المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL

Project Submission Form

V3.2 - 2020

Contents

COVER PAGE- Project Submission Form (PSF)	
Complete this form in accordance with the instructions attached at the end of this form.	
BASIC INFORMATION	
Title of the Project Activity	**Kovanlık Reg. ve HES**
PSF version number	02
Date of completion of this form	08/03/2022
Project Owner(s) (Shall be consistent with De-registered CDM Type B Projects)	Kovanlık Enerji Üretim San. ve Tic. A.Ş.
Country where the Project Activity is located	Turkey
GPS coordinates of the project site(s)	Between 40° 49’ 22” - 40° 50’ 52” North latitude and 38°32’18”-38°33’42” East longitude
Eligible GCC Project Type as per the Project Standard (Tick applicable project type)	☒ **Type A:** ☐ Type A1 ☒ Type A2 ☐ **Type B – De-registered CDM Projects:**[1] ☐ Type B1 ☐ Type B2
Minimum compliance requirements	☒ Real and Measurable GHG Reductions ☒ National Sustainable Development Criteria (if any) ☒ Apply credible baseline and monitoring methodologies ☒ Additionality

[1] Owners of Type B projects shall fill in the form provided in Appendix 7.

<table>
<tr><td></td><td>☒ Local Stakeholder Consultation Process
☒ Global Stakeholder Consultation Process
☒ No GHG Double Counting
☒ Contributes to United Nations Sustainable Development Goal 13 (Climate Action)</td></tr>
<tr><td>Choose optional and additional requirements
(Tick applicable label categories)</td><td>☒ Do-no-net-harm Safeguards to address Environmental Impacts
☒ Do-no-net-harm Safeguards to address Social Impacts
☒ Contributes to United Nations Sustainable Development Goals (in addition to Goal 13)</td></tr>
<tr><td>Applied methodologies
(Shall be approved by the GCC or the CDM)</td><td>ACM0002: Grid-connected electricity generation from renewable sources- Version 20.0</td></tr>
<tr><td>GHG Sectoral scope(s) linked to the applied methodology(ies)</td><td>01</td></tr>
<tr><td>Applicable Rules and Requirements for Project Owners
(Tick applicable Rules and Requirements)</td><td>
<table>
<tr><th colspan="2">Rules and Requirements</th><th>Reference</th><th>Version</th></tr>
<tr><td colspan="2">☒ ISO 14064-2</td><td></td><td></td></tr>
<tr><td colspan="2">☒ Applicable host country legal requirements /rules</td><td></td><td></td></tr>
<tr><td rowspan="7">☒ GCC Rules and Requirements[2]</td><td>☒ Project Standard</td><td></td><td>V3.1</td></tr>
<tr><td>☐ Approved GCC Methodology (XXXXX)</td><td></td><td></td></tr>
<tr><td>☒ Program Definitions</td><td></td><td>V3.1</td></tr>
<tr><td>☒ Environment and Social Safeguards Standard</td><td></td><td>V2.0</td></tr>
<tr><td>☒ Project Sustainability Standard</td><td></td><td>V2.1</td></tr>
<tr><td>☒ Instructions in Project Submission Form (PSF)-template</td><td></td><td>V3.2</td></tr>
<tr><td>☐ Add rows if required</td><td></td><td></td></tr>
<tr><td></td><td>☒ Approved CDM Methodology (ACM0002)</td><td>ACM0002: Grid-</td><td>V20.0</td></tr>
</table>
</td></tr>
</table>

[2] GCC Program rules and requirements: https://www.globalcarboncouncil.com/resource-centre.html

	☒ CDM Rules[3]		connected electricity generation from renewable sources- Version 20.0	
		☒ Tool for the demonstration and assessment of additionality	TOOL 01	V07.0.0
		☐ Combined tool to identify the baseline scenario and demonstrate additionality	TOOL 02	
		☒ Tool to calculate the emission factor for an electricity system	TOOL 07	V07.0
		☐ Demonstration of additionality of microscale project activities	TOOL 19	
		☐ Demonstration of additionality of small-scale project activities	TOOL 21	
		☐ Additionality of first-of-its-kind project activities	TOOL 23	
		☒ Common practice	TOOL 24	V03.1
		☒ Investment analysis	TOOL 27	V11.0
		☐ Positive lists of technologies	TOOL 32	
		☐ Guidelines for objective demonstration and assessment of barriers		
		☐ Add rows if required		
Choose Third Party External Project Verification by approved GCC Verifiers[4]	☒ GHG emission reductions (i.e., Approved Carbon Credits **(ACCs)**) ☒ Environmental No-net-harm Label (**E+**) ☒ Social No-net-harm Label (**S+**)			

[3] CDM Program rules: https://cdm.unfccc.int/Reference/index.html

[4] **Note:** GCC Verifiers under the Individual Track are not eligible to conduct verifications for GCC Project Activities whose

(Tick applicable verification categories)	☒ United Nations Sustainable Development Goals (**SDG$^+$**) ☐ Bronze SDG Label ☐ Silver SDG Label ☒ Gold SDG Label ☐ Platinum SDG Label ☐ Diamond SDG Label ☒ CORSIA requirements (**C$^+$**) ☐ Host Country Attestation on Double counting
Declaration to be made by the Project Owner(s)[5] (Tick all applicable statements)	The Project Owner(s) declares that: ☒ The Project Activity complies with the eligibility of the applicable project type (A1, A2, B1 or B2) as stipulated by the Project Standard. ☒ The Project Activity shall start operations, and start generating emission reductions, on or after 1 January 2016. ☒ The Project Activity is eligible to be registered under the GCC program. ☒ No carbon credits generated by the proposed Project Activity will be claimed as carbon credits in any other GHG program anywhere in the world, either for compliance or voluntary purposes, for the entire 10-year GCC crediting period. ☒ The proposed Project Activity, if Type A, is NOT registered as a GHG Project Activity in any other GHG program or any other voluntary program anywhere in the world. ☒ The proposed Project Activity is NOT included as a component Project Activity (CPA) in a registered GHG Programme of Activities (PoA) under any GHG program (such as the CDM or any other voluntary program) anywhere in the world. ☒ The proposed Project Activity is NOT a CPA that has been excluded from a registered PoA under any GHG program (such as the CDM or any other voluntary program) anywhere in the world. Provide details (if any) below for the boxes ticked above.
	☒ If a GCC project chooses to apply to use ACCs under CORSIA, the Project Owner(s) is required to declare that they are aware that they must obtain and provide to the GCC and its Registry (operated by IHS Markit) a written

owners intend to supply carbon credits (ACCs) for use within CORSIA.

[5] The "Project Owner" means the legal entity or organization that has overall control and responsibility for the Project Activity.

	attestation from the host country's national focal point (e.g., Ministry of Environment or Civil Aviation Authority) or focal point's designee, as required by CORSIA Emissions Unit Eligibility Criteria, which: ☒ Confirms the avoidance of double counting as required by CORSIA; ☒ Shall be made publicly available prior to the use of units from the host country under CORSIA; and ☒ Places all responsibility on the Project Owner(s) to replace any and all doubly claimed or counted ACCs by the host country, in the GCC registry operated by IHS Markit. Provide details below for the boxes ticked above
	The Project Owner(s) declares that: ☒ All of the information provided in this document, including any supporting documents submitted to the GCC or its registry operator IHS Markit at any time, is true and correct; ☒ They understand that a failure by them to provide accurate information or data, or concealing facts and information, can be considered as negligence, fraud or willful misconduct. Therefore, they are aware that they are fully responsible for any liability that arises as a result of such actions. Provide details below for the boxes ticked above
Appendixes 1-7	Details about the Project Activity are provided in Appendixes 1 through 7 to this document.
Name, designation, date and signature of the Project Owner(s)	On behalf of Kovanlık Enerji Üretim San.ve Tic. A.Ş. M. Kemal DEMİRKOL
	14/02/2022
	

1. PROJECT SUBMISSION FORM

Section A. Description of the Project Activity

A.1. Purpose and general description of the Project Activity

Kovanlık Regulator and Hydro Power Plant has been developed by Kovanlık Enerji Üretim San.ve Tic. A.Ş.. The project aim is to contribute to reducing national energy deficit and development of local industries as it allows the use of cheaper energy for industrialists and gain advantage in a competitive environment.

The purpose of the project is to generate clean energy by using 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 this scope, Kovanlık Enerji Üretim San.ve Tic. A.Ş. planned to establish a channel type hydropower plant in Bulancak district of Giresun province with the purpose of contributing to the national economy the meeting the increased electricity demand. The project boundary is considered as the National Electricity Grid of Turkey according to applied tool. The baseline scenario refers to the energy generation from the fossil fuels.

The project consists of 3 units each having 19.461 MWm / 19.07167 MWe. The total installed capacity is 58.383 MWm / 57.215 MWe. Annual electricity production is expected to be 197.39 GWh according to the generation licence. The project is licenced on 26/07/2018. As per the license issued by Energy Market Regulatory Authority (EMRA) all legal rights of the project is given to Kovanlık Enerji Üretim San.ve Tic. A.Ş for 49 years.

The project is operational since 30/10/2020 (provisional acceptance of unit-1). The project complies with the relevant regulations and laws in Turkey. In line with Turkish environmental regulations, an "Environmental Impact Assessment (EIA) Approval Letter" was approved by the Ministry of Environment and Urbanization in 22/11/2017.
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 is expected to be 197,390 MWh according to the generation license and the project will be able to deliver a reduction in emissions of around 112,631 tCO_2e (tons of carbon dioxide equivalent) per annum. For the entire crediting period, 1,126,310 tonnes of CO_2 is expected to be reduced.

Main goals of the Kovanlık Regulator and Hydro Power Plant project include;

• Utilization of the hydro 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.

The project is expected to contribute 4 SDGs which are SDG 7, 8, 9 and 13.

SDG 7 Energy: The project contributes SDG Target 7.2 “By 2030, increase substantially the share of renewable energy in the global energy mix” by the utilization of hydropower as a renewable energy source.

