

ENÜR SOLAR POWER PLANT BUNDLE PROJECT

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Version	Version 02		



Date	17/04/2025		
Project type	Non-Conventional and Renewable Energy Sources (NCRES)		
Grouped project	Not a Grouped Project		
Applied Methodology	AMS-I.D Small-scale Methodology Grid connected renewable electricity generation Version 18.0		
Project location (City, Region, Country)	Bursa, TÜRKİYE		
Starting date	19/02/2018		
Quantification period of GHG emissions reduction	19/02/2018 to 18/02/2025 renewable at most twice		
Estimated total and average annual GHG emission reduction/removals amount	nge 30,891 tCO2e/total - 4,413 tCO2e/year (aver annual)		
Sustainable Development Goals	Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all Goal 8. Decent Work and Economic Growth: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		



	Goal 13. Take urgent action to combat climate change and its impacts
Special category, related to co- benefits	

Note: The instructions, in this template, just serve as a guide and, do not automatically represent a complete list of the information that the project holder shall provide under each section of the template.



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1 **Project type and eligibility**

1.1 Scope in the BCR Standard

Enür Solar Power Plant Bundle Project is a group of five (5) individual unlicensed Photovoltaic Solar Power Plants (SPP) located in boundary of Beleneoluk village, Orhaneli District in Bursa province of Türkiye.¹ The Bundle project activity is a grid-connected electricity generation from Non-Conventional and Renewable Energy Sources (NCRES) project in the energy sector.

The purpose of the project is to generate electric energy from renewable sources by using solar power and providing to the Turkish National Grid resulting with GHG emission reduction. The project aims to contribute to mitigate the effects resulted by climate change by reducing average annual 4,413 tCO2e emission from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.

The scope of the BCR Standard is limited to:	
The following greenhouse gases, included in the Kyoto Protocol: Carbon Dioxide (CO ₂), Methane (CH ₄) and Nitrous Oxide (N ₂ O).	Х
GHG projects using a methodology developed or approved by BioCarbon, applicable to GHG removal activities and REDD+ activities (AFOLU Sector).	
Quantifiable GHG emission reductions and/or removals generated by the implementation of GHG removal activities and/or REDD+ activities (AFOLU Sector).	
GHG projects using a methodology developed or approved by BioCarbon, applicable to activities in the energy, transportation and waste sectors.	
Quantifiable GHG emission reductions generated by the implementation of activities in the energy, transportation and waste sectors.	Х

¹ Commissioning protocols of power plants



The project is eligible under the scope of the BCR Standard by meeting GHG Projects using a methodology developed or approved by BioCarbon Registry, applicable to activities in the energy, transportation and waste sectors.

1.2 Project type

Activities in the AFOLU sector, other than REDD+	
REDD+ Activities	
Activities in the energy sector	Х
Activities in the transportation sector	
Activities related to Handling and disposing of waste	

1.3 Project scale

The project is a small-scale, Type I project activity: Renewable energy project activities which have an output capacity 4.246MWe which is below 15 megawatts (or an appropriate equivalent), in accordance with the CDM rules and requirements.².

2 General description of the project

Enür Solar Power Plant Bundle Project is a group of five (5) individual unlicensed Photovoltaic Solar Power Plants located in Orhaneli District in Bursa province of Türkiye.

² <u>https://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf</u>



The project activity complies with GHG projects with BCR Standard which is an energy sector activity classified as Non-Conventional and Renewable Energy Sources (NCRE).³

The project is proposed to apply Solar Energy obtained from that non-conventional source of renewable that consist of electromagnetic radiation from the sun. ⁴

The Bundle project activity is also a grid-connected electricity generation from renewable source project. The project activity includes the installation of solar photovoltaic panels, inverters, transformers and transmission lines to connect to national grid.

Total installed capacity of the project is 4.852 MWp/4.246 MWe and project is planned to generate 6,955 MWh electricity energy annually.⁵

Name of Bundle		Powerplant Name	Installed Capacity (kWp)	Installed Capacity (kWe)	Date of Commissioning
	1	ENÜR SPP	1,140.48	999.00	19/02/2018
Enür Solar	2	RENDA SPP	1,140.48	999.00	19/02/2018
Power Plant	3	ORHANELİ SPP	1,140.48	999.00	19/02/2018
Project	4	TABİİ KAYNAKLAR SPP	1,140.48	999.00	19/02/2018
	5	SERHAT ÖZTİMUR SPP	290.48	250.00	19/02/2018
		TOTAL	4,852.32	4,246.00	

 Table 1: List of SPPs (GES) in Enür Solar Power Plant Bundle Project

³ Section 10 - <u>https://biocarbonregistry.com/standard/BCR_Standard_en.pdf</u>

⁴ Section 10.1.3 - <u>https://biocarbonregistry.com/standard/BCR_Standard_en.pdf</u>

⁵ Feasibility report-May2016



The purpose of the project is to generate electricity energy from renewable sources by using solar power and providing to the Turkish National Grid. The project activity started to reduce the GHG emissions resulting from the electricity generation for the generation mix of the national grid by supplying the same amount of electricity from the zero-emission solar power generation. The project started to encourage the sustainable development in its region and Country by utilization of solar power potential of Türkiye.

The project aims to contribute to mitigate the effects caused by climate change by reducing an average 4,413 tCO2e/year and 30,891 tCO2e/total emissions derived from fossil fueled conventional electricity generation in the national grid during the seven (7) years quantification (crediting) period that is renewable at most twice.

The Bundle project has been developed by Enür Enerji Üretim Sanayi ve Ticaret Limited Şirketi on behalf of Bundle companies presented below:⁶

- ENÜR Enerji Üretim Sanayi ve Ticaret Anonim Şirketi
- RENDA Enerji Üretim Danışmanlık Sanayi ve Ticaret A.Ş.
- ORHANELİ Elektrik Enerji Üretim Sanayi ve Ticaret Anonim Şirketi
- TABİİ KAYNAKLAR Enerji Üretim Sanayi ve Ticaret A.Ş.
- SERHAT ÖZTİMUR

The project is operational since February 2018. Project has been installed in accordance with the Turkish Electricity Market Law (Law No: 6446).^{7,8} In line with Turkish environmental regulations, "Environmental Impact Assessment (EIA) exemption letters"⁹ for each solar power plant were approved by Ministry of Environment, Urbanization and Climate Change.

⁶ Company Registration Certificates

⁷ <u>https://www.mevzuat.gov.tr/mevzuatmetin/1.5.6446.pdf</u>

⁸<u>https://www.mevzuat.gov.tr/File/GeneratePdf?mevzuatNo=31502&mevzuatTur=KurumVeKurulusYonetmeligi&mevzuatTertip=5</u>

⁹ Copies of EIA exemption letters



2.1 GHG project name

ENÜR SOLAR POWER PLANT BUNDLE PROJECT.

2.2 Objectives

Main objectives of the Enür Solar Power Plant Bundle Project include;

Utilization of the Solar potential of Türkiye to meet increasing electricity demand and maintain energy security.

• *Reduction of GHG emissions through increasing share of renewable resources.*

• Reduction of import dependency on fossil fuel weighted electricity sector and increase substantially the share of renewable energy in the energy mix.

• Contribution of economic development by creating job opportunities during construction and operation phases.

• Contribution to sustainable development through supporting local community and local economy. Project is expected to contribute UN Social Development Goals (SDG) 7, 8, and 13.

2.3 Project activities

The project activity is installation of photovoltaic (PV) Solar power plant. Total installed capacity is 4.246MWe/4.852MWp. Photovoltaic Solar systems utilize cells to convert sunlight energy into the electricity energy. The generated electricity energy is transferred to the national grid without any GHG emissions and negative environmental impacts through the technology of PV systems.

The capacity of each power plant and energy generation data are presented in Table 2.

 Table 2: Capacity and generation data of each Solar Power Plant.



SPP Name	Installed Capacity™ (kWp)	Installed Capacity" (kWe)	Number of Panel Units ¹²
ENÜR SPP	1,140.48	999.00	4,224
RENDA SPP	1,140.48	999.00	4,224
ORHANELİ SPP	1,140.48	999.00	4,224
TABİİ KAYNAKLAR SPP	1,140.48	999.00	4,224
SERHAT ÖZTİMUR SPP	290.48	250.00	1,056
TOTAL	4,852.32	4,246.00	17,952

SOLITEK Solid Pro 270W P.60, model photovoltaic solar panels are used in Enür, Renda, Orhaneli and Tabii Kaynaklar solar power plants of bundle project. UPSOLAR 275W PVM60 model photovoltaic solar panels are installed in Serhat Öztimur solar power plant of bundle project. These panels are basically Polycrystalline solar panels with dimension 1645x98x7,1mm. KACO 50.0 TL3 Basic/M/XL model inverters are installed in the project. Details of PV panels and inverters are presented in Table 3.

Table 3: Technical details of solar panels and inverters

	PANEL			INVERTER		
SPP Name	Brand	Model	Unit	Brand	Model	Unit

¹⁰ Data of EPC Agreement

¹¹ Data of EPC Agreement

¹² Data of EPC Agreement



ENÜR SPP	SOLITEK	Solid Pro 270W P.60	4,224	КАСО	50.0 TL3 Basic/M/XL	20
RENDA SPP	SOLITEK	Solid Pro 270W P.60	4,224	КАСО	50.0 TL3 Basic/M/XL	20
ORHANELİ SPP	SOLITEK	Solid Pro 270W P.60	4,224	KACO	50.0 TL3 Basic/M/XL	20
TABİİ KAYNAKLAR SPP	SOLITEK	Solid Pro 270W P.60	4,224	КАСО	50.0 TL3 Basic/M/XL	20
SERHAT ÖZTİMUR SPP	UPSOLAR	PVM 275W	1,056	КАСО	50.0 TL3 Basic/M/XL	5
TOTAL			17,952			100

2.4 Project location

The Solar Power Plants included in Enür Solar Power Plant Bundle Project are located in region of Belenoluk village, Orhaneli District, Bursa province of Türkiye. The geocoordinates of the project activity are presented in Table 4.¹³

 Table 4: Address & geodetic coordinates of the physical site of the Project Activity

Geodetic coordinates of the physical site of the					
Enür, Renda, Orhaneli, Tabii Kaynaklar, Serhat Öztimur Solar Power Plants					
Physical address Latitude Longitude					

¹³ The metadata of provided photographs of power plants include GPS coordinate data.



ENÜR SPP	39.889964	29.054150
Belenoluk, Orhaneli, Bursa	39°53'23.87''N	29°03'14.94"E
RENDA SPP	39.889858	29.053725
Belenoluk, Orhaneli, Bursa	39°53'23.49"N	29°03'13.41"E
ORHANELİ SPP	39.889958	29.054908
Belenoluk, Orhaneli, Bursa	39°53'23.85"N	29°03'17.67"E
TABİİ KAYNAKLAR SPP	39.890664	29.053483
Belenoluk, Orhaneli, Bursa	39°53'26.20"N	29°03'11.34"E
SERHAT ÖZTİMUR SPP	39.892544	29.053706
Belenoluk, Orhaneli, Bursa	39°53'33.16"N	29°03'13.34"E

The project location in host country is presented in Figure 1

Figure 1: Project Location





2.5 Additional information about the GHG Project

N/A.



3 Quantification of GHG emissions reduction

3.1 Quantification methodology

The approved CDM methodology AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation (version 18.0) is applied to establish the baseline for the project activity.¹⁴

The type of GHG emission mitigation action is "Renewable energy", displacement of electricity that would be provided to the grid by more-GHG-intensive means.¹⁵

This methodology refers to the latest approved versions of the following tools those are used in project activity:

- TOOLo1: Tool for the demonstration and assessment of additionality (V7.0.0)¹⁶
- TOOL07: Tool to calculate the emission factor for an electricity system (V7.0)¹⁷
- TOOL21: Demonstration of additionality of small-scale project activities (V13.1)¹⁸
- TOOL27: Investment analysis (Version 14.0)¹⁹
- Guideline: General guidelines for SSC CDM methodologies (Version 23.1)²⁰

¹⁴ https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK

¹⁵ BCR Energy Sector Guide version 1.1 - <u>https://biocarbonregistry.com/methodologies/BCR-Energy-Sector-Guide.pdf</u>

¹⁶ <u>https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf</u>

¹⁷ https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

¹⁸ <u>https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf</u>

¹⁹ https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v14.0.pdf

²⁰ <u>https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-</u>

^{20210211212225226/}MethSSC_Guid25ver23.1.pdf



3.1.1 Applicability conditions of the methodology

Enür Solar Power Plant Bundle Project is a photovoltaic solar power type renewable energy generation project that is supplying electricity to a national grid in accordance with scope of the applied methodology.

