Total in 2018 (January 1st to December 31st)	**353'982**
2019	January	61'705.76	55.23	61'650.53	33'282.04

	February	63'335.97	79.52	63'256.45	34'148.99
	March	108'274.09	110.82	108'163.27	58'391.94
	April	163'696.25	129.08	163'567.17	88'301.74
	May	201'841.88	1.83	201'840.05	108'963.35
	June	179'060.98	21.32	179'039.66	96'654.56
	July	90'657.09	125.88	90'531.21	48'873.27
	August	64'264.83	140.33	64'124.50	34'617.61
	September	31'356.59	41.80	31'314.79	16'905.29
	October	28'914.09	40.60	28'873.49	15'587.35
	November	14'301.51	12.21	14'289.30	7'714.08
	December	9'505.37	0.03	9'505.34	5'131.46
Total in 2019 (January 1st to December 31st)					**548'571**
2020	January	28'620.15	0.03	28'620.11	15'450.57
	February	45'716.23	60.97	45'655.26	24'646.99
	March	38'169.04	137.38	38'031.66	20'531.39
	April	129'903.67	47.06	129'856.61	70'103.09
	May	185'841.18	11.85	185'829.33	100'319.96
	June	128'569.58	46.36	128'523.22	69'383.26
	July	57'734.61	27.62	57'706.99	31'153.12
	August	44'281.76	59.42	44'222.35	23'873.43
	September	40'319.08	53.86	40'265.23	21'737.18
Total in 2020 (January 1st to June 31st)					**377'199.00**
Grand Total					**2'854'350.00**

5.2 Project Emissions

As the methodology states the PEy in case of a hydro power project can be calculated:

"Emissions from water reservoirs of hydro power plants (PEHP,y)

For hydro power project activities that result in new reservoirs and hydro power project activities that result in the increase of existing reservoirs, project proponents shall account for CH_4 and CO_2 emissions from the reservoir, estimated as follows:"

"...the power density of the project activity (PD) is greater than 4 W/m^2 and less than or equal to 10 W/m^2 :"

During this monitoring period the maximum lake level is observed to be 650 m, rounding up this value gives a maximum water level of 650 m at this level reservoir lake covers an aerial extent of

11,530,000 m^2 . The project capacity during the monitoring period was 275,520,000 W therefore the power density of the project calculates as (275,520,000 /11,530,000=23.89 W/m^2) which is

>10 W/m^2 therefore.:

PEHP,y = 0

Where:

PEHP,y Project emissions from water reservoirs (tCO_2e/yr)

Although there will be auxiliary diesel generators installed within the project boundary, the emissions from these have been deemed negligible as per the ACM0002 (version 13.0.0) methodology.

5.3 Leakage

There are no leakage emissions associated with the project activity.

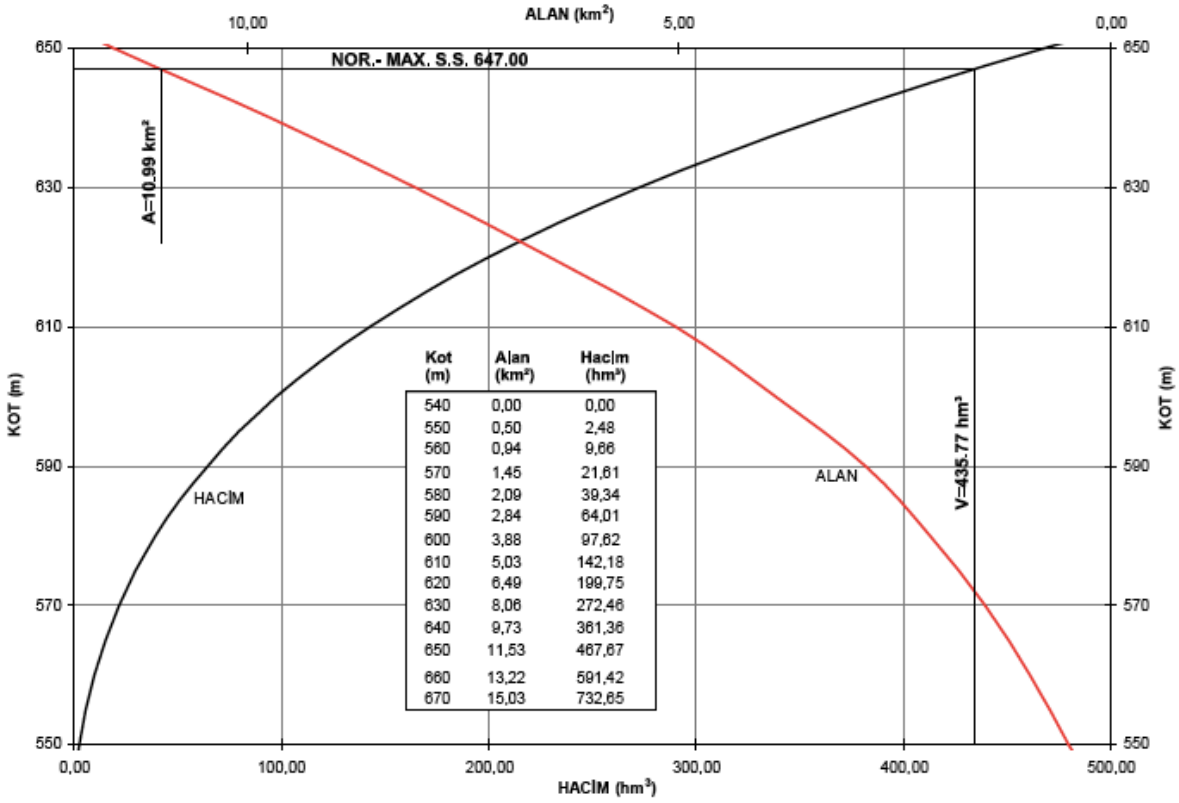
5.4 Net GHG Emission Reductions and Removals