SDG 8 Economic Growth: The project creates direct and indirect employment opportunities during construction and operation phases, so it contributes to SDG Target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”.

SDG 9 Infrastructure, Industrialization: SDG Target 9.4 requires “By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities”. The project helps the Target 9.4 by implementing a clean, reliable and environmental-friendly infrastructure for clean energy production / up-to-date industrialization.

SDG 13 Climate Change: The project produces clean renewable energy by diminishing CO_2 emissions. Therefore, it contributes SDG Target 13.3 “Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning”.

A.2. Location of the Project Activity

The project is located in Bulancak of Giresun province of Turkey.

Address and geodetic coordinates of the physical site of the Project Activity		
Physical address	**Latitude**	**Longitude**
Bulancak/Giresun	40° 49’ 22” - 40° 50’ 52” North	38°32’18” - 38°33’42” East

A.3. Technologies/measures

Kovanlık Regulator and Hydro Power Plant project is a channel type hydroelectric power plant. The power plant consists of the facilities listed below:

- Kovanlık regulator
- 3 pelton type turbines

- Free flow transmission tunnel with a length of 9522.97 m
- Cut-and-over tunnel with a length of 84.16 m
- Forebay
- Penstock with a length of 1066.24 m
- Powerhouse and switchyard
- Energy transmission line (10.4 km)[6]

Technical characteristics of Kovanlık Regulator and Hydro Power Plant have been summarized in table below:

Table 1. Technical details of Kovanlık Regulator and Hydro Power Plant[6]

Turbines	
Type	Vertical Axis Pelton
Number of units	3
Installed capacity (1 unit)	19.07167 MW
Hydraulic capacity (1 unit)	6.67m^3/sec
Rated speed	500 /rpm
Regulator	
Type	Side-lever
Thalweg elevation	497 m
Weir elevation	498 m
Weir opening	12 m
Spillweir type	Radial gate
Spillweir design flow	297.90 m^3/s

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable[7], indicate if the host country has provided approval (Yes/No)
Turkey	Kovanlık Enerji Üretim San.ve Tic. A.Ş..	No

[6] Kovanlık Regulator and Hydro Power Plant Final Feasibility Report, page 1-3 – 1-9

[7] For example, *Project Coordination Form* is to be filled-in by Project Owners for projects located in Qatar. A written attestation from the host country's national focal point or the focal point's designee, as required by CORSIA (Refer section A.5 of the PSF guidelines).

A.5. Declaration of intended use of Approved Carbon Credits (ACCs) generated by the Project Activity

The Project Activity is expected to generate ACCs for a full 10-year crediting period and supply the credits to offset the following GHG emissions:

Period		Name of the Entities	Purpose and Quantity of ACCs to be supplied
From	To		
30/10/2020	29/10/2030	CORSIA	1,126,307 tCO_2

ACCs from the project activity will be used to create additional revenue stream for the investment and for reducing the project financial risks and thus enabling the sustainability of the project. No double counting will be occur in the scope of this project since GCC is the only programme applied.

A.6. Additional requirements for CORSIA

Please see Section E and F.

Section B. Application of selected methodology(ies)

B.1. Reference to methodology(ies)

The United Nations approved consolidated baseline methodology applicable to this project is ACM0002 : Grid-connected electricity generation from renewable sources --- Version 20.0[8]

AMC0002 refers to the following tools:

[8]https://cdm.unfccc.int/filestorage/A/G/0/AG07ZJQ3EXD42LT5YV9HR16M8KINPO/EB105_repan03_ACM0002.pdf?t=VEV8cjVuZDVtfDA9f3awwfbJrJfY4jWYzyXa

- Tool 01 : Tool for the demonstration and assessment of additionality, Version 07.0.0[9]
- Tool 07: Tool to calculate the emission factor for an electricity system, Version 07.0[10]
- Tool 24 : Common Practice, version 03.1[11]
- Tool 27 : Investment analysis, Version 11.0[12]

B.2. Applicability of methodology(ies)

• The 58.383 MWm / 57.215 MWe Kovanlık Regulator and Hydro Power Plant is a hydropower power type, greenfield, grid connected renewable electricity generation project,
• The project does not involve switching from fossil fuel use to renewable energy at the site of the project activity; and
• The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available.
• According to the ACM0002 ver 20.0:
The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m2

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}}$$ Equation (7)

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

Cap_{PJ} = 57,215,000 W
A_{PJ} = 3,548.30 m²

PD = (57,215,000 -0) / (3,548.30 -0) = 16,124.6 W/m2

According to the applied methodology, if the power density of the project activity is greater than 10 W/m²

[9] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
[10] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf
[11] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf
[12] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v11.0.pdf

$PE_{HP,y}$ = 0

Since the power density of the project activity is greater than 10 W/m^2,

$PE_{HP,y}$ = 0

The choice of methodology ACM0002, is justified as the project activity meets its applicability criteria. Kovanlık Regulator and Hydro Power Plant is a large-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 generationproject activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	Kovanlık Regulator and Hydro Power Plant is a large-scale hydro power type, greenfield, grid connected renewable electricity generation project. So, the project meets (a) Install a Greenfield power plant.
2	The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.	The project activity is installation of a new grid connected renewable energy power plant of the type hydro power plant.
3	In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The project does not involve a capacity addition to an existing plant, a retrofit of an existing operating plant, a rehabilitation of an existing plant, a replacement of an existing plant. Hence, this condition is N/A.
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, calculated using equation (7), is greater than 4 W/m^2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is	The project is a hydro power plant. (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m^2.

	greater than 4 W/m^2; or (d) The project activity is an integrated hydro power project involving multiplereservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m^2, 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.	
5	In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.	The project is not a integrated hydro power project. Hence, this condition is N/A.
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.	-The project does not involve switching from fossil fuel use to renewable energy at the site of the project activity. -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	The project does not involve retrofits, rehabilitations, replacements or capacity additions. Hence, this

	implementation of the project activity and undertaking business as usual maintenance".	condition is N/A.
8	In addition, the applicability conditions included in the tools referred to below apply.[13]	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 electricity system is not located partially or totally in an Annex I country. 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	Tool for the demonstration and assessment of additionality is applied in this project since there is no new methodologies proposed.

[13] The condition in "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality" that all potential alternative scenarios to the proposed project activity must be available options to project participants; does not apply to this methodology, as this methodology only refers to some steps of this tool.

	additionality tool.	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 24 : Common practice, version 03.1”

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”, or baseline and monitoring methodologies that use the common practice test for the demonstration of additionality	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 defines approaches for the conduction of the common practice test that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	Common practice analysis is provided in section B.5.

Applicability as per “Tool 27 : Investment Analysis, version 11.0”

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 described in this methodological tool, the requirements contained in the methodology shall prevail.	Investmentractice analysis is provided in section B.5.

B.3. Project boundary, sources and greenhouse gases (GHGs)

The project boundary is considered as the National Electricity Grid of Turkey according to applied methodology. 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.

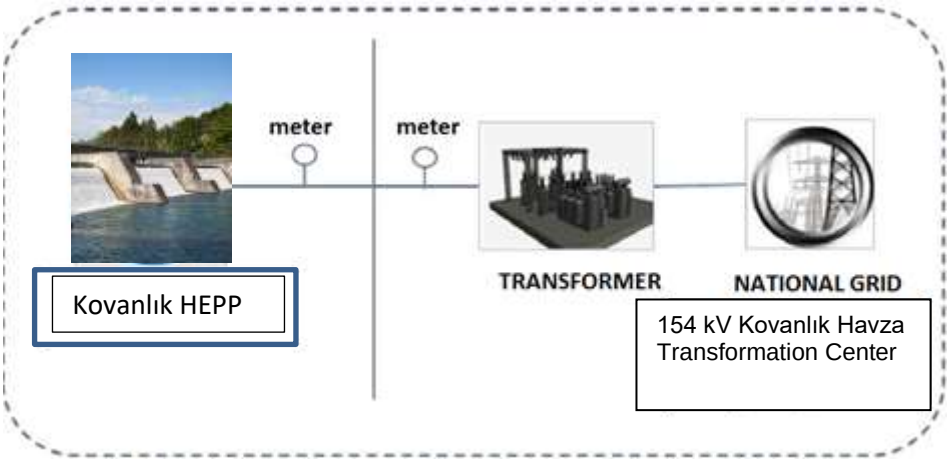

Figure 2. Project boundary

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	GHG	Included?	Justification/Explanation
Baseline	Electricity Generation	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source. Excluded for simplification
		N_2O	No	Minor emission source. Excluded for simplification
Project activity	For geothermal power plants, fugitive emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam.	CO_2	No	Not Applicable. Project is not a geothermal power plant.
		CH_4	No	Not Applicable. Project is not a geothermal power plant.
		N_2O	No	Not Applicable. Project is not a geothermal power plant.
	CO2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants.	CO_2	No	Not Applicable. Project is a hydro power plant.
		CH_4	No	Not Applicable. Project is a hydro power plant.
		N_2O	No	Not Applicable. Project is a hydro power plant.
	For hydro power plants, emissions of CH4 from the reservoir.	CO_2	No	Minor emission source. Excluded for simplification.
		CH_4	Yes	Main emission source. Included as a significant source
		N_2O	No	Minor emission source. Excluded for simplification

B.4. Establishment and description of the baseline scenario

This project follows an approved large-scale UNFCCC methodology which is ACM0002: Grid-connected electricity generation from renewable sources --- Version 20.0. Selected methodology has been applied together with the tools referred in section B.1 above.

According to the methodology 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”.

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 whereas share of wind power plants are still very low. Since Turkey is an advanced developing country, there is an increasing demand for electricity which is fully expected to continue in the foreseeable future (Figure 3.