The project illustrates respective situation under AMS-I.D.: Small-scale Methodology Grid connected renewable electricity generation (version 18)²¹ methodology by supplying electricity to a national grid.

Applicability Conditions	Justification status of the Project activity
 2. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling. 	The project activity is a renewable energy generation through photovoltaic units, (a) Supplying electricity to a national or a regional grid Condition is applicable.
3. Illustration of respective situations under which each of the methodology (i.e. "AMS-I.D.: Grid connected renewable electricity generation", "AMS-I.F.: Renewable electricity generation for captive use and mini-grid" and "AMS-I.A.:	The project activity would supply electricity to the Turkish National grid, hence it safisfies this applicability criteria.

²¹ <u>https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK</u>



Electricity generation by the user) applies is included in the appendix.	
4. This methodology is applicable to project activities that:	The project activity is installation of a Greenfield plant.
(a) Install a Greenfield plant;	Condition is applicable.
(b) Involve a capacity addition in (an) existing plant(s);	
(c) Involve a retrofit of (an) existing plant(s);	
(d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or	
(e) Involve a replacement of (an) existing plant(s).	
5. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:	Since the project activity is a renewable energy generation through photovoltaic units, this condition is not applicable.
(a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir;	
(b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m2;	
(c) The project activity results in new reservoirs and the power density of the	



project emissions section, is greater than 4 W/m2.	
6. If the new unit has both renewable and	The project activity units are only
non-renewable components (e.g. a	renewable components as photovoltaic
wind/diesel unit), the eligibility limit of 15	solar panels, and total installed capacity is
MW for a small-scale CDM project activity	4.246MWe which does not exceed the
applies only to the renewable component.	eligibility limit of 15 MW for a small-scale
If the new unit co-fires fossil fuel, the	CDM project activity applies only to the
capacity of the entire unit shall not exceed	renewable component.
the limit of 15 MW.	Condition is applicable.
7. Combined heat and power (co-	Since the project activity is a renewable
generation) systems are not eligible under	energy generation through photovoltaic
this category.	units, this condition is not applicable.
8. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	Since the project activity is installation of a Greenfield plant which does not involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, this condition is not applicable.
9. In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.	Since the project activity is installation of a Greenfield plant which does not involve the case of retrofit, rehabilitation or replacement, this condition is not applicable.
10. In the case of landfill gas, waste gas,	Since the project activity is a renewable
wastewater treatment and agro-industries	energy generation through photovoltaic
projects, recovered methane emissions are	solar units which does not involve landfill
eligible under a relevant Type III category.	gas, waste gas, wastewater treatment and
If the recovered methane is used for	agro-industries projects, recovered



electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS-I.C.: Thermal energy production with or without electricity" shall be explored.	methane emissions are eligible under a relevant Type III category, this condition is not applicable.
11. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	Since the project activity is a renewable energy generation through photovoltaic solar units which does not involve biomass is sourced from dedicated plantations, this condition is not applicable.

The assessment of applicability of AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation presents that it is applicable to project activity.

The additionality analysis is applied by using the steps of TOOL01 Tool for the Demonstration and Assessment of Additionality (version 7.0.0)²² Applicability conditions of Tool 01 have been assessed as following:

Applicability Conditions	Justification status of the Project activity
9. 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	The project is not proposing any new methodology, hence the use of the "Tool for the demonstration and assessment of additionality" is mandatory.

²² <u>https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf</u>



demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	Condition is applicable.
10. Once the additionally tool is included	Applicable steps of this tool are
in an approved methodology, its	demonstrated in the section 3.3 of the
application by project participants using	PDD.
this methodology is mandatory.	Condition is not applicable.

As per applied methodology AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation (version 18.0) refers to TOOLo7 for calculation of baseline emissions, compliance to applicability conditions of TOOLo7: Tool to calculate the emission factor for an electricity system (Version 7.0)²³ is assessed as following:

Applicability Conditions	Justification status of the Project activity
3. 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 (Turkish National Grid) and substitutes grid electricity through supplying renewable energy to grid. Therefore, this tool will be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity. Condition is applicable.

²³ <u>https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf</u>



4. 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	The emission factor for the project electricity system is calculated for grid power plants only. Condition is applicable.
5. 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	Türkiye's different position from other Annex-I Parties was recognized, and its name was removed from the Annex-II list of the UNFCCC, but not in the Annex-I list at COP7. However, the project electricity system is located totally in Türkiye as BCR GHG Program accepts projects located in any country whereas under CDM only non-Annex 1 country.



	Since project is not a CDM project submission condition is not applicable.
6. Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	The project does not involve biofuels. Condition is not applicable.

The assessment of applicability of TOOLo7: Tool to calculate the emission factor for an electricity system (Version 7.0) presents that it is applicable to project activity.

As per applied methodology AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation (version 18.0) rules normative reference to apply "General guidelines for SSC CDM methodologies", information on additionality.

Guideline rules for demonstrating additionality, as project participants shall refer to the applicable provisions for the demonstration of additionality for small-scale project activities provided in the Project Standard.

The project is developed under rules of BCR Standard Version 3.4. For projects in the energy and waste sectors, the use of the Clean Development Mechanism tool is required by BCR Standard. TOOL21: Demonstration of additionality of small-scale project activities is opted due to applied methodology as requirement of Standard.

Compliance to applicability conditions of TOOL21: Demonstration of additionality of smallscale project activities (Version 13.1)²⁴ is assessed as following:

Applicability Conditions	Justification status of the Project activity
4. The use of the methodological tool "Demonstration of additionality of small- scale project activities" is not mandatory	. Hence the project has an installed capacity of 4.246MWe and below 15MWe demonstration of additionality of small- scale project activities is opted to

²⁴ https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf



for project participants when proposing new methodologies.	demonstrate additionality of project activity.
Project participants and coordinating/managing entities may propose alternative methods to demonstrate additionality for consideration by the Executive Board.	Condition is applicable.
5. Project participants and coordinating/managing entities may also apply "TOOL19: Demonstration of additionality of microscale project activities" as applicable.	Although project scale is acceptable for microscale project activities, project activity does not utilize the rules of Tool 19: Demonstration of additionality of microscale project activities. Condition is not acceptable.

The assessment of applicability of TOOL21: Demonstration of additionality of small-scale project activities (Version 13.1) presents that it is applicable to project activity.

In order to apply investment analysis to demonstrate additionality of project activity TOOL27: Investment analysis (Version 14.0)²⁵ is applied.

Compliance to applicability conditions of TOOL₂₇: Investment analysis (Version 14.0) is assessed as following:

²⁵ https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v14.0.pdf



Applicability Conditions	Justification status of the Project activity		
2. This methodological tool is applicable to CDM project activities and programmes of activities (PoAs) that conduct an investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.	Project activity applies "Tool 21 Demonstration of additionality of small- scale project activities, version 13.1 and non-binding best practice examples to demonstrate additionality for SSC project activites". Hence, condition is applicable.		
3. 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.	 2. The applied approved baseline and monitoring methodology AMS-I.D.:Grid connected renewable electricity generation (version 18) does not contain requirements for the investment analysis that are different from those described in this methodological tool. Condition is not applicable. 		

The assessment of applicability of TOOL27: Investment analysis (Version 14.0) presents that it is applicable to project activity

3.1.2 *Methodology deviations (if applicable)*

N/A

3.2 Project boundaries, sources and GHGs

In reference to the guidance specified in AMS-I-D: Grid connected renewable electricity generation (Version 18.0), "the spatial extent of the project boundary includes the project power plant/unit and all power plants physically connected to the electricity system that the CDM project power plant is connected to".

3.2.1 Spatial limits of the project

The project boundary is considered as National Electricity Grid of Türkiye according to applied tool. The spatial extent of the project boundary includes the project power plant and



all power plants connected physically to the electricity system that the project power plant is connected to.

The geographical and system boundaries for the connected electricity grid can be clearly identified and information on the characteristics of the grid is available.

Figure 2: Project Boundaries



3.2.2 Carbon reservoirs and GHG sources

Sou	rce	GHG	Included ?	Justification/ Explanation
Baseline	CO ₂ emissions from	CO2	Yes	Main Emission Source
	electricity generation in fossil fuel fired power	CH4	No	Minor Emission Source Excluded for simplification
	due to the project activity	N2O	No	Minor Emission Source Excluded for simplification
Project	For dry or flash steam geothermal power plants,	CO2	No	Not Applicable As project uses solar energy
	emissions of CH4 and CO2	CH4	No	Not Applicable



from non-condensable			As project uses solar energy
gases contained in	N2O	No	Not Applicable
geothermal steam			As project uses solar energy
For binary geothermal	<i>c</i> o	No	Not Applicable
power plants, fugitive	02		As project uses solar energy
emission of CH4 and CO2	CH4	No	Not Applicable
from non-condensable			As project uses solar energy
gases contained in	N2O	No	Not Applicable
geothermal steam			As project uses solar energy
For binary geothermal		No	Not Applicable
power plants, fugitive	Low	INO	As project uses solar energy
emission of hydrocarbons	GWP	No	Not Applicable
such as n-bute and	hydrocar	INU	As project uses solar energy
isopentane (working	bon/refri		Not Applicable
fluid) contained in the	gerant	No	As project uses solar energy
heat exchangers			ns project uses solar energy
CO ₂ emissions from	CO2	No	Not Applicable
combustion of fossil fuels	02	110	As project uses solar energy
for electricity generation	CH4	No	Not Applicable
in solar thermal power		110	As project uses solar energy
plants and geothermal	N2O	No	Not Applicable
power plants			As project uses solar energy
	CO2	No	Not Applicable
For hydro power plants.			As project uses solar energy
emissions of CH ₄ from the	CH4	No	Not Applicable
reservoir			As project uses solar energy
	N2O	No	Not Applicable
			As project uses solar energy
	CO_2	No	Not Applicable
Charging of BESS using			As project uses solar energy
electricity from the grid or	CH4	No	Not Applicable
from fossil fuel electricity			As project uses solar energy
generators.	N2O	No	Not Applicable
			As project uses solar energy
Utilization of electricity	CO2	No	Not Applicable
from grid or from fossil			As project uses solar energy
fuel generators by PSP for	P for CH ₄	No	Not Applicable
pumped mode.		110	As project uses solar energy



		N2O	No	Not Applicable As project uses solar energy
	For PSP, emissions of CH 4 from the reservoir	CO2	No	Not Applicable As project uses solar energy
		CH4	No	Not Applicable As project uses solar energy
		N2O	No	Not Applicable As project uses solar energy

3.2.3 Time limits and analysis periods

In accordance with BCR Standard ver. 3.4, section 11.5, para 4, (b) for projects in sector other than AFOLU, the renewable quantification period may be a maximum of seven years which may be renewed at most two times, for a maximum total length of 21 years.

3.2.3.1 Project start date

The start date for project activity is 19/02/2018 that result in actual reductions/removals of GHG emission begins.

3.2.3.2 Quantification period of GHG emission reductions/removals

The quantification period of the project will cover a period of seven (7) years starting from the project start date of 19/02/2018 until 18/02/2025, with the potential to be renewed two (2) times.

(a) Each renewable crediting period shall be at most seven years and may be renewed at most two times, for a maximum total length of 21 years;

*The option (a) which is stated paragraph 87, article 7.6 of CDM project standard for project activities version 03.0 is opted for project activity.*²⁶

3.2.3.3 Monitoring periods

²⁶<u>https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-</u> 20210921115752577/reg_stan04_v03.0.pdf



The first monitoring period of the project will cover dates between 19/02/2018 and 31/12/2022. The second monitoring period of the project will cover dates between 01/01/2023 and 18/02/2025. Future monitoring periods will be determined due to renewal of next quantification periods.

3.3 Identification and description of the baseline or reference scenario

The approved CDM methodology AMS-I.D version 18.0 Small-scale Methodology Gridconnected renewable electricity generation is applied to establish the baseline for the project activity.²⁷

The project activity is installation of Greenfield power plant. "The baseline scenario for Greenfield power plant is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid."²⁸

Over the past 20 years, Türkiye has witnessed significant developments in electricity generation. Over the last two decades, Türkiye has made significant investments in renewable energy sources, particularly wind, solar, and hydroelectric power.

Wind energy capacity has rapidly increased, and the solar energy sector has also seen substantial growth. Türkiye has become a significant player in global solar energy production. The share of renewable energy sources in Türkiye's total electricity generation has increased.

However, the share of natural gas in Türkiye's electricity production has significantly increased. Natural gas is sourced both domestically and through imports. Natural gas power plants in Türkiye, with their flexible infrastructure, have been able to quickly respond to increases in demand. The capacity of coal and natural gas-fired thermal power plants has been expanded, playing a significant role in electricity generation. Türkiye has taken

²⁷ https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK

²⁸ <u>https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK</u>



significant steps to utilize domestic energy resources. The capacity of domestic coal and hydroelectric power plants has been increased.