The following table (Table 4) gives a summary of the project activity related emission reductions with respect to vintage years:

Table 4 : Project activity related emission reductions with respect to vintage years.

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2013 (December 1st to 31st)	16'970	0	0	16'970
2014(January 1st to December 31st)	273'633	0	0	273'633
2015(January 1st to December 31st)	391'738	0	0	391'738
2016(January 1st to December 31st)	503'458	0	0	503'458
2017(January 1st to December 31st)	388'799	0	0	388'799
2018(January 1st to December 31st)	353'982	0	0	353'982
2019(January 1st to December 31st)	548'571	0	0	548'571
2020 (January 1st to September 30th)	377'199	0	0	377'199
Total	2854350	0	0	2'854'350

APPENDIX 1: VOLUME VS AREA CURVE



This curve is taken from the up to date feasibility report prepared by SuYapı Ltd. It is given as Figure 4.6.1 in the fourth chapter of the report.

It is a correlation curve between water depth, reservoir volume and reservoir area.

The aerial extend that corresponds to the maximum operation level of 647 m is 10.99 km^2.
During this monitoring period the maximum water level recorded was 647.07 m. Rounding that value up to 650 m yields a reservoir area of 11,530,000 m^2.
Therefore, the power density calculates as follows:

Power Density Calculation:		
Parameter	**Value**	**Unit**
Capacity During Monitoring Period:	275,520,000	W
Maximum Lake Area:	11,530,000	m^2
Power Density (=275,520,000/11,530,000)	23.89	W/m^2

Since Power Density (23.89 W/m2) is greater than 10 Project Emissions are zero (0)

APPENDIX 2: INTERNAL CONSUMPTION

The internal consumption of the project activity comprises of the electricity used for the running up of the computers, automatization systems, internal and external lightings, and electricity used to pump water to the fish passage. In case of the project activity, during the construction process of the fourth unit the internal consumption was obtained from two different major sources, depending on the operational status of the turbines.

1. When the Turbines were operational the internal consumption was obtained via Turbine Unit 1 and Turbine Unit 3, and this consumption was recorded via bi-directional meters. This is still the case and all unit meters are bidirectional. They all measure active electricity sent to the grid and the reactive electricity taken from the grid.

2. When the turbines are not operational the electricity for the internal consumption needs were obtained by the electricity obtained via the mid voltage (33KVa) distribution grid. This consumption is recorded by the TEDAŞ meter that produces invoices, but these invoices also included the electricity consumed by the construction work site camp. The schematic representation of how internal consumption is measured is shown in the following figure (Figure3):

