المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL

Project Submission Form

V4.0- 2022

CONTENTS

COVER PAGE- Project Submission Form (PSF)	
BASIC INFORMATION	
Title of the Project Activity as per LON/LOA	**Tire Biogas Plant Project**
PSF version number	06
Date of completion / Updating of this form	01.12.2022
Project Owner(s) as per LON/LOA (Shall be consistent with De-registered CDM Type B Projects)	Enfaş Enerji Elektrik Üretim A.Ş GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık ve Ticaret A.Ş.
Country where the Project Activity is located	Turkey
GPS coordinates of the project site(s)	Degree Minutes Second Longitude= 27 ° 42 ' 17.15'' Latitude= 38 ° 07 ' 43.47 '' Degree Decimal Latitude= 38.1287 Longitude= 27.7047
Eligible GCC Project Type as per the Project Standard (Tick applicable project type)	☒ **Type A:** ☐ Type A1 ☒ Type A2 ☒ Sub-Type 1 ☐ Sub-Type 2 ☐ Sub-Type 3

	☐ Sub-Type 4 ☐ Type A3 ☐ **Type B – De-registered CDM Projects:**[1] ☐ Type B1 ☐ Type B2
Minimum compliance requirements	☒ Real and Measurable GHG Reductions ☒ National Sustainable Development Criteria (if any) ☒ Apply credible baseline and monitoring methodologies ☒ Additionality ☒ Local Stakeholder Consultation Process ☒ Global Stakeholder Consultation Process ☒ No GHG Double Counting ☒ Contributes to United Nations Sustainable Development Goal 13 (Climate Action)
Choose optional and additional requirements (Tick applicable label categories)	☒ Do-no-net-harm Safeguards to address Environmental Impacts ☒ Do-no-net-harm Safeguards to address Social Impacts ☒ Contributes to United Nations Sustainable Development Goals (in addition to Goal 13)
Applied methodologies including version No. (Shall be approved by the GCC or the CDM)	GCCM003-Methodology-for-Energy-Generation-from-Animal-Manure-and-Waste-Management-Projects-v1
GHG Sectoral scope(s) linked to the applied methodology(ies)	• GHG -SS# 1: Energy Industries (renewable/non-renewable sources); and • GHG -SS# 13: Waste handling and disposal; and • GHG -SS# 15: Agriculture

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

Applicable Rules and Requirements for Project Owners

(Tick applicable Rules and Requirements)

Rules and Requirements		Version
☒ ISO 14064-2		2006
☒ Applicable host country legal requirements /rules		
☒ GCC Rules and Requirements[2]	☒ Project Standard	3.1
	☒ Approved GCC Methodology (GCCM003)	1.0
	☒ Program Definitions	3.1
	☒ Environment and Social Safeguards Standard	3.0
	☒ Project Sustainability Standard	3.0
	☒ Instructions in Project Submission Form (PSF)-template	4.0
	☐ Clarification No. 01	
	☐ Clarification No. 02	
	☐ Clarification No. 03	
	☐ Clarification No. 04	
	☐ Clarification No. 05	
	☐ Standard on avoidance of double counting	
	☐ Add rows if required	
☒ CDM Rules[3]	☐ Approved CDM Methodology (XXXXX)	
	☐ TOOL 1- Tool for the demonstration and assessment of additionality	
	☒ TOOL 02- Combined tool to identify the baseline scenario and demonstrate additionality	7.0

[2] GCC Program rules and requirements: http://www.globalcarboncouncil.com/resource-centre/
[3] CDM Program rules: https://cdm.unfccc.int/Reference/index.html

		☒ TOOL 07- Tool to calculate the emission factor for an electricity system	7.0
		☐ TOOL 19- Demonstration of additionality of microscale project activities	
		☐ TOOL 21- Demonstration of additionality of small-scale project activities	
		☐ TOOL 23- Additionality of first-of-its-kind project activities	
		☒ TOOL 24- Common practice	3.1
		☒ TOOL 27- Investment analysis	11.0
		☐ TOOL 32- Positive lists of technologies	
		☐ Guidelines for objective demonstration and assessment of barriers	
		☒ TOOL 06- Project emissions from flaring	4.0
		☒ TOOL 08- Tool to determine the mass flow of a greenhouse gas in a gaseous stream	3.0
		☒ TOOL 09- Determining the baseline efficiency of thermal or electric energy generation systems	3.0
		☒ TOOL 14- Project and leakage emissions from anaerobic digesters	2.0
		☒ TOOL 03- Tool to calculate project or leakage CO2 emissions from fossil fuel combustion	3.0

		☒ TOOL 04- Emissions from solid waste disposal sites	8.0
		☐ Add rows if required	
Choose Third Party Project Verification by approved GCC Verifiers[4] (Tick applicable verification categories)	☒ GHG emission reductions (i.e., Approved Carbon Credits **(ACCs)**) ☒ Environmental No-net-harm Label (**E+**) ☒ Social No-net-harm Label (**S+**) ☒ United Nations Sustainable Development Goals (**SDG+**) ☐ Bronze SDG Label ☐ Silver SDG Label ☐ Gold SDG Label ☒ Platinum SDG Label ☐ Diamond SDG Label ☒ CORSIA requirements (**C+**) ☒ Host Country Attestation on Double counting		
Declaration by the 'Authorized Project Owner[5] and focal point'	The Project Owner(s) declares that: **Generic Requirements applicable to all Project Types:** ☒ We confirm that the Project Activity complies with the eligibility of the applicable project type (A1, A2, A3, B1 or B2) as stipulated by the Project Standard and relevant clarifications.		

[4] **Note:** GCC Verifiers under the Individual Track are not eligible to conduct verifications for GCC Project Activities whose owners intend to supply carbon credits (ACCs) for use within CORSIA.

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

(Tick all applicable statements[6])	☒ We confirm that the Project Activity shall start or have started operations, and shall start or have started generating emission reductions, on or after 1 January 2016. ☒ We confirm that the Project Activity is eligible to be registered under the GCC program. We shall ensure the following for the Project Activity (tick at least one of the two options): ☒ No outcomes (e.g., emission reductions, environmental attributes) generated by the Project Activity under GCC will be claimed as carbon credits or environmental attributes under any other GHG/non-GHG[7] program, either for compliance or voluntary purposes, during the entire GCC crediting period; or ☒ If the project activity has been issued with carbon credits or environmental attributes of compensating nature[8] by any other GHG/ non-GHG program, either for compliance or voluntary purposes, the ACCs will be claimed only for the remaining crediting period (subject to a maximum of 10 years of crediting period including the periods under other programs and GCC program) for which carbon credits/ environmental attributes of compensating nature have not been issued by any other GHG/ non-GHG program. **Specific requirements applicable to respective Project Types:** ***For Project Type A1:*** ☐ For Project Type A1, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program. ***For Project Type A2 (Sub-Type 1):*** ☒ For Project Type A2 Sub-Type 1, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program.

Activity

[6] **Consequences in case of Non-compliance with declaration statements:**
If at any point in time non-compliance with the declared statements is established as a result of negligence, fraud or wilful misconduct of the GCC Project Owner/s the GCC project activity will be disqualified, and the registration of the proposed Project Activity will be rejected.

[7] Non-GHG programs could be such as I-REC facilitating reliable energy claims with Renewable Energy Certificate (REC) schemes

8 The environmental attributes of compensating nature are those which are used by captive users (e.g., corporates/industries) for offsetting their GHG emissions

	For Project Type A2 (Sub-Type 2 or Sub-Type 3): For Project Type A2 Sub-Type 2 or Project Type A2 Sub-Type 3, we confirm that for Project Activity, which has been registered with CDM or any GHG/non-GHG Program and we shall (tick at least one of the two options): ☐ Submit a proof for deregistration from CDM; or ☐ Submit a signed & stamped public undertaking, stating that the Project Owner will never submit any request for Issuance of ACCs or request for renewal of crediting period to CDM-EB or under article 6.4 or any authority after submission to GCC Program and shall formally inform CDM-EB or authority under article 6.4 or any authority after submission to GCC Program. ☐ For Project Type A2 Sub-Type 2 or Project Type A2 Sub-Type 3, we confirm that the Project Activity is NOT included as a component Project Activity (CPA) in any registered GHG Programme of Activities (PoA) or any other functionally equivalent grouped/aggregated activities under any GHG program (such as the CDM or any other voluntary program). ***For Project Type A2 (Sub-Type 4):*** For Project Type A2 Sub-Type 4, we confirm that the Project Activity has been included in a registered CDM-POA and we shall (tick at least one of the two options): ☐ Submit the proof for exclusion of CPA(s) from registered CDM-POA prior to the date of initial submission to the GCC Program; or ☐ Submit the proof of exclusion of CPA(s) from the registered CDM-PoA after the request for registration has been submitted to GCC Program but before the final decision is made by the GCC Steering Committee. ***For Project Type A3:*** ☐ For Project Type A3, we confirm that the Project Activity is NOT registered as a GHG Project Activity in any other GHG/non-GHG program or any other voluntary program and has not issued or will not issue credits under any other program. ***For Project Type B1 or B2:*** For Project Type B1 or Project Type B2, we confirm that for Project Activity, which has been registered with CDM or any GHG/non-GHG Program and we shall (tick at least one of the two options): ☐ Submit a proof for deregistration from CDM; or ☐ Submit a signed & stamped public undertaking, stating that the Project Owner will never submit any request for Issuance of ACCs or request for renewal of crediting period to CDM-EB or under article 6.4 or any authority after submission to GCC Program and shall formally inform CDM-EB or authority under article 6.4 or any authority after submission to GCC Program. **Requirements to avoid double counting:**