The trend in Turkey to date and given historically slow development of alternative energy resources is to build an increasing number of thermal power plants in the future to satisfy the annual growth in energy consumption demand. Turkey as an advanced developing nation has looked at dealing with energy security by developing and constructing high capacity coal and natural gas power plants. The development of thermal power plants has been also encouraged by the large natural resource availability in Turkey, especially the abundance of economically accessible lignite.

In the absence of the proposed project activity, the same amount of electricity is required to be supplied via either the current power plants or by increasing the number of thermal power plants thus increasing GHG emissions.

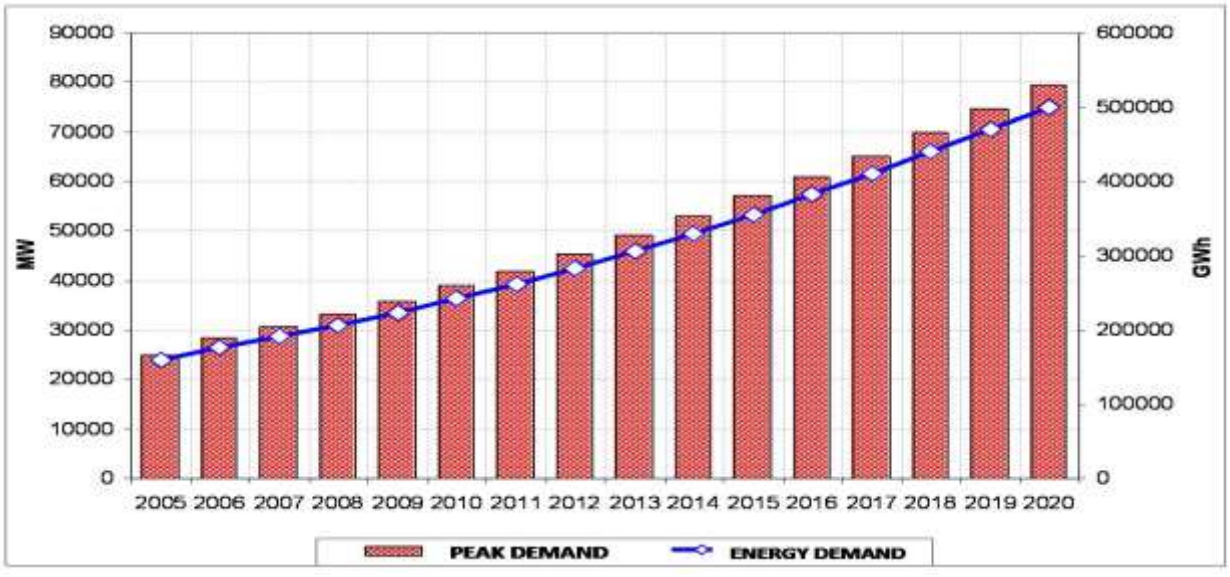

Figure 3. Peak Load and consumption projection for Turkish electricity system between 2005-2020[14]

The project is estimated to reduce CO_2 emissions by 112,631 tonnes, annually indicating the GWP of the project.

B.5. Demonstration of additionality

The additionality of a GCC Project shall be demonstrated by applying the following approach, consisting of two components: (i) A Legal Requirement Test; and (ii) An Additionality Test either based on a Positive List test or a projects-specific additionality test.

The project is not enforced by law. The project passes the legal requirement test since there are no enforced laws, statutes, regulations, court orders, environmental-mitigation agreements, permitting conditions of other legally binding mandates requiring its implementation. Since voluntary commitments/agreements within a sector or by an entity do not constitute the legal requirement, the project is additional as per paragraph 46 of Project Standard.

14http://www.teias.gov.tr/apkuretimplani/veriler.htm

Specify the methodology or activity requirement or product requirement that establish deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).	This project follows an approved large scale UNFCCC methodology which is ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, Version 20.0. Selected methodology has been applied together with the “tool to calculate the emission factor for an electricity system, version 07.0” and “tool for assessment and demonstration of additionality, version 07.0.0”. These are the latest version of the methodology and related additionality & calculation tool.
Describe how the proposed project meets the criteria for deemed additionality.	1- Project without carbon revenue is not financially attractive as discussed in investment analysis section below (benchmark and sensitivity analysis). 2- Continuation of the current situation- supply of equal amount of electricity by the newly built grid connected power plants. Continuation of the current situation is not considered as a realistic alternative due to increasing electricity demand therefore new power plants should be constructed which includes mainly thermal power plants. Implementation of the project is additional to the baseline scenario which is an alternative 2 above and therefore reduces the emissions. 3- The following applicable mandatory laws and regulations have been identified: - Electricity Market Law - Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy - Energy Efficiency Law - Forest Law - Environment Law 4- In accordance with common practice analysis there is no plants similar to the proposed project and built without carbon revenue, the proposed type of project should not be considered as a common practice in Turkey. Hence, project is additional in this aspect.

According to tool for demonstration and additionality the steps listed below are followed in detail;

Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations

***Sub-step 1a* - Define alternatives to the project activity:**

The most realistic and reliable alternatives to the project activity are:

1. Proposed project is not undertaken as an ACC project activity
2. Continuation of the current situation-supply of equal amount of electricity by the newly built grid connected power plants

The first alternative, which is the implementation of the project without carbon revenue is not financially attractive as discussed in investment analysis section below. The Second alternative (Scenario 2) is the baseline scenario and implementation of the proposed project as an ACC activity would be additional to this scenario. Continuation of the current situation is not considered as a realistic alternative due to increasing electricity demand therefore new power plants should be constructed which includes mainly thermal power plants. Implementation of the project is additional to the baseline scenario which is alternative 2 above and therefore reduces the emissions.

Outcome of Step 1a

Continuation of the current situation is not considered as a realistic alternative due to increasing electricity demand therefore new power plants should be constructed which includes mainly thermal power plants. Implementation of the project is additional to the baseline scenario which is an alternative 2 above and therefore reduces the emissions.

Sub-step 1b. Consistency with mandatory laws and regulation

The following applicable mandatory laws and regulations have been identified:

1. Electricity Market Law[15]
2. Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy[16]
3. Energy Efficiency Law [17]
4. Forest Law[18]
5. Environment Law[19]

The resultant alternatives to the project as outlined in Step (1a) are in compliance with the applicable laws and regulations.

15 Law number 4628, enactment date 03/03/2001 http://www.teias.gov.tr/eBulten/makaleler/2009/okulyeni2/elektrik/elektrik_piyasalari_kanunu.pdf

16 Law number 5346, enactment date 18/05/2005 http://www.mevzuat.gov.tr/MevzuatMetin/1.5.5346.pdf

17 Law number 5627, enactment date 02/05/2007 http://www.eie.gov.tr/verimlilik/document/EnVerKanunu_Mayis2011.pdf

18 Law number 6831, enactment date 31/08/1956

19 Law number 2872. Published in official gazette No. 18132 on 11/08/'83

Outcome of Step 1b

Mandatory legislation and regulations for each alternative are taken into account in sub-step 1b. Based on the above analysis, the proposed project activity is not the only alternative amongst the project participants that is in compliance with mandatory regulations. Therefore, the proposed ACC project activity is considered as additional.

Step 2 - Investment analysis

The investment analysis has been done in order to make an economic and financial evaluation of the project. No public funding or ODA are available in Turkey for finance of this type of projects. For investment analysis, loan conditions have been determined considering the average market rates/term sheets signed with the banks.

***Sub-step 2a* - Determine appropriate analysis method**

There are three options for the determination of analysis method which are:

- Simple Cost Analysis
- Investment Comparison Analysis and
- Benchmark Analysis

Since Project generates economic benefits from sales of electricity, the simple cost analysis is not applicable. Also, since the baseline of the project is generation of electricity by the grid, no alternative investment is considered at issue. So, it has been decided to use benchmark analysis for evaluation of the project investment.

Sub-step 2b: Option III. Apply benchmark analysis

For benchmark analysis, figure defined by World Bank for similar project types have been used which has been given as 15%[20] (pre-tax) for equity IRR by a report generated in June 2017. For the proposed project, in order to reach this equity IRR values, average electricity tariff must be above 10.1 $c/kWh[21] in the absence of carbon revenue and assuming that initial investment figures are realized so that the investment will become reasonable.

***Sub-step 2c.* Calculation and comparison of financial indicators**

Table 2. Main financial parameters used for investment analysis

Parameters	Unit	Data Value
Installed Capacity[22]	MWe	57.215
Grid Connected output[20]	GWh	197.39

20 http://documents.worldbank.org/curated/en/799701498842988254/pdf/ICR00004069-06192017.pdf
21 https://www.resmigazete.gov.tr/eskiler/2011/01/20110108-3-1.pdf
22 Generation License

Capital Investment[23]	Million $	69,729
O&M	Million $	980
Feed in Tariff/Market price after 10th years	$ Cents/kWh	7.3/4.61
Expected VERs price	$/ tCO_2e	4

Applied benchmark is defined by world bank for renewable energy investments in Turkey. It includes a threshold benchmark for IRR which is the minimum IRR required for financing a project. Hence, it is "commerical lending rate" as described by the tool 27. Benchmark IRR used has been taken from World Bank Loan provided to Turkish Renewable energy sector within the scope of clean technology fund (CTF). The proposed benchmark of CTF were deemed consistent with emission reduction project eligibility criteria (that is, significant potential in emission reductions, demonstration potential, development impact and implementation potential). Threshold IRRs have been determined for each project type which are the minimum IRRs to attract investors.

Applied benchmark IRR is conservative and reliable. EBRD, which is another international finance institution providing loan to Turkish RE and EE projects have published their evaluation report. This report shows that average IRR of 27 projects financed is 15% (Table 6 page 27) which if above the applied benchmark.[24]

Internal Rate of Return (IRR) of the Kovanlık Regulator and Hydro Power Plant has been calculated as 12.68% based on the parameters given above without considering the carbon revenue. Project does not use any ODA or government incentive; however, bank loan is used. Electricity tariff has been used as $7.3 Cent/kWh for first 10 years and 4.61 $ Cent/kWh after 10 years. Annual generation has been taken as 197.39 GWh as indicated in generation license.