Additionally, Türkiye's geothermal energy capacity has grown significantly. Geothermal energy, especially for heating purposes, has considerable potential.

Turkey has diversified its energy policy by balancing different energy sources and making strategic investments. Major energy projects have been carried out in collaboration with the public and private sectors, especially with large investments in renewable energy.

In conclusion, the developments observed in Türkiye's electricity generation over the last 20 years have focused on diversifying the energy portfolio, making more effective use of domestic resources, and shifting towards environmentally friendly energy production methods. This process has led to significant strides in ensuring energy security and sustainability.

Figure 3 is representing the gross electricity generation values between 2003 and 2023. Over the years, net generation values have been increased both due to the rapid increasing population (from around 67 million to 85 million)²⁹ and due to the technological advancements which requires more electricity. This is also the result of being advanced developing country and this trend is likely to rise as it can be seen from the figure 3.

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https://data.tuik.gov.tr/Bulten/DownloadIstatistikselTablo?p=JKFU8fe9rtEqmvZSjwkJIs57ZdyMD 8P/4d24X31JHhz5cl/wlswaRylqktJag3Qt





Figure 3: Türkiye's Gross Electricity Generation between 2003 – 2023³⁰

Although the electricity generation is predominated by the thermal power plants, in 2023, the percentage of electricity generation by means of renewable sources increased to 42.72%.

Figure 4 and following data table shows the thermal power and different types of renewable energy source shares in electricity production. This implies that Türkiye has a tendency to use renewable energy sources in parallel to this project.

³⁰ https://webim.teias.gov.tr/file/5e9f3f8d-aa7d-4ad2-ab94-0d48b9014b0a?download





Figure 4: The Distribution of Türkiye's Electricity Generation by Sources (2023)³¹

SOURCE	GENERATION (GWh)	SHARE (%)
Imported Coal	72.719,40	21,96	
Coal and Asphaltite	5.341,69	1,61	57.28
Lignite	41.735,31	12,60	

³¹ <u>https://webim.teias.gov.tr/file/2e8f7a79-8861-4a1e-8e29-0319f6c0b0af?download</u>



Natural Gas	69.452,23	20,97	
Liquit	471,42	0,14	
Hydro- DAM	44.302,17	13,38	
Hydro- Run-off river	19.700,28	5,95	
Wind	34.109,05	10,30	42.72
Biogas and Heat	10.124,73	3,06	. ,
Geothermal	11.102,08	3,35	
Solar	22.090,56	6,67	
TOTAL	331.148,90	100,00	100.00

Since Türkiye is an advanced developing country, demand for electricity is very high depending on economic development and population increase. However, development of renewable energy resources and investment are lower than increasing number of thermal power plants. The infrastructure development of natural gas pipelines encourages the natural gas power plants. The economic policy to utilize domestic lignite resources also promotes the coal fired thermal power plant investments that will cause increase in GHG emissions. Peak Load and consumption projection for Turkish electricity system between 2021 and 2030 is presented in Figure 5.

Figure 5: Peak Load and consumption projection for Turkish electricity system





In other words, the baseline scenario is the existing electricity generation prior to the implementation of the project. In case the project activity has not been implemented, it was assumed that the same amount of electricity would be generated from mostly thermal power plants connected to the grid.

3.4 Additionality

In line with Project Standard, for projects in energy and waste sectors, the use of the Clean Development Mechanism tool is required to establish the project additionality.

The approved CDM methodology AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation (version 18.0) is applied to establish the baseline for the project activity. The normative references of applied methodology refer to project participants shall apply the "General guidelines for SSC CDM methodologies, information on additionality.³²

As per Guidelines on TOOL21: Demonstration of additionality of small-scale project activities (Version 13.1)³³ and, it has to be provided an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

³² https://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid15_v01.pdf

³³ https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf



- (a) **Investment barrier:** a financially more viable alternative to the project activity would have led to higher emissions;
- (b) **Technological barrier:** a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
- (c) **Barrier due to prevailing practice:** prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- (d) **Other barriers:** without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

The most significant barrier is identified as the investment barrier according to context of the project activity to demonstrate in a conservative and transparent manner that the proposed project activity is financially attractive or unattractive.

Best practice examples of Investment analysis defined is as: "Best practice examples include but are not limited to, the application of investment comparison analysis using a relevant financial indicator, application of a benchmark analysis or a simple cost analysis (where BCR is the only revenue stream such as end-use energy efficiency). It is recommended to use national or global accounting practices and standards for such an analysis according to non-binding best practice examples to demonstrate additionality for SSC project activities to demonstrate additionality of the project activity"34

TOOL01 Tool for demonstration and assessment of Additionality (version 07.0.0)³⁵ utilized to establish the additionality of the project in the following subsections. This tool provides a systematic framework for proving that the project activity leads to genuine greenhouse gas (GHG) reductions that would not have occurred in the absence of the project, thereby

³⁴ <u>https://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid15_v01.pdf</u>

³⁵ https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf



ensuring that the emissions reductions are truly additional and not a result of standard practices or regulatory requirements.

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

Realistic and credible alternatives to the Project activity that can be a part of the baseline scenario is defined through the following sub-steps:

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

As per para 8 of Tool 01 v7.0.0, "Project activities that apply this tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity." In terms of defining the project alternatives according to Tool following options are assessed:

(a) The proposed project activity undertaken without being registered as an ICC or VER project activity

(b) The potential alternatives with the output of renewable electricity such as wind, hydro or geothermal power plants are very unlike to install to project area. As it is stated in the potential maps of Directorate of Renewable Energy, Ministry of Energy and Natural Resources, project site does not have wind, hydro and geothermal potential to consider as renewable energy generation investment.

(c) Continuation of the current situation (no project activity or other alternatives undertaken) is deemed as a realistic scenario as electricity delivered to the grid by the project activity that would otherwise been generated by the operation of grid-connected power plants and by addition of new generation sources.

Alternative (a) is not financially attractive due to the investment analysis results presented below. Alternative (b) is also not attractive hence natural potential of project site is unlike to install other types of renewable power generation projects. Hence alternative (c) is deemed as realistic scenario.

Outcome of sub-step 1a:



Since the project activity is a Greenfield power plant, electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources is defined as the baseline scenario. Implementation of the project is additional to the baseline scenario which is an alternative (c) above and therefore reduces the emissions.

Sub-step 1b: Consistency with mandatory laws and regulations:

Since there is no legal obligation in host country to implement the proposed project activity undertaken without being registered as a ICR project activity, it is consistent with mandatory laws.

Project activity has been developed in line with following Turkish legislation and regulations.

- # 6446 Electricity Market Law (Ratification date: 14/03/2013 - Enactment date: 30/03/2013)
- # 5346 Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy (Ratification date: 10/05/2005 – Enactment date: 18/05/2005)
- # 2872 Environment Law (Ratification date: 09/08/1983 – Enactment date: 11/08/1983)
- # 6831 Forest Law Ratification date: 31/08/1956 – Enactment date: 08/09/1956)
- By-Law on EIA Environmental Impact Assessment Regulation, (Enactment dates: 25/11/2014 and 29/07/2022 - Official Gazette Issues: 29186 and 31907 authored by Ministry of Environment, Urbanization and Climate Change)
- Unlicensed Electricity Generation in the Electricity Market Regulation Official Gazette Issue: 12/05/2019 #30772

Outcome of sub-step 1b:

All alternatives defined in sub-step 1.a are consistent with all mandatory laws and regulations. Hence the project activity is not the only alternative for project proponent that is consistent with mandatory regulation and considered as additional.

Step 2: Investment analysis

Determine whether the proposed project activity is economically or financially less attractive than at least one other alternative, identified as a realistic scenario, without the revenue


from the sale of emission reductions credits. To conduct the investment analysis, use the following sub-steps:

Sub-step 2.a: Determine appropriate analysis method

Simple Cost Analysis is not applicable since the project obtains revenue from the sale of generated electricity. Investment Comparison Analysis is also not applicable since the baseline of the project is generation of electricity energy by Turkish grid and no alternative investment is point at issue.

Sub-step 2b (Option III): Apply benchmark analysis

Benchmark Analysis option has been selected for the assessment of the project investment as the most proper method. The financial indicator of project activity is determined as posttax equity IRR in-line with the Sub-step 2b.

Determination of Benchmark Indicator:

At the time of investment decision date, the methodological TOOL₂₇: Investment Analysis (Version 14) was the latest available for project holder.

As it is stated in TOOL1 Tool for the demonstration and assessment of additionality (Version 07.0), the financial indicator can be based on either project IRR or equity IRR. Project holder has decided to assess investment analysis through equity IRR. The CDM Tool 27 Investment Analysis (Version 14.0) provides specific requirements and guidance on investment analysis for demonstration of the additionality of project activities. In appendix of Tool 27, default values for the cost of equity (expected return on equity) is provided to determine benchmark value. Project holder decided to use default values to determine benchmark value for bundle project activity.

The default value of Expected Return on Equity for Türkiye in Group-1 projects is not stated among the other countries in table 1. Hence default value of a country (Azerbaijan) which has the same country risk premium based on Moody's ratings³⁶ with Türkiye at the time of investment decision in 16/01/2017 is used for determination of benchmark value. The default

³⁶ https://pages.stern.nyu.edu/~adamodar/pc/archives/ctryprem16.xls



value of Expected Return on Equity for Türkiye is accepted as 9.60 % in real terms per appendix table 1.

As it is stated in CDM Tool 27 para 16, in situations where an investment analysis is carried out in nominal terms and the available IRR benchmarks are in real terms, project participants shall convert the real term values of benchmarks to nominal values by adding the inflation rate. The inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period. If this information is not available, the target inflation rate of the central bank shall be used. If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook Data) or the World Bank for the next five years after the start of the project activity shall be used.

Methodology applied to determine a suitable value of Benchmark using Default Value has been described below:

- As the project activity generates power utilizing solar power energy, Group 1, as per para 2 of appendix of Tool 27 Version 14 has been identified as a suitable category.
- The investment analysis has been carried out in Nominal terms. Accordingly, default value as given in Table 1 of appendix of Tool 27 Version 14 has been adjusted by adding suitable forecasted inflation rate taken from TCMB (Central Bank, Türkiye).
- Since the inflation forecast of the central bank of the host country for the duration of the crediting period was not available, the average forecasted inflation rate for the Türkiye published by the IMF (International Monetary Fund World Economic Outlook Data by 2018-2022) has been utilized. The average forecasted inflation rate for 2018 to 2022 as the next five years after the start of the project activity has been considered for calculation of benchmark due to start date of crediting period as 19/02/2018.
- The benchmark has been computed in the following manner:

Table 5: Benchmark Analysis Parameters

Benchmark Analysis Parameters				
Variables	Parameter	Source		
Real Benchmark - default value for Türkiye by GCC default cost of equity	9.60%	Default value for Türkiye as per table 1 of appendix of CDM TOOL 27		



		Investment Analysis (Version 14)37
Projected inflation rate for Türkiye by IMF World Economic Outlook	10.90%	Projected average inflation rate for Türkiye by International Monetary Fund World Economic Outlook Data for 2018-2022 ³⁸ pp249 11.4
Nominal Benchmark	21.54%	Calculated

Nominal Benchmark = {(1+Real Benchmark)*(1+Inflation rate)}-1

Where,

Real Benchmark = Default Value, 9.60% (as per Table 1 of appendix of CDM TOOL 27 Investment Analysis (Version 14))

Inflation rate = 10.90% Projected Inflation Rate for Türkiye for 2018 (by International Monetary Fund World Economic Outlook, October 2017)

Nominal Benchmark = {(1+0.960) * (1+0.1090)} -1 = **21.54**%

Sub-step 2c: Calculation and comparison of financial indicators

The post tax Equity IRR is evaluated for the lifetime of the bundle project activity as 25 years. Key assumptions supporting financial projections are provided in excel spreadsheet to BCR CAB. The main parameters used for investment analysis including installed capacity, projected amount of generation, investment cost, operating and maintanence cost are derived from project feasibility report dated May 2016.³⁹ Date of investment decision is

 ³⁷ <u>https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v14.0.pdf</u>
 ³⁸ <u>https://www.imf.org/en/Publications/WEO/weo-database/2018/October/weo-</u>
 report?c=186,&s=PCPI,PCPIPCH,&sy=2018&ey=2022&ssm=0&scsm=1&scc=0&ssd=1&ssc=0
 &sic=0&sort=country&ds=.&br=1

³⁹ Project feasibility report dated May 2016



accepted as 16/01/2017 which is the date of board resolutions of bundle companies. Key event dates of project activity considered in investment analysis are presented table below.