	We intend to submit or have submitted a written attestation[9] (Host Country Letter of Authorization - HCLOA) from the host country's national focal point or focal point designee for CORSIA eligible units generated beyond 31 December 2020 at the following stages[10] (tick at least one of the three options): ☐ The initial submission for GSC; or ☐ Along with the submission for a request for registration (after Project Verification is completed); or ☐ Along with the submission for a request for the first or subsequent issuance of ACCs. **Project specific requirements:** ***CORSIA specific requirements:*** ☒ We confirm that bundled projects or grouped projects shall have registered crediting period starting on or after 1 Jan 2016 for the grouped/aggregated project as a whole. ☒ We confirm that the Project Activity meets all the requirement of the CORSIA Eligible Emissions Units[11] required for GCC projects and does not fall under the excluded unit types, methodologies, programme elements, and/or procedural classes. ☒ We confirm that the Project Activity aims to achieve at least Silver or higher SDG+ label (i.e., positively impact at least 3 or more United Nations Sustainability Development Goals). ☒ We confirm that the Project Activity will be implemented in a country which is UN member state[12]. Provide details (if any) below for the boxes ticked above:

9 In case of any change of Host Country Letter of Authorisation (HCLOA) the project owner shall inform the GCC operations team immediately

10 If the host country attestation is not submitted at the initial submission of GSC, the project can be tagged with an indicative CORSIA flag if it's confirmed to be submitted later. If the host country attestation is not submitted at the request for registration, the project can be tagged with an indicative CORSIA flag if at least the PSF and Verification Report confirms to submit this letter, at first issuance. If the host country attestation is not submitted at request for first issuance, the ACCs will not be tagged as CORSIA (C+) compliant if this letter is not submitted.

11 CORSIA Eligible Emissions Units containing approval and conditions for GCC Program: https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Emissions-Units.aspx

12 The list of UN member states countries can be found at https://www.un.org/en/about-us/member-states

	The Project Owner(s) declares that: ☒ All the information provided in this document, including any supporting documents submitted to the GCC or its registry operator IHS Markit at any time, is true and correct. ☒ They understand that a failure by them to provide accurate information or data, or concealing facts and information, can be considered as negligence, fraud or willful misconduct. Therefore, they are aware that they are fully responsible for any liability that arises as a result of such actions. Provide details below for the boxes ticked above
Appendixes 1-9	Details about the Project Activity are provided in Appendixes 1 through 9 to this document.
Name, designation, date and signature of the Focal point (as per LON/LOA)	ENFAŞ Enerji Elektrik Üretim A.Ş is the project owner and GTE Karbon Sürdürülebilir Enerji Eğitim ve Danışmanlık A.Ş. is the project owner and representative. Authorization document is provided on this issue which means the process along the GCC cerfitication will be managed by GTE Carbon. Hence; On behalf of ENFAŞ Enerji Elektrik Üretim A.Ş is Contact Person: M. Kemal Demirkol (GTE Carbon Managing Director) e-mail: kemal@gtecarbon.com
	01.12.2022 

1. PROJECT SUBMISSION FORM

Section A. Description of the Project Activity

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

Tire Biogas Power Plant (BPP) was constructed by ENFAŞ Enerji Elektrik Üretim A.Ş. (Subsidiary of SÜTAŞ) in Tire Organized Industrial Zone (TOIZ) in İzmir, Turkey.

The proposed project activity is a biogas-to-energy and generates renewable energy by capturing biogas from cattle manure, chicken manure, agro-industrial wastes, domestic waste, food industry wastes, waste/wastewater sludge and agricultural wastes -via anaerobic digestion- and utilising it to produce thermal and electric energy through cogeneration systems.

Generated electricity is fed to the national grid and the produced heat is used by the project owner's diary facility. On the other hand, outputs of the anaerobic digesters are sent to the separator and drier units to gather solid and liquid digestate separately. These outputs are used as fertilizer in nearby agricultural land as free. Before the project activity nearby farm owners bought the inorganic fertilizer from related market which is costly. Hence project activities provide a great service which is not present in baseline situation. In fact, there is no any service in baseline situation which could be beneficiary for nearby farms and agricultural lands. That is why the local stakeholders are very pleasant within the project activity.

Agricultural wastes are mainly It consists of pomegranate, potato, orange peels and annual plant roots and stems left in the nearby agricultural lands. Project owner transport these waste to project site with confined trucks to eliminate any leakage problems. In addition the source of the cattle and poultry manure is also the farms located near to Tire Biogas Project Site.

There was no any biogas plant in the region before this project and there was no anaerobic biogas generation activity too. Hence the project became a Greenfield Project activity in terms of biogas generation within the region. In terms of quantum of waste handled within project activity, Tire Biogas Plant project operates with a daily organic flow of 95 tons/day and 30-40% of this amount is belonged to cattle manure, 10-20 of this amount is belonged to chicken manure and rest of it belonged to agricultural wastes as per the information given in EIA report of the project (page 8). In addition, in the baseline situation, there is no renewable electricity generation and export to national grid via a biogas plant in the region.

The project was implemented by Sütaş A.Ş. in İzmir province and aims to provide an environmental friendly solution to this manure management problem. Prior to the project activity, baseline situation, cattle, chicken manure generated at farms managed by lagoons (depth of the lagoons are more than 1 meter) and agricultural wastes left in agricultural lands by farmers.

However, for this project, only manure handling is to be taken into account for emission reduction claims due to related methodologies applied and mentioned detailly later in this document. Based on

the information stated in the EIA of the Project, around 800 tonnes/ day organic waste will be used in the biogas power plant. As per the initial conditions, methane emission potential caused from both anaerobic treatment of the wastewater and manure in open lagoons are calculated as 13.847 m3/day and 9.180 m3/day respectively.

The biogas released during the biodegradation of organic wastes will be used for electricity and heat production in cogeneration unit. Installed capacity of the project is 4.380 MWm / 4.268 (with four gas engines, 4 x 1.067 MWe, license date is 01/09/2016) with 29.876 GWh annual expected electricity generation and 15.5 TJ/year of heat (data belonged to actual generation in between 01/09/2020-31/08/2021 for 12 months). Corresponding estimated emission reduction for the whole crediting period is 367,463 (4 years) tCO_2 and 91,866 tCO_2 annually.

Main goals of the Tire BPP Project include;

• Utilization of the renewable energy potential of Turkey in order to meet rapidly increasing electricity demand and contribute achieving energy security.
• Increase share of BPPs in electricity generation mix of Turkey and reduction of GHG emissions.
• Contribute to the national economic development by creating direct and indirect job opportunities during construction and operation phases.
• Reduce import dependency of fossil fuel dominated electricity sector and diversify generation mix through use of local resources.
• Contribution to sustainable development through supporting local community and local economy.

The project is expected to contribute 6 SDGs which are SDG 6, 7, 8, 9, and 13.

SDG 6 Water and Sanitation: The project helps SDG Target 6.3 “By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally” since the project uses wastewater of milk and milk products factories.

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

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

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

SDG 13 Climate Change: The project produces clean renewable energy by diminishing CO_2 emissions. Therefore, it contributes SDG Target 13.3 “Improve education, awareness-raising and

human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning".

A.2. Location of the Project Activity

The project is located in Tire Organized Industrial Zone in Tire district of İzmir province / Turkey.

Address and geodetic coordinates of the physical site of the Project Activity		
Physical address	**Latitude**	**Longitude**
Organize Sanayi Bölgesi Mah. Tosbi Yol 4 Sokak No:6/8 TİRE / İZMİR	Degree Minutes Second Latitude= 38 ° 07 ' 43.47 " Degree Decimal Latitude= 38.1287	Degree Minutes Second Longitude= 27 ° 42 ' 17.15" Degree Decimal Longitude= 27.7047

Figure 1. Location of Tire Biogas Power Plant

A.3. Technologies/measures

>>
Organic wastes are digested in anaerobic digestors located in the biogas plant. During digestion, biogas formation occurs at the end of the chemical reactions which take place in the digestors. This biogas is the used in the cogeneration units in order to generate electricity, hot water and heat. The process flow is illustrated in Figure 2.

