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TEMPLATE

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

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VERSION v. 1.2

RELATED SUPPORT

- **TEMPLATE GUIDE Key Project Information & Project Design Document v.1.2**

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Key Project Information

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KEY PROJECT INFORMATION

GS ID of Project	GS729
Title of Project	Selale HEPP
Time of First Submission Date	17/03/2023
Date of Design Certification	22/10/2011
Version number of the PDD	09
Completion date of version	19/02/2024
Project Developer	GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık Ve Tic. A.Ş.
Project Representative	Muradiye Elektrik Üretim A.Ş.
Project Participants and any communities involved	Muradiye Elektrik Üretim A.Ş. (Project Owner, Private Entity) GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık Ve Tic. A.Ş. (Project Developer, Private Entity)
Host Country (ies)	Turkey
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Scale of the project activity	☐ Micro scale ☒ Small Scale ☐ Large Scale
Other Requirements applied	N/A
Methodology (ies) applied and version number	ACM0002 - "Grid connected electricity generation from renewable sources" - Version 21.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☐ Regular ☒ Retroactive

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted	SDG Impact (defined in B.6.)	Estimated Annual Average	Units or Products
13 Climate Action (mandatory)	Renewable energy power plants such as Selale HEPP, will contribute to “Emissions Reductions or Removals and/or Adaptation to Climate Change” by reducing CO ₂ emissions caused by fossil fuel-fired power plants that are displaced due to the project activity, in line with GS4GG principles.	25,167 tonnes of CO ₂ e per annum	tCO ₂ (GS VERs)
7 Affordable and Clean Energy	Increasing the number and percentage of renewable energy power plants such as hydro power plants will provide substantial increase in the share of renewable energy in the global energy mix and ensure universal access to affordable, reliable and modern energy services.	54,523 MWh/yr	MWh/yr
8 Decent Work and Economic Growth	The project will generate employment and income. All employees will be provided with the required trainings and certification depending on the duties of their own.	The project is expected to create job opportunity for around 8 people.	Number of recruited staff and their social security records

SECTION A. DESCRIPTION OF PROJECT

A.1 Purpose and general description of project

The Selale HEPP (Hydro Electric Power Plant) has been developed by Muradiye Elektrik Üretim A.Ş.. The project is reducing national energy deficit and development of local industries as it allows the use of local sources for energy generation to meet the increasing demands. The project is located 5 km on the north of Muradiye District of Van Province in Türkiye on Bendimahi Creek. Selale HEPP will have a capacity of 13.650 MWm / 13.377 MWe, and is composed of Selale Regulator and Selale Powerhouse with the expected electricity generation of 54,523 MWh per year.

Also called Muradiye II HEPP, Selale HEPP is part of the Muradiye Ayrancilar HEPP which involves Muradiye I HEPP composed of Ayrancilar Regulator and Ayrancilar Powerhouse. The two projects had been planned as one initially; however, the project design was changed to preserve Muradiye Waterfall and the projects were separated. Accordingly, Ayrancilar HEPP remains in the upstream of Selale HEPP which has a capacity of 28.650 MWm / 28.077 MWe with an expected electricity generation of 114,437 GWh. The distance between the two projects is about 1.1 km and will be working independently of each other. Electricity generated at Ayrancilar HEPP will be fed to the outlet of Selale HEPP where both are connected to the national grid at 154 kV Erciş TM, Transmission Center, with a 5 km-long energy transmission line. Both Muradiye I (i.e. Selale HEPP) and Muradiye II (i.e. Ayrancilar HEPP) are connected to the same electricity meter.

i. The location of the project activity

A hydropower plant is installed in Muradiye District in Van Province of Türkiye, with the purpose of contributing to the national economy the meeting the increased electricity demand.

ii. The technologies/measures to be employed and/or implemented by the project activity

In this scope, 3x(4.550 MWm/4.459 MWe) were installed. The project uses Orient horizontal axis generators with total electrical output capacity of 13.650 MWm / 13.377 MWe with the purpose of contributing to the national economy the meeting the increased electricity demand. The project complies with the relevant regulations and laws in Türkiye.

In line with Turkish environmental regulations, an “Environmental Impact Assessment (EIA) Exemption Letter” was approved by the Ministry of Environment and Forestry on 08/08/2007. The project was licenced on 14/06/2007 (Licence No. EÜ/1224-3/870). The power plant is connected to the national grid at Erciş TM, 154 kV substation.

iii. The project boundary

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

iv. The baseline scenario

According to the methodology, baseline scenario was identified as “the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources”.

The purpose of the project is to generate clean energy by harnessing the hydro power and providing the energy to the Turkish national grid. By implementing the project, investors also aim to reduce dependency to the fossil fuels thereby reducing the sources of environmental pollution. In order to achieve the highest possible power output and the emission reductions associated with it; the project owner invested in state-of-the-art equipment and all the necessary assessments were carried out before the implementation.

The project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO₂ emissions from electricity generation by fossil fuel power plants connected to Turkish National Power Grid. The average annual generated energy of 54,523 MWh¹, will be able to deliver a reduction in emissions of around 25,167 tCO₂e

¹ “Muradiye Ayrancılar Hidroelektrik Santrali”s Generation Licence

(tons of carbon dioxide equivalent) per annum. Total estimated emission reduction in the first crediting period is calculated as 176,169 tCO₂e.

Main goals of the Selale HEPP Project include;

- Utilization of the hydro power potential of Turkey in order to meet increasing electricity demand and maintain energy security.
- Reduction of GHG emissions through increasing share of renewable resources.
- Contribution to economic development by creating direct and indirect job opportunities during construction and operation phases.
- Reduction of import dependency on fossil fuel weighed electricity sector and diversify generation mix through use of local resources.
- Contribution to sustainable development through supporting local community and local economy.

In terms of local benefits, the project mainly contributes to the reduction of local air pollutants and local employment.

Table 2. Milestones of Selale HEPP

Milestone	Date
License Issuance	14/06/2007
EIA Exemption	08/08/2007
Construction Agreement*	26/11/2007
Start of Construction	01/12/2007
Equipment Purchase Contract	14/01/2008
License Amendment	13/03/2008
LSC Meeting	16/04/2009
Commissioning of Selale HEPP Unit 1-2-3	25/03/2011
Commissioning of Ayrancılar HEPP Unit 1 and Unit 2	25/08/2011
Commissioning of Ayrancılar HEPP Unit 3	14/04/2012
First crediting period	25/03/2012-24/03/2019
Second crediting period	25/03/2019-24/03/2026

*Date of investment decision

All required permits had been taken from relative institutions before project implementation. Some of the permits taken are listed in the table below.

Table 3. Permits

Permit	Source	Date	Completed?
Land Use Permit	Manisa Province	28/06/2016	Yes
Expropriation Permit	Energy Market Regulatory Board	13/06/2017	Yes
Ownership and Right to Use	Energy Market Regulatory Board	18/08/2017	Yes
Contruction Plan Approval	Republic of Turkey Ministry of Environment and Urbanization	22/08/2017	Yes
Land Renting Permit	İzmir Province	28/12/2017	Yes
Land Use Permit	İzmir Province	03/04/2018	Yes
Fire Prevention Compliance Report	Directorate of Fire and Emergency Response	25/12/2020	Yes

A.1.1. Eligibility of the project under Gold Standard

Project activity involves installation of a 13.377 MWe hydro power plant for electricity generation. Project is categorized as “Renewable Energy Supply” according to GS definition whereas it is included in the sectoral scope 1 “Energy Industry – Renewable Sources” according to the UNFCCC definition. Project type is retroactive as per the GS rules.

The project meets the eligibility principles and requirements as per section 3.11 of GS4GG Principles & Requirements, as described below:

	Criteria	The Project
(a)	Types of Project: Eligible projects shall include physical action/implementation on the ground. Pre-identified eligible project types are identified in the Eligibility Principles and Requirements section.	Project is a renewable energy (hydro) installation activity. Project activity include physical action/implementation on the ground.
(b)	Location of Project: Projects may be located in any part of the world.	Project is located in Turkey, which is eligible for VER projects.

(c)	Project Area, Project Boundary and Scale: The Project Area and Project Boundary shall be defined. Projects may be developed at any scale although certain rules, requirements and limitations may apply under specific Activity Requirements, Impact Quantification Methodologies and Products Requirements. In order to avoid double counting the Project shall not be included in any other voluntary or compliance standards programme unless approved by Gold Standard. Also, if the Project Area overlaps with that of another Gold Standard or other voluntary or compliance standard programme of a similar nature, the project shall demonstrate that there is no double counting of impacts at design and performance certification.	The Project Area and Project Boundary are defined. Project is not included in any other voluntary or compliance standards. Project Area does not overlap with that of another Gold Standard or other voluntary or compliance standard programme of a similar nature, the project shall demonstrate that there is no double counting of impacts at design and performance certification.
(d)	Host Country Requirements: Projects shall be in compliance with applicable Host Country's legal, environmental, ecological and social regulations.	The Project is in compliance with applicable Turkey's legal, environmental, ecological and social regulations.
(e)	Contact Details: As part of the Project Documentation the Project Developer shall provide (i) name and (ii) contact details of all Project Participants; AND in case of an organisation (iii) the legal registration details and (iv) documentation by the governing jurisdiction that proves that the entity is in good standing.	Project Developer has provided names, contact details of all Project Participants.
(f)	Legal Ownership: Full and uncontested legal ownership of any Products that are generated under Gold Standard Certification, shall be demonstrated. Where such ownership is transferred from project beneficiaries	In case if ownership is transferred from project beneficiaries, it will be demonstrated transparently

	this must be demonstrated transparently and with full, prior and informed consent (FPIC).	and with full, prior and informed consent.
(g)	Other Rights: As well as legal title and ownership, the Project Developer shall also demonstrate where required uncontested legal rights and/or permissions concerning changes in use of other resources required to service the Project (for example, access rights, water rights etc.). Any known disputes or contested rights must be declared immediately to Gold Standard by the Project Developer and resolved prior to further project implementation in affected areas.	The project has had water usage rights since 26/04/2007, issued by Ministry of Energy and Natural Resources of Turkey. In case if any legal disputes are arised, declaration will be made to Gold Standard by the Project Developer.
(h)	Official Development Assistance (ODA) Declaration: All Project Developers applying for project activities located in a country named by the OECD Development Assistance Committee's ODA recipient list and seeking Gold Standard Certification for carbon credits shall declare the Official Development Assistance (ODA) support. The Project Developer shall follow the GHG Emissions Reduction & Sequestration Product Requirements and submit the declaration at the time of Design Certification.	As Turkey being a part of the DAC list of ODA Recipients of OECD², a written declaration of non-ODA for the project activity has been submitted during design certification.

i. The project is not pre identified as eligible.

ii. Gold Standard approval, GS4GG Principles and Requirements:

² <http://www.oecd.org/dataoecd/9/50/48858205.pdf>

The project activity complies with Gold Standard and UNFCCC eligibility criteria as reducing carbon dioxide emission that is mainly produced by the Turkish Grid dominated by fossil fuel power plants.

iii. The project meets the Eligibility Principles And Requirements of the Renewable Energy Activity Requirements

Renewable Energy Activity Requirements:

- 4.1 Principle-1: Contribution to Climate Security & Sustainable Development: Project contributes 3 SDSs including SDG 13. Please see Section B 6.1.
- 4.2 Principle-2: Safeguarding Principles: Please see Section D.
- 4.3 Principle-3: Stakeholder Inclusivity: Please see Section E.
- 4.4 Principle-4: Demonstration of Real Outcomes: Please see Section B 6.4.
- 4.5 Principle-5: Financial Additionality & Ongoing Financial Needs: Please see Section B.5.

iv. The project is not registered with any other voluntary or compliance schemes.