Sub-step 2d - Sensitivity Analysis

Sensitivity analysis had been carried out for three main parameters identified for the first phase of the project. Since the investment cost of the project is not changed, only impact of change in tariff and operating cost has been included in sensitivity analysis.

- Investment Cost
- Operating Cost
- Electricity Sales revenue

Table 1. Sensitivity analysis for the Project (without carbon revenue)

% Fluctuation	-15	-10	-5	0	+5	+10	+15
Investment Cost	15.58	14.52	13.56	12.68%	11.87	11.13	10.43
Operating Cost	12.87	12.81	12.74	12.68%	12.62	12.56	12.49
Electricity Income	9.89	10.84	11.77	12.68%	13.58	14.46	15.33

For a range of ± 15% fluctuations in parameters above, table below has been obtained.

24

Outcome of Step 2:
The investment and sensitivity analysis shows that the VER revenues will improve the financial indicators of the Project remarkably. Considering that figures above are based on a higher price rather than the government guaranteed floor price, optimistic estimations for yearly generation and that those figures do not reflect the risk for investment, role of carbon income is a most significant number to enable the project to proceed.

According to local regulations, electricity price is determined daily according to Market Financial Settlement Centre (MFSC) as defined in the regulations and there exists three tariffs during day, peak and night hours. Thermal power plants and HEPPs with storage facilities have flexibility to schedule their generation at peak hours when the tariff is high. However, wind power plants do not have storage facility therefore may not be able to benefit from high prices realized at when demand is high. According to MFSC figures, electricity tariff fluctuated between 4.3 $c/kWh and 8.6 $c/kWh between 01/04/2014 and 01/02/2016. The value does not provide any guarantee about the actual selling price as the control on generation period and tariff is limited and it may not be possible to generate and sell electricity during peak tariff periods. Also, considering that fluctuation in wind flow exist and fact that a part of the electricity can be sold through bilateral agreements to free consumers with a discount rate over market price, guarantee price has been taken as reference in investment analysis which also provides input for evaluation of financing institutions.

Another important parameter affecting equity IRR is investment cost. Although a decrease in investment cost by %15 causes higher IRR as 15.58, the project cost is already spent. Operating costs can also affect the equity IRR however, its impact is not significant and does not cause any significant change in equity IRR and the fluctuation percentage to reach the benchmark is very high and not likely. Based on the above information, it is seen that project is not the most attractive option. Therefore, project is considered as additional to the baseline scenario.

Step 3. Barrier analysis

This step is not applied as per the tool.

Step 4. Common Practice Analysis
According to the “Tool for the demonstration and assessment of additionality”, Version 07.0.0”, the common practice shall provide an analysis of any other activities that are similar to the Project Activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing etc.
According to 2021 final renewable energy sources list published by Energy Market Regulatory Authority , there are 20 hydro power projects developed or had additional capacity in 2019[25].
Guidelines on Common Practice version 03.1[26] has been followed.
Step 1: calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.
The total capacity of the proposed project is 57.215 MWe. Therefore, the applicable output range is

[25]https://www.epdk.gov.tr/Detay/Icerik/4-9265/2021-yili-nihai-yek-listesi-
[26] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf

from 28.61 MWe to 85.82 MWe.
Step 2: identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:
(a)The projects are located in the applicable geographical area;
(b)The projects apply the same measure as the proposed project activity;
(c)The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
(d)The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;
(e)The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;
(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Applicable geographical area has been selected as the whole host country (Turkey) as per paragraph 1 of Guidelines on Common Practice version 03.1. Projects which apply the same measure as the proposed project have been determined and wind energy projects are selected as the same energy source type of projects. All of the selected plants deliver the same service which is the electricity generation.
Applicable output range has been determined and all of the power plants are taken from the latest available year 2019. General Directorate of Energy Affairs and EMRA Electricity Production Licence Database have been used as a main resource. Therefore, all of the compared power plants have been operational before the implementation of the project activity.
Below is a list of operational wind power plants as given by the General Directorate of Energy Affairs indicates that 2019 investments (counted as 20):

Table 6. Operational wind power plants27 (2019 investments)

NAME OF THE PLANT	INSTALLED CAPACITY (MWe)	ANNUAL GENERATION (GWh)
Balıkçı HES	0.200	0.54
Hacımercan HES	5.440	23.85
Keremali HES	0.460	3.45
Gürsöğüt Barajı ve HES	55.800	302.48
Ambarlık I-II HES	9.000	40.89
Adatepe Barajı ve HES	3.690	11.52
Esentepe Reg. ve HES	15.880	44.69
Orta Reg. ve HES	15.360	55.24
Alicik I-II HES	9.000	0.04
Büyük Karaçay Barajı ve HES	3.300	15.15
Karakurt Barajı ve HES	95.520	346.32
Kayabaşı Reg. ve HES	3.270	14.98
Gürleyik HES	0.490	2.72
Tımarlı HES	7.000	58.02

[27] https://enerji.gov.tr/enerji-isleri-genel-mudurlugu-yatirimlar

NAME OF THE PLANT	INSTALLED CAPACITY (MWe)	ANNUAL GENERATION (GWh)
Araklı Kaçkar Reg. ve HES	3.856	15.26
Soğukpınar HES-3	0.476	3.00
Soğukpınar HES 2	0.841	6.47
Soğukpınar HES-1	0.230	1.72
Soğukpınar HES-4	0.639	1.85
Çiğdemli Regülatörü ve HES	6.290	36.22
Kızılev Reg. ve HES	14.817	51.32
Saral-3 Reg. ve HES	11.230	80.92
Çiçekli I-II Reg. ve HES	6.730	21.91
Çetin Barajı ve HES	420.100	1,174.74
Gök HES	12.640	52.73
İskale Reg. ve HES	10.500	28.71
Karakuş Reg. ve HES	8.220	31.10
Kuzkaya Regülatörü ve HES	6.518	19.90
Alpaslan II Barajı ve HES	280.000	862.27
Akıncı HES	12.320	48.49
Ova HES	13.230	55.45
Taşköprü Reg. Ve HES	12.420	37.49
Çökek Reg.ve HES	10.440	33.14
Geriz HES	1.887	5.15
Gelen Regülatörü ve HES	7.208	19.30
Oylum III Reg ve HES	5.460	18.20
Yalman II HES	2.600	16.48
Omala Barajı ve HES	16.550	54.56

There is one power plant which is in the applicable range of Kovanlık HEPP (i.e. 28.61 MW to 85.82 MW).

NAME OF THE PLANT	INSTALLED CAPACITY (MWe)	ANNUAL GENERATION (GWh)
Gürsöğüt Barajı ve HES	55.8	302.5

Step 3: within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number Nall

Characteristics of the power plants are also indicated in this excel sheet. After excluding the registered VER projects and projects entering into commercial operation before start date of the project, 1 power plant is identified which is not registered as carbon project (Gürsöğüt HES).

Therefore;

Nall = 1

Step 4: within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number Ndiff

There is no different scale and different to the technology project therefore Ndiff=0

Step 5: calculate factor F=1-Ndiff/Nall representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

F=1-Ndiff/Nall=1-(0/1) = 1 (> 0.200)
Nall – Ndiff = 1 – 0 = 1

According to “Tool for Common practice”, Version 03.1, if the factor F is greater than 0.2 and Nall-Ndiff is greater than 3, then the proposed project is a “common practice”.

For the proposed project, F=1 and Nall-Ndiff=1, therefore, the proposed project is not a common practice within the applicable geographical area. Hence, the proposed project is additional.

Given the fact that all there is no plants similar to the proposed project and built without carbon revenue, the proposed type of project should not be considered as a common practice in Turkey. Therefore, the proposed project is not a common practice within the applicable geographical area. Hence, the proposed project is additional.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

Emission factor will remain same over the crediting period.

Emission Reduction

Ex-ante emission reductions (ERy) are calculated as follows:
ERy = BEy – PEy – LEy
Where:
ERy = Emission reductions in year y (tCO_2)
BEy = Baseline emissions in year y (tCO_2)
PEy = Project Emissions in year y (tCO_2)
LEy = Leakage emissions in year y (tCO_2)

Baseline Emissions

Baseline emission is calculated according to the formula:
BEy = EGy x EFy
Where:
EGy = Net electricity delivered to the grid by the project activity in year y excluding transmission losses of the grid
EFy = Emission factor calculated according to selected methodology and according to the Ministry

of Energy and Natural Resources document named as Turkey's National Electricity Network Emission Factor Factsheet (06/10/2021), OM is calculated as 0.7258 tCO_2/MWh whereas BM is 0.4153 tCO2/MWh)[28] Therefore, CM is calculated as 0.5706 whereas 0.50 and 0.50 weightage factor given to OM and BM, respectively.
Considering this project is a solar power plant project, combined margin is calculated as follows:
CM = (OM x 0.50) + (BM x 0.50)
As given by the Ministry of Energy and Natural Resources, built margin is 0.7258 and operating margin is 0.4153.
(0.7258 x 0.50) + (0.4153 x 0.50) = 0.5706 tCO_2/MWh

Project Emissions

Since the project is classified as a renewable energy project, parameter $PE_{FF,y}$ is neglected.
Therefore,
PEy = 0

Leakage Emissions

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".

Total Emission Reduction

As a result, Total Emission Reduction is:
ERy = BEy

B.6.2. Data and parameters fixed ex ante

Data / Parameter Table 1.