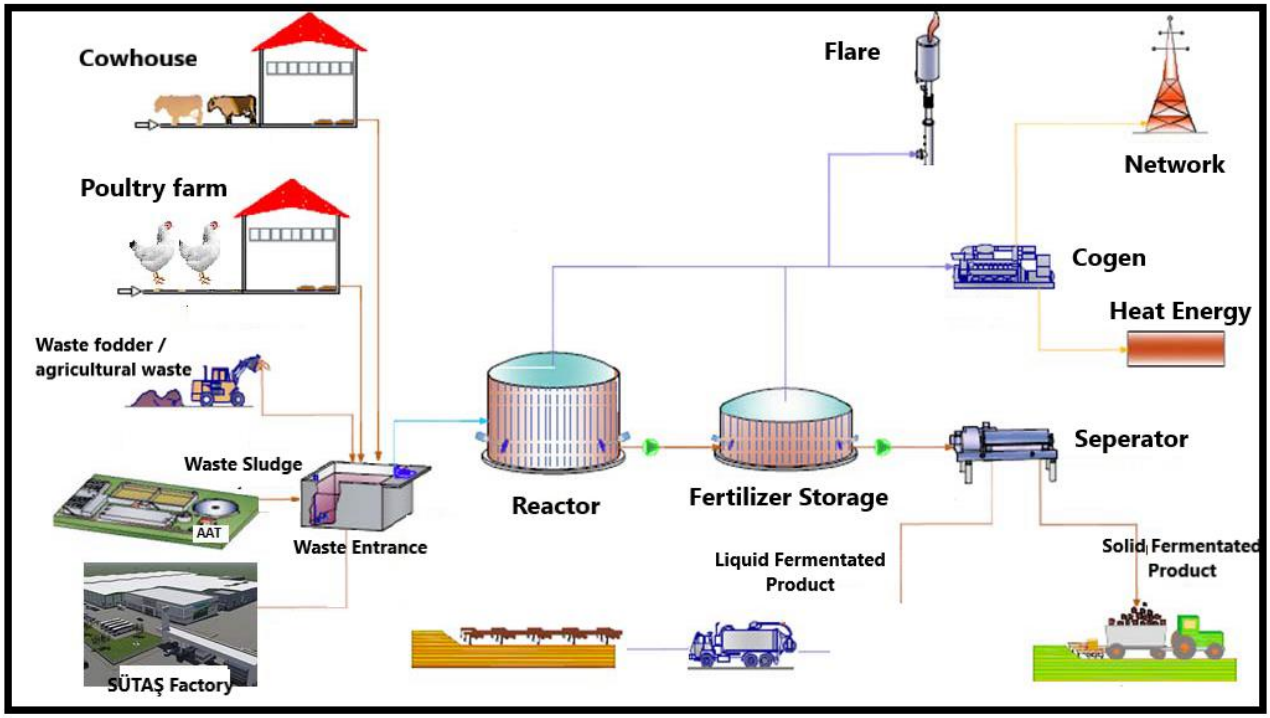

Figure 2. Process flow scheme

The system consists of following units:

- Waste collection unit: Weigh bridge and data control/storage system
- Waste preparation / feed unit: Equalization tank, vegetative waste stock area, central pumping system
- Anaerobic Digestion Unit: Digestors, gas storage unit, desulfurization unit, early warning system, temperature control system
- Cogeneration Unit: Cogeneration, gas treatment system, flare
- Fertilizer Dewatering / Hygenization Unit: Post-digestion tanks, hygenization unit, separator
- Automation system
- Product Storage Area: Liquid fermented storage area, solid fermented storage area

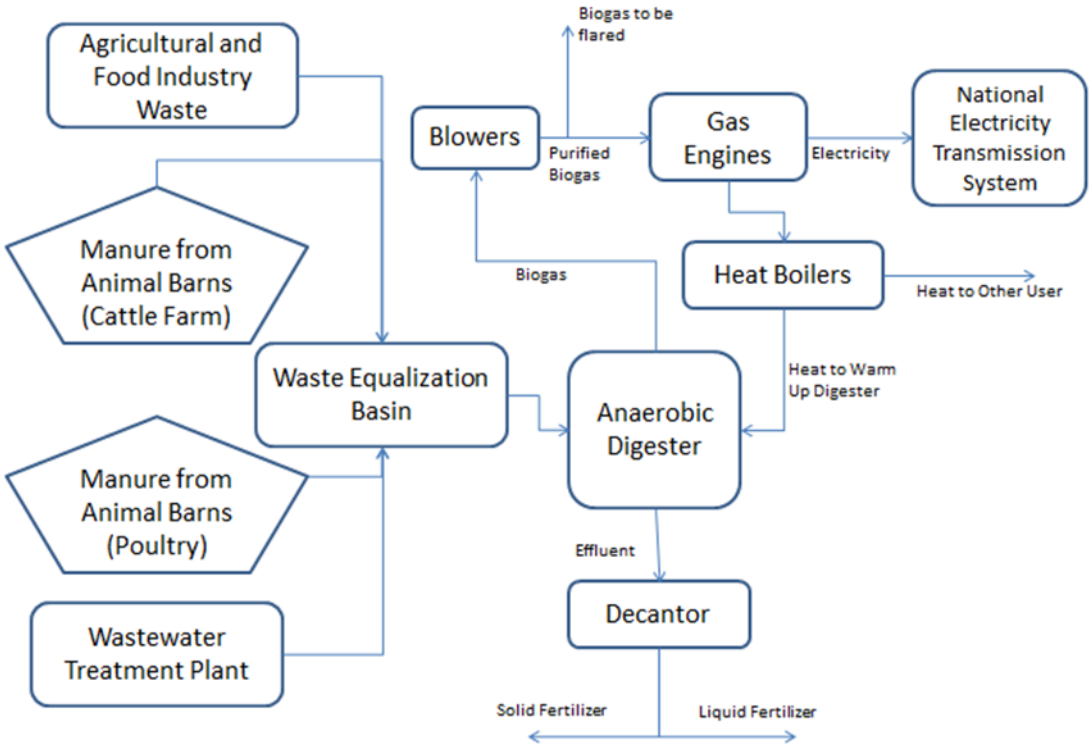

Figure 3: Detailed Schematic View of the Process

As seen in Detailed Schematic View of the Process (Figure 3), the key equipments of the project are;

- Anaerobic Digestor
- Gas engines
- Heat Boilers
- Biogas meters
- Electricity meters

The technical specifications of these key equipments are indicated as follows.

Anaerobic Digesters

- Anaerobic digesters designed as hermetically sealed closed reinforced concrete cylindrical pools.
- The gas tank to be placed at the top of the pool during the reaction stores the produced biogas.
- The reactor contents mix with submersible mixers. All interior surfaces in the final digester It will be coated with epoxy paint against corrosion.
- Against heat losses to the reactor there is thermal insulation on the surface.
- Waste level, temperature, pH and other related parameters are belonged to remote control continuously. Overpressure and vacuum safety valves are present in all digesters.

The physical specifications of digesters are given below.

Number of digesters	3
Type	Vertical and cylindrical
Volume	5,720 m3/per digester
Wet Volume	5,150 m3/per digester
Diameter	27.0 meter
Height	10.0 meter
Wet Height	9 meter
Isolation	Polyurethane b2 flammability class
Protection	Corrosion control
Material structure	Concrete

Gas Engine 1, 2, 3 and 4
Supplier Company: Jenbacher Gas Engines
Type: JMS 320 GS
Production Year: 2016
Fuel Gas Type: Biogas
Electricity Output: 1067 kW (full load)
ISO Standard Power (Mechanical Output): 1095 kW (full load)
Speed: 1500 rpm/min
Gas Volume: 443 Nm3/h (full load)
Electrical Efficiency: 40.2% (full load)
Thermal Efficiency: 27.2% (full load)
Total efficiency: 67.4(%) (full load)

Heat Boiler 1, 2, 3 and 4
Supplier Company: MNK Energy Waste Heat boiler
Type: Smoke Tube Type Waste Heat Boiler
Production Year: 2016
Test Pressure: 22.6 Bar
Operation Pressure: 10 Bar
Design Pressure : 14 Bar
Max. Heat Power: 412 kw
Volume: 2,700 liter
Standard: EN 12953

Biogas Meters
The device consists of a transmitter and a sensor. The device is available as a compact version: The transmitter and sensor form a mechanical unit. These meters are located at the top of anaerobic digesters.

Transmitter Unit:
• Compact, aluminum coated:
Aluminum, AlSi10Mg, coated
• Compact, stainless:
For maximum corrosion resistance: stainless steel 1.4404 (316L)
Configuration:
• External operation via four-line, illuminated local display with touch

control and guided menus ("Make-it-run" wizards) for applications
• Via operating tools (e.g. FieldCare)

Sensor:
Designed exclusively to measure:
– Biogas
– Firedamp
– Air
– Methane
– Nitrogen
– Gas with a very high methane fraction
• Range of nominal diameter: DN 50 to 200 (2 to 8")
• Materials:
– Sensor:
Stainless steel 1.4404 (316L), cold worked
Stainless steel 1.4435 (316L), cold worked
– Process connections:
Stainless steel 1.4301 (304),
Stainless steel 1.4306 (304L),
Stainless steel 1.4404 (316L),
Steel S235JR,
Carbon steel A105
Details of electricity meters is given in monitoring parameters (under the parameter EGPJ,facility,y) part of this document.

Flare Unit
Model and Brand: C-nox environmental engineering
Year of manufacture: 2016
Flare Type: NTV 3.6 S
Firing capacity: 3600 kW
Volume flow max: 550 Nm3/h
Biogas heating value: 6.4 kWh/m3
Max flow pressure in front of flare: 120 mbar
Min flow pressure in front of flare: 50 mbar
Biogas temperature: < 140 Celcius
Combustion temperature (approximately): 850 Celcius
Fuel gas admission pressure min, and max: 5 mbar and 30 mbar
Fuel gas temperature: 35 Celcius
Exhaust gas temperature, max: 800 Celcius

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable[13], indicate if the host country has provided approval (Yes/No)
Turkey	ENFAŞ Enerji Elektrik Üretim A.Ş	Yes
Turkey	GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık ve Ticaret A.ş.	Yes

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

>> The Project Activity is expected to generate ACCs during crediting period and supply the credits to offset the following GHG emissions:

Period		Name of the Entities	Purpose and Quantity of ACCs to be supplied
From	To		
01/06/2016	31/05/2020	ENFAŞ Enerji Elektrik Üretim A.Ş	91,866 tonnes CO_{2e}/year

ACCs from the project activity shall not be double counted

A.6. Additional requirements for CORSIA

Please see section “E” and “F”.