Enür Solar Power Plant Bun	dle Project	Franking and the second
Project Milestones	Date	Explanation
Feasibility report	May 2016	Prepared by Öztan Elektrik Sanayi ve Ticaret A.Ş.
Board Resolution	16/01/2017	Board resolutions
EIA exemption letters of Enür and Renda SPPs	31/08/2015	Ministry of Environment, Urbanisation and Climate Change
EIA exemption letters of Orhaneli SPP	17/08/2016	Ministry of Environment, Urbanisation and Climate Change
EIA exemption letters of Tabii Kaynaklar SPP	15/05/2017	Ministry of Environment, Urbanisation and Climate Change
EIA exemption letters of Serhat Öztimur SPP	08/08/2017	Ministry of Environment, Urbanisation and Climate Change
System connection agreement of Enür, Renda, Orhaneli SPPs	20/02/2017	UEDAŞ- Uludağ Elektrik Dağıtım A.Ş.
System connection agreement of Tabi Kaynaklar SPP	23/02/2017	UEDAŞ- Uludağ Elektrik Dağıtım A.Ş.
System connection agreement of Serhat Öztimur SPPs	03/11/2017	UEDAŞ- Uludağ Elektrik Dağıtım A.Ş.
Construction Agreement	20/05/2017	Konelsis Enerji Mak.Müh. Proje Bil. Otoms. İnş. Taah.S an. Tic. Ltd. Şti.
	01/06/2017	Upsolar
Purchase agreements of PV Panels	31/10/2017	Solitek
	06/11/2017	Solitek
Commissioning of power plant	19/02/2018	Ministry of Energy and Natural Resourse, Directorate of TEDAŞ
Acquisitions of project by current Project Holder	17/05/2018	Copy of Turkish trade registry gazette

Table 6: Key Event Dates

Plant Load Factor (PLF) values of unit SPPs are presented in project feasibility report. However cumulative PLF is calculated as referenced to EB 48 Annex 11.

Reference to EB 48 Annex 11; the plant load factor shall be defined ex-ante according to one of the following options:



- a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval;
- *b)* The plant load factor determined by a third party contracted by the project participants.

Option (b) has opted. Since the demostration of additionalty has been carried out by bundled power plants, PLF were calculated by collective values in feasibility report prepared by third party, Öztan Elektrik Sanayi ve Ticaret A.Ş. as follows:

PLF = (Annual Generation / 365 days) / (Installed Power x 24 hours)

= (6,955MWh / 365 days) / (4.246MWe x 24 hours)

=19.055 / 102

=18.70%

Electricity tariff is received from "#5346: Law on Utilization of Renewable Energy Sources for The Purpose of Generating Electrical Energy"⁴⁰ ratified on 10/05/2005 indicates that 13.3 ct/kWh for ten (10) years after commissioning.

The market price after ten (10) years is accepted as 6.6ct/kWh according to average market price for electricity energy generation derived from last 5 years (Jan 2012 – Jan 2017) average market price⁴¹ from EPIAS⁴² Energy Markets Operator Company records which was latest data available at the time of investment decision.

The input assumptions and the post tax equity IRR outcome presented below table 7.

Table 7: Parameters of Investment Analysis

Parameters Data Valu	e Unit	Reference
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⁴⁰ Table: "I Sayılı Cetvel", pp 10 <u>https://www.mevzuat.gov.tr/MevzuatMetin/1.5.5346.pdf</u> and also <u>https://www.epdk.gov.tr/Detay/DownloadDocument?id=5TsScgaXpeE=</u>

https://www.epdk.gov.tr/Detay/Icerik/1-1270/electricityelektricity-legislation

⁴¹ https://seffaflik.epias.com.tr/transparency/piyasalar/gop/ptf.xhtml

⁴² <u>https://seffaflik.epias.com.tr/transparency/about.xhtml</u>



Technical Data				
Installed Capacity	4.246	MWe	EPC Agreement data	
Plant Load Factor	18.70%	%	calculated	
Projected Generation	6,955	MWh/year	feasibility data	
Average Annual Emission Reduction	4,413	tCO2e/yea r	Calculated value	
Financial Data				
Feed in Tariff	13.3	ct/kWh	https://www.mevzuat.gov.tr/ MevzuatMetin/1.5.5346.pdf	
Market Price after 10 years	6.6	ct/kWh	<u>https://seffaflik.epias.com.tr/t</u> <u>ransparency/piyasalar/gop/ptf</u> <u>.xhtml</u>	
Expected VCCs price	3.00	USD/tCO2 e	VCC price assumption	
Corporate Tax rate	20	%	Official record of Republic of Türkiye, Ministry of Treasury and Finance, Revenue Administration ⁴³	
Project Cost and Financing Model				

⁴³<u>https://www.gib.gov.tr/fileadmin/user_upload/Yararli_Bilgiler/KV_Oranlari.html</u> <u>https://www.gib.gov.tr/sites/default/files/fileadmin/taxation_system2021.pdf</u>



Investment Cost	5,300,073	USD	Feasibility Report, Section 6.1.1, Cost table, pp33 ⁴⁴
O&M Cost	97,750	USD	Feasibility Report, Section 6.1.6.2, Cost Table, pp35 ⁴⁵
Debt / Equity	0%	%	Feasibility Report data ⁴⁶
Period of assessment of financial analysis	25	years	

Equity Internal Rate of Return (IRR) of the Enür Solar Power Plant Bundle Project has been calculated as 16,04% based on applied parameters without considering the carbon emission reduction revenue. Investment analysis shows that calculated equity IRR of project is below the Benchmark 21.54% value without carbon revenue.

Table 8: Post tax Equity IRR w&w/o VCC

Variable	W/O VCC	With VCC	Relative Improvement
Equity IRR after Tax	16,04%	16,21%	1,06%*

⁴⁴ Feasibility Report, Section 6.1.1, Cost table, pp33

⁴⁵ Feasibility Report, Section 6.1.6.2, Cost Table, pp35

⁴⁶ <u>https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v12.pdf</u>



The carbon revenue will improve the project's financial indicator equity IRR at least 1,06% relatively and encourage investors to maintain projects and further developments.

Sub-step 2d: Sensitivity Analysis

As per para 28 of Tool 27 Sensitivity analysis (Version 14.0), the initial objective of a sensitivity analysis is described as to determine in which scenarios the project activity would pass benchmark or become more favourable than the alternative. Hence the calculation of benchmark is critical parameter to discuss the sensitivity analysis. As per para 17 of Tool 27 Investment Analysis V.14.0, the projected average inflation data 10.90% for the next five years (2018-2022) after the start of the project activity by World Economic Outlook Data of IMF has been utilized to determine Benchmark value for investment analysis of project.47 However realized average consumer price index for same period is calculated as 27.07%48 according to TUIK, Turkish Statistical Institute official data. It is clear that the real benchmark value would be 15% more than what is calculated for below sensitivity analysis if the data of real world could be used.

However, sensitivity analysis has been applied for four main parameters identified below in order to determine in which scenarios the project activity would pass the benchmark or become more favourable than the alternative.

- 1. Investment Cost
- 2. O&M Cost (Management)
- 3. Expected Energy Generation (PLF)
- *4. Energy price (tariff)*

Variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues has been subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude), and the results of this variation has been presented below Table 9 and be reproducible in the associated IRR spreadsheets in-line with Tool 27 Investment

 ⁴⁷<u>https://www.imf.org/en/Publications/WEO/weo-database/2018/October/weo-report?c=186,&s=PCPI,PCPIPCH,&sy=2021&ey=2023&ssm=0&scsm=1&scc=1&ssd=1&ssc=0
 <u>&sic=0&sort=country&ds=.&br=1</u>
 <u>48</u><u>https://data.tuik.gov.tr/Bulten/Index?p=T%C3%BCketici-Fiyat-Endeksi-Temmuz-2024-53617&dil=1</u>
</u>



Analysis V14.0, As a general point of departure variations in the sensitivity analysis has been applied to cover a range of +10 per cent and -10 per cent according to guidance of Tool 27.

IRR Calculation	-10.00%	0.00%	10.00%	Breaching Value
Total Project Cost	18.36%	16.04%	14.12%	-21.06%
O&M Cost	16.23%	16.04	15.85%	below -100%
PLF - Generation	14.78%	16.04%	17.26%	46.93%
Energy Price	15.51%	16.04%	16.57%	109.98%
Benchmark IRR	21.54%	21.54%	21.54%	

Table 9: Sensitivity Analysis without carbon revenue

Probability to surpass the benchmark:

Total Project Cost:

Project cost for financial analysis is derived from unit cost for per power plant from feasiblity report of project activity"⁴⁹ which was available at the time of investment decision making to proceed. It is the bottom unit cost as conservative cost value from real world instances. Nevertheless, the sensitivity is applied for 10% variation for threshold level below that benchmark is not exceeded. It needs to be 21.06% below

⁴⁹ Project feasibility report dated May 2016



variation for threshold level to reach benchmark therefore it is unlike that total project cost will change beyond sensitivity range.

O&M Cost:

Operation and Maintenance cost is derived from perpower plant from feasibility report of project activity"⁵⁰ Since the O&M cost is generally under effect of inflation, it is more like to increase rather than to be decreased. It does not match the benchmark even gets 100% below variation for threshold level. Hence, the reduction in the O&M cost is unlike.

PLF - Generation:

Generation amount based on cummulative PLF is considered in financial analysis as per third party data provided in feasibility report in line with "Guidelines for the reporting and validation of Plant load factors" stated in EB 48 Annex11 option 3(b). Hence, variation in PLF of more than 10% is unlikely to happen since the PLF data provided by the feasibility report of project based on Solar energy potential of project site on earth which is also unlike to change beyond the sensitivity range. It needs to be 46.93% above variation for threshold level to reach benchmark therefore it is unlike that PLF will change beyond sensitivity range.

Tariff – Energy Price:

The tariff is fixed for ten years after the start date of project activity and accepted as average of market price from last five years from EPIAS Energy Markets Operator Company records which was latest data available at the time of investment decision for remaining period of project lifetime. Hence, there is no probability to get huge variation like 109.98% it is unlike that Tariff change beyond the sensitivity range. However, Sensitivity is carried out for +/-10% even then the benchmark is not exceeded.

Outcome of Step 2:

⁵⁰ Project feasibility report dated May 2016



Based on the analysis presented in Table 9, the variation percentage required to meet the benchmark is extremely large and unlikely. It is clear that project is not the most financially/economically attractive option. Therefore, the project is considered as additional to the baseline scenario.

3.5 Uncertainty management

The data used for quantification of baseline values are mainly derived from Turkish Grid emission factor and estimation of quantification of project activity generation values.

The emission factor considered to calculate emission reductions is officially published on 18/03/2024 by Ministry of Energy and Natural Resources on "Türkiye National Network Emission Factor Data Sheet" which is latest publicly available data. ⁵¹

The emission factor is indicating National Electricity Grid emission factor for the year 2021 that includes Operating Margin (OM), Build Margin (BM) and Combined Margin (CM) Emission Factors calculated by using TOOL 07 – V07.0

The quantification of projected generation values of project activity is mainly derived from installed power and plant load factor (PLF). Project activity is installation of a Solar photovoltaic power plant. Install power values of Solar photovoltaic panels are fixed and appearing increase in system loss by years. Cummulative PLF is calculated by feasibility report data under the consideration of maximum Solar potential of project site and install powers of solar panels.

The quantification of net project generation is recorded by sealed meters, cross checked by backup meters which are located at sub-station connection to the national grid. Authorization of recording and servicing of meters is controlled by distribution company UEDAŞ Uludağ Elektrik Dağıtım A.Ş.

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https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/TUESEF_Bilgi_Formu.pdf



3.6 Leakage and non-permanence

Project emission for Solar power plant is accepted as zero by Methodology which is real world case too.

Project Leakage is also accepted as zero since it does not use any type of fossil fuel sources for its generation and operations

3.7 Mitigation results

3.7.1 Eligible areas within GHG project boundaries (AFOLU sector projects)

The project activity is not an AFOLU hence it is not applicable.

3.7.2 Stratification (Projects in the AFOLU sector)

The project activity is not an AFOLU hence it is not applicable.

3.7.3 GHG emissions reduction/removal in the baseline scenario

The baseline of project activity is described in accordance with the approved CDM methodology AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation (version 18.0)⁵² hence it is an installation of a Greenfield power plant, using renewable energy sources and supplying electricity to a national grid, in line with the eligibility limit of 15 MW for a small-scale CDM project activity definition.

Baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

Where:

⁵² <u>https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK</u>



$BE_{\mathcal{Y}}$	=	Baseline emissions in year y ($t CO_2$)
EG _{PJ,y}	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)
EF _{grid,y}	=	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO ₂ /MWh)

Since the project activity is the installation of a greenfield power plant, $EF_{grid,y}$ is to be calculated as follows:

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

Where:

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

The emission factor has been calculated in a transparent and conservative manner as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "TOOLo7: Tool to calculate the emission factor for an electricity system"⁵³

The emission factor considered to calculate emission reductions is officially published on 18/03/2024 by Ministry of Energy and Natural Resources on "Turkish National Network Emission Factor Data Sheet" which is latest publicly available data. ⁵⁴

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⁵³ <u>https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf</u>

https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/TUESEF_Bilgi_Formu.pdf



The emission factor is indicating National Electricity Grid emission factor for the year 2019 that includes Operating Margin (OM), Build Margin (BM) and Combined Margin (CM) Emission Factors calculated by using TOOL 07 – V07.0.

The data set used for calculation is declared as follows:

- 1. TEİAŞ (Turkish Electricity Transmission Corporation) electricity generationconsumption and loss statistics of Türkiye.
- 2. Common Reporting Format with Türkiye's National Greenhouse Gas Inventory Reporting – The emission value stated in electricity generation (1.A.1.a.i) in the tables of Common Reporting Format (CRF)
- 3. Chronologic order according to commissioning dates of electricity generation plants, plant names, fuel types, installed powers data, amount of electricity generation for the calculation year
- 4. The status of Voluntary Emission Reductions (VER) ownership by web-sites of Gold Standard (GS) and Verified Carbon Standard (VCS).
- 5. Efficiency values has been derived from Clean Development Mechanism (CDM) Tool 009-V2.0.⁵⁵

Calculation of the Operating Margin Emission Factor:

Based on above data set, Turkish Ministry of Energy and Natural Resources calculated EF,grid,OM,y as . 0.7279 tCO2e/MWh.

Published as **0.7279 tCO2e/MWh** for OM

Calculation of the Build Margin Emission Factor:

Based on above data set, Turkish Ministry of Energy and Natural Resources calculated EF,grid,BM,y as 0.3541 tCO2e/MWh.

⁵⁵ <u>https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-09-v3.0.pdf</u>



Published as 0.3541 tCO2e/MWh for BM

Calculating of the Combined Margin Emission Factor:

The combined margin emission factor is calculated by using weighted average CM as per Tool o7 formula presented below:

$EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$	Equation (16)
--	---------------

Where:

EF grid,BM,y	= Build margin CO2 emission factor in year y (t CO2/MWh)
EF grid,OM,y	= Operating margin CO2 emission factor in year y (t CO2/MWh)
W _{OM}	= Weighting of operating margin emissions factor (per cent)
W_{BM}	= Weighting of build margin emissions factor (per cent)

As per Tool 07 rules, default values for Wind and Solar power generation project activities: $W_{OM} = 0.75$ and $W_{BM} = 0.25$ (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods.

Hence, CM calculation equal to CM = (0.7258 x 0.75) + (0.41.53 x 0.25)

Published as **0.6345 tCO2e/MWh** for CM

Calculation of Emission Reductions

According to AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation methodology, emission reductions related to project activities is estimated as follows:

$$ER_{y} = BE_{y} - PE_{y} - LE_{y}$$

Equation (9)

where

 ER_{y} = Emission reductions in year y (t CO_{2})

Version 2.3



$BE_{\mathcal{Y}}$	=	Baseline Emissions in year y (t CO_2)
PE_y	=	Project emissions in year y (t CO2)
LE_y	=	Leakage emissions in year y (t CO ₂)

Project emissions

In reference to Methodology for most renewable energy project activities, $PE_y = o$. However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of "ACM0002: Grid-connected electricity generation from renewable sources":

(a) Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption);

(b) Emissions from water reservoirs of hydro power plants.

However, in case biomass is sourced from dedicated plantations, the procedures in the tool "Project emissions from cultivation of biomass" shall be used.

CO₂ emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the "Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion".

The project activity is generation of electricity energy by Solar Power Plants and not related to any types of geothermal, hydro and biomass resources. The applied technology is environment friendly photovoltaic panels and converters that converts solar energy into electrical energy, hence there are no GHG emission associated with the project activity. There is no on-site consumption of fossil fuels due to the project activity.

Hence Project Emissions are accepted as zero.

 $PE_y = 0$

Leakage

The project activity is a greenfield project and installed equipment is not transferred from another activity. Leakage emissions are accepted as zero.



 $LE_{\gamma} = 0$

Finally, Net GHG Emission Reductions and Removals are calculated as:

```
Emission reduction is calculated as ER_{y} = BE_{y} (tCO2e)
```

3.7.4 GHG emissions reduction/removal in the project scenario

The baseline emission is calculated as the net electricity generated by the project activity, multiplied with the baseline emission factor of the project grid in accordance with AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation methodology (version 18)

 $BE_y = (6,955) x (0.6345) = 4,413 tCO2e/year$

Total emission reduction is considered as $ER_y = BE_y = 4,413 \text{ tCO}_{2e}/\text{year}$

Year	GHG emission reductions in the baseline scenario (tCO2e)	GHG emission reductions in the project scenario (tCO _{2e})	GHG emissions attributable to leakages (tCO _{2e})	Estimated Net GHG Reduction (tCO ₂ e)
19/02/2018- 31/12/2018	3,821	0	0	3,821
2019	4,413	0	0	4,413
2020	4,413	0	0	4,413
2021	4,413	0	0	4,413
2022	4,413	0	0	4,413
2023	4,413	0	0	4,413
2024	4,413	0	0	4,413
01/01/2025- 18/02/2025	592	0	0	592
Total	30,891	0	0	30,891



4 Compliance with Laws, Statutes and Other Regulatory Frameworks

Project activity has been developed in line with following legislation and regulations.

• # 6446 Electricity Market Law⁵⁶

(*Ratification date: 14/03/2013 - Enactment date: 30/03/2013*)

• # 5346 Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy⁵⁷

(*Ratification date: 10/05/2005 – Enactment date: 18/05/2005*)

• # 2872 Environment Law⁵⁸

(*Ratification date: 09/08/1983 – Enactment date: 11/08/1983*)

• # 6831 Forest Law⁵⁹

(*Ratification date: 31/08/1956 – Enactment date: 08/09/1956*)

• By-Law on EIA Environmental Impact Assessment Regulation^{60,61}

(Enactment dates: 25/11/2014 and 29/07/2022 - Official Gazette Issues: 29186 and 31907 authored by Ministry of Environment, Urbanization and Climate Change)

Project team have access to check on an ongoing basis to relevant legislation and regulations periodically.

⁵⁶ <u>https://www.mevzuat.gov.tr/mevzuatmetin/1.5.6446.pdf</u>

⁵⁷ https://www.mevzuat.gov.tr/mevzuatmetin/1.5.5346.pdf

⁵⁸ <u>http://www.mevzuat.gov.tr/MevzuatMetin/1.5.2872.pdf</u>

⁵⁹ <u>https://www.mevzuat.gov.tr/mevzuatmetin/1.3.6831.pdf</u>

⁶⁰ https://www.resmigazete.gov.tr/eskiler/2014/11/20141125-1.htm

⁶¹ https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=39647&MevzuatTur=7&MevzuatTertip=5



5 Carbon ownership and rights

5.1 Project holder

•

Individual or organization	ENÜR Enerji Üretim Sanayi ve Ticaret	
	Anonim Şirketi	
Contact person	Mr. Serhat Öztimur	
Job position	Owner	
Address	Konak Mah. Yıldırım Cad.	
	Tomurcuk Sok. No:3	
	Nilüfer BURSA TÜRKİYE	
Phone number	Landline: +902242212192	
Email	serhat.oztimur@oztimur.com.tr	

5.2 Other project participants

Individual or organization	ENÜR Enerji Üretim Sanayi ve Ticaret	
	Anonim Şirketi	
Contact person	Mr. Abdurrahman Zengin	
Job position	Project Coordinator – Contact Person	
Address	Konak Mah. Yıldırım Cad.	
	Tomurcuk Sok. No:3	
	Nilüfer BURSA TÜRKİYE	
Phone number	Cell phone: +905323540751	



	Landline: +902242212192		
Email	abdurrahman.zengin@oztimur.com.tr		
Individual or organization	GLOBİA Çevre Yatırım Danışmanlık ve Mühendislik San. Tic. Ltd. Şti.		
Contact person	Mr. Bülent Birol		
Job position	Managing Director – Contact Person		
	Consultant for GHG Emission Reduction Project		
Address	Atatürk Mah. Ertuğrul Gazi Sk. Metropol İstanbul		
	Cı Blok No:2/B İç Kapı No:376 Ataşehir		
	İSTANBUL TÜRKİYE		
Phone number	Cell phone: +905323145185		
Email	bulent.birol@globia.com.tr		

5.3 Agreements related to carbon rights

Project activity has been developed on private property owned by Mahmut Öztimur who is share holder of project proponent not within the territories of ethnic groups and/or local traditional communities.⁶² Hence Carbon ownership and rights are only assigned to project holder ENÜR Enerji Üretim Sanayi ve Ticaret Anonim Şirketi.

5.4 Land tenure (Projects in the AFOLU sector)

The project activity is not an AFOLU hence it is not applicable.

⁶² Land register of private property.



6 Climate change adaptation

Climate change is definitely the most major global issue and an important environmental concern worldwide due to its comprehensive consequences, such as extreme weather events, the loss of biodiversity, rising sea levels, among other harmful effects on the environment and society. These challenges not only impact the natural world but also the economy and public health, underscoring the urgent need for coordinated action. Climate change adaptation refers to the process of making adjustments to social, economic, and environmental practices in order to minimize the negative effects of climate change. These adaptations help individuals, communities, and ecosystems cope with the changes that are already occurring or are anticipated in the future. In this context, climate change adaptation is essential to avoid operational failure and ensure business future.

Project holder has planned actions related to climate change adaptations as a part of its risk assessment. This plan consists of identifying possible climate risks on local area and then developing corresponding adaptation measures. Environmental risks, associated with climate change and effects on direct damage to operations and technical setup, social and economic risks, cause damage such as loss of income, or damage caused to stakeholders.

The main adaptation strategies, measures and indicators are presented below table.

Impacts on	Adaptation Strategies		Measure	Indicator
EcoSystem Protection	Infrastructure Improvements	Building resilient infrastructure to withstand extreme weather events	Maintaining flood defenses and stormwater drainage systems to prevent damage from heavy rainfall.	Monthly check reports of operation staff on site infrastructure



	Water Managment	Water Consumption and pollution from ground and surface sources	Keeping water storage systems and improving the management of water resources.	Service or invoice records of water consumption, and disposal
Social & Economic Protection	Disaster Risk Reduction	Strengthening early warning systems and emergency response strategies to minimize the damage from extreme weather events.	Keeping the internal training programs and safety practices	Monthly training updates of staff
	Employee Health and Safety	Implementing early warning systems for heatwaves and other extreme weather events	Keeping the official training programs for occupational health and safety in consistent with relevant regulations	Official ISG (Occupational Health and Safety Training) reports

7 Risk management

The risk assessment was carried out before installation and at operation phases for the environmental, financial and social dimensions for the purpose of indicating the risks and mitigations related to the implementation of the project activities.

Identified risks and defined mitigations are presented below.



Risk Category	Identified Risks	Mitigation Measures		
Environmental	Ecosystem protection issues	• Maintain recycling and disposal of solid waste in line with national regulation in order to protect ecosystem.		
	Environmental Externalities	• Keep active protection for negative weather conditions		
	Occupational Health and Safety issues	• Promote trainings on occupational health care, sanitation and precaution and supports to access health services.		
Financial	Potential Power Price changes	• Payment guarantee mechanisms is available for ten years. Market price will be applied after ten years.		
	Human Resource Risk	• Availability of skilled technicians and engineers are very less in solar energy projects on site in Bursa province.		
Social	Negative perception for energy generation projects	• Keep and improve education, awareness- raising of local people on advantages and aspects of Solar PV Power facilities supporting climate change mitigation, adaptation, impact reduction and early warning		

7.1 Reversal Risk

Project activity has a connection agreement with official distribution company (UEDAŞ) which provides offset the reversal risk for identified financial risks through energy price and payment guarantee mechanisms.

Project proponent will apply a risk management plan for environmental and social risks with monitoring plan correspondingly.



7.1.1 Loss Event Report

Not applicable

8 Sustainable development safeguards (SDSs)

The project complies with the relevant regulations and laws including Electricity Market Law with Number 6446 dated 14/3/2013 and Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy with Number 5346 and dated 18/05/2005 which are base legal framework for energy sector in Türkiye.

Project activity is considered as out of "Environmental Impact Assessment (EIA) application" in accordance with Environment Law with Number 2872 dated 11/8/1983, and By-law on Environmental Impact Assessment dated 25/11/2014 and updated 29/07/2022 by the Ministry of Environment and Urbanization for every plant in this bundled project.