The project doesn't claim Green or White certificates or equivalents that may result in double counting as a result of carbon dioxide emission reduction purposes. Project is not registered and also will not benefit from other certification schemes or renewable energy labelling standards.

v. The activity is NOT located in a host country, region, locality or state that has an emission reduction cap enforced OR has the possibility to trade emissions that include the scope of the proposed project.

As Turkey, the host country, has no cap on GHG emissions, the GS VERs don't need to be backed up by allowances or other denominated units resulting in local authorities stating that an equivalent amount of allowances will be retired to back up the GS VERs issued. The project will be registered and seek approval from the national registry on GHG emission reduction projects as regulated by Communiqué on Procedures for Registration of Greenhouse Gas Emission Reduction Projects³.

³ <https://www.resmigazete.gov.tr/eskiler/2015/04/20150402-12.htm>

vi. There is no potential for double counting of impacts if the Project Area overlaps with that of another Gold Standard or other voluntary or compliance standard programme of a similar nature. The project installed capacity and proportional estimated electricity generation is published in a transparent manner. Therefore, no double counting will occur.

vii. The project is in compliance with Turkey's legal, environmental, ecological and social regulations.

Moreover, the project is also eligible for the additional criteria set for the hydro power projects:

- The project is not located on any land which is classified as High Conservation Value areas, both nationally and internationally.

- A Project Identification File has been prepared for SELALE HEPP project by EN-ÇEV (consultant) in 2007, considering final project design. In order to assess the Environmental Impacts of the project, including its location, its characteristics, capacity, interaction with other plants in the vicinity, utilization of natural resources, waste management, social and economic impacts, any natural and historical protected areas within the project boundaries, assessment of geological and seismic aspects of the project site has been considered.
 - This report has been evaluated by Province Directorate of Environment and Forestry. After evaluation of the project and comments of the local agencies, on 08/08/2007, Directorate has decided that no detailed EIA is required for the project activities.
 - Also, since the project is a run-of-river type hydroelectric power generation activity, effects of project on environment has been assessed according to the table C.2 of special guidance of Gold Standard Toolkit. Assessment has shown that project activity complies with GS guidance for run-of- river type HEPPs.
 - In addition to all existing local regulations, project owner has issued all additional pre-cautions to minimize any adverse environmental impacts that may be caused by project activity as a company policy.
 - Stakeholder meeting has been done as stated in Section E.
- A preliminary review was conducted.

As per Principles and Requirements v1.2 para 5.1.47;

- a) There are no changes with respect to the original approved project design. Latest eligibility criterias and requirements are used in the crediting period renewal.
- b) Latest version of Gold Standard requirements are applied in the crediting period renewal.
- c) Baseline scenario is the same, but baseline emission factor has been updated as per the latest data available. There is no impact of change in eligibility criterias affecting the project. Project fulfills new requirements too.
- d) Hydropower specific eligibility criterias are covered in above.
- e) Please see section B.5.2 Ongoing Financial Need.

A.1.2. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

Muradiye Elektrik Üretim A.Ş. is legal owner of the products and all legal rights of the project. After the coup attempt in 2016, the management of the company has changed, and government has impounded the assets of the company. Due to state of emergency and new governance structure commanded by the Savings Deposit Insurance Fund of Türkiye (TMSF). However, the entity does not change after impoundment. Shares of the entity has passed to the government. Hence, same entity will continue to be the owner of the generated products.

As per GHG Emissions Reduction & Sequestration Product Requirements v2.1, Section 14:

14.1 Double Issuance

14.1.1 Double issuance will not occur in this project because one emission reduction unit will not be issued for the same emissions reductions.

14.1.2 The project is not included in any other voluntary or compliance standard or program. Ayrancılar HEPP and Şelale HEPP are connected to the same electricity meters. Ayrancılar HEPP is registered under Verra, the Verified Carbon Standard. However, this does not cause any double counting.

14.2 Double Use

14.2.1 Double use will not occur because same issued emission unit will not be counted twice towards achieving climate change mitigation targets or pledges.

14.2.2 Project developer had already demonstrated full and uncontested legal ownership of any products, including GSVERs, generated under Gold Standard certification, under the entity “Muradiye Elektrik Üretim A.Ş.”. This information has also been checked on EPDK (EMRA) list of active generation licences⁴.

14.2.3 Registry Account Holder has accepted the Gold Standard Impact Registry Terms of Use, which require Account Holders to acknowledge and agree, with respect to the retirement of GSVERs.

14.3 Double Claiming

14.3.1 Double claiminig will not occur in this project.

As per GHG Emissions Reduction & Sequestration Product Requirements v2.1, Section 15:

15.1 Requirements

15.1.1 GSVERs from this project will not be included within and counted under a regulated domestic climate mitigation target, including under a regulated GHG emissions trading scheme, and also claimed by another country, jurisdiction or entity to achieve respective mitigation targets or pledges.

The owner of the issued GSVERs will be Muradiye Elektrik Üretim A.Ş., who has the uncontested ownership of the power plant in this project. There is no confusion or uncertainty about the ownership on the rights of generated products.

A.2 Location of project

GPS coordinates of the weir and powerhouse is given below.

	Longitude	Latitude
Bendimahi Weir	E 43° 45' 38''	N 39° 03' 01''

⁴ <https://lisans.epdk.gov.tr/epvys-web/faces/pages/lisans/elektrikUretim/elektrikUretimOzetSorgula.xhtml>

Powerhouse	E 43° 44' 38"	N 39° 01' 02"
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The project is located in Muradiye District of Van Province in Turkey.

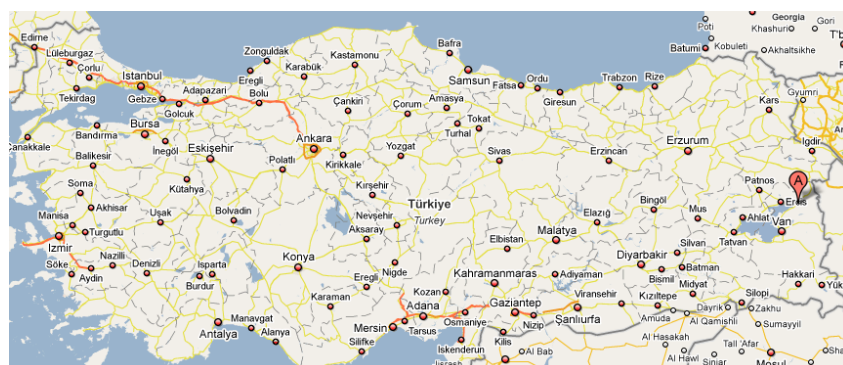


Figure 1. Location of the project on Turkish map

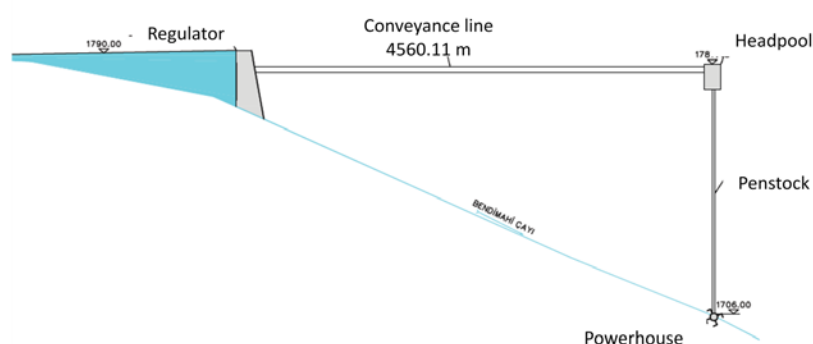


Figure 2. Layout of the project

A.3 Technologies and/or measures

Parameter	Value
Location:	On Bendimahi River Course, In Muradiye District of Van Province
Design Discharge:	19.00 m ³ /sec (6.33 m ³ /s Each)
Total Length Of Conveyance Line:	1,895 km Channel + 4,400 km Tunnel
Net Head:	48.3 m
Total Installed Capacity:	13.377 MWe / 13.650 MWm
Number Of Units:	3 Each 4.55 MW
Turbine Type:	Francis Type – Horizontal Axis
Turbine Manufacturer:	Orient Engineering (China)
Generator Type:	Horizontal Axis Generators With 5.059 Kva Apparent Power,

Generator Manufacturer:	Orient Engineering (China)
Energy Transmission Line Capacity:	33 kV, 5 Km Transmission Line To Muradiye Substation
Number Of Penstocks:	3
Length Of Penstocks:	325 m each
Average Annual Power Generation:	56.22 GWh
Type of Metering Devices	Brand: EMH, Type: LZQJ-XC, Class: 0.2S Serial Nr.: 8923707 (main), 8923708 (spare)

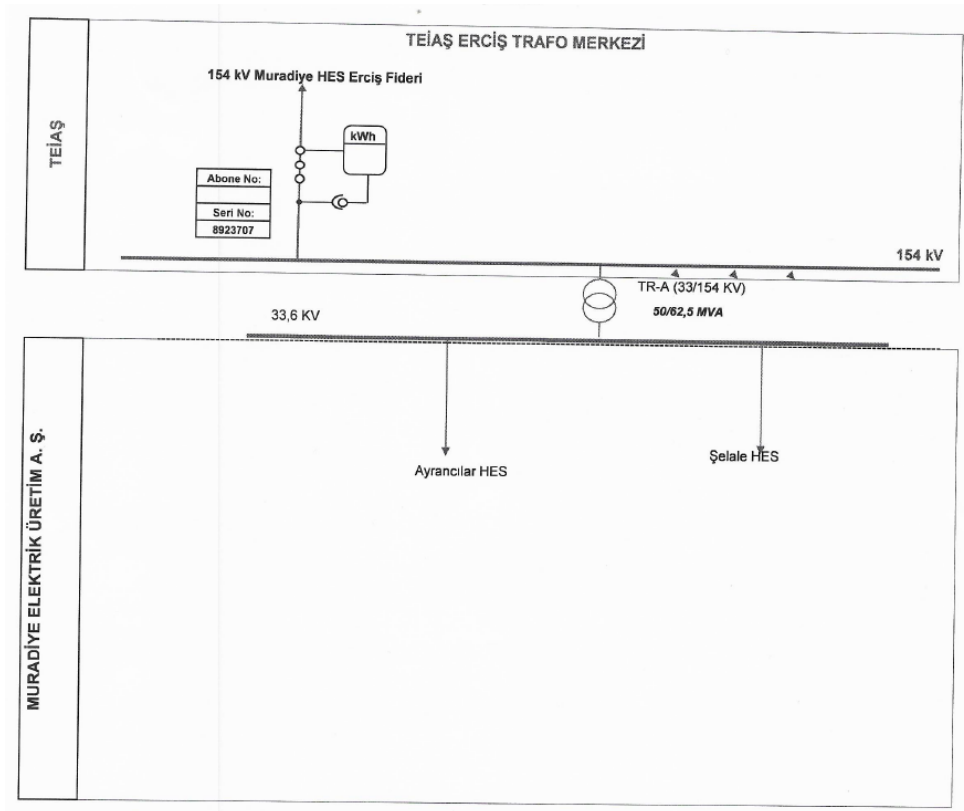


Figure 3. Diagram of the project including the meters, transformation center and the boundaries

A.4 Scale of the project

The project is a small-scale project since the installed capacity of the project is below 15 MW.