Section B. Application of selected methodology(ies)

B.1. Reference to methodology(ies) and tools applied in the project

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

Applied methodology for this project is “Methodology for Energy Generation from Animal Manure and Waste Management Projects (GCCM003 v1)”

This methodology is based on following baseline and monitoring methodologies of CDM.
• ACM0022: Alternative waste treatment processes
• ACM0010: GHG emission reductions from manure management systems
• AM0080: Mitigation of greenhouse gases emissions with treatment of wastewater in aerobic wastewater treatment plants

This methodology also refers to the latest approved versions of the following tools and guidelines of CDM:

(b) “Tool to calculate the emission factor for an electricity system”;
(c) “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion”;
(d) “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”;
(e) “Combined tool to identify the baseline scenario and demonstrate additionality”;
(f) “Project and leakage emissions from anaerobic digesters”;
(g) “Tool to determine the baseline efficiency of thermal or electric energy generation systems”;
(h) “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”.
(i) “Tool to determine project emissions from flaring gases containing methane”;
(j) “Emissions from solid waste disposal sites”;

B.2. Applicability of methodology(ies) and tools applied in the project

>>
The main feedstock for the Project is livestock manure (cattle and poultry manure), agricultural wastes (details given in section A.1). The feedstock (manure and agricultural wastes) is directed to the anaerobic digesters. Auxiliary equipment are also designed to utilize other wastes in the region causing by agricultural activities which are also renewable biomass resources.

According to the applied methodology which is **“**Methodology for Energy Generation from Animal Manure and Waste Management Projects (GCCM003 v1)” project satisfies the following applicability conditions;

In terms of energy generation

a) The biogas will be generated from waste types mentioned above using digestor, anaerobic lagoon or other waste treatment technologies that do not allow for aerobic decomposition of waste.

b) The project activities involve power, heat or combined power and heat generation using the energy of biogas generated.

c) Generated electricity may be used for internal consumption and/or supplied to national or a regional grid. Project activities that supply electricity also for internal consumption or domestic purposes instead of (or in addition to) supply to grid, shall demonstrate that grid connection was available on the site before the installation of project activity.

d) Generated heat is used for internal consumption to replace heat generated by emission intensive fuels. The project activities may sell/deliver excess energy to nearby facilities after meeting the internal demand of heat energy, if any.

e) The project activities shall not involve co-firing of fossil fuel of any kind, except the use of diesel generators for breakdown power supply.

f) The project activities may consume electricity (from grid or on-site generation) for site offices and operation of power plant units as internal usage.

Tire Biogas Project meets all the conditions mentioned above. Project does not use any fossil fuel except diesel generators which is to be used in case of power supply breakdown. Electricity generated is transferred to National Grid and heat generated is used both for warming up of anaerobic digestors and remaining heat is transferred to Sutas Dairy Factory to replace the natural gas usage (for heat generation). That is why project claims emission reduction via heat generation also since it replaces the natural gas usage compared to baseline scenario.

In terms of manure management

g) Manure management of livestock farms shall either replace an existing animal waste management system with new one or introduce a new animal waste management system or a combination of multiple animal waste management systems that result in less GHG emissions.

h) In case of anaerobic lagoons treatments systems, the depth of the lagoons used for manure management under the baseline scenario shall be at least 1 m;

i) The annual average ambient temperature at the site where the anaerobic manure treatment facility exists, shall be higher than 5°C;

j) The minimum retention time of manure waste in the anaerobic treatment system shall be one month;

k) Farms shall not discharge manure into natural water resources (e.g. rivers or estuaries), in absence of project activity;

l) Farms shall manage livestock populations, comprising of cattle, buffalo, swine, sheep, goats, and/or poultry, under confined conditions.

The annual average ambient temperature of the region is 17,9 Celcius as per Turkish State Meteorological Service[14]. The depths of the lagoons where the manure managed in baseline scenario is more than 1 meter (most of them 4 meter or deeper) and Tire Biogas

[14] https://www.mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?m=IZMIR

Project is replaced the manure management system of farms as a new and central management system. Therefore, the Project meets all the conditions mentioned above.

In terms of agricultural waste, food industry waste and municipal solid waste management

m) These is no law/regulation in the country requiring mandatory flaring of landfill gas where agricultural and food industry wastes and Municipal Solid Waste (MSW) was or would have been disposed in absence of the project activity.

n) The waste was (or would have been) disposed in a solid waste disposal site or an anaerobic lagoon that led (or would lead) to methane emissions as landfill gas/ biogas without being captured or flared.

The project does not use municipal solid waste and landfill gas. Therefore, this criterion is not relevant tp project activity.

In terms of sludge management

o) Sludge is produced in the baseline aerobic wastewater treatment plant which operates for treatment of domestic and/or industrial wastewater. Sludge is treated in a new anaerobic digester, with the biogas extracted from the anaerobic digester being flared and/or used to generate electricity and/or heat.

Project use animal manure (cattle and poultry manure) and agricultural wastes to generate electricity and heat. Therefore, this criterion is not relevant to project activity.

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

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The table below provides an overview of the emissions sources included or excluded from the project boundary for determination of baseline and project emissions.

Source		GHG	Included?	Justification/Explanation
Baseline	Electricity Generation	CO_2	Yes	Major emission source
		CH_4	No	Minor emission source. Excluded for simplification
		N_2O	No	Minor emission source. Excluded for simplification
	Methane Emission from Open Lagoon	CO_2	No	Minor emission source. Excluded for simplification
		CH_4	Yes	Major emission source
		N_2O	No	Minor emission source. Excluded for simplification

	Emission due to Fossil Fuel Combustion for Heating Purposes	CO_2	Yes	Emissions due to natural gas firing for heat generation
		CH_4	No	Minor emission Source. Excluded for
		N_2O	No	Minor emission Source. Excluded for
Project activity	Methane Leakage from system	CO_2	No	N/A
		CH_4	Yes	Physical leakage of biogas in the manure management system that capture's CH4
		N_2O	No	Minor emission Source. Excluded for simplification
	Internal Electricity Consumption	CO_2	Yes	Emission through electricity consumption
		CH_4	No	Minor emission Source. Excluded for simplification
		N_2O	No	Minor emission Source. Excluded for simplification
	Manure Transport	CO_2	Yes	Emissions from incremental transportation in the year y
		CH_4	No	Minor emission Source. Excluded for simplification
		N_2O	No	Minor emission Source. Excluded for simplification

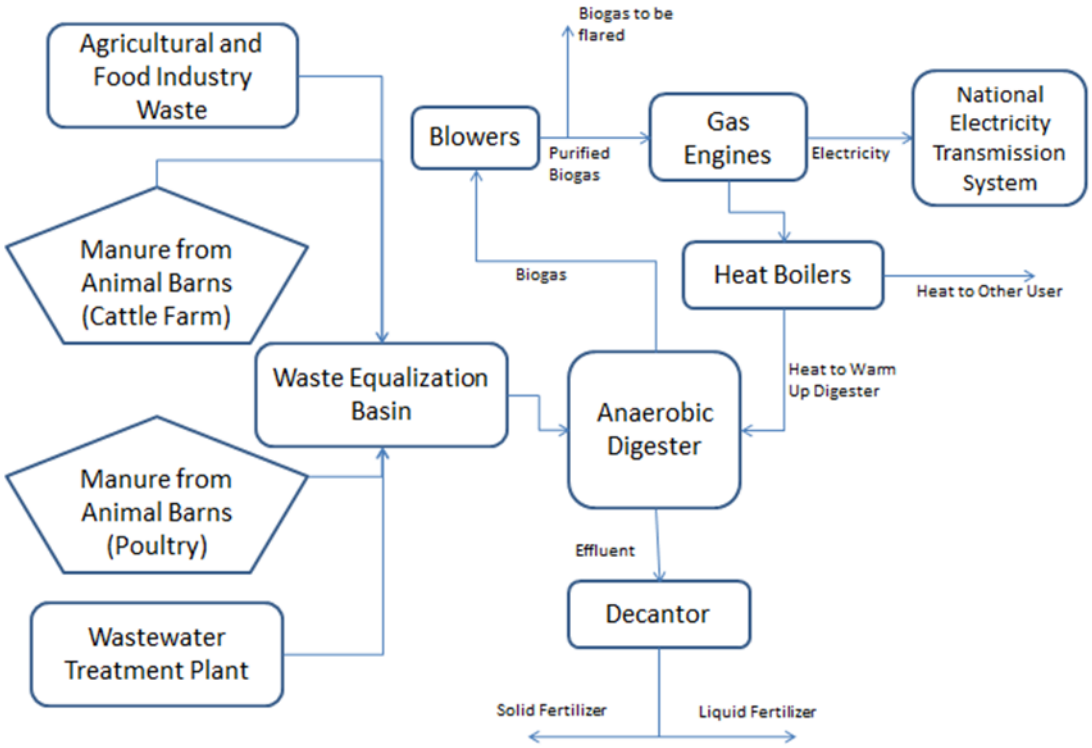

Figure 3. Project Boundary

B.4. Establishment and description of the baseline scenario

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As per applied methodology, baseline scenario is determined based on the project activity, as follows.