However, project holder demostrates the following sustainable development safeguards in line with BioCarbon Cert SDS Tool (Version 1.1).

Land use: Resource Efficiency and Pollution Prevention and Management

Could the project/initiative activities potentially entail or result in:	Response	Mitigation and/or preventive actions
Land degradation or soil erosion, leading to the loss of productive land?	□Yes □Potentially ⊠No	Project Land is classified as unqualified agricultural area by state authority. However, no physical change is applied to project area which would cause degradation or soil erosion.



Contaminating soils and aquifers with pollutants, chemicals, or hazardous materials?	□Yes □Potentially ⊠No	Project does not use chemicals, pollutants, hazardous materials, hence project is solar power plant which uses solar energy.
Air and water pollution resulting from project-related emissions, discharges, or improper waste disposal practices?	□Yes □Potentially ⊠No	Project does not cause any type of project emissions that may cause air and water pollution hence it is a solar power plant which uses solar energy.
Detrimental excess of nutrients caused by the use of fertilizers and/or pesticides?	□Yes □Potentially □No	N/A
Inadequate waste management practices, leading to the improper disposal of project- related waste and potential environmental harm?	□Yes ⊠Potentially □No	Damaged solar PV panels can be described as potential project related waste. Damaged solar PV panels are stored in a storage house at project site and will be delivered to waste collection company in line with regulations. Records of delivery (invoice, protocol, etc) will be billed on event based and will be reported in relevant monitoring report.
Inefficient resource use, including energy, water, and raw materials, leading to increased environmental footprint?	□Yes □Potentially ⊠No	Project does not cause any type of project emissions that may cause increased environmental footprint hence it is a solar power plant which uses solar energy.
Losing productive agricultural land to urban expansion, impacting local food production, rural livelihoods, and overall food security?	□Yes □Potentially □No	N/A



Urbanization, leading to the urban heat island effect, impacting local climates and potentially contributing to higher energy consumption for cooling?	□Yes □Potentially □No	N/A
Disrupting natural drainage systems, leading to increased vulnerability to floods, soil erosion, or other hydrological issues?	□Yes □Potentially □No	N/A
Inadequate recycling and reuse of project-related resources, leading to unnecessary waste and environmental impact?	□Yes □Potentially □No	N/A
Deforestation or degradation of forested areas impacting carbon sequestration, biodiversity, and ecosystem services?	□Yes □Potentially ⊠No	Project Land is classified as unqualified agricultural area by state authority that does not have forest.
Changes in agricultural practices, such as intensive monoculture, leading to soil degradation, loss of biodiversity, and increased vulnerability to pests?	□Yes □Potentially ⊠No	Project Land is classified as unqualified agricultural area by state authority that did not have agricultural production earlier.
Urbanization or infrastructure development leading to changes in land use patterns and potential habitat fragmentation?	□Yes □Potentially □No	N/A

Water

Could the project/initiative activities potentially entail or result in:	Response	Mitigation actions	and/or	preventive
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Exacerbating water scarcity or depleting water resources?	□Yes □Potentially ⊠No	Project does not use water source hence project is solar power plant which uses solar energy.
Water pollution, including contamination of rivers, lakes, oceans, or aquifers as a result of project-related activities such as emissions, spills, or waste disposal?	□Yes ⊠Potentially □No	Project does not cause any type of project emissions that may cause water pollution hence it is a solar power plant which uses solar energy.
disposur.		Waste water due to domestic use is being stored in a septic storage pool and disposed according to national laws and regulations when needed.
		Records of delivery to waste collection company (invoice, protocol, etc) will be billed on event based and will be reported in relevant monitoring report.
		The invoice of first disposal activity by Bursa Metropolitan Municipality is provided to CAB.
Disrupting aquatic ecosystems, including marine life, river ecosystems, or wetlands, due to changes in water quality, temperature, or flow patterns?	□Yes □Potentially □No	N/A
Altering coastal dynamics, including erosion, sedimentation, or changes in sea levels?	□Yes □Potentially □No	N/A
Displacing or negatively impacting wetland habitats, affecting the unique biodiversity and ecosystem services provided by wetlands?	□Yes □Potentially □No	N/A



Altering river flow patterns, potentially leadingto downstream impacts on water availability, sediment transport, and ecosystems?	□Yes □Potentially □No	N/A
Depleting aquifers and groundwater resources as a result of the project's activities, impacting local water supplies and ecosystem sustainability?	□Yes □Potentially □No	N/A
Mountainous terrains, including changes in snowmelt patterns, glacier dynamics, or alterations in water runoff?	□Yes □Potentially □No	N/A
Disrupting lake ecosystems, including changes in water quality, nutrient levels, or habitat disturbance?	□Yes □Potentially □No	N/A
Contributing to ocean acidification, with potential consequences for marine life and coral reef ecosystems?	□Yes □Potentially □No	N/A

Biodiversity and ecosystems

Could the project/initiative activities potentially entail or result in:	Response	Mitigation actions	and/or	preventive
Habitat destruction or		N/A		
fragmentation, impacting	□Yes			
biodiversity by reducing	□Potentially			
available habitats for various	□No			



species?		
Introducing invasive species, which could negatively affect native flora and fauna and disrupt local ecosystems? *	□Yes □Potentially □No	N/A
Altering ecosystem dynamics, including changes in species composition, trophic interactions, or nutrient cycles on the environment?	□Yes □Potentially □No	N/A
Disrupting migration patterns for wildlife species, such as birds, mammals, or aquatic organisms?	□Yes □Potentially □No	N/A
Chemical contamination or pollution negatively impacting biodiversity in soil, water, or air?	□Yes □Potentially □No	N/A
Overexploiting natural resources, such as timber, water, or other materials, leading to declines in biodiversity and ecological balance?	□Yes □Potentially □No	N/A
Overharvesting species at rates faster than they can actually sustain themselves in the wild?	□Yes □Potentially □No	N/A
Climate change-induced impacts on biodiversity, including shifts in species distributions, changes in phenology, or increased vulnerability to extreme weather events?	□Yes □Potentially □No	N/A



Negatively impacting endangered or threatened species within the project area, either directly or indirectly through habitat changes or other disturbances?	□Yes □Potentially □No	N/A
Reducing genetic diversity within populations, potentially leading to decreased resilience and adaptability of species in the face of environmental changes?	□Yes □Potentially □No	N/A
Inadequate monitoring and assessment of biodiversity within the project area, making it Challenging to identify and address changes over time?	□Yes □Potentially □No	N/A
Pressure on vulnerable ecosystems?	□Yes □Potentially □No	N/A

Climate Change



increasing greenhouse gas emissions?	□Yes □Potentially ⊠No □N/A	Project decreases greenhouse gas emissions hence project is solar power plant which uses solar energy.
changes in habitat suitability for species due to climate change impacts, leading to shifts in species distributions or loss of critical habitat?	□Yes □Potentially □No	N/A
disrupt ecosystem services provided by biodiversity, such as pollination, water purification, and carbon sequestration, affecting overall ecosystem functioning?	□Yes □Potentially □No	N/A
the spread of invasive species, leading to competition with native species and alteration of ecosystem dynamics?	□Yes □Potentially □No	N/A
increased frequency or intensity of extreme weather events, such as storms, droughts, or floods, which can damage habitats and threaten species survival?	□Yes □Potentially □No	N/A
alteration of the phenology and behavior of species, affecting reproductive cycles, migration patterns, and interactions with other species, disrupting ecosystem dynamics?	□Yes □Potentially □No	N/A
reducing genetic diversity within species populations due to climate change-induced habitat loss or fragmentation, compromising the adaptive capacity of populations to environmental stressors?	□Yes □Potentially □No	N/A



exacerbation the prevalence of diseases and pathogens among wildlife populations, leading to population declines and ecosystem destabilization?	□Yes □Potentially □No	N/A
weakening the resilience of ecosystems to disturbances, making them more susceptible to collapse or regime shifts, with cascading effects on biodiversity and ecosystem function?	□Yes □Potentially □No	N/A
new challenges in effectively incorporating climate change considerations into biodiversity conservation planning, such as identifying climate-resilient habitats and prioritizing species and ecosystems for conservation action?	□Yes □Potentially □No	N/A
habitat loss, pollution, and overexploitation, amplifying the impacts on biodiversity and complicating conservation efforts?	□Yes □Potentially □No	N/A

Labor and Working Conditions

Could the project/initiative activities potentially entail or result in:	Response	Mitigation and/or preventive actions
forced labor, or human trafficked labor	□Yes □Potentially	All employment is made in line with



	⊠No	national laws and regulations. ⁶³
		Project activity provides job opportunities for 6 employees. ⁶⁴
child labor or forced labor practices during the project, either directly or within the project's supply chain?	□Yes □Potentially ⊠No	All employment is made in line with national laws and regulations.
unsafe working conditions, exposing project stakeholders to potential hazards or accidents before, during and after the implementation of the activities?	□Yes □Potentially ⊠No	Project activity does not cause occupational accidents. Employee trainings and precautions are applied according to the official HSE (Occupational Health and Safety) Regulations. ⁶⁵
		Training records of employees provided to CAB.
exploitative labor practices, such as inadequate wages, excessive working hours, or poor working conditions for the personnel engaged during the project activities?	□Yes □Potentially ⊠No	All employment is made in line with national laws and regulations which prohibits wages under minimum wage, extended working hours, unhealthy working conditions.
discrimination in employment, including unequal opportunities, biased hiring practices, or unfair treatment based on factors such as gender, ethnicity, or other characteristics?	□Yes □Potentially ⊠No	All employment is made in line with national laws and regulations which prohibits any type of discrimination.

 ⁶³ <u>https://www.mevzuat.gov.tr/mevzuatmetin/1.5.4857.pdf</u>
 ⁶⁴ Social security/insurance records are provided to CAB.

⁶⁵ <u>https://www.mevzuat.gov.tr/mevzuatmetin/1.5.6331.pdf</u> <u>https://mevzuat.gov.tr/File/GeneratePdf?mevzuatNo=16924&mevzuatTur=KurumVeKurulusYonetmeligi&m</u> <u>evzuatTertip=5</u>



violating workers' rights, including issues related to freedom of association, collective bargaining, or other fundamental labor rights during the project's activities?	□Yes □Potentially ⊠No	All employment is made in line with national laws and regulations which is consistent with ILO (International Labor Organization) protocols.
unfair treatment, exploitation, or inadequate protections for contractual workers or migrant laborers?	□Yes □Potentially ⊠No	All employment is made in line with national laws and regulations which is consistent with ILO (International Labor Organization) protocols.
inadequate grievance mechanisms, making it challenging for workers to address concerns, report issues, or seek resolution for labor- related problems?	□Yes □Potentially ⊠No	All employment is made in line with national laws and regulations. All employees have right to make any grievance application to SGK (Social Security/Insurance Institution) if he/she faces illegal labor-related problems.
insufficient social welfare support, such as healthcare, insurance, or other benefits for workers engaged in project activities?	□Yes □Potentially ⊠No	All employment is made in line with national laws and regulations. Occupation of Labor without Social Security/Insurance including healthcare is strictly prohibited.
displacement or negative impacts on local communities due to labor-related issues, including challenges related to employment opportunities and livelihoods?	□Yes □Potentially ⊠No	No displacement or negative impact on local community is subject to project activity.
lack of training	□Yes □Potentially ⊠No	Project activity does not cause occupational accidents. Employee trainings and precautions are applied according to the official HSE (Occupational Health and Safety) Regulations. Training records of employees provided to CAB.