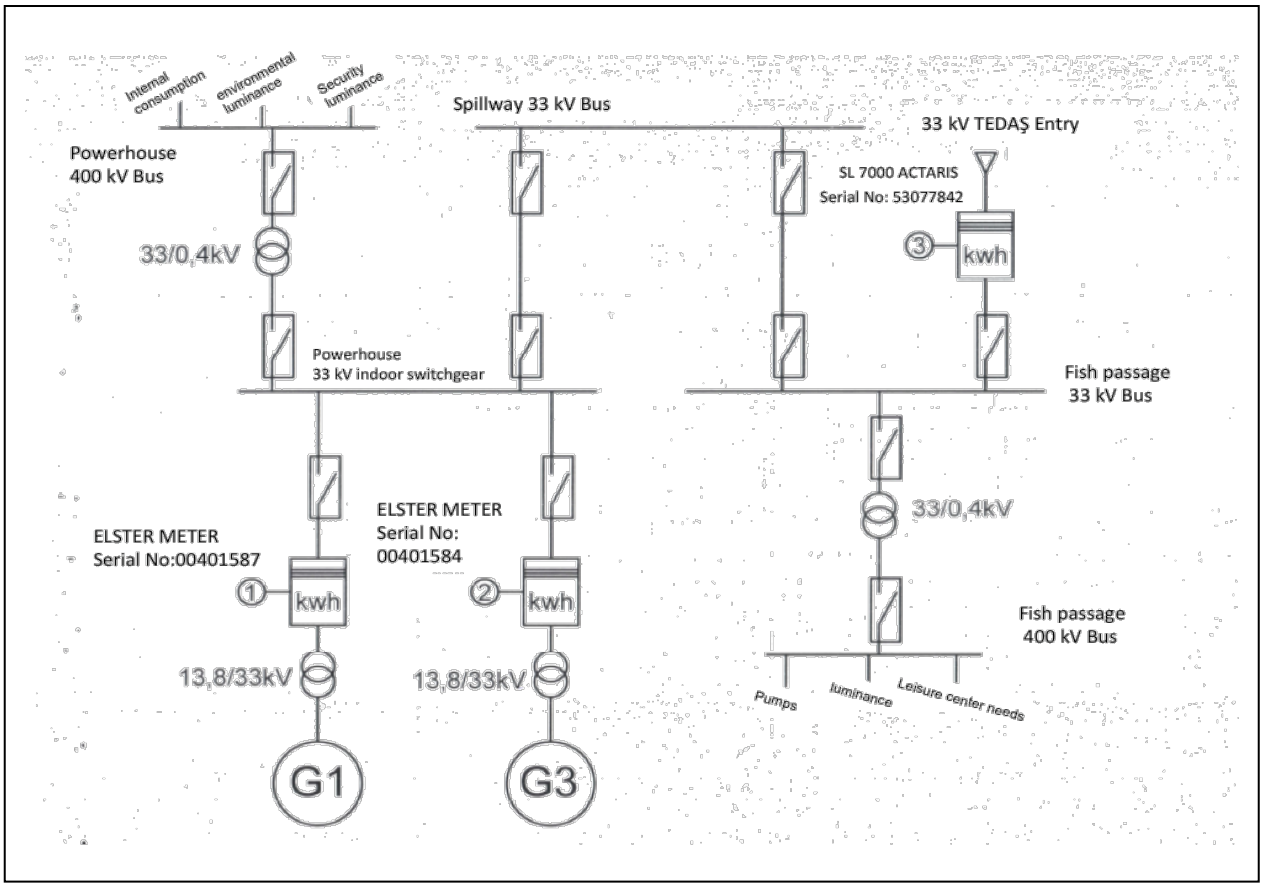


Figure 2: Schematic representation of the points where internal consumption is measured.

Therefore, another meter, that is located at the fish passage location, that belongs to the project owner recorded the electricity consumed by the project activity when it is not operational. Information about this meter and the meter that is installed as a back-up/control meter can be found below (Table 5 and Figure 3):

Table 5: Information about the meters that measures internal consumption when the power plant is not operational.

	Main Meter	Control Meter
Brand:	Actaris SL7000	Actaris SL7000
Serial Number:	53077842	53077843

Main Meter	Control Meter
	

Figure 3: The pictures of the meters that measures internal consumption when the power plant is not operational.

This was the case only for the first month of this monitoring. Period (December 2013), Then as the fourth turbine became operational, the following Meters:

Table 3 .List of Internal consumption recording meters

Purpose	Internal consumption recording meter brand	Internal consumption recording meter serial number	Calibration Date	Used for the period
Internal Consumption via Construction Camp Site Main	Actaris SL7000	53077842		Only used for December 2013
Internal Consumption via Construction Camp Site Back Up	Actaris SL7000	53077843		Only used for December 2013
Internal Consumption via Unit 1	Elster 1500	401585	29-01-2010	Entire monitoring period
Internal Consumption via Unit 3	Elster 1500	401584	29-01-2010	Entire monitoring period
Internal Consumption via Unit 4	Elster 1500	401587	29-01-2010	Starting Jan 2014
Two Way electricity Measurement via Unit 1 Main	Elster 1500	00419607	20-07-2010	Entire monitoring period
Two Way electricity Measurement via Unit 1 Backup	Elster 1500	00419608	20-07-2010	Entire monitoring period
Two Way electricity Measurement via Unit 2 Main	Elster 1500	00419609	20-07-2010	Entire monitoring period
Two Way electricity Measurement via Unit 2 Back up	Elster 1500	00419610	20-07-2010	Entire monitoring period
Two Way electricity Measurement via Unit 3 Main	Elster 1500	00419611	20-07-2010	Entire monitoring period