Project activities involving the generation of electricity and export to the grid

- In absence of project activity, the electricity would be generated by the operation of grid-connected power plants either existing or by the addition of new generation sources into the grid or by the fossil fuel source of electricity generation that is directly replaced by the project activity.

- Hypothetically it means that a power plant with emission factor equivalent to grid mix would have supplied electricity in absence of new project plant or added capacity. A grid emission factor is a reasonable benchmark that provides the proxy performance of the baseline power plant.

In the absence of the project activity, electricity generated by using fossil fuel in Turkey is higher. Hence, project activity and its generated renewable electricity replaces the fossil fuel sourced electricity which is the baseline situation.

Project activities involving the generation of heat and/or electricity for captive consumption

- In absence of project activity, the electricity and/or heat would be supplied by the operation of most attractive course of action, considering the economic attractiveness and/or barriers for implementation.

- Considering the above guidance for different project activity types, the identification of the baseline scenario shall be done following the latest version of CDM tool "Combined tool to identify the baseline scenario and demonstrate additionality".

In the absence of the project activity, the heat energy required for the operation of Sutaş A.Ş. Dairy Factory is gathered by using natural gas. Within the operation of this project, heat energy is generated by heat boilers. Generated excess heat energy (remaining heat energy after warming up of anaerobic digesters) is transferred to Sutaş A.Ş. Dairy Factory. As a result, natural gas consumption of dairy factory is diminished. Tire Biogas Plant Project belonged to Enfaş A.Ş. and Enfaş A.Ş. is also legally belonged to Sutaş A.Ş.(subsidiary firm of Sutaş A.Ş.). Hence, heat energy used by Sutaş Dairy Plant could be stated as captive consumption. In addition, generated electricity of the project is experted to Turkish National Grid.

The common practice for the livestock farm owners is to have uncovered anaerobic lagoons/ponds at their farms in Turkey[15][16]. In terms of the residence time of the manure at the lagoons, it is possible to say that since the uncovered lagoons are also fed by rain waters, the lagoons are reaching their full capacities faster than usual in rainy seasons. Nevertheless, the minimum retention time of manure waste in the uncovered anaerobic lagoons is greater than one and half and/or two months through the implementation of the proposed project activity, the manure collected at these lagoons/ponds will be collected daily via special manure trucks and fed into the digesters at the biogas plants.

According to Turkish Electricity Transmission Corporation (TEİAŞ) statistics, the fossil-fuel based electricity generation share in total electricity generation in Turkey is over 56.5% by 2019[17].

ANNUAL DEVELOPMENT OF RENEWABLE ELECTRICITY GENERATION SHARE IN TURKEY TOTAL ELECTRICITY GENERATION
(2019)

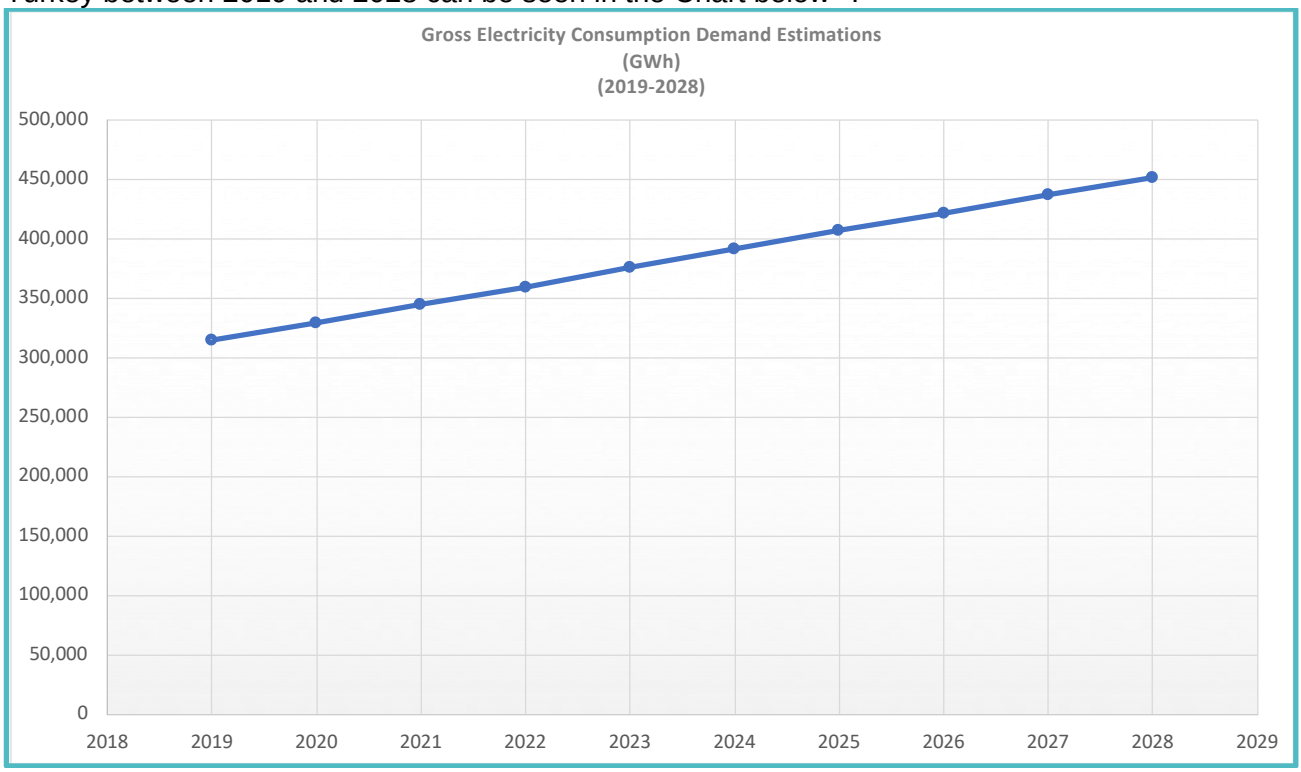
[15] Türkiye'de Biyogaz Yatırımları için Gerekli Koşulların ve Potansiyelin Değerlendirilmesi. Yazar: DBFZ - Deutsches Biomasse Forschungs Zentrum gemeinnützige GmbH, Torgauer StraBe 116, 04347 Leipzig. Çeviri: Funda Cansu Ertem. Aralık, 2011

[16] https://www.yatirimadestek.gov.tr/pdf/assets/upload/fizibiliteler/elazig-ili-biyogaz-tesisi-on-fizibilite-raporu2020.pdf

[17] https://webapi.teias.gov.tr/file/3b6826b3-a880-4b42-8ba3-e5915a2281ea?download

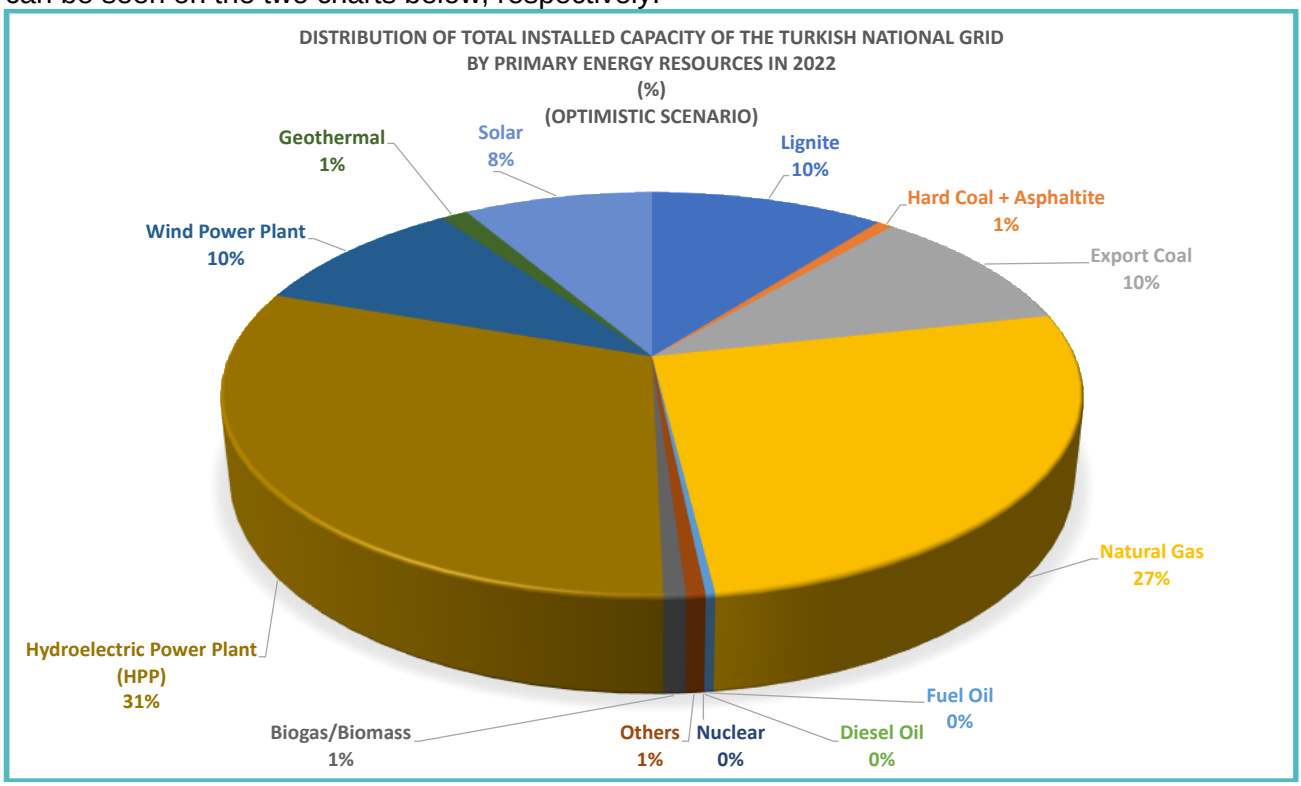
YEAR	*HYDRO (MW)*	*GEOTERMAL (MW)*	*WIND (MW)*	*SOLAR (MW)*	*BİOMASS (MW)*	*RENEWABLE INSTALLED CAPACITY (MW)*	*TOTAL INSTALLED CAPACITY (MW)*
2019	88,822.8	8,951.7	21,730.7	9,249.8	3.522,7	88.822,8	88.550,8
% in Renewable Installed Capacity	67%	7%	16%	7%	3%	100%	-
% in Total Installed Capacity	29%	3%	7%	3%	1%	43.5%	100%