Data / Parameter:	**$EF_{grid,CM,y}$**
Methodology reference	ACM0002
Data unit	tCO_2/MWh
Description	Combined margin CO2 emission factor for the project electricity system in year
Measured/calculated /default	
Data source	Tool 07 Tool to calculate the emission factor for an electricity system

[28] https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/T%C3%BCrkiyeUlusalElektrik%C5%9EebekesiEmisyonFakt%C3%B6r%C3%BC/Belgeler/EK-2.pdf

	Ministry of Energy and Natural Resources, OM & BM values[29]
Value(s) of monitored parameter	0.5706 tCO_2/MWh
Measurement/ Monitoring equipment (if applicable)	The coefficients are taken as 0.50 and 0.50 for BM and OM, respectively according to the methodology.
Measuring/reading/ recording frequency (if applicable)	Once in each crediting period
Calculation method (if applicable)	CM = (BM x 0.50) + (OM x 0.50) As given by the Ministry of Energy and Natural Resources, built margin is 0.4153 and operating margin is 0.7258. (0.4153 x 0.50) + (0.7258 x 0.50) = 0.5706 tCO_2/MWh
QA/QC procedures	-
Purpose of data	To calculate baseline emission
Additional comments	-

B.6.3. Ex-ante calculation of emission reductions

Ex-ante emission reductions (ERy) 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:

$BE_y = EG_y \times EF_y$

Where:

[29] https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/T%C3%BCrkiyeUlusalElektrik%C5%9EebekesiEmisyonFakt%C3%B6r%C3%BC/Belgeler/EK-2.pdf

EG_y = Net electricity delivered to the grid by the project activity in year y excluding transmission losses of the grid (data is gathered from energy yield assessment report of the project which is 80,325 MWh)

EF_y = Emission factor calculated according to selected methodology (Combined margin value was calculated by using nationally accepted emission factors. Republic of Turkey Ministry of Energy and Natural Resources released them on 06/10/2021)[30]

Combined margin is calculated as follows:

CM = (OM x 0.50) + (BM x 0.50)

(0.7258 x 0.50) + (0.4153 x 0.50) = 0.5706 tCO_2/MWh

BE_y = 197,390 MWh × 0.5706 tCO_2e/MWh = 112,631 tCO_2e

Project emissions

Since the project is classified as a renewable energy project, parameter $PE_{FF,y}$ is neglected.

Therefore;

$PE_y = 0$

Leakage

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

$LE_y = 0$

As a result, Total Emission Reduction is:

$ER_y = BE_y$

B.6.4. Summary of ex ante estimates of emission reductions

>>

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
2020 (30/10/2020-31/12/2020)	19.440	0	0	19.440
2021	112.631	0	0	112.631
2022	112.631	0	0	112.631
2023	112.631	0	0	112.631
2024	112.631	0	0	112.631
2025	112.631	0	0	112.631
2026	112.631	0	0	112.631
2027	112.631	0		112.631

30

https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/T%C3%BCrkiyeUlusalElektrik%C5%9EebekesiEmisyonFakt%C3%B6r%C3%BC/Belgeler/EK-2.pdf

2028	112.631	0	0	112.631
2029	112.631	0	0	112.631
2030 (01/01/2030-29/10/2030)	93.190	0	0	93.190
Total	1.126.310	0	0	1.126.310
Total number of crediting years	10 years			
Annual average over the crediting period	112.631	0	0	112.631

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data / Parameter Table 1.

Data / Parameter:	EGfacility,y
Methodology reference	ACM0002
Data unit	MWh
Description	Net Electricity generated and delivered to the grid by the power plant in year y
Measured/calculated /default	Measured
Source of data	Electricity meter readings on-site
Value(s) of monitored parameter	Estimated annual generation forming the basis for emission reduction calculation is 197,390 MWh as indicated in generation licence

<table>
<tr><td>Measurement/ Monitoring equipment</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Type of meter</td><td>EMH LZQJ-XC (main meter)
EMH LZQJ-XC (spare meter)</td></tr>
<tr><td>Location of meter</td><td>On-site</td></tr>
<tr><td>Manufacturing standard and class</td><td>0.2S/0.5S</td></tr>
<tr><td>Serial number of meter</td><td>8923701 (main meter)
8923702 (spare meter)</td></tr>
<tr><td>Calibration frequency</td><td>10 years</td></tr>
<tr><td>Date of Calibration/ validity</td><td>-</td></tr>
<tr><td>Reference No. of Calibration Certificate</td><td>-</td></tr>
<tr><td>Calibration Status</td><td>Calibrated</td></tr>
</table>
</td></tr>
<tr><td>Measuring/reading/ recording frequency</td><td>Monthly</td></tr>
<tr><td>Calculation method (if applicable)</td><td>EGy calculation is used by EPIAS (which is one of the TEIAS association) records and which are more conservative than the site records. Generation is recorded via remote reading system. The values are cross-check with the on-site meter records.

Generation data is recorded by two metering devices continuously. These records provide the data for the monthly invoicing to TEIAS. Generation is recorded via remote reading system. The quantity of electricity supplied by the project plant/unit to the grid(ISVM) and the quantity of electricity delivered to the project plant/unit from the grid (UECM) are measured. Net generation is calculated via subtracting energy delivered by the project activity to the grid for internal consumption from electricity fed to the grid.</td></tr>
<tr><td>QA/QC procedures:</td><td>Calibration of the meters are valid for 10 years based on related regulation[31]. Maintenance and calibration of the metering devices are made by TEIAS. If there is a significant difference between the readings of two devices, maintenance and tests of the metering devices and the associated equipment are done before waiting for the periodical maintenance. The meters should comply with EPDK regulations which define the accuracy class of the meters as 0.2 or 0.5 depending on the capacity of the circuit as given in document in link (https://www.epdk.gov.tr/Detay/Icerik/3-0-0-128/tebligler).</td></tr>
<tr><td>Purpose of data</td><td>To calculate the baseline emission value
To assess the contribution SDG 9 Infrastructure, Industrialization / 9.4 By 2030, upgrade infrastructure and retrofit industries to make them</td></tr>
</table>

[31] https://www.mevzuat.gov.tr/anasayfa/MevzuatFihristDetayIframe?MevzuatTur=7&MevzuatNo=6381&MevzuatTertip=5

	sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
Additional comments	-

Data / Parameter:	Cap_{PJ}
Methodology reference	ACM0002
Data unit	W
Description	Installed capacity of the hydro power plant after the implementation of the project activity
Measured/calculated /default	Measured
Source of data	Via confirmation of installed capacity from equipment labels
Value(s) of monitored parameter	57,215,000
Measurement/ Monitoring equipment	
Measuring/reading/ recording frequency	Once at the beginning of each crediting period
Calculation method (if applicable)	For the total capacity of the plant, installed capacities of each unit are summed up.
QA/QC procedures:	Supplier information on the related equipment and the existence of the equipment are checked. Also, this information can be checked from EPDK generation licence.
Purpose of data	To check the project's installed capacity
Additional comments	-

Type of meter	EMH LZQJ-XC (main meter) EMH LZQJ-XC (spare meter)
Location of meter	On-site
Manufacturing standard and class	0.2S/0.5S
Serial number of meter	8923701 (main meter) 8923702 (spare meter)
Calibration frequency	10 years
Date of Calibration/ validity	-
Reference No. of Calibration Certificate	-
Calibration Status	Calibrated

Data / Parameter:	APJ
Methodology reference	ACM0002
Data unit	m2
Description	Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full
Measured/calculated /default	Measured
Source of data	Project site
Value(s) of monitored parameter	3,548.30
Measurement/ Monitoring equipment	Determined using topographical surveys or maps
Measuring/reading/ recording frequency	Once at the beginning of each crediting period
Calculation method (if applicable)	N/A
QA/QC procedures:	N/A
Purpose of data	Measurement of the area of the reservoir and calculate project emissions accordingly.
Additional comments	Maximum area is already calculated during assessing feasibility of the project for expropriation purposes and considered in calculations. Annual measurements are not expected to be higher than this value.

Data / Parameter:	**CO2 Emissions**
Methodology reference	GCC Environment-and-Social-Safeguards-Standard-v2
Data unit	tonnes
Description	Reduction of CO2 emissions due to implementation of project activity that would otherwise be emitted by thermal power plants
Measured/calculated /default	Calculated
Source of data	Electricity generated by Kovanlık HEPP and OM&BM calculations
Value(s) of monitored parameter	112,631 tonnes of CO_2 annually

Measurement/ Monitoring equipment	<table><tr><td colspan="2"></td></tr><tr><td>Type of meter</td><td>EMH LZQJ-XC (main meter) EMH LZQJ-XC (spare meter)</td></tr><tr><td>Location of meter</td><td>On-site</td></tr><tr><td>Manufacturing standard and class</td><td>0.2S/0.5S</td></tr><tr><td>Serial number of meter</td><td>8923701 (main meter) 8923702 (spare meter)</td></tr><tr><td>Calibration frequency</td><td>10 years</td></tr><tr><td>Date of Calibration/ validity</td><td>-</td></tr><tr><td>Reference No. of Calibration Certificate</td><td>-</td></tr><tr><td>Calibration Status</td><td>Calibrated</td></tr></table>
Measuring/reading/ recording frequency	Continuous reading, monthly recording
Calculation method (if applicable)	The net electricity supplied by the Project will be continuously measured and recorded by EPIAS; and will be kept by the Project Owner
QA/QC procedures:	-
Purpose of data	To assess the contribution SDG 13 Climate Action / 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions development
Additional comments	-

Data / Parameter:	**Quantitative Employment**
Methodology reference	GCC Environment-and-Social-Safeguards-Standard-v2
Data unit	Number of recruited staff during operation
Description	Creating new employment opportunities
Measured/calculated /default	Calculated
Source of data	Employment records
Value(s) of monitored parameter	At least 5 people to be employed
Measurement/ Monitoring equipment	-

Measuring/reading/ recording frequency	Annually
Calculation method (if applicable)	Employment records will be checked to confirm the number of employed staff.
QA/QC procedures:	-
Purpose of data	To assess the contribution to SDG 8 Economic Growth - SDG Target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”.
Additional comments	-

B.7.2. Monitoring-program of risk management actions

There is no parameter evaluated as “Harmful” in Section E.

B.7.3. Sampling plan

N/A

B.7.4. Other elements of the 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.