A.5 Funding sources of project

Project is financed by the company's own resources. No public funding was used.

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology (ies)

The UNFCCC approved baseline and monitoring methodology applicable to this project is ACM0002: Grid-connected electricity generation from renewable sources - Version 21.0⁵ was applied for the project activity. ACM0002 refers to the following tools:

- Tool 01 : “Tool for the demonstration and assessment of additionality”, Version 7.0.0,
- Tool 11 : “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”, Version 03.0.1⁶
- Tool 07, “Tool to calculate the emission factor for an electricity system”, Version 07.0⁷

B.2. Applicability of methodology (ies)

The choice of methodology ACM0002 Grid-connected electricity generation from renewable sources, v21.0, is justified as the project activity meets its applicability criteria. Selale HEPP is a small-scale hydro power type, Greenfield, grid connected renewable electricity generation project.

No.	Applicability Conditions	The Project
1	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 plant(s)/unit(s);	Selale HEPP is a small-scale hydro power type, Greenfield, grid connected renewable electricity generation project.

⁵ <https://cdm.unfccc.int/UserManagement/FileStorage/ZPFJL01OU2RYC6N3HASIXV7K84QBG9>

⁶ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf>

⁷ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

	(d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	So, the project meets (a) Install a Greenfield power plant.
2	In case the project activity involves the integration of a Battery Energy Storage System (BESS), the methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Integrate BESS with a Greenfield power plant; (b) Integrate a BESS together with implementing a capacity addition to (an) existing solar photovoltaic¹ or wind power plant(s)/unit(s); (c) Integrate a BESS to (an) existing solar photovoltaic or wind power plant(s)/unit(s) without implementing any other changes to the existing plant(s); (d) Integrate a BESS together with implementing a retrofit of (an) existing solar photovoltaic or wind power plant(s)/unit(s).	The project does not include integration of BESS.
3	The methodology is applicable under the following conditions: (a) 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	(a) The project is a hydro power plant with reservoir. (b) The project does not include capacity additions, retrofits, rehabilitations or replacements. (c) The project is a Greenfield project but not categorized under paragraph 5. (d) The project does not include integration of BESS.

	minimum historical reference period and the implementation of the project activity; (c) In case of Greenfield project activities applicable under paragraph 5 (a) above, the project participants shall demonstrate that the BESS was an integral part of the design of the renewable energy project activity (e.g. by referring to feasibility studies or investment decision documents); (d) The BESS should be charged with electricity generated from the associated renewable energy power plant(s). Only during exigencies² may the BESS be charged with electricity from the grid or a fossil fuel electricity generator. In such cases, the corresponding GHG emissions shall be accounted for as project emissions following the requirements under section 5.4.4 below. The charging using the grid or using fossil fuel electricity generator should not amount to more than 2 per cent of the electricity generated by the project renewable energy plant during a monitoring period. During the time periods (e.g. week(s), months(s)) when the BESS consumes more than 2 per cent of the electricity for charging, the project participant shall not be entitled to issuance of the certified emission reductions for the concerned periods of the monitoring period.	
4	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,	The project is a run-of-river hydro power plant without reservoir. The project does not involve construction of a reservoir, thus, power density criteria is

	calculated using equation (7), is greater than 4 W/m²; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m²; or (d) 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) 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: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	met as per the tool ⁸ .
5	In the case of integrated hydro power projects, project participants 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	The project is not a integrated hydro power project. Hence, this condition is N/A.

⁸ Registered PDD page 8

	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 of five years prior to the implementation of the CDM project activity.	
6	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.	(a) The project does not involve switching from fossil fuel use to renewable energy at the site of the project activity. (b) The project is not a biomass fired power plant.
7	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, that is 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”.	The project does not involve retrofits, rehabilitations, replacements or capacity additions. Hence, this condition is N/A.
8	In addition, the applicability conditions included in the tools referred to below apply	Given below.

Applicability as per “Tool 07 : Tool to calculate the emission factor for an electricity system, version 07.0”

No.	Applicability Conditions	The Project
1	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).	The project activity supplies electricity to a grid. Hence, this condition is met.
2	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 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.	CO ₂ emission factor for the displacement of electricity generated by power plants in an electricity system is determined by calculating the “combined margin” emission factor (CM) of the electricity system.
3	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.	The project is not a CDM project, it is a GS project. Hence, this condition is N/A.
4	Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The project does not involve biofuels in any way.

Applicability as per “Tool 01 : Tool for the demonstration and assessment of additionality, version 07.0.0”

No.	Applicability Conditions	The Project
1	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.	Tool for the demonstration and assessment of additionality is applied in this project since there is no new methodologies proposed. Hence, this condition is N/A.
2	Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	The additionality tool is applied using this methodology.

Applicability as per “Tool 27 : Investment Analysis, version 12.0”

No.	Applicability Conditions	The Project
1	This methodological tool is applicable to project activities that apply the methodological tool “Tool for the demonstration and assessment of additionality”, the methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality”, the guidelines “Non-binding best practice examples to demonstrate additionality for SSC project activities”, or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.	This project activity applies the methodological tool “Tool for the demonstration and assessment of additionality”. Hence, this condition is met.
2	In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those	Investment analysis is provided in section B.5.

	described in this methodological tool, the requirements contained in the methodology shall prevail.	
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Since there is no delineation of project electricity system or connected electricity systems by DNA, following criteria has been used to determine the existence of significant transmission constraints:

- In case of electricity systems with spot markets for electricity: there are differences in electricity prices (without transmission and distribution costs) of more than 5 per cent between the systems during 60 per cent or more of the hours of the year.
- The transmission line is operated at 90% or more of its rated capacity during 90% per cent or more of the hours of the year.

Since the project output is fed to the Turkish electricity grid which does not involve any distinct electricity systems that applies different price, first criteria defined above is not applicable. Also, since the transmission line between the proposed projects and nearest substation is built within the scope of the project and there exist no information on grid capacity utilization, second criteria is also inapplicable. Based on assessment above, it is difficult to conclude with a significant transmission constraint or grid boundary. Since there is no dispatch grid system in Turkey, the project boundary is considered as the National Electricity Grid of Turkey according to applied tool. The geographical and physical boundaries of the Turkish grid and location of the power plants are well identified as given diagram below.

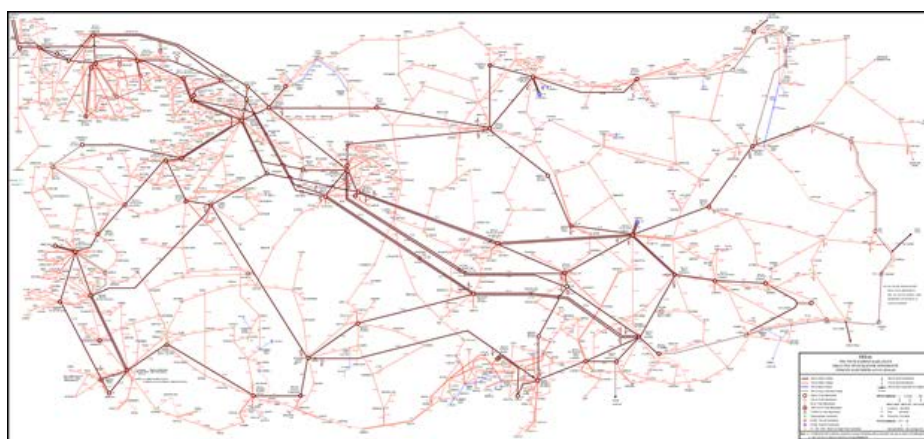


Figure 4. Turkish electricity grid

B.3. Project boundary

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

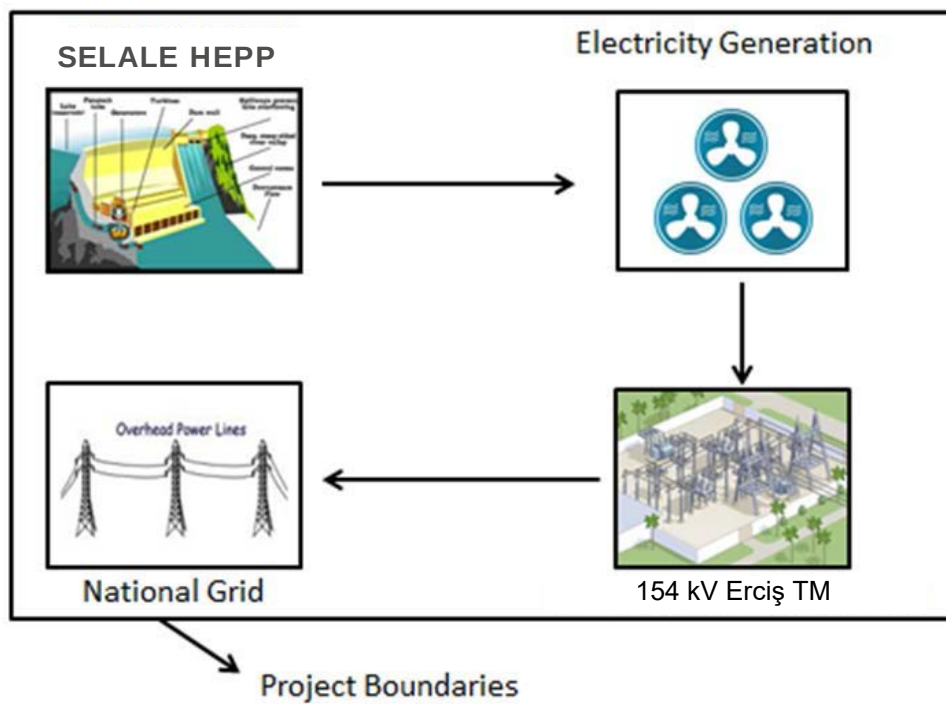


Figure 5. Project boundary

There are two diesel generators one is located on site (125 kV) and one is located in the regulator (50 kV), which are also included in the project boundary. However, they are not included in project emissions and the same is explained in Section B.6.1.

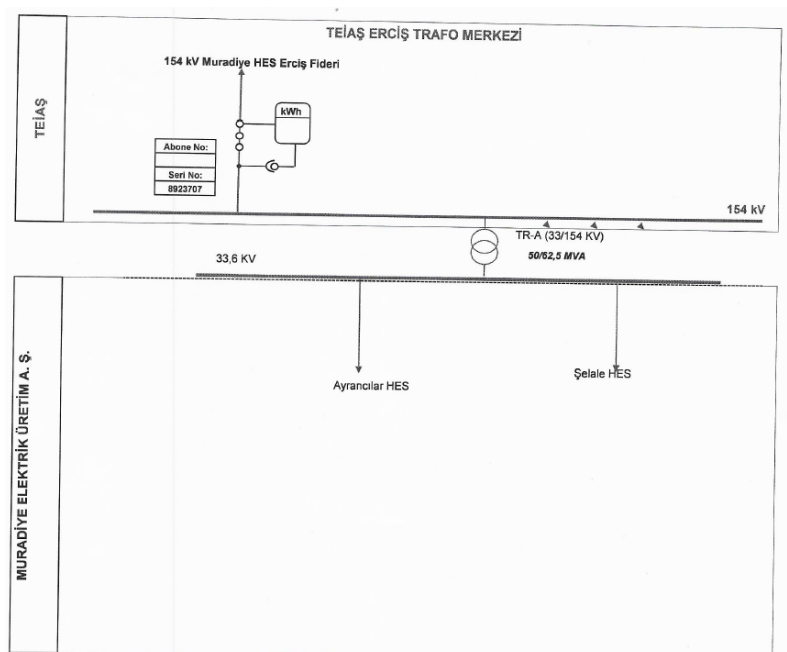


Figure 6. Project flow diagram

The project does not involve any other emissions sources not foreseen by the methodologies. The greenhouse gases and emission sources included in or excluded from the project boundary are shown in table below.