Moreover, Turkey's energy demand is rapidly increasing in line mainly with the increases in its population and its economy. TEİAŞ's estimations on the demand of gross electricity consumption in Turkey between 2019 and 2028 can be seen in the Chart below[18].

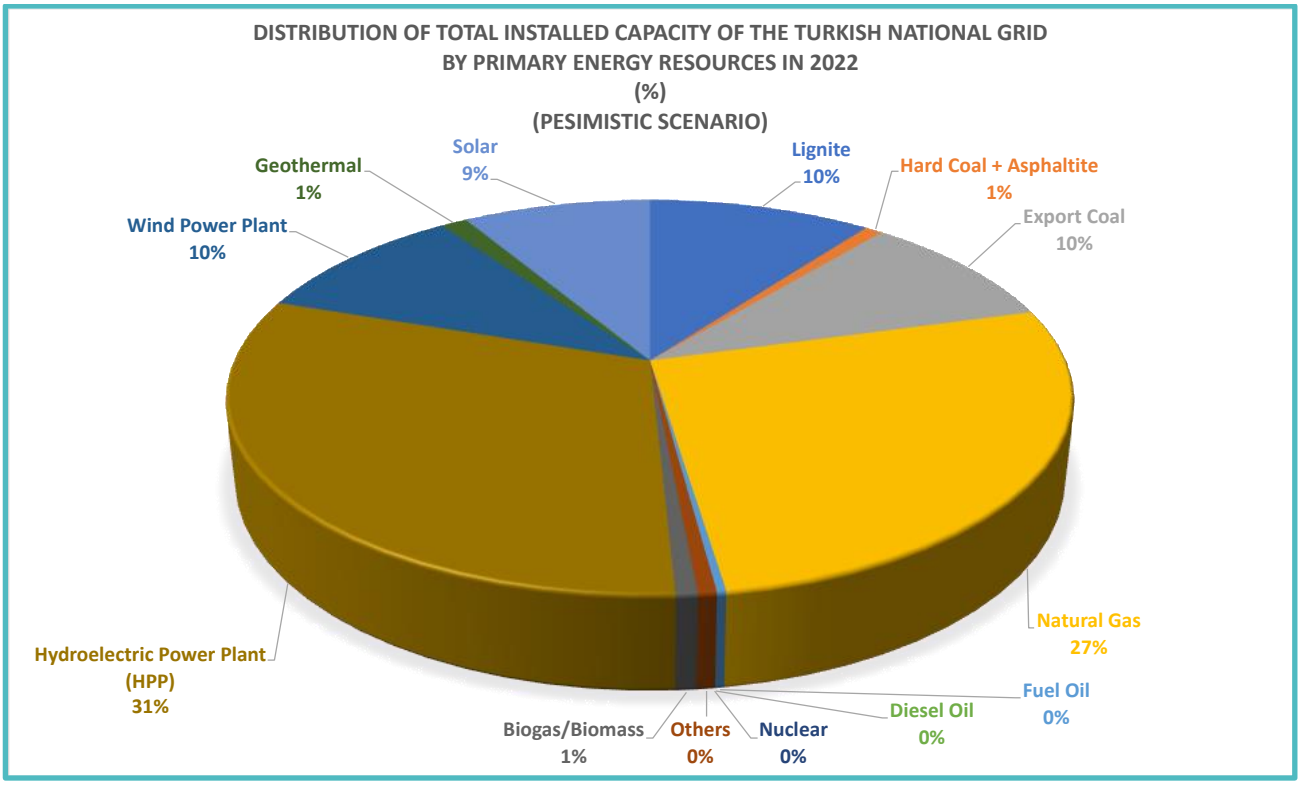


[18] TEİAŞ Report on Demand Estimations in 10 Years, Table 71, pg. 56 https://www.teias.gov.tr/sites/default/files/2019-06/taleprapor_2019-2028.pdf

Moreover, TEİAŞ, in its report on "The Projections on Capacity Generation[19]", analyses the estimations on changes in electricity generation capacities in Turkey between 2018 and 2022, based on two main scenarios, 'optimistic' and 'pesimistic'. The distribution of total installed capacity of the Turkish national grid by primary energy resources in 2022 both in optimistic and pessimistic scenarios can be seen on the two charts below, respectively.



[19] https://www.teias.gov.tr/sites/default/files/2018-09/Kapasite_Projeksiyonu_2018_2022.pdf



As seen in these two charts, although it is estimated that the share of renewable energy sources in the total installed capacity of the Turkish national grid would reach almost 50% by 2022, the share of biogas and biomass energy sources would remain the same, only 1%, combined. That means that the share of biogas- and biomass-based renewable energy sources in the Turkish national grid is estimated to show no changes from 2017 to 2022, despite their potential pointed out by the 'Bioenergy and Food Security (BEFS) Assessment for Turkey: Sustainable bioenergy options from crop and livestock residues[20]' published by Food and Agriculture Organization of the United Nations (FAO) and European Bank for Reconstruction and Development (EBRD) in 2016.

Hence, it is reasonable to claim that it is estimated that whilst the share of biogas- and biomass-based renewable energy sources in the total installed capacity of the Turkish national grid could remain the same as only 1%, combined, by 2022, Turkey's electricity grid would continue to be dominated by fossil fuel burning power plants which are seen as the quickest solutions in short term to meet the demand and to enable energy security in terms of supply.

B.5. Demonstration of additionality

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[20] http://www.fao.org/3/a-i6480e.pdf

As per applied methodology, under project-specific additionality approach, the additionality of GCC projects shall be determined by Project Owner using the latest version of CDM Tool: “Combined tool to identify the baseline scenario and demonstrate additionality”.

Moreover, the applied methodology states the sentence below;

I. “If the project is only about generation of electricity (and not heat or cogeneration), the Project Owner demonstrates that the penetration of renewable electrical energy generation technology justifies that the share of installed capacity of the specific technology used in the project activity at the time of preparation of project submission to GCC is equal to or less than 2%[1] of the total installed capacity of power generation in grid-connected power plant, the project is considered as “automatically additional”. “

This project is not only about the electricity generation, but also about the waste management and heat generation. Hence demonstration of additionality is carried in line with the methodological tool: “Combined tool to identify the baseline scenario and demonstrate additionality (Tool 02) ” version 07.0.0 [21] as given below.

Step 0: Demonstration whether the proposed project activity is the first-ofits-kind

The project is not the first of its kind. Hence, as per guidance of the tool, the additionality analysis goes on with Step-1

Step 1: Identification of alternatives scenarios

This step serves to define all realistic and credible alternatives to the project activity(s) which can be the baseline scenario.

Step 1a: Define alternatives to the proposed GCC project activity

The alternatives to the project activity are defined as per paragraph 13 of the applied additionality tool:

(a) S1: The proposed project activity undertaken without being registered as a GCC project activity;

(b) S2: Where applicable, no investment is undertaken by the project participants but third party(ies) undertake(s) investments or actions which provide the same output to users of the project activity, for example

(i) In the case of a Greenfield power project, an alternative scenario may be that the project participants would not invest in the Greenfield power plant but that

[21] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v7.0.pdf

power would be generated in existing and/or new power plants in the electricity grid;

(ii) (ii) In the case of a transportation project, an alternative scenario may be that the project participants would not invest in alternative modes (e.g. rail or pipelines), but these alternatives would be implemented by third parties.

a)

(c) S3: Where applicable, the continuation of the current situation, *not* requiring any investment or expenses to maintain the current situation, such as, inter alia:

(i) The continued venting of methane from a landfill;

(ii) The continued release of N2O from adipic or nitric acid production

(d) S4: Where applicable, the continuation of the current situation, requiring an investment or expenses to maintain the current situation.

(i) The continued use of an existing boiler involving expenses for operation and maintenance;

(ii) The continued use of a specific fuel mix for power generation in an existing power plant;

(iii) The continued use of existing transportation infrastructure for transporting a product.

(e) S5: Other plausible and credible alternative scenarios to the project activity scenario, including the common practices in the relevant sector, which deliver the same output, taking into account, where relevant, examples of scenarios identified in the underlying methodology.