Two Way electricity Measurement via Unit 3 Back up	Elster 1500	00419612	20-07-2010	Entire monitoring period
Two Way electricity Measurement via Unit 4 Main	Elster 1500	00480673	04/04/2013	Starting Jan 2014
Two Way electricity Measurement via Unit 4 Back up	Elster 1500	00480672	04/04/2013	Starting Jan 2014

Since Unit 4 is operational most of the Internal consumption is going through Unit 4

The Calibrations are valid for 10 years but the Grid operator tested the meters in 2018 and they allowed their usage Until October 2020 when the meters with serial numbers: 401585, 401584,

, 00419607, 00419608, 00419609, 00419610, 00419611, and 00419612 will be renewed.

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APPENDIX 3: ON-GOING COMMUNICATIONS

At the project site there is an ad-hoc basis ongoing communication between the project office and the local stakeholders. The local stakeholders have the telephone numbers of the project site management.

And there is a hot line and a fax line provided to local stakeholders:

Hot line and Address for Alkumru HPP :

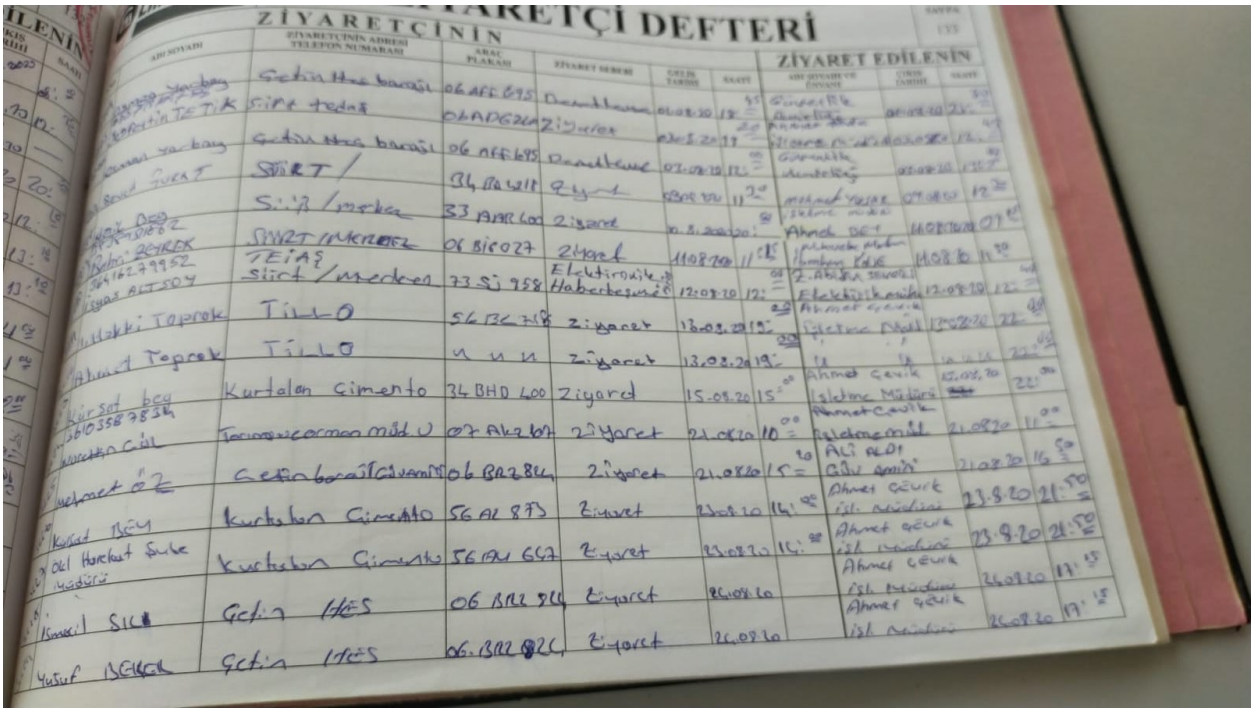
Taşbalta Köyü Mevki Tillo/SİİRT
Tel: +90 484 224 20 36/+90 484 224 20 46
Fax: +90 484 224 20 56

The following are. The pictures from the. Atatürk High School Visit and from a sample from the visitor's log book showing various visitors.

Picture 1: Visit records of Atatürk High School Students

Picture 2: A moment from the. Visit of high school students

Picture 3. A moment from the. Visit of high school students



Picture 4: Visit records of various visitors