Source	GHGs	Included?	Justification / Explanation	
Baseline scenario	Electricity Generation by the grid connected power plants	CO ₂	Yes	Major emission source
		CH ₄	No	Minor emission source. Excluded for simplification
		N ₂ O	No	Minor emission source. Excluded for simplification
Project scenario	Emissions of CH ₄ from the reservoir	CO ₂	No	Minor emission source. Excluded for simplification as per the applied methodology
	CO ₂ emissions from combustion of fossil fuels for	CH ₄	Yes	Main emission source. Calculated for determining significance.

	electricity generation	N ₂ O	No	Minor emission source. Excluded for simplification
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B.4. Establishment and description of baseline scenario

According to the methodology (ACM0002: Grid-connected electricity generation from renewable sources, v.21) baseline scenario has been identified as “the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources” as per Section 5.2.3.1, paragraph 26, of the selected methodology.

According to the Tool 11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, Version 3.0.1, there are some requirements:

No.	Applicability Conditions	The Project
Step 1.1	If the current baseline complies with all relevant mandatory national and/or sectoral policies which have come into effect after the submission of the project activity for validation or the submission of the previous request for renewal of the crediting period and are applicable at the time of requesting renewal of the crediting period, go to Step 1.2. If the current baseline does not comply with relevant mandatory national and/or sectoral policies, then assess based on the examination of current practice in the country or region in which the policies apply, whether those policies are systematically not enforced and that non-compliance with those requirements is widespread in the country or region.	There is no change in national/sectoral policies affecting project implementation. Hence the Step 1.2. can be evaluated.
Step 1.2.	Assess the impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline emissions, without reassessing the baseline scenario. In the situation where the baseline scenario identified at the validation of the project activity was the	The combined margin is updated as per OM & BM calculations by Ministry of Energy and Resources.

	continuation of the current practice without any investment, an assessment of the changes in market characteristics is required for the renewal of the crediting period. Evaluate whether the conditions used to determine the baseline emissions in the previous crediting period are still valid. Assess the availability of new fuels or raw materials and the impact of electricity or fuel prices in the identification of the current practice for the baseline emissions.	
Step 1.3	This sub-step should only be applied if the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment(s) without any investment and, the projects proponents or third party (or parties) would undertake an investment later due, for example, to the end of the technical lifetime of the equipment(s) before the end of the crediting period or the availability of a new technology. Assess whether the remaining technical lifetime of the equipment that would have continued to be used in the absence of the project activity, as determined in the CDM-PDD or CDM-PDD-REN, exceeds the crediting period for which renewal is requested. Take into consideration the market penetration of different technologies. Evaluate the penetration rate of different technologies that are available in the market and evaluate how they could affect the baseline.	There is no overdue technology in the project as the lifetime of the technologies used was defined as 20 years as equity IRR has been calculated for the validation period. the ongoing financial need derived from GS is still valid considering that the financial model validated in first crediting period projects 20 years of operation of the project. Hence, the model is still valid for the current crediting period.
Step 1.4	Assess whether data and parameters that were only determined at the start of the crediting period and not monitored during the crediting period are still valid or whether they should be updated. Updates should be undertaken in the following cases: • Where IPCC default values are used, the values should be updated if any new default values have been adopted and published by the IPCC, for example, in guidelines for national GHG inventories, IPCC assessment report or special reports by the IPCC; • Where emission factors, values or emission benchmarks are used and determined only once for the crediting	The combined margin is updated as per OM & BM calculations by Ministry of Energy and Resources. Hence the assessment should proceed to Step 2.

	period, they should be updated, except if the emission factors, values, or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity. <i>If the application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline as well as data and parameters are still valid for the subsequent crediting period, then this baseline, data and parameters can be used for the renewed crediting period. Otherwise, proceed to Step 2.</i>	
Step 2	Update the current baseline and the data parameters.	The data and the parameters are updated for the second crediting period.

Turkish electricity generation is mainly composed of thermal power plants and the share of renewable resources; especially hydroelectric power plants have decreased significantly in recent years. Since Turkey is a developing country, there is an increasing demand for electricity which is fully expected to continue in the foreseeable future.

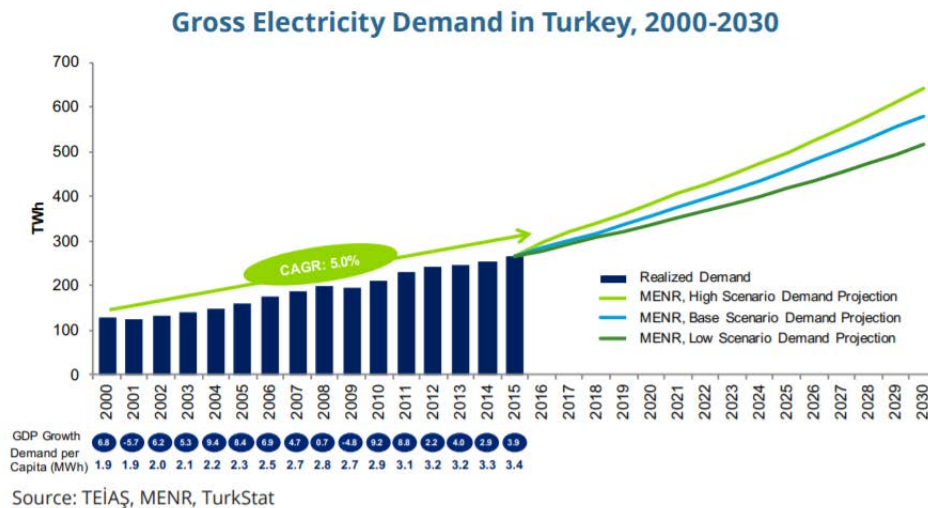


Figure 7. Projection of Turkey's electricity demand⁹

Keeping in mind the slow development of alternative energy sources, the trend in Turkey is to build new thermal power plants to satisfy the annual growth in energy demand. Turkey as a developing nation has been dealing with energy security by developing and constructing high capacity coal and natural gas power plants (Figure 8). The development of thermal power plants has also been encouraged by the large natural resource availability, especially the abundance of economically accessible lignite (Figure 9).

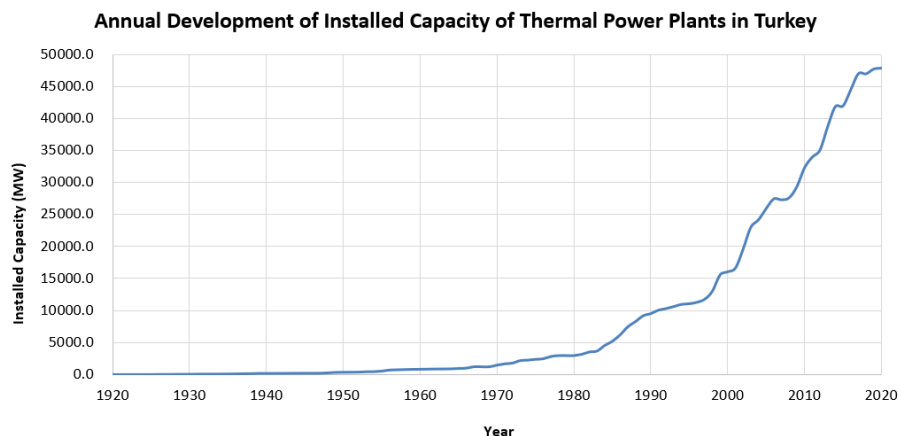


Figure 8. Development of Turkey's Installed Capacity¹⁰

⁹ <https://www.dunyaenerji.org.tr/wp-content/uploads/2017/10/turkish-energy-market-outlook.pdf>

¹⁰ <https://webapi.teias.gov.tr/file/6871efed-aea5-4ec1-bf65-26d70e4f67e9?download>

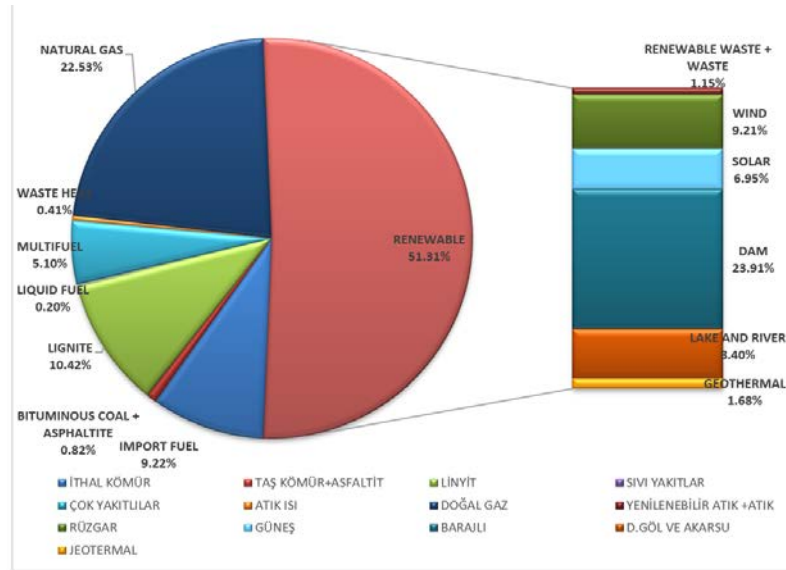


Figure 9. Distribution of installed capacity by primary energy resources¹¹

In the absence of the proposed project activity, the same amount of electricity would be required to be supplied by either the current power plants or the new thermal power plants which would lead to increasing GHG emissions.

According to the TEIAS statistics¹², share of HEPPs in total installed capacity of Turkey is about 32% whereas share of HEPPs in total generation is only 24.5%¹³. However, when the historical data is examined, it is observed that total installed capacity of thermal power plants has shown a rapid growth in parallel with the demand for electricity whereas hydroelectric power generation has grown at a much slower rate - the energy generation proportion decreasing from 40% historically to current levels as shown in the figure below^{14, 15}.