- The common practice in the sector is the collection of waste in anaerobic lagoons, which leads to higher methane emissions and fails to deliver the same outputs.

(f) S6: Where applicable, the "proposed project activity undertaken without being registered as a GCC project activity" to be implemented at a later point in time (e.g. due to existing regulations, end-of-life of existing equipment, financing aspects)

- Scenarios 4, is not applicable since the and electricity need is increasing so these energy types could not be supplied with existing units. Moreover, since the energy need is increasing the corresponding value production and its supply demand transportation infrastructure is increasing also. In addition there was no heat boiler in the baseline scenario.
-
- Scenario 5 is not applicable since the project is not a common practice. Details are present in common practice part of this document.
-
- Scenario 6 (S4, S5 and S6) is not applicable as there is no requirement for investment for continuation of the current situation or no reason expected for change in regulations etc.

- Scenario 1 (S1), which is the implementation of the project without carbon revenue is not financially attractive as discussed in investment analysis section below.

- Scenario 2 is not also realistic as the energy demand is increasing and the need for new power plant investment is a must for Turkey. Details of this manner are given in Section B.4

- Scenario 3 is not in line with current worldwide efforts to combat climate change. For instance, Turkey is one of the countries that ratified and approved by assembly the Paris Agreement.

Outcome of Step 1a

Continuation of the current situation is not considered as a realistic alternative due to increasing electricity demand therefore new power plants should be constructed which includes mainly thermal power plants. Implementation of the project is additional to the baseline scenario which is alternatives of Scenario 2 and 3 above and therefore reduces the emissions compared to baseline scenario.

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

The following applicable mandatory laws and regulations have been identified:

1. Electricity Market Law[22]
2. Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy[23]
3. Energy Efficiency Law [24]
4. Forest Law[25]
5. Environment Law[26]
6. Regulation on prevention of pollution from Industrial Facilities[27]

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

Outcome of Step 1b

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

Step 2: Barrier analysis

Barrier analysis is applied when additionality could not be stated within other steps of the relevant tool such as insufficient financial returns (Tool paragraph 20). Hence, the proposed project does not

[22] Law number 4628, enactment date 03/03/2001 http://www.epdk.gov.tr/english/regulations/electricity.htm

[23] Law number 5346, enactment date 18/05/2005 http://www.epdk.gov.tr/documents/10157/4b360128-53aa-4174-8104-a6c10434ac9c

[24] Law number 5627, enactment date 02/05/2007 http://www.eie.gov.tr/english/announcements/EV_kanunu/EnVer_kanunu_tercume_revize2707.doc

[25] Law number 6831, enactment date 31/08/1956

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

[27] www.osbuk.org.tr/doc/gen13.doc

use barrier analysis as the additionality has been demonstrated in other steps.

Step 3: Investment analysis

The investment analysis has been done in order to make an economic and financial evaluation of the project. No public funding or ODA are available in Turkey for finance of this type of projects. Project proposed has been financed through company own resources. Loans may be utilized in next steps of the investment depending on the market conditions and availability of financial resources. Investment analysis has been carried out in line with "Tool 27: Methodological Tool - Investment Analysis version 10.0" [28]

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

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

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

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

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

For benchmark analysis, figure defined by World Bank for similar project types have been used which has been given as 20%[29] (post-tax). For the proposed project, in order to reach this equity IRR values, average electricity tariff must be above 18.0 $c/kWh in the absence of carbon revenue so that the investment will become reasonable.

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

Parameters	Unit	Data Value
Installed Capacity	MWe	4.268[30]
Gross Output	MWh	29,876[31]
Capital Investment	Million $	13.407[32]
Expected Tariff	$ Cents/kWh	13.3[33]
Expected ACRs price	$/ tons CO_2e	3 [34]
Operation&Maintenance	$/Year	1,044,000

[28] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v10.0.pdf

[29] https://documents1.worldbank.org/curated/en/799701498842988254/pdf/ICR00004069-06192017.pdf (table 3.3)

[30] Generation License

[31] Generation licence

[32] Capital Investment is the sum of investment components (please see the IRR calculation sheet).

[33] https://www.mevzuat.gov.tr/MevzuatMetin/1.5.5346.pdf

[34] https://www.cbd.int/financial/2017docs/carbonmarket2017.pdf

Cost

IRR has been calculated according to the tool as stated in the applied methodology. Electricity tariff has been used as $13.3 Cent/kWh. Annual generation has been taken as 29.876 GWh (according to generation licence) and operational cost has been assumed as $1,044K (related references given in IRR calculation sheet). Investment decision date has been identified as the date of construction agreement. Calculation and estimations have been made conservatively therefore IRR value represents the most optimistic scenario in terms of capital investment and electricity generation. Capital investment involves the construction works, generator costs, other equipment and commissioning, consultancy and contingency. Contingency has been assumed as 10% of total costs excluding the generator set. The project does not use any debt or bank loan and the investment has been realized fully on equity.

This IRR value represents the most optimistic scenario in terms of capital investment and electricity generation. In Turkey, As per the regulation on renewable energy plants, guaranteed price for the generated electricity via biogas plants is (13.3$ cent/kWh)[35] which were started to operate before 2020. Also, saving due to avoided natural gas consumption has been included in IRR calculation.

For proposed project, equity IRR has been calculated as 11.98 % in the absence of carbon revenue. When the carbon revenues are included in the cash flow, equity IRR increases to 13.72% which is closer to the benchmark. As a result, the project becomes more attractive and viable for the investors. Carbon revenues have significant affect in this respect in terms of decreasing the period for return on investment and risk of investment decision. Considering that generation is affected by manure amount and specifications which are not fully controlled by project owner. Carbon revenue has a significant affect in this respect in terms of decreasing the period for return on investment and minimizing investment risk.

Sub-step 2d - Sensitivity Analysis

Sensitivity analysis has been carried out for three main parameters identified;

- Investment Costs
- Operational Costs
- Annual Generation

For a range of ±15% fluctuations in parameters; investment costs, operational costs and annual generation, table below is obtained;

Sensitivity analysis for proposed project without carbon revenue

%Fluctuation	-15	-10	-5	0	5	10	15
Investment Cost	14.98	13.88	12.89	11.98%	11.14	10.36	9.64
Operating Cost	13.70	13.13	12.55	11.98%	11.40	10.81	10.23
Annual Generation	8.21	9.48	10.74	11.98%	13.20	14.41	15.61

[35] https://www.mevzuat.gov.tr/MevzuatMetin/1.5.5346.pdf

Outcome of Step 2:
The investment and sensitivity analysis shows that the ACR revenues will improve the financial indicators of the Project remarkably. Considering that figures above are based on guaranteed price, optimistic estimations for yearly generation which assumes 7000 working hours per year and that those figures do not reflect the risk for investment, role of carbon income is a most significant number to enable the project to proceed. In practice, actual operation hour is assumed as 7000 hour/year in similar investments which means 5% to 10% lower income. Also, since the project is based on guaranteed tariff as per the regulations which provides higher purchasing guarantee than the market price, it is not possible to expect a further increase in tariff.

Capital expenditures for investment costs have been sourced from individual contracts for biogas plant components. Operation cost does not have significant impact on IRR therefore; major parameter subject to change becomes electricity generation since tariff is also fixed.

Based on the above information, it is seen that project is not the most attractive option and there is no room for a better scenario whereas realized scenario is worse on behalf of project. Therefore project is considered as additional to the baseline scenario.

Step 3. Barrier Analysis

The proposed project does not use barrier analysis as the additionality has been demonstrated in other steps.

Step 4. Common Practice Analysis

According to the "Tool for the demonstration and assessment of additionality", Version 07.0.0", the common practice (Tool 24 - Common Practice version 03.1 has been followed[36]) shall provide an analysis of any other activities that are similar to the Project Activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing etc.

This project started commercial operation in 2016 and stakeholder consultation was also originated in 2016. Since tool 24 states *"The projects started commercial operation before the project design document (or PSF for GCC) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity 2016* projects are taken into consideration for common practice analysis.

According to the latest capacity projection report published by General Directorate of Energy Affairs [37], there are 206 renewable energy plants started to operational in Turkey for the investment year

[36] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf

[37] https://www.eigm.gov.tr/File/?path=ROOT%2f4%2fDocuments%2fSayfalar%2f2016+Y%c4%b1l%c4%b1+Enerji+Yat%c4%b1r%c4%b1mlar%c4%b1.xlsx

2016 (till now) and 19 of them are belonged to biomass energy and 6 of them has the similar technology with Tire Biogas Plant (details are present in common practice excel sheet of Tire Biogas Plant Project). List of the plants that have similar technology with Tire Biogas Plant is given below. Other details are present in common practice excel document.