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

Generation data collected during crediting period is submitted to GTE KARBON SÜRDÜRÜLEBİLİR ENERJİ EĞİTİM DANIŞMANLIK VE TİCARET A.S’ who is responsible for calculating the emission reduction subject to verification: Generation data is used to prepare monitoring reports which are used to determine the vintage from the project activity.
Team Members is expected to include the following staff :
Plant Manager: Responsibility for running the plant and compliance with ACC monitoring plan
Accounting Manager: Responsible for keeping data about generation and consumption.
and
GTE KARBON SÜRDÜRÜLEBİLİR ENERJİ EĞİTİM DANIŞMANLIK VE TİCARET A.S’: 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 be done using main metering devices and spare metering device is used for comparison only. Data from metering devices is recorded by TEIAS monthly (through remote reading).

Two calibrated meters backup each other. Maintenance and calibration of the metering devices are made by TEIAS. If there is a significant difference between the readings of two devices, maintenance and tests of the metering devices and the associated equipment are done before waiting for the periodical maintenance. The meters should comply with EPDK regulations which define the accuracy class of the meters as 0.2 or 0.5 depending on the capacity of the circuit as given in document in link (https://www.epdk.gov.tr/Detay/Icerik/3-0-0-128/tebligler). EPIAS records will be taken in consideration while calculating net electricity generation by the plant. ISVM (Electricity fed to the grid) and UECM (Electricity consumed from the grid) data given in the EPIAS records are used for emission reduction calculations. Meters at the site will be used for crosscheck.

All data is kept for at least two years after the crediting period for QA/QC purposes.

Calibration of the metering devices is made by TEIAS and sealed before the commissioning of the power plant. The meters are calibrated by TEIAS when there is an inconsistency between two devices.

Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

Start date of project activity is 30/10/2020, which is the commissioning date of unit 1.

C.2. Expected operational lifetime of the Project Activity

The project is licenced on 26/07/2018. As per the license issued by Energy Market Regulatory Authority (EMRA) all legal rights of the project are belong to Kovanlık Enerji Üretim San. ve Tic. A.Ş for 49 years.

C.3. Crediting period of the Project Activity

C.3.1. Fixed crediting period

The crediting period is fixed as 10 years.

C.3.2. Start date of the crediting period

Start date of crediting period is 30/10/2020

C.3.3. Duration of the crediting period

The crediting period is between 30/10/2020 – 29/10/2030.

Section D. Environmental impacts

D.1. Analysis of environmental impacts

Please see section E

D.2. Environmental impact assessment

An environmental impact assessment dated in 2017 was prepared in order to assess the environmental effects of the project activity. The report has been prepared in accordance with Turkey's national standards. Approval from the Ministry of Environment and Urbanization was taken on 22/11/2017. Therefore, the project is considered to be implemented according to the national laws and regulations as long as the environmental precautions stated in the report are applied.

Main units to be built are weir, conveyance tunnel, silting basin, penstock and powerhouse. Aggregate from tunnel will be used in construction to avoid excavation waste and demand for construction material. EIA has been conducted to assess all potential impacts and minimize through measures adopted. Main measures to be taken to minimize environmental impacts are;

- Collect top layer soil during exvation and use rehabilitation of site after construction works
- Spraying will be applied to minimize dust formation
- All wastes will be collected, recycled or sent to municipal landfill site
- Minimal flow will be released as per the decision to be made by DSI (State hydraulic Works Authority)
- Fish passage will be built to allow fish migration upward and downward

Within the scope of EIA , stakeholder consultation meeting have been organized in Kovanlik on 19/04/2017 with participation from investor company, local residents and public agencies. Presentation about location, activities and technology has been explained through presentation made. Main questions from public has been about minimal flow, dust and noise during construction works. Measures to be taken has been defined regarding the questions raised.

Section E. Environmental and social safeguards

>>

E.1. Environmental safeguards

>>

Impact of Project Activity on		**Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards**									**Project Owner's Conclusion**	
		Description of Impact *(both positive and negative)*	**Legal requirement / Limit**	**Do-No-Harm Risk Assessment**			**Risk Mitigation Action Plans**		**Do-No-Harm Residual Risk Assessment**		**Self-Declaration**	
				Not Applicable *(No actions required)*	**Harmless** *(No actions required)*	**Harmful** *(Actions required)*	**Operational Controls**	**Program of Risk Management Actions**	**Re-evaluate Risks**	**Monitoring**	**Explanation of Conclusion**	**The Project Activity will not cause any harm**
Environmental impacts on the identified categories[32] indicated below.	*Indicators for environmental impacts*	*Describe anticipated environmental impacts, both positive and negative from all sources (stationary and mobile), that may result from the Project Activity, within and outside the project boundary, over which the Project Owner(s) has control, and beyond what would reasonably be expected to occur in the absence of the Project Activity.*	*Describe the applicable national regulatory requirements /legal limits related to the identified risks of environmental impacts.*	*If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable*** *(No actions required)*	*If environmental impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ below the legal limits, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Harmless*** *(No actions required)*	*If environmental impacts are anticipated that will not be in compliance with the applicable national regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be un-safe) and shall be indicated as* ***Harmful*** *(Actions required).*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as* ***Harmful****.*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce the risk of impacts that have been identified as* ***Harmful****.*	*Re-evaluate risks after Risk Mitigation Action Plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful. Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as* ***Harmless*** *(No actions required)*	*Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and described in the PSF (refer to Table 3).*	*Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.*	*Confirm that the Project Activity risks of negative environmental impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for* ***Yes*** *or and -1 for* ***No****)*
Environmental Safeguards												
Environment *- Air*	*SO_x emissions*	N/A. Project does not cause any SOx emissions.	Limit:60 kg/hr[33]	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	NO_x emissions	Project does not cause any	20 kg /hr[28]	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

[32] sourced from the CDM SD Tool and the sample reports are available (https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx)

[33] http://www.cmo.org.tr/mevzuat/mevzuat_detay.php?kod=348

		NOx emissions. N/A										
	CO_2 emissions	The project reduces CO2 emissions since it reduces the amount of fossil fuel used. In case of "no project", stated amount of electricity would be generated from fossil fuels and cause air pollution.	Since project does not emit CO2, it is not applicable.	N/A. No further action is required as project activity is renewable energy generation.	-	-	No harmful action has been identified as per the activity type.	N/A	N/A	N/A	The electricity generation will be monitored by using electricity meters. Therefore, emission reduction will be calculated accordingly.	+1
	CO emissions	Project will not released and CO emission.	50 kg/hr[28]	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Suspended particulate matter (SPM) emissions	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Fly ash emissions	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Non-Methane Volatile Organic Compounds (NMVOCs)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Odor emissions	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Noise Pollution	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
Environment *- Land*	*Solid waste Pollution from Plastics*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Solid waste Pollution from Hazardous wastes	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Solid waste Pollution from Bio-medical wastes	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

	Solid waste Pollution from E-wastes	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Solid waste Pollution from Batteries	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Solid waste Pollution from end of life products/ equipment	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Soil erosion	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
Environment *- Water*	*Reliability/ accessibility of water supply*	*Reliability/ accessibility of water supply*	The water used for electricity is released back to the same River without any chemical change and at the same amount and quality. Lifeline minimum water is determined by State Hydraulic Works Flow Stations as 794 Litre/s.[34] Therefore, agricultural and husbandry activities are not affected from the	Minimum flow rates are determined by State Hydraulic Works (DSI). DSI will monitor incoming and minimum flow released to the river bed.	N/A	Harmless-	-	N/A	N/A	DSI will will monitor flow through gauging stations. The amount of lifeline water is also monitored by the State Hydraulic Works.	All measures will be implemented in line with directives of DSI and local regulations. Minimum flow determined by DSI will be released from the weir to ensure biodiversity.	

[34] EIA, page 18

			project activity since the project is run-type.[35] Since those activites are not affected, no relocation is needed.									
	Water Consumption from ground and other sources	*Water Consumption from ground and other sources*	N/A. There is no water consumption.	N/A	N/A	-	-	N/A	N/A	N/A	N/A	
	Generation of wastewater	*Generation of wastewater*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	
	Wastewater discharge without/with insufficient treatment	*Wastewater discharge without/with insufficient treatment*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	
	Pollution of Surface, Ground and/or Bodies of water	*Water Pollution of Surface and Ground water and water bodies*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	
Environment *– Natural Resources*	*Conserving mineral resources*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Protecting/ enhancing plant life	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Protecting/ enhancing species diversity	In order to avoid disturbing fish migration in the river, fish passage will be built in line with DSI directives.	Minimum flow will be released (794 L7s)and a fish passage is built.	-	-	Harmless	In the project site, there are 16 fish species identified. 9 of them are classified as endemic, however those species not only live	The fish passages are constructed.	Harmless	Minimum flow will be monitored by DSI through gauging stations. Fish passage will be built to ensure fish migration.	Fish passage is built considering the characteristic of the river and species. Also, minimum flow is	

[35] EIA, page 261 and 479

							around the project site but also in the whole Sakarya basin. Therefore, together with the fish passages, the negative effects of the projects will be minimized for those species. Still water generated by the regulator will also promote those species in terms of phytoplanto nic aspects.[36] The project is run-type, so there will not be any change in the amount of water that the fish requires to live in. There are also fish passages which allows them to pass through downstream .				released as per the DSI requirement .	
	Protecting/ enhancing forests	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

[36] EIA, page 124-126

	Protecting/ enhancing other depletable natural resources	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Conserving energy	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Replacing fossil fuels with renewable sources of energy	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Replacing ODS with non-ODS refrigerants	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to Environment. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.

Net Score:	**+1**
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to the environment.