¹¹ <https://webapi.teias.gov.tr/file/39abb292-4b3e-4e70-9e08-914d0ba9bd43?download>

¹²

[http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2010/front%20page%202010%C3%A7i%C3%A7ek%20kitap/kguc\(1-12\)/3.xls](http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2010/front%20page%202010%C3%A7i%C3%A7ek%20kitap/kguc(1-12)/3.xls)

¹³

[http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2010/front%20page%202010%C3%A7i%C3%A7ek%20kitap/uretim%20tuketim\(22-45\)/23.xls](http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2010/front%20page%202010%C3%A7i%C3%A7ek%20kitap/uretim%20tuketim(22-45)/23.xls)

¹⁴ <https://webim.teias.gov.tr/file/39abb292-4b3e-4e70-9e08-914d0ba9bd43?download>

¹⁵ IEA Turkey Country Report, 2005

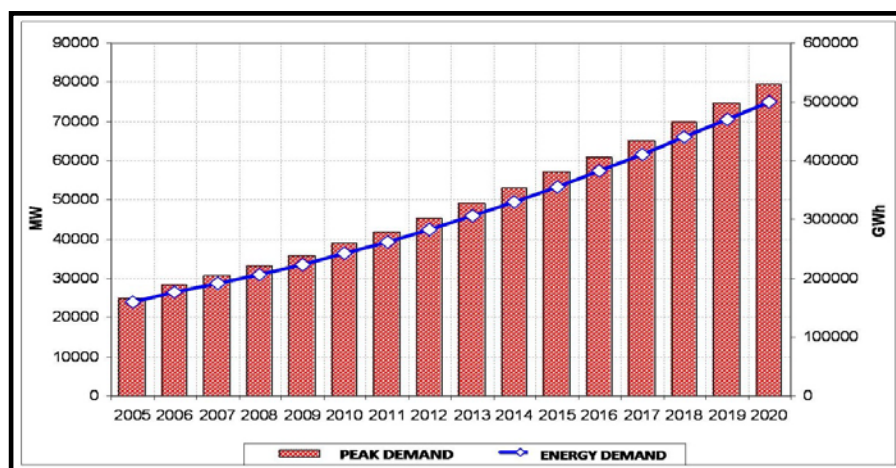


Figure 4. Peak load and consumption projection for Turkish electricity system between 2005-2020^{16, 17}

B.5. Demonstration of additionality

Additionality has been demonstrated in the first crediting period. There is no change in project implementation, therefore there is no need to conduct an additionality assessment in the second crediting period.

The additionality assessment as per registry is provided below (page 15 of registered PDD).

Table 4. Calculation and comparison of financial indicators

Parameters	Unit	Data Value
Installed Capacity	MW	13.61
Grid Connected output	GWh	56.22
Capital Investment	Million €	23,471,00
Corporate tax rate	%	20
Loan	Million €	17,603,000
Expected Tariff	€ Cents/kWh	5.5
Expected VERs price	€/ tCO ₂ e	8

Equity IRR of the SELALE HEPP has been calculated as 6.51% based on the parameters given above without considering the carbon revenue. IRR has been calculated without considering the interest payments for the loan as stated in the applied methodology.

¹⁶ <http://www.teias.gov.tr/apkuretimplani/veriler.htm>

¹⁷ https://www.emo.org.tr/genel/bizden_detay.php?kod=51061&tipi=41&sube=0

Electricity tariff has been used as €5.5 Cent/kWh although this is the maximum amount and floor price is €5.0 Cents/kWh as given in renewable energy law. Annual generation has been taken as 56.22 GWh. This IRR value represents the most optimistic scenario in terms of capital investment and electricity generation whereas electricity tariff is expected to increase so that the investment becomes attractive. As the IRR value calculated is compared with Turkish bond yields in the market, (average interest rates have been realized as 6.95 % for government bonds at time of investment decision) it is seen that the project is not financially attractive for investors as Government bond guarantee almost the same income without any investment risk.

Acceptable IRR values for energy investments in Turkey are, given the present international recession and consequent economic uncertainty, are expected at yields in excess of 15% per annum. When we include the carbon revenue in the cash flow, equity IRR increases to nearly 8.06% and the project becomes more attractive and viable for the investors as coupled with the view that energy sale prices that can be achieved from the project will likely increase in future years.

Table 5. Sensitivity analysis for SELALE HEPP project (without carbon revenue)

Fluctuation, %	-10	-5	-2.5	0	+2.5	+5	+10
Investment Cost	7.81	6.93	7.12	6.51	6.23	5.96	5.48
Operating Cost	6.81	6.74	6.62	6.51	7.5	7.38	7.15
Electricity Income	4.95	5.72	6.11	6.51	6.9	7.3	8.11

B.5.1 Prior Consideration

This is the second crediting period. The project has no design changes.

B.5.2 Ongoing Financial Need

The project could not receive the income from GS-VERs to support it financially during the first crediting period. After the coup attempt in 2016, the management of the company has changed, and government has impounded the assets of the company. Due to state of emergency and new governance structure commanded by the Savings Deposit Insurance Fund of Türkiye (TMSF), decision making process has been delayed except urgent cases. Therefore, project owner could not apply for verification or for the

renewal of the crediting period. The fact that the project owner could not apply was not that the project did not need the revenue but it was not possible to do so. The project needed the revenue in the first crediting period and it still needs the revenue in the second crediting period.

The projects needs the income from the GS-VERs more than ever, in the second crediting period. The electricity generation has been much lower than expected. According to the generation licence, Selale HEPP was estimated to generate around 54,523 MWh/year. However, the average annual generation between start of operation and end of 2020 has been around 37,000 MWh/year. This adds up to on average 32.88% less electricity generation than estimated. Since no GS VERs were issued, the project is in need of the GS VERs that are expected to be issued during the second crediting period.

Also, for the first 10 years, electricity tariff was fixed at prices provided in Law on the Use of Renewable Energy Sources for Electric Energy Generation¹⁸, Renewable Energy Resources Support Mechanism (YEKDEM) appendix I. Since the YEKDEM mechanism is no longer available for Şelale HEPP (after 10 years), the electricity is sold to the grid at a fluctuating tariff rate. Also, since the power plant can not store the water, the plant can not apply strategical electricity generation to increase their income. The revenue from GS VERs are to be used for increasing operational and maintenance cost. If Selale HEPP could make issuances in the second crediting period, the revenue would also be used for employees' salaries and trainings as well.

Electricity selling revenue is the only income of the project, which has been decreasing due to decreased amount of electricity generation and decreasing of selling tariff to the grid as well as the ending of the YEKDEM mechanism. However, the costs has been increasing. The corporate tax was 20% before 2017, it has increased to 22% in 2018 and stayed the same until 2021. In 2021, corporate tax has increased to 25%. In addition to project-specific financial problems, Turkish economy is under an ongoing financial and economic crisis¹⁹. Therefore, GS-VERs would not only help the project sustain its operations, but will contribute to economy in Turkey.

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

¹⁸ Law No. & Official Gazette No. and Date: 5346 & 25819, 18/05/2005
<https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=5346&MevzuatTur=1&MevzuatTertip=5>

¹⁹ [https://en.wikipedia.org/wiki/Turkish_economic_crisis_\(2018%E2%80%93present\)#:~:text=100%20index%20tumblr.es.-,Timeline%20of%20events%20\(2022\),value%20against%20the%20US%20dollar.](https://en.wikipedia.org/wiki/Turkish_economic_crisis_(2018%E2%80%93present)#:~:text=100%20index%20tumblr.es.-,Timeline%20of%20events%20(2022),value%20against%20the%20US%20dollar.)

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact
		Indicator (Proposed or SDG Indicator)
7 Affordable and Clean Energy	7.2	“By 2030, increase substantially the share of renewable energy in the global energy mix.” The project is expected to generate 54,523 MWh/year electricity from hydro power.
8 Decent Work and Economic Growth	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” The project is expected to create job opportunity for around 8 people.
13 Climate Action	13.3	“Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning” The project is expected to reduce 25,167 tonnes of CO₂e per annum.

B.6.1 Explanation of methodological choices/approaches for estimating the SDG Impact

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

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂)

BE_y = Baseline emissions in year y (tCO₂)

PE_y = Project Emissions in year y (tCO₂)

LE_y = Leakage emissions in year y (tCO₂)

Baseline emissions

Baseline emission is calculated according to the formula:

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

Where:

$EG_{PJ,y}$ = 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 (data is gathered from energy yield assessment report of the project which is 54,523 MWh)

Emission Factor

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of TOOL07: Tool to calculate the emission factor for an electricity system (tCO₂/MWh) (Nationally accepted emission factors have been used.²⁰)

Considering this is the second crediting period and the project is a hydro project, combined margin is calculated as follows:

$$CM = (BM \times 0.75) + (OM \times 0.25)$$

As given by the Ministry of Energy and Natural Resources, built margin is 0.3680 and operating margin is 0.4616⁸.

$$(0.3680 \times 0.75) + (0.7424 \times 0.25) = 0.4616 \text{ tCO}_2/\text{MWh}$$

$$BE_y = 54,523 \text{ MWh} \times 0.4616 \text{ tCO}_2\text{e}/\text{MWh} = 25,167 \text{ tCO}_2\text{e}$$

Project emissions

For most renewable energy power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation (Equation (1) of ACM0002 v21.0):

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} + PE_{BESS,y}$$

²⁰ Document in .pdf is also provided:

<https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klm/%C4%B0klmDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Bform2020.pdf>

Where:

PE_y	=	Project emissions in year y (t CO ₂ e/yr)
$PE_{FF,y}$	=	Project emissions from fossil fuel consumption in year y (t CO ₂ /yr)
$PE_{GP,y}$	=	Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO ₂ e/yr)
$PE_{HP,y}$	=	Project emissions from water reservoirs of hydro power plants in year y (t CO ₂ e/yr)
$PE_{BESS,y}$	=	Project emissions from charging of a BESS using electricity from the grid or from fossil fuel electricity generators (t CO ₂ e/yr)

- $PE_{GP,y}$ is not included since the project is not a geothermal power plant.
- $PE_{BESS,y}$ is not included since the project does not include charging of a BESS using electricity from the grid or from fossil fuel electricity generator.
- $PE_{HP,y}$ is 0 since power density is higher than 10 W/m². Calculated as follows (Equation (7) of ACM0002 v21.0):

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

Where:

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

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

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

A_{PJ} = Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m²)

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

For proposed project HEPP,

Cap_{PJ} = 13,377,000 We, Cap_{BL} = 0 W, A_{PJ} = 23,046 (m²), A_{BL} = 0 (m²)

Therefore, PD is calculated as;

$$PD = \frac{13,377,000 - 0}{23,046 - 0}$$

$$PD = 580.45 \text{ W/m}^2$$

According to the methodology ACM0002 Grid-connected electricity generation from renewable sources v21.0 para. 42 (c) “If the power density of the project activity is greater than 10 W/m^2 : $PE_{HP,y}=0$ ”

The proposed project activity involves the generation of electricity by a run-of-river hydroelectric power plant without reservoir²¹ therefore project activity does not result in greenhouse gas emissions, as was stated in the registered PDD page 29.

- $PE_{FF,y}$ is 0 since according to the methodology ACM0002 Grid-connected electricity generation from renewable sources v21.0 para. 37, “For all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected.”

Leakage

No leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected. Also, the energy generating equipment is not transferred from or to another activity. Therefore, leakage is considered as “0”.

So, final emission reduction value is 25,167 tCO₂/year, and 176,169 tCO₂ for the whole crediting period of 7 years.