Gender equality and Women empowerment

Could the project/initiative activities potentially entail or result in:	Response	Mitigation and/or preventive actions
gender-based discrimination in employment opportunities, recruitment processes, or access to leadership positions, hindering women's participation and advancement?	□Yes □Potentially ⊠No	All employment is made in line with national laws and regulations which prohibits any type of discrimination.
unequal access to project benefits, resources, or decision- making processes, resulting in disparities between men and women in the distribution of project-related opportunities and rewards?	□Yes □Potentially ⊠No	Project Holder respects equal rights of women and men.However, gender-based discrimination is a crime according to Labor Law.All have equal access to benefit, resources, decision making, opportunities and rewards.
limited participation and representation of women in project activities, consultations, or community engagements, potentially marginalizing their voices and perspectives?	□Yes □Potentially □No	N/A
increasing unpaid care work burden on women, such as caregiving responsibilities or household chores, due to changes in community dynamics or time constraints resulting from project activities?	□Yes □Potentially □No	N/A
limited access to education, training, or capacity-building opportunities for women and girls, inhibiting their ability to develop skills and pursue leadership roles within the project or related industries?	□Yes □Potentially □No	N/A



gender-based violence or harassment occurring within project settings or project- affected communities, affecting women's safety, well-being, and ability to participate fully?	□Yes □Potentially □No	N/A
inequitable access to land, natural resources, or economic opportunities, particularly disadvantaging women in rural or indigenous communities affected by land use changes?	□Yes □Potentially □No	N/A
underrepresentation of women in decision-making processes, including planning, governance structures, or stakeholder consultations, leading to less inclusive and effective outcomes?	□Yes □Potentially □No	N/A
gender-blind policies, interventions, or project designs that fail to consider the specific needs, priorities, and capacities of women and men, resulting in unintended negative consequences for gender equality and women empowerment?	□Yes □Potentially □No	N/A
limited economic empowerment and livelihood opportunities for women, such as access to credit, entrepreneurship support, or income-generating activities, withinproject-affected communities?	□Yes □Potentially □No	N/A


health and safety risks that disproportionately affect specific genders within the community, potentially leading to disparate impacts on men and women?	□Yes □Potentially □No	N/A
cultural and social barriers that may hinder the advancement of gender equality and women empowerment within project settings or affected communities, such as stereotypes, norms, or traditional roles and expectations?	□Yes □Potentially □No	N/A
inadequate gender analysis and monitoring mechanisms, resulting in a lack of understanding of gender dynamics and missed opportunities for promoting gender equality and women empowerment?	□Yes □Potentially □No	N/A

Land Acquisition, Restrictions on Land Use, Displacement, and Involuntary Resettlement

Could the project/initiative activities potentially entail or result in:	Response	Mitigation actions	and/or	preventive
conflict over land resources and/or rights, such as competition for space between different land uses, communities, or stakeholders affected by the project?	□Yes □Potentially ⊠No	Project area holder. Land CAB.	is owned deeds are	by project provided to



land acquisition, leading to changes in land ownership patterns and potential conflicts with local communities and landholders?	□Yes □Potentially ⊠No	Project area is owned by project holder. No issue is subject to purchase of Land.
imposing restrictions on traditional land use practices, affecting the livelihoods and cultural practices of communities in the project area?	□Yes □Potentially □No	N/A
displacing communities or residents from their homes and lands, leading to social, economic, and cultural disruptions?	□Yes □Potentially □No	N/A
involuntary resettlement or relocation of communities, impacting their access to resources, services, and community networks?	□Yes □Potentially □No	N/A
communities losing their livelihoods and agricultural productivity as a result of land acquisition or restriction on land use?	□Yes □Potentially □No	N/A
insufficient compensation and benefits for affected communities and individuals, leading to economic hardships and social discontent?	□Yes □Potentially □No	N/A
lack of free, prior, and informed consent from affected communities, potentially resulting in conflict and challenges to project implementation? *	□Yes □Potentially □No	N/A



social and cultural disintegration within displaced communities, leading to the erosion of social cohesion and cultural practices?	□Yes □Potentially □No	N/A
communities losing access to common resources, such as forests, water bodies, or grazing lands, due to land acquisition or use restrictions?	□Yes □Potentially □No	N/A
inadequate resettlement plans, potentially leading to insufficient support, services, and infrastructure for resettled communities?	□Yes □Potentially □No	N/A

Indigenous Peoples and Cultural Heritage

Could the project/initiative activities potentially entail or result in:	Response	Mitigation and/or preventive actions
violating the right of indigenous peoples, including their right to land, resources, and self- determination?	□Yes □Potentially □No	N/A
impacts on indigenous lands and territories, potentially leading to the displacement of indigenous communities and disruption and loss of livelihoods?	□Yes □Potentially □No	N/A



negatively impacting the traditional livelihoods, such as hunting, fishing, or gathering, due to changes in land use or environmental conditions?	□Yes □Potentially □No	N/A
losing sacred sites and cultural heritage, impacting the spiritual and cultural identity of indigenous communities?	□Yes □Potentially □No	N/A
the lack of free, prior and informed consent from indigenous communities (FPIC), potentially resulting in conflicts and challenges to project implementation? *	□Yes □Potentially □No	N/A
inadequate cultural impact assessments, potentially leading to insufficient understanding of the project's impact on indigenous cultures and traditions?	□Yes □Potentially □No	N/A
losing indigenous knowledge and practices related to land management, resource utilization, and traditional ecological knowledge?	□Yes □Potentially □No	N/A
cultural disintegration and the erosion of social cohesion withinindigenous communities?	□Yes □Potentially □No	N/A
inadequate recognition and respect for indigenous governance systems, potentially leading to conflicts over land and resource management?	□Yes □Potentially □No	N/A



insufficient benefit-sharing mechanisms, resulting in the unequal distribution of benefits derived from the project among indigenous communities? **	⊠Yes □Potentially □No	N/A
Conflicts arising over land rights, particularly when the project involves changes in land use that may be contested by different stakeholders, including indigenous communities?	⊠Yes □Potentially □No	N/A

Community health and safety

Could the project/initiative activities potentially entail or result in:	Response	Mitigation and/or preventive actions
exposure to hazardous materials, chemicals, or pollutants, potentially leading to adverse health effects or life-threatening risks?	□Yes □Potentially ⊠No	Project does not use chemicals, pollutants, hazardous materials, hence project is solar power plant which uses solar energy.
degrading air quality in the project area due to emissions, dust, or other airborne pollutants?	□Yes □Potentially ⊠No	Project does not use chemicals, pollutants, hazardous materials, hence project is solar power plant which uses solar energy.
water contamination, including pollution of water sources or reduced access to clean water, affecting community health and well-being?	□Yes □Potentially ⊠No	Project does not use chemicals, pollutants, hazardous materials, hence project is solar power plant which uses solar energy.



increased noise levels or vibrations resulting from project operations, potentially causing disturbances and health impacts for nearby communities?	□Yes □Potentially ⊠No	Project does not use chemicals, pollutants, hazardous materials, hence project is solar power plant which uses solar energy.
traffic accidents or road safety hazards associated with increased traffic flow or transportation activities related to the project?	□Yes □Potentially □No	N/A
workers exposure to hazardous conditions, physical attacks or inadequate safety measures?	□Yes □Potentially ⊠No	Project does not use chemicals, pollutants, hazardous materials, hence project is solar power plant which uses solar energy.
increased prevalence of vector- borne diseases or pest infestations as a result of changes in environmental conditions or habitat disruption?	□Yes □Potentially □No	N/A
community displacement or involuntary resettlement, leading to social disruption, stress, and negative health outcomes?	□Yes □Potentially □No	N/A
community mental health and well-being, including stress, anxiety, and social isolation resulting from changes in living conditions or community dynamics?	□Yes □Potentially □No	N/A
inadequate emergency preparedness and response mechanisms, leading to challenges in managing and mitigating potential health and safety emergencies?	□Yes □Potentially □No	N/A



changes in land use patterns, such as increased exposure to disease vectors or decreased access to natural resources essential for health?	□Yes □Potentially □No	N/A
inadequate health infrastructure and services in the project area, leading to challenges in addressing community health needs and emergencies?	□Yes □Potentially □No	N/A

Corruption

Could the project/initiative activities potentially entail or result in:	Response	Mitigation and/or preventive actions
funds allocated for the project/initiative being misappropriated or embezzled through fraudulent practices or kickbacks?	□Yes □Potentially □No	N/A
bribery or kickbacks being solicited or offered to secure contracts, permits, or other project-related approvals?	□Yes □Potentially □No	N/A
nepotism or favoritism in the selection of contractors, suppliers, or project personnel, compromising the integrity and fairness of procurement processes?	□Yes □Potentially □No	N/A



fraudulent reporting or manipulation of project data, such as inflating project costs or overstating achievements, to obtain additional funding or meet performance targets?	□Yes □Potentially □No	N/A
conflicts of interest among project stakeholders or personnel, such as individuals with financial interests in project outcomes or decision-makers with personal connections to project contractors?	□Yes □Potentially □No	N/A
lack of transparency in project decision-making processes, budget allocations, or contract awards, leading to suspicions of corruption or malpractice?	□Yes □Potentially □No	N/A
weak regulatory oversight or enforcement mechanisms, allowing for corrupt practices to go undetected or unaddressed withinproject/initiative activities?	□Yes □Potentially □No	N/A
undue influence or pressure exerted by external parties, such as political figures or industry lobbyists, to sway project decisions or gain unfair advantages?	□Yes □Potentially □No	N/A
Inadequate accountability mechanisms or whistleblower protection, discouraging individuals from reporting instances of corruption or unethical behavior?	□Yes □Potentially □No	N/A



corruption in the environmental permitting process, such as officials accepting bribes to overlook environmental violations or grant permits unlawfully?	□Yes □Potentially □No	N/A
Corruption within subcontracting relationships, such as subcontractors paying bribes to secure favorable terms or win subcontracting opportunities?	□Yes □Potentially □No	N/A

Economic Impact

Could the project/initiative activities potentially entail or result in:	Response	Mitigation and/or preventive actions
Compromising healthy competition, resulting in unhealthy rivalry and undermining collaboration and cooperation essential for achieving project goals?	□Yes □Potentially □No	N/A
loss of employment opportunities, particularly for vulnerable populations, as a result of changes in economic activities or restructuring?	□Yes □Potentially □No	N/A
creating economic dependence, such as tourism or conservation initiatives, leading to vulnerability to fluctuations in project funding or market conditions?	□Yes □Potentially □No	N/A



market distortions or increased competition, such as changes in land use patterns or shifts in supply and demand dynamics within local economies?	□Yes □Potentially □No	N/A
increasing the cost of living for local communities as a consequence of project-related developments, such as infrastructure projects or influxes of external workers?	□Yes □Potentially □No	N/A
inequitable distribution of benefits, leading to disparities in wealth, income, or access to resources among different segments of the population?	□Yes □Potentially □No	N/A
losing traditional economic practices and knowledge systems, potentially undermining cultural heritage and resilience to economic shocks in communities?	□Yes □Potentially □No	N/A
negatively impacting small-scale enterprises or informal economies that rely on natural resources or ecosystem services?	□Yes □Potentially □No	N/A
financial uncertainties, such as project delays, budget overruns, or changes in funding sources, affecting investment confidence and economic stability?	□Yes □Potentially □No	N/A
limited access to financial resources, such as credit or microfinance services, for entrepreneurs or smallholders affected by project-related changes in land use or economic activities?	□Yes □Potentially □No	N/A



lack of economic resilience and adaptive capacity within project- affected communities, particularly in response to external shocks or long-term changes in market conditions?	□Yes □Potentially □No	N/A
Inadequate compensation or mitigation measures for economic impacts, such as loss of assets or disruptions to income streams, experienced by individuals or communities?	□Yes □Potentially □No	N/A

Governance and Compliance

-

Could the project/initiative activities potentially entail or result in:	Response	Mitigation and/or preventive actions
Insufficient institutional capacity within project/initiative implementing agencies or partner organizations, leading to challenges in effective governance and project management?	□Yes □Potentially □No	N/A
weak governance structures and mechanisms within the project/initiative, such as unclear roles and responsibilities, inadequate decision-making processes, and limited transparency and accountability?	□Yes □Potentially □No	N/A



Inadequate stakeholder engagement and participation in project/initiative decision- making processes, leading to governance gaps and reduced project legitimacy?	□Yes □Potentially □No	N/A
ineffective or inadequate regulatory frameworks governing project activities, resulting in loopholes, inconsistencies, or gaps in environmental protection and governance standards?	□Yes □Potentially □No	N/A
delays or challenges in obtaining necessary permits, licenses, and approvals for project activities due to regulatory complexities, bureaucratic inefficiencies, or legal requirements?	□Yes □Potentially □No	N/A
political interference in project/initiative decision- making processes, such as pressure to prioritize certain projects or interventions based on political agendas rather than scientific or environmental considerations?	□Yes □Potentially □No	N/A
non-compliance with relevant laws, regulations, permits, and international agreements governing GHG emissions, biodiversity conservation, environmental protection and land use management, leading to legal challenges and reputational risks?	□Yes □Potentially □No	N/A



conflicts of interest among project stakeholders or decision- makers, such as individuals with personal or financial interests that may influence project outcomes or decision-making processes?	□Yes □Potentially □No	N/A
limited access to justice for communities affected by project activities, such as barriers to legal recourse or remedies for grievances related to land rights, environmental harm, or social impacts?	□Yes □Potentially □No	N/A
insufficient monitoring and evaluation mechanisms to assess project performance, impacts, and compliance with governance standards, leading to gaps in accountability and learning?	□Yes □Potentially □No	N/A
inadequate capacity building and training for project stakeholders, such as government officials, local communities, and civil society organizations, to effectively participate in project governance and decision-making processes?	□Yes □Potentially □No	N/A

9 Stakeholder engagement and consultation

The project activities should be assessed according to the Environmental Impact Assessment Regulations which was enacted by the Ministry of Environment and Urbanization in Türkiye. Due to the project's installed capacities which are less than the threshold limit specified for



solar power plants in regulation, project activity has been classified as "out of EIA concern" type of project. The corresponding documents for each plant within the scope of this bundled project are available for BCR CAB Verifier review.