E.2. Social Safeguards

>>

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards									Project Owner's Conclusion	
		Description of Impact (*both positive and negative*)	**Legal requirement /Limit**	**Do-No-Harm Risk Assessment**			**Risk Mitigation Action Plans**		**Do-No-Harm Residual Risk Assessment**		**Self-Declaration**	
				Not Applicable *(No actions required)*	**Harmless** *(No actions required)*	**Harmful** *(Actions required)*	**Operational Controls**	**Program of Risk Management Actions**	**Re-evaluate Risks**	**Monitoring**	**Explanation of Conclusion**	**The Project Activity will not cause any harm**
Social impacts on the identified categories[37] indicated below.	*Indicators for social impacts*	*Describe the impacts on society and stakeholders, both positive and negative, that may result from constructing and operating of the Project Activity.*	*Describe the applicable national regulatory requirements / legal limits related to the identified risks of social impacts.*	*If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable*** *(No actions required)*	*If social impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ legal limits, then it the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Harmless*** *(No actions required)*	*If social impacts are anticipated that will not be in compliance with the applicable national regulatory requirements/ legal limits, then the Project Activity is likely to cause harm (may be unsafe) and shall be indicated as* ***Harmful*** *(Actions required).*	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as* ***Harmful****.*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., construction of crèche for workers) that will be adopted to reduce the risk of impacts that have been identified as* ***Harmful****.*	*Re-evaluate risks after Risk Mitigation Actions plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful. Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as* ***Harmless*** *(No actions required)*	*Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and to be described in the PSF (refer to Table 3).*	*Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.*	*Confirm that the Project Activity risks of negative social impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for* ***Yes*** *or and -1 for* ***No****)*
Social Safeguards												
Social - *Jobs*	*Long-term jobs (> 1 year) created/ lost*	The project creates long term job opportunities during operation. 6 people have been employed as long terms employee.	All employments are done according to the national employment regulations.	N/A	-	-	N/A	N/A	N/A	Check social security records.	Project will be operated for term and around 15 staff is expected to be permanently employed during	+1

[37] sourced from the CDM SD Tool and the sample reports are available (https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx)

											operation phase.	
	New short-term jobs (< 1 year) created/ lost	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Sources of income generation increased / reduced	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A
Social - *Health & Safety*	*Disease prevention*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Reducing / increasing accidents	N/A.	N/A		-	-	N/A	N/A	N/A	N/A	N/A	
	Reducing / increasing crime	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Reducing / increasing food wastage	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Reducing / increasing indoor air pollution	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Efficiency of health services	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Sanitation and waste management	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
Social - *Education*	*Job related training imparted or not*	N/A.	-	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Educational services improved or not	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Project-related	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

	knowledge disseminatio n effective or not											
Social - *Welfare*	*Improving/ deteriorating working conditions*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Community and rural welfare	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Poverty alleviation (more people above poverty level)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Improving / deteriorating wealth distribution/ generation of income and assets	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Increased or / deteriorating municipal revenues	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Women's empowerme nt	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	Reduced / increased traffic congestion	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to society. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.

Net Score:	**+1**
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to society.

Section F. United Nations Sustainable Development Goals (SDG)

The project is expected to contribute 4 SDGs which are SDG 7, 8, 9 and 13.

SDG 7 Energy: The project contributes SDG Target 7.2 “By 2030, increase substantially the share of renewable energy in the global energy mix” by the utilization of hydropower as a renewable energy source.

Related indicator: 7.2.1 Renewable energy share in the total final energy consumption

SDG 8 Economic Growth: The project creates direct and indirect employment opportunities during construction and operation phases, so it contributes to SDG Target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”.

Related indicator: 8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities

SDG 9 Infrastructure, Industrialization: SDG Target 9.4 requires “By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities”. The project helps the Target 9.4 by implementing a clean, reliable and environmental-friendly infrastructure for clean energy production / up-to-date industrialization.

Related indicator: 9.4.1 CO2 emission per unit of value added

SDG 13 Climate Change: The project produces clean renewable energy by diminishing CO2 emissions. Therefore, it contributes SDG Target 13.3 “Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning”.

Related indicator: 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions

UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs					Project Owner(s)'s Conclusion	
			Project-level SDGs	**Project-level Targets/ Actions**	**Project-level Indicators**	**Contribution of Project-level Actions to SDG Targets**	**Monitoring**	**Explanation of Conclusion**	**Are Goal/ Targets Likely to be Achieved?**
Describe UN SDG targets and indicators *See: https://unstats.un.org/sdgs/indicators/indicators-list/*	*Describe the UN-level target(s) and correspo-nding indicator no(s)*	*Has the host country declared the SDG to be a national priority? Indicate Yes or No*	*Define project-level SDGs by suitably modifying and customizing UN/ Country-level SDGs to the project scope.* ***For guidance see:*** *Integrating the SDGs into Corporate Reporting- A Practical Guide: https://www.unglobalcompact.org/docs/publications/Practical_Guide_SDG_Reporting.pdf* *Case-study from Coca-Cola and other organizations to develop organization-wide SDGs (page 114): https://pub.iges.or.jp/pub/realising-transformative-potential-sdgs*	*Define project-level targets/actions, by suitably modifying and customizing UN/Country-level targets to the project scope. Define the target date by which the Project Activity is expected to achieve the project-level SDG target(s). Refer to the previous column for guidance*	*Define project-level indicators by suitably modifying and customizing UN/Country-level indicators to the project scope or creating a new indicator(s). Refer to the previous column for guidance*	*Describe and justify how actions taken under the Project Activity are likely to result in a direct positive effect that contributes to achieving the defined project-level SDG targets and is additional to what would have occurred in the absence of the Project Activity*	*Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG target and Indicator*	*Describe how the Project Owner has concluded that the project is likely to achieve the identified Project level SDGs target(s).*	*Describe whether the project-level SDG target(s) is likely to be achieved by the target date (Yes or No)*
Goal 1: End poverty in all its forms everywhere	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 3. Ensure healthy lives and promote well-being for all at all ages	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 5. Achieve gender equality and empower all women and girls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 6. Ensure availability and sustainable management of water and sanitation for all	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	SDG Target 7.2 "By 2030, increase substantially the share of renewable energy in the global energy mix" by the utilization of biomass as a renewable energy source." Indicator 7.2.1 Renewable energy share in the total final energy	Yes	Increase the share of renewables in the total installed power capacity connected to the national grid.	Provide 197,390 MWh clean energy annually.	Enhance the share of installed electricity generation capacity from renewable energy sources.	The project increases the renewable energy share in Turkey's energy production mix. It provides 197,390 MWh annual clean energy to the grid.	Calculate the share of installed capacity from renewable energy.	The project fully commissioned in October 2020. Project implementation goes on without any problem.	Yes

	consumption								
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	SDG Target 8.5 "By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value". Indicator 8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	Yes	Generated job opportunities and income	Provide a minimum number of 5 employment opportunity.	Minimum 5 people to be recruited including all levels.	The project created job opportunity for both construction and operation period. It created long term employment for minimum 5 people who are directly working at the site.	Check employment records	Project owner employs people according to the regulations. Social security payments are done regularly.	Yes
Goal 9. Build resilient infrastructure, promote inclusive and sustainable	SDG Target 9.4 requires "By 2030,	Yes	Provides one clean and resilient energy generation facility	Project implementation is a 197,390 MWh resilient energy	Project provides clean energy.	The project helps adaptation of clean energy	Check that the project implementation continues	Project owner operates the plant since October 2020	Yes

industrialization and foster innovation	upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities". Indicator 9.4.1 CO2 emission per unit of value added			generation facility.		technologies by implementing a wind power plant.	and electricity generated.	and complies with targeted SDGs so far.	
Goal 10. Reduce inequality within and among countries	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 11. Make cities and human settlements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

inclusive, safe, resilient and sustainable									
Goal 12. Ensure sustainable consumption and production patterns	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 13. Take urgent action to combat climate change and its impacts	SDG Target 13.3 "Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning". Indicator 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to	Yes	Eliminates 112,631 tCO2 annually	197,390 MWh renewable energy plant.	Reduce greenhouse gas emissions by 112,631 tonnes annually.	Since the project uses wind energy, there is no GHG emissions related to the project activity. It eliminates 112,631 tCO2 annually.	Calculate avoided GHG emissions every year.	Project owner operates the plant since October 2020 and complies with targeted SDGs so far.	Yes

	implement adaptation, mitigation and technology transfer, and development actions								
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 17. Strengthen the means of implementation and revitalize the global	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

partnership for sustainable development									

SUMMARY	Targeted	Likely to be Achieved
Total Number of SDGs	**4**	**4**
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF	**Gold**	**Gold**

Section G. Local stakeholder consultation

G.1. Modalities for local stakeholder consultation

Announcement and call for the stakeholder consultation meeting was done on 06/04/2017 in Giresun Öncü Gazette (local) and Dünya Gazette (national). Mukhtars of the neighborhoods also announced the meeting.

Local stakeholder consultation meeting was conducted at 14.00 on 19/04/2017 in Giresun Province, Bulancak District, Kovanlık Town, Kovanlık Municipality Wedding Venue. Representatives for Ministry of Environment and Urbanization, Provincial Directorate for Environment and Urbanization, investor company official, Almer Proje and local stakeholders participated in the meeting. A powerpoint presentation was given to the local stakeholders to provide information about the project. Hence, the local stakeholders learned about the project at the same time provided their opinions and suggestions. Their questions were answered. Importance of the project were explained and detailed information about the selected location and the activities planned for the future were given to the participants. It was pointed out that the project would create job opportunities.

G.2. Summary of comments received

Questions were raised about the job opportunities by the project activity and answered that the project would create job opportunities.

Meeting has been coordinated by Province Directorate of Environment and Urbanization. Purpose of the meeting, feedback mechanisms and link for EIA report has been shown in the meeting. After presentation of the project and explanation of the measures, questions have been answered by investor and Ministry representatives. Questions raised are given below;

- What will you do in summer months when the flow is low?
- What will happen if the water sources of the villages are affected? How shall we ensure and protect our rights if there is any problem?
- What will be impact of detonations, noise and dust to our village?
- What is the plant for emergency situations?
- Houses close to tunnel inlet/outlet can be disturbed by noise and dust. What will be the precatutions?