B.6.2 Data and parameters fixed ex ante

SDG13

²¹ Project Introduction File, page 16 (Muradiye Ayrancılar Hidroelektrik Sanral, Proje Tanıtım Dosyası, sf. 16) & Registered PDD page 29

Data/parameter	EF _{grid,CM,y}
Unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor for the project electricity system in year y
Source of data	Ministry of Energy and Natural Resources, OM & BM values ²²
Value(s) applied	$CM = (BM \times 0.75) + (OM \times 0.25)$ As given by the Ministry of Energy and Natural Resources, built margin is 0.3680 and operating margin is 0.4616. $(0.3680 \times 0.75) + (0.7424 \times 0.25) = 0.4616 \text{ tCO}_2/\text{MWh}$
Choice of data or Measurement methods and procedures	The coefficients are taken as 0.75 and 0.25 for BM and OM, respectively according to the methodology.
Purpose of data	To calculate baseline emission
Additional comment	-

²² Document in .pdf is also provided:

<https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klm/%C4%B0klmDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Bform2020.pdf>

B.6.3 Ex ante estimation of SDG Impact

SDG 7: Affordable and Clean Energy (Ensure access to affordable, reliable, sustainable and modern energy for all)

The clean energy generated by the project is calculated based on the amount of electricity generated by the project per annum. The project is expected to generate 54,523 MWh of clean energy per annum according to the generation license. Hence, contribution of the project could be followed via 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”. This project increases the renewable energy sharing of global energy mix and contribute to improved air quality by reducing air pollution.

SDG 8: Decent Work and Economic Growth (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)

The project is to create around 8 employment opportunities. It contributes to decent work and economic growth by providing long term job opportunities.

SDG13: Climate Action (Taking urgent action to combat climate change and its impacts)

Emission factor for the baseline scenario which was calculated by the Republic of Turkey Ministry of Energy and Natural Resources has been used. Accordingly, the project leads to mitigation of 25,167 tCO₂ per annum.

B.6.4 Summary of ex ante estimates of each SDG Impact

SDG 13

Year	Baseline estimate (tCO ₂)	Project estimate (tCO ₂)	Net benefit (tCO ₂)
2019 (25/03/2019 – 31/12/2019)	0	0	0
2020	0	0	0
2021	0	0	0
2022	0	0	0
2023	19,996	0	19,996

2024	25,167	0	25,167
2025	25,167	0	25,167
2026 (01/01/2026 – 24/03/2026)	5,723	0	5,723
Total	76,052	0	76,052
Total number of crediting years	7 years		
Annual average over the crediting period	25,167		25,167

SDG 7

Year	Baseline estimate (MWh)	Project estimate (MWh)	Net benefit (MWh)
2019 (25/03/2019 – 31/12/2019)	0	0	0
2020	0	0	0
2021	0	0	0
2022	0	0	0
2023	0	43,319	43,319
2024	0	54,523	54,523
2025	0	54,523	54,523
2026 (01/01/2026 – 24/03/2026)	0	12,398	12,398
Total	0	164,763	164,763
Total number of crediting years	7 years		
Annual average over the crediting period	0	54,523	54,523

SDG 8

Year	Baseline estimate (number of people employed by the project)	Project estimate (number of people employed by the project)	Net benefit (number of people employed by the project)
2019 - 2026	0	Around 8 people	Around 8 people
Total	0	Around 8 people	Around 8 people
Total number of the crediting years	7 years		

B.7. Monitoring plan

B.7.1 Data and parameters to be monitored

SDG 13

Data / Parameter	Emissions Reductions in tCO ₂
Unit	tCO ₂
Description	Reduction of CO ₂ emissions due to implementation of project activity
Source of data	Electricity generated by the project and Turkey's national electricity grid emission factor which is provided by Ministry of Energy and Natural Resources will be used as reference in calculation of the emission reduction.
Value(s) applied	National electricity grid emission factor is 0.4616 tCO ₂ /MWh. Estimated annual emission reduction is 25,167 tonnes of CO ₂ .
Measurement methods and procedures	The project will contribute to "Emissions Reductions or Removals and/or Adaptation to Climate Change" by reducing CO ₂ emissions caused by fossil fuel-fired power plants that are displaced due to the project activity, in line with GS4GG principles. The Project will contribute to SDG Target 13.3 through an expected amount of 25,167 tonnes of CO ₂ e, which represent direct and quantifiable impact on climate security.
Monitoring frequency	Continuous measuring, monthly recording
QA/QC procedures	-

Purpose of data	To calculate the baseline emission value; and also to monitor the contribution to SDG 13 (Take urgent action to combat climate change and its impacts)
Additional comment	-

SDG 8

Data / Parameter	Quantitative employment and income generation
Unit	Number of employed staff
Description	Creating job opportunities
Source of data	Social Security Records
Value(s) applied	Around 8 people
Measurement methods and procedures	-
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to SDG 8
Additional comment	-

Data / Parameter	Qualitative employment
Unit	Number of trainings provided
Description	The project owner will give HSE trainings and/or vocational trainings (when needed)
Source of data	Training records, attendance lists and/or certificates
Value(s) applied	-
Measurement methods and procedures	Training records, attendance lists and/or certifications will be evaluated.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To assess the contribution to Principle 3
Additional comment	-

SDG 7

Data / Parameter	$EG_{PJ,grid,y}$
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y

Source of data	EPIAS screenshot records are used.
Value(s) applied	Estimated annual generation forming the basis for emission reduction calculation is 54,523 MWh/year
Measurement methods and procedures	Generation data is recorded by two metering devices continuously. These records provide the data for the monthly invoicing to TEİAŞ. Each month, an officer from TEİAŞ and the manager/electricity technician of the plant record the readings and sign. This record forms the basis for monthly invoicing.
Monitoring frequency	Continuous measurement at the site and daily and monthly recording were applied. The monthly records obtained from remote reading system of TEİAŞ were used for monitoring purposes. Data are cross checked with EPIAS records(formerly PMUM, changed to EPIAS, 2015)
QA/QC procedures	Two meters (ISKRA MT830) back up each other. These meters are chosen according to national regulations and approved and sealed by TEİAŞ at startup of the plant. Maintenance and calibration of the metering devices are made by TEİAŞ periodically. In addition to invoices and metering devices, the electricity delivered to the grid can be cross checked through TEİAŞ web page (https://www.epias.com.tr/) using the ID and password of the project owner. All records are kept for at least two years as requested by the applied methodology. Ayrancılar HEPP and Şelale HEPP are connected to the same electricity meters. Hence, their electricity generation data are read from one source. Their installed capacities are different, the ratio of their installed capacities are used to divide the electricity generation to each of the plants. It is not possible to monitor electricity generation values separately. Further explanation on metering of electricity generation is as follows: • Instead of continuously metering gross electricity generated and electricity consumed by Ayrancılar HEPP, the meters only measured gross electricity generation of Ayrancılar HEPP and Şelale HEPP, combined. Only data available from the project field is the combined gross electricity production of Ayrancılar HEPP and Şelale HEPP. This is due to the fact that Ayrancılar HEPP and Şelale HEPP are both connected to the same grid connection point and only one meter is responsible to meter both plant's data.

	- Hence, to calculate gross electricity production only of Ayrancilar HEPP, the combined gross electricity production of the two plants will be multiplied by the constant: $13,377 / (28,077 + 13,377) = 0.3227$. Details are given in the excel sheet. - EPİAŞ values of the two plants are also combined. Both gross electricity generation and electricity consumption are provided by EPİAŞ. To find the portion that is due Ayrancilar HEPP, EPİAŞ values are also multiplied by the proportional constant explained above. Installed capacity of Ayrancilar HEPP: $3 \times 9.550 \text{ MWm} / 3 \times 9.359 \text{ MWe} = 28.650 \text{ MWm} / 28.077 \text{ MWe}$ Installed capacity of Şelale HEPP: $3 \times 4.550 \text{ MWm} / 3 \times 4.459 \text{ MWe} = 13.650 \text{ MWm} / 13.377 \text{ MWe}$ Total installed capacity = $42.300 \text{ MWm} / 41.454 \text{ MWe}$ The electricity generations for each plant is calculated as follows: Generation of AYRANCILAR HYDROELECTRIC POWER PLANT $= \frac{\text{Total generation value} \times \text{Installed capacity of Ayrancilar HEPP}}{\text{Total installed capacity}}$ Generation of Selale HEPP $= \frac{\text{Total generation value} \times \text{Installed capacity of Selale HEPP}}{\text{Total installed capacity}}$ Consider if the electricity generation in year x has been 168,960 MWh, read from the meter which all the plants are connected. Generation of AYRANCILAR HYDROELECTRIC POWER PLANT $= 168,960 \text{ MWh} \times \frac{28.077 \text{ MWe}}{41.454 \text{ MWe}} = 114,437.44 \text{ MWh}$ Generation of Selale HEPP = $168,960 \text{ MWh} \times \frac{13.377 \text{ MWe}}{41.454 \text{ MWe}}$ $= 54,522.55 \text{ MWh}$ Total generation = $114,437.44 \text{ MWh} + 54,522.55 \text{ MWh}$ $= 168,959.99 \text{ MWh} \approx 168,960 \text{ MWh}$
Purpose of data	Baseline emission calculations
Additional comment	-

Data / Parameter	A_{PJ}
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 map
Value(s) applied	23,046 m^2
Measurement methods and procedures	Measured from topographical surveys or maps
Monitoring frequency	Once in each monitoring period
QA/QC procedures	-
Purpose of data	To measure area of the surface of the water. To be used in power density calculations.
Additional comment	The project does not have a reservoir ²³ . There is an area of the surface of the water before water enters the plant.

B.7.2 Sampling plan

N/A

B.7.3 Other elements of monitoring plan

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

²³ Project Introduction File, page 16 (Muradiye Ayrancılar Hidroelektrik Sanral, Proje Tanıtım Dosyası, sf. 16) & Registered PDD page 29

Net electricity generation are measured and recorded by both TEIAS and project owners for billing purposes therefore no new additional protocol are needed monitoring emission reduction. Power Plant Manager, are responsible for the electricity generated, gathering all relevant data and keeping the records. He is informed about VER concepts and mechanisms and how to monitor and collect the data which are used for emission reduction calculations.

Generation data collected during crediting period are submitted to GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık Ve Ticaret A.Ş. who are responsible for calculating the emission reduction subject to verification: Generation data are used to prepare monitoring reports which are used to determine the vintage from the project activity. These reports are submitted to the duly authorized and appointed “Validation/verification body (VVB)” before each verification period.

The monitoring system organization chart is shown in Figure below, in which the authority and responsibility of project management are defined.

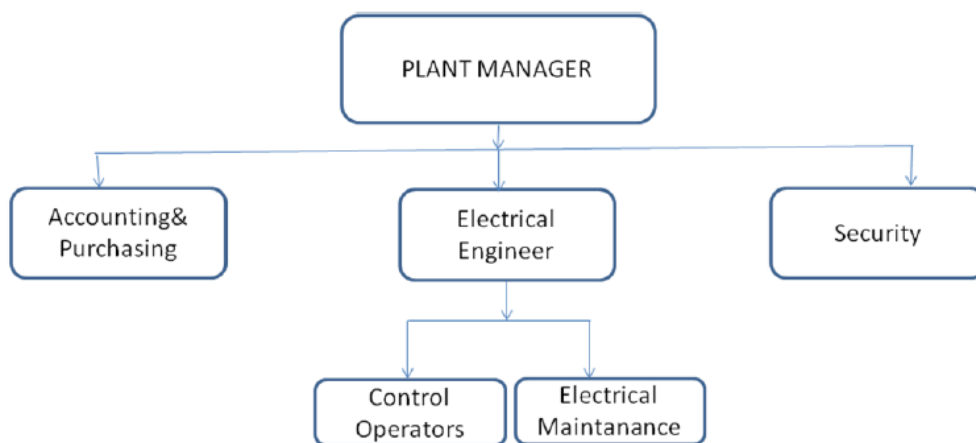


Figure 10. Operational structure of Ayrancilar HEPP

VER Team Members is expected to include;

Plant Manager: Overall responsibility of compliance with VER monitoring plan

Electrical Engineer: Responsible for day to day running of plant, recording and monitoring of relevant data and periodic reporting

Accounting Manager: Responsible for keeping data about power sales, invoicing and purchasing.