Since Environmental Impact Assessment is not required for the project by regulations, no local stakeholder consultation meeting conducted in a particular place which was not required too.

BCR Standard V 3.4 indicates that there should be a LSC process considered for project activity. Hence, the local stakeholder consultation has been carried out through using project information notes and feedback forms delivered to local stakeholders via available site opportunities and e-mails. Date of Local Stakeholder Consultation is 11/05/2023 as the public institutions and organizations listed below have been informed via e-mail on same date.

The scope of consultation has been defined to inform stakeholders about environmental, social, financial, climate change mitigations and sustainable development aspects of project activity. A brief project information note and a feedback form have been delivered to local people of Belenoluk village which is the nearest settlement to project site and made publicly available at Mukhtar's office and asked for feedbacks between 20/05/2023 and 05/06/2023 for two weeks.⁶⁶ The copies of sent e-mails and responses obtained from the stakeholders are available for BCR CAB Verifier review. The stakeholders that were invited to be informed for project activity are listed below:⁶⁷

- Bursa Province Governor
- Bursa Provincial Directorate of Environment and Urbanizations
- Orhaneli District Governor
- Mayor of Orhaneli Municipality
- Belenoluk Mukhtar
- Non-Governmental Organizations, (wwf.org.tr)

 ⁶⁶ Mukhtar's letter on publicly declaration of project information
⁶⁷ Invitation letters to official institutions.



• Local people.

9.1 Summary of comments received

The population of Belenoluk village is 62 residents by 2022.⁶⁸ Although much more people have been informed about project, the comments declared by 5 persons for each power plant in the Bundle. The feedback forms evaluated by local stakeholders on sites are available for BCR CAB Verifier.⁶⁹ The local people including Mukhtar, Farmers and a retired Officer have been presented their feedbacks as stakeholders of project. None of the invited official and NGO institutions have been commented to consultation

In general, feedbacks of local people are positive about the projects. Their evaluation seems to have a positive assessment regarding the solar power plants. The main points mentioned in feedbacks are;

- Clean and sustainable energy via solar power
- Employment opportunities provided to the local people
- Contribution to National economy
- Effective utilization of unfavorable rural area
- No harmful effect to nature and rural area

Stakeholders have been declared positive comments about the project during the interviews.

9.2 Consideration of comments received

The comments have been discussed by the consultant and the project owner. It is evaluated that there is no negative comment and grievance according to the project implementation. There were no negative comments in general by mail replies of institutions and interviews of local stakeholders. However, the contact information of the consultant and site managers

⁶⁸ <u>https://www.nufusune.com/184529-bursa-orhaneli-belenoluk-mahallesi-nufusu</u>

⁶⁹ Copies of feedback questionaries from stakeholders



was shared with the stakeholders in order to be able to contact to declare any potential grievance that may occur in future.

10 Sustainable Development Goals (SDGs)

Contribution of project activity to Sustainable Development Goals (SDG) has been assessed by considering "BCR Tool for the determination of contribution of fulfillment of the Sustainable Development Goals (SDGs) on the Greenhouse Gas (GHG) mitigation projects." The following Goals are assessed as applicable SDGs according to the type and aspects of project activity.

SDG 7 *Affordable and Energy:* The project t encourages the goal "Ensure access to affordable, reliable, sustainable, and modern energy for all" through clean energy generation. Project generates renewable energy by solar power that contributes SDG Target 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix. Project promotes increase substantially by increase in the share of renewable energy in the global energy in the global energy mix by generating 6,955MWh per year.

SDG 8 Decent Work and Economic Growth: The project encourages the goal "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" by 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. Project promotes full and productive employment opportunities by occupying 2 workers for operations at site.

SDG 13 Climate Action: The project encourages the goal "Take urgent action to combat climate change and its impacts" by generation of clean renewable energy and diminishing CO₂ emissions. Project contributes SDG Target 13.2 "Integrate climate change measures into national policies, strategies and planning". Project promotes emission reduction about its operation. Project level target is to provide average annual 4,413tCO₂e emission reduction.

11 REDD+ Safeguards (For **REDD+** projects)

Not applicable.

12 Special categories, related to co-benefits (optional)

Not applicable.



13 Grouped projects (if applicable)

Not applicable.

14 Other GHG program

Project activity has not been registered under another GHG program.

15 Double counting avoidance

Project does not apply another GHG program hence does not cause double counting.

16 Monitoring plan

Data / Parameter:	EG _{PJ,facility,y}			
Data unit:	MWh			
Description:	Quantity of ne plant/unit to th	et electricity g ne grid in year	generation suppli	ied by the project
Source of data	The basic source of data is the Main and Backup Meters located in power plants. ⁷⁰			
	SPP Name	Main Meter	Backup Meter	Brand
	ENÜR	40184050	40184051	Landis+Gyr
	RENDA	40184045	40184047	Landis+Gry

Data and parameters for quantifying emission reductions are presented below table:

70 Meter reading records of ULUDAĞ EDAŞ



	ORHANELİ	40184044	40184046	Landis+Gry
	ТАВІ КАҮ.	40184049	40184048	Landis+Gry
	SERHAT Ö.	40184068	40184067	Landis+Gry
Value applied:	Estimated ann	ual generation	is 6,955 MWh/yr	
Measurement procedures (if any):	The official dat EDAS system input for invoid electricity meta grid after the tr of Power Static Monthly invoid be used as r measurement r In case of any ULUDAĞ EDA main and back	ta will be read (official distrib cing. Electricity ers. The data i ransmission lo on from grid. cing data derive main, official records for emi y inconsistence AS Centre for up records at U	and recorded mo pution company) y generation data s the net electric ses and the electric source for elec ission reduction o y, project propo cross checking a JLUDAĞ EDAS d	nthly by ULUDAĞ and used as data is recorded by two ity exported to the ricity consumption EDAS records will stricity generation calculations.
Monitoring frequency:	It is continuou Reported Mont	s monitoring, l thly.	hourly measurem	ent and
QA/QC Procedures:	Calibration of the relevant Instruments Ir	the meters are regulation nspection, arti	valid for 10 years of "Measuring cle 9.b" publishe	s as determined by and Measuring ed and applied by



	Turkish legislation. ⁷¹ The meters are sealed to secure, and the project holder or any other unauthorized person are not allowed to access the meters. EPDK/EMRA Türkiye Cumhuriyeti Enerji Piyasası Düzenleme Kurulu / Turkish Republic Energy Market Regulatory Authority regulations will be followed for the meters to identify the accuracy class of the meters.
Any comment:	Applied Methodology: CDM Methodology, AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation (version 18.0) Purpose of Parameter: Calculation of baseline emissions

Data / Parameter:	EF _{grid,y}
Data unit:	t CO₂e/MWh
Description:	CO ₂ emission factor of the grid electricity in year y Emission factor of the Turkish National Grid determined ex-ante. It's been published by the Ministry of Energy and Natural Resources for 2021 on 18/03/2024 which is latest available data.
Source of data	"Türkiye National Network Emission Factor Data Sheet" which is latest publicly available data by Ministry of Energy and Natural Resources on. 72

⁷¹ <u>https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=6381&MevzuatTur=7&MevzuatTertip=5</u> ⁷²

https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/TUESEF_Bilgi_Formu.pdf



	https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe% C4%Boklim/%C4%BoklimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TU ESEmisyonFktr/Belgeler/TUESEF_Bilgi_Formu.pdf
Value applied:	o.6345 tCO2e/MWh
Measurement procedures (if any):	As per publication of "Türkiye National Network Emission Factor Data Sheet" the emission factor is indicating National Electricity Grid emission factor for the year 2019 that includes Operating Margin (OM), Build Margin (BM) and Combined Margin (CM) Emission Factors calculated by using CDM TOOL 07 – Vo6.0. Operating Margin (OM) = 0.7279 tCO2e/MWh Build Margin (BM) = 0.3541 tCO2e/MWh Combined Margin (CM) = 0.6345 tCO2e/MWh for Solar and Wind
Monitoring frequency:	Fixed as ex-ante
Any comment:	Applied Methodology: CDM Methodology, AMS-I.D Small-scale Methodology Grid-connected renewable electricity generation (version 18.0) Purpose of Parameter: Calculation of baseline emissions

Data / Parameter:	People Employed
Data unit:	Number of person
Description:	To monitor employment provided by project activity as long- term job opportunities which would not be occurred in the absence of project activity.



Source of data	The number of permanent job opportunities created will be monitored on annual basis through SGK (Social Security Institution) records or payroll records. Regulation: Labor Law #4857 ⁷³ No legal or corporate limit is for the parameter.
Value applied:	6
Measurement procedures (if any):	Checking the monthly social security records of employees.
Monitoring frequency:	Once for each monitoring period.
Any comment:	-

Element	Measure of Impact	Responsible
Air	Positive / Negative	ENÜR Energy A.Ş.
Land	Positive / Negative	ENÜR Energy A.Ş.
Water	Positive / Negative	ENÜR Energy A.Ş.
Natural Sources	Positive / Negative	ENÜR Energy A.Ş.

The project holder has already assigned qualified employees who are in charge of the monitoring and execution of project activities. The basic monitoring structure of the Enür Solar Power Plant Bundle Project is consisted of the following team:

⁷³ https://www.mevzuat.gov.tr/mevzuatmetin/1.5.4857.pdf



• Energy Projects Coordinator

Coordination of SPP Units and Cooperate Management

• SPP Operating Engineer

Managing the Operation of SPP Units

Managing the data collection and recording for the BCR Monitoring Report.

Execution of data recording and archiving system

• Financial and Accounting Specialist

Recording and monitoring of the financial records of electricity sold to Grid.

• Technicians

Execution of day-to-day operations of SPP Units

Figure 4: Roles and responsibilities of Monitoring Team





Monitoring Plan will be implemented by the following steps:

- 1) The electricity generated will be metered by the electricity meters placed at the point of connection to national grid, in the project solar power plant. It is a small concrete, compact and secured building contains main and backup meters, transformers and other related equipment for each of power plant included in Bundle Project. Project activity is connected to National grid through connection to ORHANELİ TM sub-center. The metering and data acquisition will be processed according to ULUDAĞ EDAS's (official distribution company) defined rules and procedures.⁷⁴ ULUDAĞ EDAS will perform the calibration of the metering devices whenever deemed necessary.
- 2) The official data will be read and recorded monthly by ULUDAĞ EDAS system and used as data input for invoicing. The data is the net electricity exported to the grid after the transmission loses and the electricity consumption of the project solar power plant from grid. Monthly invoicing data derived from ULUDAĞ EDAS records will be used as main, official source for electricity generation measurement records for emission reduction calculations.
- 3) Main meter records are accepted as official data for generation measurement. In the case of inconsistency backup meter has been used to cross-check generation.
- 4) The official data will be cross-checked by the measurements of net electricity supplied to Turkish Grid by project power plant will be recorded by remote electronical system of ULUDAĞ EDAS. In case of any inconsistency, project holder reminds the ULUDAĞ EDAS Centre for cross checking and reporting both main and backup records at ULUDAĞ EDAS data center.
- 5) SCADA monitoring system installed with panels and inverters by manufacturer which monitors the functioning of all electrical system also enables the project holder to monitor generation.
- 6) All monitoring data collected will be archived electronically and will be kept at least for two years after the end of the last crediting period or last issuance, which is later.

⁷⁴ Official distribution agreements with ULUDAĞ EDAŞ Distribution Company.



- 7) The emission reduction will be calculated by multiplying the net electricity with the calculated Combined Margin Emission Factor as presented in the 'project document'.
- 8) Monitoring is a key procedure to verify the real and measurable emission reductions from the Project. To guarantee project's real, measurable and long term GHG emission reductions, Operation Engineer will continue to be responsible for the electricity generated, gathering all relevant data by accessing the ULUDAĞ EDAŞ database and keeping a copy of records for future periods. He has been already informed about VCC and BCR Program concept and mechanism and how to monitor and collect the data which will be used for emission reduction calculations for subsequent monitoring periods.

Besides monitoring of GHG emission reduction parameters, Operation Engineer will be responsible for monitoring and recording of Environmental and Social Impacts, SDG Contribution parameters.



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NOTE: This Project Document (PD) shall be completed following the instructions included. However, it is important to highlight that these instructions are complementary to the BCR STANDARD, and the Methodology applied by the project holder, in which more information on each section can be found.