"HALKIN KATILIMI TOPLANTISI" KATILIMCI LİSTESİ

Proje Sahibi	Kovanlık Enerji Üretim San. ve Tic. A.Ş.
Proje Adı	Kovanlık Regülatörü ve HES (58.383 MWm / 57.215 MWe) (Kırma-Eleme Tesisi, Beton Santrali ve Malzeme Ocakları dahil)
Toplantı Tarihi/Saati	19/04/2017 Çarşamba günü, Saat:14.00

S.No	Adı Soyadı	Kurumu/Adresi/Köyü	İmza
1	Kemal YÜKSEL	Gültepe Köyü	
2	Nelat Yüksel	Gültepe Köyü	
3	Rafet Güneş	Gültepe Köyü	
4	Raif BAY	Demicili Köyü	
5	Şükrü OK	Tepören Köyü	
6	Osman Başkurak	Yeni Köy	
7	Osman Öztaş	Güldepe K.	
8	Dursun Alibey	Alibey/C	
9	Muhterem Demir	Merkez mahalle	
10	Ersin Dik	Alibey	
11	Harun Kalıntaş	Sofulu	
12	Mustafa YILMAZ	Tepeören	
13	Dursun BULUT	Soğuksu mah.	
14	Hanti Pekdemir	Dut Mahalle	
15	Bilal ÇETİN	Sofulu Mah.	
16	Mustafa ÇAKIR	Sofulu Mh.	
17	Ahmet Yeniay	Soğuksu Mah	
18	Mürsel Cündioğlu	Akurla Mah.	
19	Selim TAN	Akurla Mah.	
20	Feyzi BULUT	Soğuksu Mah	

Table 2. List of Stakeholder Consultation Participants

"HALKIN KATILIMI TOPLANTISI" KATILIMCI LİSTESİ

Proje Sahibi	Kovanlık Enerji Üretim San. ve Tic. A.Ş.
Proje Adı	Kovanlık Regülatörü ve HES (58.383 MWm / 57.215 MWe) (Kırma-Eleme Tesisi, Beton Santrali ve Malzeme Ocakları dahil)
Toplantı Tarihi/Saati	19/04/2017 Çarşamba günü, Saat:14.00

S.No	Adı Soyadı	Kurumu/Adresi/Köyü	İmza
21	Abdürrahim Demir	Merkez Mah	[signature]
22	Fikri DEMİR	Merkez Mah.	[signature]
23	Cemil ÇAKIR	Sofulu mah.	[signature]
24	İsmet ÇAKIR	Sofulu Mah.	[signature]
25	Turhan BULUT	Soğuksu Mah.	[signature]
26	Metin Yeniay	Soğuksu Mah	[signature]
27	Hüseyin EKER	Merkez Mah	[signature]
28	Uğur KALINTAŞ	Sofulu Mah.	[signature]
29	Tevfik TEKTAŞ	Giresun Çevre Şehircilik İl Md. Ziraat Müh.	[signature]
30	Erkan KAYA	Çevre ve Şehircilik İl Md. Çevre Müh	[signature]
31	Abdullah AYAZ	Giresun Çevre ve Şeh. Md.	[signature]
32	Oğuz AYDIN	Çevre ve Şehircilik Bakanlığı Enerji Yat. Şb. Md. [illegible]	[signature]
33	Orkun Muncu	GİRESUN ÇŞİM (Çevre Müh.)	[signature]
34	Mehmet Küçük	Belediye Başkanı	[signature]
35	Ahmet Bulut	ESNAF	[signature]
36			
37			
38			
39			
40			

G.3. Consideration of comments received

Questions have been replied by investors and Ministry representatives when needed.

- Location of quarry grinding facility has been changed upon comments of participants.
- Measures for dust and noise have been explained.
- Emergency Management plan prepared for the project has been explained
- Measures such as limiting vehicle speeds, spraying etc has been explained.

Within the scope of EIA, a social impact assessment report has been prepared and surveys have been conducted. Around 92% has stated that project will be beneficial for local and national economy. %61.9 have supported, 16% have conditionally supported the project whereas 3.4% has voted against project[38].

Section H. Approval and authorization

>>

[38] EIA Report

Appendix 1. Contact information of project owners

Organization name	Kovanlık Enerji Üretim San.ve Tic. A.Ş.
Country	Turkey
Address	
Telephone	
Fax	
E-mail	evren.kirikoglu@kovanlikenerji.com.tr
Website	
Contact person	Evren Kırıkoğlu

Organization name	GTE Karbon Sürdürülebilir Enerji Egitim Danışmanlık ve Ticaret A.Ş.
Country	Turkey
Address	MAIDAN Mustafa Kemal Mah. 2118. Cad. C Blok 42 Çankaya Ankara
Telephone	+90 312 514 63 63
Fax	-
E-mail	kemal@gtecarbon.com
Website	http://www.gte.com.tr/
Contact person	M. Kemal Demirkol

Appendix 2. Affirmation regarding public funding

>>

Appendix 3. Applicability of methodology(ies)

>>

Appendix 4. Further background information on ex ante calculation of emission reductions

>>

Appendix 5. Further background information on monitoring plan

>>

Appendix 6. Summary report of comments received from local stakeholders

>>

Appendix 7. Summary of de-registered CDM project (Type B)

>>

Complete this form in accordance with the instructions attached at the end of this form.	
CDM Project registration number	
Date of registration of CDM Project	
Title of the Project Activity	
CDM Project de-registration reference number	
Date of de-registration of the CDM Project	
Project Participants (authorized by the host / annex 1 country letter of approval)	
Country where the project is located	

<table>
<tr><td>Applied CDM methodology(ies)
(provide reference and version number(s))</td><td></td></tr>
<tr><td>Pre-registration changes to the CDM Project Activity
(Tick as applicable)</td><td>
<table>
<tr><th>CDM Pre-registration Changes</th><th>Reference number</th><th>Approved</th><th>Provide a summary of pre-registration changes</th></tr>
<tr><td>Deviations from the CDM methodology</td><td></td><td>☐</td><td></td></tr>
<tr><td>Deviations from the CDM Tool</td><td></td><td>☐</td><td></td></tr>
<tr><td>Deviations from the CDM rules</td><td></td><td>☐</td><td></td></tr>
<tr><td>Other…….</td><td></td><td>☐</td><td></td></tr>
</table>
</td></tr>
</table>

Post-registration changes to the CDM Project Activity

(Tick as applicable)

CDM Post registration Changes	Reference number	Approved	Provide a summary of post-registration changes
Change in project design		☐	
Request for revision of monitoring plan		☐	
Request for change in start date of crediting period		☐	
Renewal of crediting period		☐	
Temporary deviations		☐	
Other…….		☐	

Crediting Period(s)

Crediting period(s)			Period (start & end dates)	ERs as per registered PDD/MR	CERs issued
Crediting Period (shall start on or after 1 Jan 2016)	Fixed 10 year				
	Renewable (7 years, with 2 approved renewals)	1st			
		2nd			
		3rd			
Period for which CERs have been issued					
Period for which CERs have been requested but not issued					-
Period for which CERs have never been requested for issuance (no monitoring reports submitted)					-
Period for which CERs have never been requested for issuance prior to CDM de-registration					-
Remaining Crediting period, after CDM de-registration, for which CERs have not been issued by the UNFCCC CDM Executive Board, subject to a ceiling of 10 years as allowed under the GCC Program					-

<table>
<tr><td>Details of Previous CDM Issuance Requests</td><td>
<table>
<tr><th>Issuance Request</th><th>Period
(start & end dates)</th><th>ERs as per registered PDD</th><th>Quantity of CERs requested to be issued</th><th>Quantity of CERs issued</th></tr>
<tr><td>1st</td><td></td><td></td><td></td><td></td></tr>
<tr><td>2nd</td><td></td><td></td><td></td><td></td></tr>
<tr><td>3rd</td><td></td><td></td><td></td><td></td></tr>
<tr><td>4th</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5th</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Add rows …….</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>List any open issues in the Validation and last Verification Report (e.g., FARs, if any) and how they have been addressed</td><td></td></tr>
<tr><td>Any other relevant information that has not been reported in the registered CDM documents and that may have adverse impacts on the environmental integrity of the Project Activity</td><td></td></tr>
<tr><td>Provide the list of all the registered documents related to this project, as available on the UNFCCC/CDM website and the corresponding URLs.</td><td></td></tr>
</table>

DOCUMENT HISTORY

Version	Date	Comment
V 3.2	31/12/2020	▪ The name of GCC Program's emission units has been changed from "Approved Carbon Reductions" or ACRs to "Approved Carbon Credits" or ACCs.
V 3.1	17/08/2020	▪ Editorial revisions made ○ Revised Table in section B.7.2 on Monitoring-program of risk management actions ○ Revised Table in section E.1 on Environmental Safeguards ○ Revised Table in section E.1 on Social Safeguards ○ Revised Table in section F on United Nations Sustainable Development Goals (SDG)
V 3.0	05/07/2020	▪ Revised version released on approval by Steering Committee as per GCC Program Process; ▪ Revised version contains following changes: ○ Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC); ○ Considered and addressed comments raised by Steering Committee: ➢ during physical meeting (SCM 01, dated 29 Oct 2019, Doha Qatar); and ➢ electronic consultations EC01-Round 01 (15.09.2019 – 25.09.2019), EC01-Round 02 (27.03.2020 – 27.06.2020). ○ Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA[39];
V 2.0	25/06/2019	▪ Revised version released for approval by the GCC Steering Committee. ▪ Revised version includes additional details and instructions on the information to be provided, consequent to the latest developments world-wide (e.g., CORSIA EUC).
V 1.0	01/11/2016	Initial version released under the GCC Program Version 1

[39]See ICAO recommendation for conditional approval of GCC at https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf

المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL

A member of

GORD
المنظمة الخليجية للبحث والتطوير
Gulf Organisation for Research & Development