Control Operators & Electrical Maintenance: Staff are responsible for day-to-day operation and maintenance of the plant and equipment. All staff are trained and have certificated for working with high voltage equipment.

GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık Ve Ticaret A.Ş.:

Responsible for emission reduction calculations, preparing monitoring report and periodical verification process.

Installation of meter and data monitoring are carried out according to the regulations by TEIAS. Two metering devices (one of them used as spare) are used for monitoring the electricity generated by the power plant. Readings are done using main metering devices and spare metering device are used for comparison only. Data from metering devices are recorded by TEIAS monthly and form the basis for invoicing using the template formed by TEIAS²⁴ which are used for cross checking of generation data. In addition to the two metering devices, generation of the Ayrancilar HEPP can be cross checked from TEIAS – EPIAS web site (<http://EPIAS.teias.gov.tr>) which is accessible using a password provided to electricity generation companies. Since the data in EPIAS web page shows the net electricity generated less transmission loss, in order to match the data, the figures taken from EPIAS web site must be multiplied by transmission loss factor of the grid. All data are kept for at least two years after the crediting period for QA/QC purposes.

In case of a major failure at both metering at the same time, electricity generation by the plant since the last measurement are able to be monitored by another metering device at the inlet of the main substation operated by TEIAS where the electricity is fed to the grid.

The meters are tested every 2 years by the grid operator according to the system use agreement, who is the sole responsible entity of the meters. If the test results are appropriate, the meters are calibrated before waiting for the due date, of 10 years.

Table 6. Meter Properties

	Meters used before 21/11/2019		Meters used after 21/11/2019	
	Main Meter²⁵	Spare Meter²⁶	Main Meter²⁷	Spare Meter²⁸
Brand	AKTARIS	AKTARIS	EMH	EMH

²⁴ http://www.teias.gov.tr/mali/GDUY/PRO_FORM/OLCUM/K01.xls

²⁵ Van TEIAS Ayrancilar HEPP Main Meter Replacement Protocol

²⁶ Van TEIAS Ayrancilar HEPP Spare Meter Replacement Protocol

²⁷ Van TEIAS Ayrancilar HEPP Main Meter Replacement Protocol

²⁸ Van TEIAS Ayrancilar HEPP Spare Meter Replacement Protocol

Type	SL7000	SL7000	LZQJ-XC	LZQJ-XC
Class	0.2S	0.2S	0.2S	0.2S
Serial No.	53099071	53099070	8923707	8923708
Date of calibration	2010, at the factory by the manufacturer		2019, at the factory by the manufacturer	
Date of Testing	14/02/2011 21/12/2012 04/03/2014 20/09/2016 09/11/2017		21/11/2019	

Both meters and their circuits were examined by TEİAŞ on 21/11/2019.^{29 30}

An unconventional method of metering gross electricity generation and electricity consumption has been applied by Ayrancılar HEPP. Instead of continuously metering gross electricity generated and electricity consumed by Ayrancılar HEPP, the meters only measured gross electricity generation of Ayrancılar HEPP and Şelale HEPP, combined. Only data available from the project field is the combined gross electricity production of Ayrancılar HEPP and Şelale HEPP. This is due to the fact that Ayrancılar HEPP and Şelale HEPP are both connected to the same grid connection point and only one meter is responsible to meter both plant's data. Ayrancılar HEPP was commissioned in August 2011 where Şelale HEPP was commissioned in March 2011. The project owner states that a proportional constant can be used to calculate gross electricity production of Ayrancılar HEPP alone and this constant can be determined by using the ratio between plant capacity of Ayrancılar HEPP and plant capacity of Şelale HEPP. It is provided that project capacity of Ayrancılar HEPP and Şelale HEPP are 28,077 kW and 13,377 kW, respectively.

Hence, to calculate gross electricity production only of Şelale HEPP, the combined gross electricity production of the two plants will be multiplied by the constant:
 $13,377/(28,077+13,377) = 0.3227$.

²⁹ Van TEİAŞ Ayrancılar HEPP Main Meter Examination Report

³⁰ Van TEİAŞ Ayrancılar HEPP Spare Meter Examination Report

EPIAŞ values of the two plants are also combined. Both gross electricity generation and electricity consumption are provided by EPIAŞ. To find the portion that is due Şelale HEPP, EPIAŞ values are also multiplied by the proportional constant explained above.

Summary of information provided by the project owner:

- Ayrancı HEPP and Şelale HEPP are connected to the same grid connection point and the metering is done with one meter.
- Gross electricity generation data provided by the project owner shows two separate gross electricity production data set one belonging to Ayrancı HEPP and one belonging to Şelale HEPP. This does not indicate that the two different plants were metered separately. But instead, the total value was rationed between Ayrancı HEPP and Şelale HEPP considering their plant capacities.
- EPIAŞ data stands for values for Ayrancı HEPP and Şelale HEPP, combined. EPIAŞ metering system read values of Şelale HEPP up until August 2011 and after Ayrancı HEPP was commissioned in August 2011, EPIAŞ metering system read values of Ayrancı HEPP and Şelale HEPP combined under the name of "Ayrancı HEPP".

Both Ayrancı HEPP and Şelale HEPP operates under Muradiye Elektrik Üretim A.Ş.

The ongoing communication between project owner and the local stakeholders are done via logbook kept by mukhtar. Logbook has contact info of the project owner as well as the project consultant. The locals also have no difficulty in reaching to the project owner face-to-face. They can comment and state grievances directly to the site manager, in case of any problem.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1 Start date of project

Start date of project activity is determined as 26/11/2007, the date of construction agreement.

C.1.2 Expected operational lifetime of project

The expected operational lifetime of the project is about 49 years as per the license issued.

C.2. Crediting period of project

C.2.1 Start date of crediting period

This is the second crediting period. Selale HEPP started generating electricity on 25/03/2011. First crediting period was postponed by 1 year without any approval requirements as per Design Change Requirements, section 3.1.3 | Changes to the start date of the registered crediting period". Therefore, the first crediting period was between 25/03/2012-24/03/2019. Hence, second crediting period start date is 25/03/2019 and the total length is 7 years. End date of crediting period is 24/03/2026. The second crediting period is between 25/03/2019-24/03/2026.

C.2.2 Total length of crediting period

7 years between 25/03/2019-24/03/2026

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1 Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in [Appendix 1](#), ongoing monitoring is summarised below.

Principles	Mitigation Measures added to the Monitoring Plan
Principle 3. Community Health, Safety and Working Conditions	Required trainings will be given to the staff and the certificate of attendances will be kept.
Principle 8.1 Impact on Natural Water Patterns/Flows	Monitoring for minimum flow is done by Flow Monitoring Stations of DSI. Required actions will be taken according to the monitoring data collected by the stations. DSI monitors the flowrates and notifies the PP if there is any problem. The project owner can not apply any internal audit on the minimum flow measurements and evaluations.

Fish passage was designed in order to allow fish communities to pass through the river. The riverbed is protected by preserving and also planting new plants in order to prevent sedimentation. Its functionality will be assessed regularly to make sure that it works properly.

Principle 9.4 Release of Pollutants

Appropriate disposal of wastewater as required by the Law on Water Pollution Control. Waste collection methods during site visits will be assessed and waste disposal records will be checked.

Principle 9.5 Hazardous and Non-hazardous Waste

Waste oil will be managed properly. Disposal methods will be assessed during site visits and waste oil disposal records will be checked. Waste oil from equipment will be collected properly in line with the relevant regulation and disposed via accredited abatement companies.
Waste oil will be disposed in line with regulation # 26952 on control of waste oils.

D.2. Assessment that project complies with GS4GG Gender Sensitive requirements

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?

As stated in Gold Standard Gender Policy document, “foundational gender sensitive certification” which is mandatory for every project requires compliance with the gender ‘do no harm’ safeguard, gender-gap analysis and gender sensitive stakeholder consultations. Although the project is a renewable energy project and does not have negative impacts on men and women, it complies with the criteria mentioned. Moreover, Turkey has ratified ILO convention 100 and 111 and

	discrimination based on gender is illegal in Turkey. The project tries to align with the national gender strategy. So, the project does not involve and is not complicit in any form of discrimination based on gender difference.
Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	A gender-equal strategy is implemented by creating employment opportunities for both man and woman without discrimination. According to the Woman Empowerment Strategy Paper and Action Plan prepared by the Ministry of Family and Social Policies (2018), there are 21 targets classified under 5 main fields in order to enhance participation of women to the society. In this action plan regarding the years 2018 – 2023, economy and employment-oriented strategies are represented for women since the labor force activity of women is not at desired level compared to the EU countries. According to 2017 statistics tabulated in the report, labor force activity of women is declared as 33.6% and it is aimed that this percentage will be 41% in 2023. Accordingly, the project shows parallelism with the national strategies developed for women. Moreover, all men and women can benefit from project outputs without any discrimination under the SDG 9.
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	Not required.

Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	Not required.
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SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

The below is a summary of the 2 step GS4GG Consultation for monitoring purposes. Please refer to the separate Stakeholder Consultation Report for a complete report on the initial consultation and stakeholder feedback round.

E.1 Summary of stakeholder mitigation measures

There is no stakeholder grievance/complaint from the local stakeholders in the beginning of the second crediting period. There is no grievance / complaint received during the first crediting period.

E.2 Final continuous input / grievance mechanism

Method	Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.
Continuous Input / Grievance Expression Process Book (mandatory)	Local stakeholders are welcome to communicate face-to-face with the mukhtar or directly with the plant's staff. Also, they can use the logbook which was left at Van Province, Muradiye District (the closest to the project area), Kandahar Village's mukhtar's (village head) office to submit their grievances. This logbook is checked regularly by the plant's staff. The project owner's contact information has been present with the mukhtar since the project start date.
GS Contact (mandatory)	help@goldstandard.org
Other	Bahadır Karabekiroğlu Energy&Carbon Trade Supervisor +90 (212) 267 42 06

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Complete the Assessment below and copy all Mitigation Measures for each Principle into [SECTION D](#) above. Please refer to the instructions in the [Guide to Completing](#) this Form.

Assessment Questions / Requirements	Justification of Relevance (Yes / potentially / no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights 2. The Project shall not discriminate with	1.Yes 2.Yes	1.Turkey has ratified European Convention on Human Right on 10/03/1954 ³¹ . Therefore, the project is not expected to violate the rules regarding human rights. 2.Turkey has ratified European Convention on Human Right on 10/03/1954. Therefore, the project is not	1.No mitigation measure is required for this indicator. 2.No mitigation measure is required for this indicator.

³¹ https://www.echr.coe.int/Documents/CP_Turkey_ENG.pdf

regards to participation and inclusion		expected to violate the rules regarding human rights.	
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women 2. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work 3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)	Yes	1.Turkey has ratified ILO convention 100, 111, 122 and 142, which provides gender equality. It also shows parallelity with national strategies prepared for women employment by creating opportunities for all. 2.Turkey has ratified ILO convention 100, 111, 122 and 142, which provides gender equality. It also shows parallelity with national strategies prepared for women employment by creating opportunities for all. 3.Turkey has ratified ILO convention 100, 111, 122 and 142, which provides gender equality. It also shows parallelity with national strategies prepared for	1.No mitigation measure is required for this indicator. 2.No mitigation measure is required for this indicator. 3.No mitigation measure is required for this indicator. 4.No mitigation measure is required for this indicator.

		women employment by creating opportunities for all. 4.Turkey has ratified ILO convention 100, 111, 122 and 142, which provides gender equality. It also shows parallelity with national strategies prepared for women employment by creating opportunities for all.	
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	Yes	Turkey has ratified ILO convention 155 and about work safety and precautions ³²	Staff will be trained during construction operation phases, such as general HSE, risk, first aid, etc.
Principle 4.1 Sites of Cultural and Historical Heritage			

³² https://www.ilo.org/global/standards/subjects-covered-by-international-labour-standards/occupational-safety-and-health/WCMS_356966/lang--en/index.htm

Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	No	No sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture were observed in the project area.	No mitigation is required for this indicator.
> >			
Principle 4.2 Forced Eviction and Displacement			
Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	No relocation needed for the project implementation.	No mitigation is required for this indicator.
> >			
Principle 4.3 Land Tenure and Other Rights			
a. Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership? b. For Projects involving land use tenure, are there any uncertainties with regards to land tenure, access rights, usage rights or land ownership?	No	a) Project activity involves expropriation but no resettlement. Hence there is no land tenure situation within project area. b) There is no uncertainty. Related permits and payments for expropriation were carried out.	No mitigation measure is required for this indicator.

>>			
Principle 4.4 - Indigenous people			
Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	There is no indigenous people affected by the project implementation.	No mitigation measure is required for this indicator.
>>			
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	Yes	The project does not engage in, contribute to or reinforce corruption of any kind.	Turkey has ratified several conventions on bribery and corruption including OECD and UN conventions
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied	Yes	1. Project owner ensures that all employment and HSE activities will be done	1. No mitigation is required for this indicator. 2. No mitigation is required for this indicator. 3. No mitigation is required for this indicator. 4. No mitigation measure is required for this indicator.

in the ILO fundamental conventions 2. Workers shall be able to establish and join labour organisations 3. Working agreements with all individual workers shall be documented and implemented and include: a) Working hours (must not exceed 48 hours per week on a regular basis), AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND		according to the Law of Health And Safety.³³ 2.Turkey has ratified ILO 87 and 98 conventions. 3.All employee will be recruited according to the national legislations. 4. Turkey is a party of IPEC^{34, 35} since 1992 and ratified ILO convention 138 and 182³⁶. 5. Turkey has ratified ILO convention 155 and about work safety and precautions.	5. Staff will be trained during construction and operation phases, such as general HSE, risk, first aid,etc.
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³³ <https://www.mevzuat.gov.tr/MevzuatMetin/1.5.6331.pdf>

³⁴ <http://www.ilo.org/ipec/programme/lang--en/index.htm>

³⁵ <http://www.ilo.org/ipec/Regionsandcountries/lang--en/index.htm>

³⁶ <http://www.ilo.org/public/turkish/region/eurpro/ankara/about/sozlesmeler.htm>

d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave. 4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion) 5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency			
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preparedness and response measures			
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?	No	The project does not cause any negative consequences after implementation. On the contrary, it will create job opportunities for locals as a positive economic impact.	No mitigation measure is needed.
>>			
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	As a renewable energy power plant, the project contributes to “Emissions Reductions or Removals and/or Adaptation to Climate Change” by reducing CO ₂ emissions caused by fossil fuel-fired power plants that are displaced due to the project activity, in line with GS4GG principles with the mitigation of an expected amount of 25,167 tonnes of CO ₂ e.	No mitigation measure is required for this indicator.
>>			
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power	No	Project does not use any local fuel resource. It is connected	No mitigation measure is required for this indicator.

supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?		to the national grid and supply 54,523 MWh additional energy to the grid. Internal consumption which indicates the usage in the project site will be read from monthly records taken from the meters.	
> >			
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	Yes	Since the Project is run-of-river type without a storage capacity, quality and the quantity of water is not affected by the project activity compared to the baseline scenario ³⁷ . Project use excess water from the channel and releasing	Monitoring is done by Flow Monitoring Stations of DSI. Required actions will be taken according to the monitoring data collected by the stations. DSI monitors the flowrates and notifies the PP if there is any problem. The project owner can not apply any internal audit on the minimum
> >			

³⁷ Project Introduction File, page 16 (Muradiye Ayrancılar Hidroelektrik Sanral, Proje Tanıtım Dosyası, sf. 16)

		flow from the channel is within the responsibility of the project owner signed a water usage agreement with DSI.³⁸ Since the proposed facility is not an accumulative facility, the amount of precipitate does not pose a problem. The sedimentation materials accumulating in front of the regulator will go to the turbines via the gravel passage, and the sedimentation materials in the water will be deposited via the sedimentation pool and given to the stream via the	flow measurements and evaluations. Fish passage was designed in order to allow fish communities to pass through the river. The riverbed is protected by preserving and also planting new plants in order to prevent sedimentation. Its functionality will be assessed. As per technical feasibility report prepared by third party Yolsu International Engineering and Consulting
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³⁸ Project Feasibility Report, page-11

		sedimentation washing channel³⁹. No mitigation measure is required in terms of plants as there are no endemic or protected plant species on the project site. As per trees, as it can be seen in Figure 3 of the registered PDD, the project site is very poor of vegetation and no trees exist on the site. To maintain fish migration, fish passage was built⁴⁰.	Services Inc. dated 11/2019: "Since the proposed facilities are not accumulation facilities, the quantity of sedimentation material does not pose any problem. The sediments accumulated in front of the regulator will go to the turbines through the gravel passage, while the sediments in the water will be sedimented through the sedimentation pool and released into the stream through the sedimentation washing channel.". Therefore,
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³⁹ Feasibility Report page 4-13

⁴⁰ Project Introduction File, page 51

			no harm is expected for sedimentation.
Principle 8.2 Erosion and/or Water Body Instability			
a. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? b. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	Potentially	The Project does not have any serious effects on erosion or water body instability since land use is limited. Şelale HEPP has been designed as a run-of-river type facility, therefore, no storage is involved. Since the project is a run of river power plant with a small reservoir, the erosion impacts are very limited. During operation, no significant erosion is expected below the regulator structure. The close vicinity of the conveyance channel is planned to be planted with trees, which will contribute to erosion control as well. The project has been implemented for a long time and there has not been any problem due to erosion.	In order to prevent erosion, - Any power transmission tower or other structure was not placed in areas with high slopes. - If working on sloping areas cannot be avoided, the structures was designed in such a way that minimum excavation is done on the slope. - Construction took place in as dry conditions as possible. - To prevent siltation, embankments, settling basins or other dirt traps were be constructed. No mitigation measure is required for this parameter. Therefore, no mitigation measure is required for this principle.
>>			
Principle 9.1 Landscape Modification and Soil			

Does the Project involve the use of land and soil for production of crops or other products?	No	No mitigation measure is required in terms of plants as there are no endemic or protected plant species on the project site. As per trees, as it can be seen in Figure 3 of the registered PDD, the project site is very poor of vegetation and no trees exist on the site ⁴¹ . The project is not located in a forest area and no construction, recreation etc. is in works for the area ⁴² .	No mitigation measure is required for this parameter.
> >			
Principle 9.2 Vulnerability to Natural Disaster			
Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	According to the results of the Turkey Earthquake Zones Map (1996) of the Ministry of Environment and Urbanization, the project area and its immediate surroundings are located in	The project structure is durable for the project location's conditions. The design was done considering the characteristics of the area. Many analysis such as construction reports, concrete

⁴¹ Project Introduction File, page 51

⁴² Project Introduction File, page 50

> >		the 1 st degree earthquake zone. Construction works were performed in accordance with relevant regulations. ⁴³ Flooding risk is classified as medium according to the Turkey Flood Map.	mix calculation, contact water analysis, building permit were done.
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	The project activity is not relevant to the use of genetically modified organisms or GMOs since it is a renewable energy power plant.	No mitigation measure is required for this indicator.
> >			
Principle 9.4 Release of pollutants			

⁴³ Regulation: Afet Bölgelerinde Yapılacak Yapılar Hakkındaki Yönetmelik, numbered 26582, dated 14.07.2007

Could the Project potentially result in the release of pollutants to the environment?	Yes	Excavation soil, domestic waste water and solid waste is expected to be generated. However; these are not result in adverse effects on the environment since managed as per the requirements of national legislation. The nearest settlement is Muradiye Town. No mitigation measure is required since there exist no settlement close to project site and noise during construction is calculated to be lower than the allowed limits⁴⁴.	Project does not have any adverse impact on water quality and quantity. Domestic waste water is collected and disposed to the sewage system. Domestic solid waste handled in accordance with related regulation⁴⁵. All the other generated waste handled according to the national regulation "Turkish Water Pollution Control Regulation". Excavation was properly stored in designated areas and used for aff. The project does not have any point or fugitive emission and heating source emissions during operation other than an emergency diesel generator. Moreover, no mitigation measure is required for noise
> >			

⁴⁴ Project Introduction File, page 39-46

⁴⁵ Regulation: Katı Atıkların Kontrolü Yönetmeliği, numbered 20814, dated 14.03.1991

			pollution due to related justification.
Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	Yes	Project does not create any adverse impact on the local environment due to the handling, storage, transport, and disposal of the hazardous waste generated during and after the construction and is comply with the requirements of the Turkish Regulations ⁴⁶ .	Waste oil from equipment is collected properly in line with the relevant regulation and disposed via accredited abatement companies. Waste oil is disposed in line with regulation 34051 ⁴⁷ on control of waste oils. The plant does not use high amounts of oil, once the containers are full, waste oil will be removed by an authorized company or municipality services. Residential wastes and solid wastes due to daily operation of the personnel will also be stored in containers under
> >			

⁴⁶ Regulation on Control of Waste Oils (Official Gazette Date & No.: 21/12/2019 & 30985)
<https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=34051&MevzuatTur=7&MevzuatTertip=5>

⁴⁷ Regulation on Control of Waste Oils

			confined conditions. Wastes will either be collected by the local municipality or dumped to sites designated by the local authorities. Wastewater generated will be collected in a septic tank and later will be draught to the nearest sewage system by vacuum truck.
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	The project is not relevant since it is a renewable energy project.	No mitigation is needed for this indicator.
> >			
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	Project does not involve any harvesting activity.	No mitigation measure is required for this indicator.
> >			
Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration	No	The project is not relevant since it is a renewable energy project.	No mitigation is needed for this indicator

or export or economic incentives?			
> >			
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	The project is not relevant since it is a renewable energy project.	No mitigation is needed for this indicator.
> >			
Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	Potentially	The project does not affect any identified sensitive area.	No mitigation is needed for this indicator.
> >			
Principle 9.11 Endangered Species			
a. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?	No	There is no endangered species in the project area.	No mitigation is needed for this indicator.
b. Does the Project potentially impact other areas where			

endangered species may be present through transboundary affects?			
> >			

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

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