No	Name of plant
1	ITC-KA BİYOKÜTLE GAZLAŞTIRMA TESİSİ
2	TİRE OSB BİYOGAZ SANTRALİ
3	KARACABEY-2 BİYOGAZ TESİSİ
4	ODAYERİ BİYOGAZ
5	AFYON-I BİYOGAZ SANTRALİ
6	ITC-KA ÇARŞAMBA ÜRETİM TESİSİ
7	SİVAS ÇÖP GAZ ELEKTRİK ÜRETİM TESİSİ
8	AREL YENİLENEBİLİR ENERJİ ISPARTA BİYOKÜTLE TESİSİ
9	TİRE BİYOGAZ TESİSİ
10	AFYONKARAHİSAR SANDIKLI BİYOKÜTLE ÜRETİM TESİSİ
11	MARAŞ BİYOKÜTLE TESİSİ
12	ZEUS BİYOKÜTLE ENERJİSİNE DAYALI ELK. ÜRT. TESİSİ
13	MAS 1 YENİLENEBİLİR ENERJİ ÜRETİM TESİSİ
14	HATAY GÖKÇEGÖZ ÇÖP SANTRALİ
15	MALATYA-1 ÇÖP GAZ ELEKTRİK ÜRETİM TESİSİ
16	MUTLULAR BES
17	ATLAS İNŞAAT OSMANİYE ÇÖP GAZI ELEKTRİK ÜRETİM TESİSİ
18	SENKRON EFELER BİYOGAZ SANTRALİ
19	KOCAELİ ÇÖP BİYOGAZ SANTRALİ

Stepwise Approach For Common Practice
Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.

The design capacity of the proposed project is 4.268 MWe (as per generation license). Therefore, the applicable output range is from 2.134 MWe-6.40 MWe.

Step 2: identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:

(a) The projects are located in the applicable geographical area;
(b) The projects apply the same measure as the proposed project activity;
(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;
(e) The capacity or output of the projects is within the applicable capacity or output range calculated

in Step 1;
(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity

The 8 plants listed below meets the conditions of “a”, “b”, “d” and “e”. All of them in Turkey (2016 investments, within the applicable range of output/capacity and producing goods within same measure.

No	Name of plant	Capacity (MWe)
1	TİRE OSB BİYOGAZ SANTRALİ	**2.2**
2	KARACABEY-2 BİYOGAZ TESİSİ	**2.134**
3	ODAYERİ BİYOGAZ	**3.134**
4	AREL YENİLENEBİLİR ENERJİ ISPARTA BİYOKÜTLE TESİSİ	**2.83**
5	HATAY GÖKÇEGÖZ ÇÖP SANTRALİ	**4.24**
6	ATLAS İNŞAAT OSMANİYE ÇÖP GAZI ELEKTRİK ÜRETİM TESİSİ	**3.12**
7	ITC-KA BİYOKÜTLE GAZLAŞTIRMA TESİSİ	**5.425**

However, in terms of conditions “c”; “Odayeri”, “ITC Biykütle Gazlaştırma”, “Hatay Gökçegöz Çöp Santrali” , “Atlas İnşaat Elektrik Üretim Tesisi” and “Arel Yenilenebilir Enerji Santrali” are biomass sourced in terms of fuel but different process technology since do not use manure as raw material (these plants use municipial solid waste and forestry waste as raw material/fuel). Moreover, “Hatay Gökçegöz Çöp Santrali” , “Atlas İnşaat Elektrik Üretim Tesisi” started to commercial operation after then Tire Biogas Plant (in other words, before the start date of proposed project activity) which does not comply with condition “f”. Therefore, only two plants remains which are Tire and Karacabey Biogas Plants.

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

No	Name of plant	Capacity (MWe)	VER Reference and Explanation
1	TİRE OSB BİYOGAZ SANTRALİ	2.2	https://registry.goldstandard.org/projects/details/129 (in applicable design capacity range but has VER reference already)

2	KARACABEY-2 BİYOGAZ TESİSİ	2.134	https://registry.goldstandard.org/projects/details/135 (in applicable design capacity range but has VER reference already)

Since Karacabey Biogas Plants is VER project (registered and even Karacabey Biogas Plant Project issued) with given references. Therefore:

Nall=1

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

Tire and Karacabey Biogas Plants projects have the same technology (used manure as main fuel source) and even belonged to same company with Tire Biogas Plant Project. Therefore:

Ndiff = 0

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

F=1-Ndiff/Nall=1-(0/1) = 1 (< 0.2)

Nall-Ndiff= 1 – 0 = 1 (≤ 3)

According to the guidelines on common practice version 02.0, if the factor F is greater than 0.2 and Nall-Ndiff is greater than 3, then the proposed project is a “common practice”.

For the proposed project, F=1 (greater than 0.2) but Nall-Ndiff=1 (smaller than 3), therefore, the proposed project is not common practice within the region. Hence, the proposed project is additional.

Given the fact that there are no registered plants similar to the proposed project and built without carbon revenue, the proposed type of project should not be considered as a common practice in Turkey.

In addition the applied methodology states that “If the project is only about generation of electricity (and not heat or cogeneration), the Project Owner demonstrates that the penetration of renewable electrical energy generation technology justifies that the share of installed capacity of the specific technology used in the project activity at the time of preparation of project submission to GCC is equal to or less than 2%[1] of the total installed capacity of power generation in grid-connected power plant, the project is considered as “automatically additional”. “ For the proposed project situation Tire Biogas Plant operates not only for electricity generation but also generates heat energy.

B.6. Estimation of emission reductions

>>

Baseline CH_4 emissions

$$BE_{CH4,total,y} = BE_{AWMS,y} + BE_{agro-industrial\ wastes,CH4,y} + BE_{sl,CH4,y} \quad \text{Equation 02}$$

Where:

$BE_{CH4,total,y}$	=	Baseline CH_4 emissions in year y (tCO_2e/yr)
$BE_{AWMS,y}$	=	Baseline CH_4 emissions from animal waste management site in year y (tCO_2e/yr)
$BE_{agro-industrial\ wastes,CH4,y}$	=	Baseline methane emissions occurring in year *y* generated from waste disposal at a SWDS during a time period ending in year y (tCO_2e/yr)
$BE_{sl,CH4,y}$	=	Baseline CH_4 emissions from sludge management in year y (tCO_2e/yr)

For the proposed project, baseline emission is calculated only for the manure management (cattle and poultry manure). Baseline emissions due to management of agricultural wastes are excluded. In addition, while calculating project emissions, the transportation of agricultural wastes are also considered by taking the total amount of waste fed to reactor in a year in the related formula. In that way, a conservative approach is followed for the net emission reduction calculations.

B.6.1. Explanation of methodological choices

The project based on manure management and appropriate methodology is chosen for that reason which is **"**Methodology for Energy Generation from Animal Manure and Waste Management Projects (GCCM003 v1).

B.6.2. Data and parameters fixed *ex ante*

The grid emission factor revised as latest official emission factor of Turkey that can be used in the projects depending on the project type published by the Ministry of Energy and Natural Resources which is released in 06/10/2021. Reference is also added to the appendixes in official language and

also present in excel calculation spreadsheet of the project. According to that reference;

Build margin was released as 0.4153 tCO_2/MWh.
Operation Margin was released as 0.7258 tCO_2/MWh.

In addition, “Tool to calculate the emission factor for an electricity system” guides the calculation of combined margin as follows;

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad \text{Equation (16)}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EF_{grid,OM,y}$	=	Operating margin CO_2 emission factor in year *y* (t CO_2/MWh)
w_{OM}	=	Weighting of operating margin emissions factor (per cent)
w_{BM}	=	Weighting of build margin emissions factor (per cent)

For the projects apart from wind and solar power plants: wOM = 0.5 and wBM = 0.5 for the first crediting period, and wOM = 0.25 and wBM = 0.75 for the second and third crediting period as per same tool. Since this project is to summited for the first crediting period, the wOM and wBM values are taken as 0.5 for combined margin calculation. Hence combined margin could be figured out as follows;

CM= (0.7258 x 0.5) + (0.4153 x 0.5) = 0.5706 tCO_2/MWh.

Data / Parameter Table 1.

Data / Parameter:	**GWP_{CH4}**
Methodology reference	GCCM003
Data unit:	t CO_2e/t CH_4
Description:	Global warming potential of CH_4
Measured/calculated /default	
Source of data:	IPCC 5th Assessment Report
Value(s) of monitored parameter	28
Measurement/ Monitoring equipment (if applicable)	-

Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
QA/QC procedures	IPCC 5th Assessment Report
Purpose of data	Baseline emission calculation
Additional comments	-

Data / Parameter Table 2.

Data / Parameter:	**D_{CH4}**
Methodology reference	GCCM003
Data unit:	t/m^3
Description:	Density of CH_4
Measured/calculated /default	
Source of data:	Technical literature
Value(s) of monitored parameter	0.00067 t/m^3 at room temperature 20ºC and 1 atm pressure
Measurement/ Monitoring equipment (if applicable)	-
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
QA/QC procedures	-
Purpose of data	Baseline emission calculation
Additional comments	-

Data / Parameter Table 3.

Data / Parameter:	**$EF_{C02,grid,y}$**
Methodology reference	GCCM003
Data unit:	t CO_2/MWh

Description:	CO_2 emission factor of the fossil fuel type used for electricity generation by equipment type k in the absence of the project activity
Measured/calculated /default	-
Source of data:	Country specific data
Value(s) of monitored parameter	0.5706
Measurement/ Monitoring equipment (if applicable)	-
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	Tool to calculate the emission factor for an electricity system ver 07
QA/QC procedures	-
Purpose of data	Used in project/baseline emission calculations
Additional comments	Latest official emission factor of Turkey used in the projects depending on the project type published by the Ministry of Energy and Natural Resources. As per this reference; OM is 0.7258 and BM is 0.4153 tCO2/MWh for Turkey National Grid. During CM calculation as per related tool, these values were taken into considedration. Details are present in “CM” tab of project excel ER calculation file.

Data / Parameter Table 4.

Data / Parameter:	**B0,LT for Dairy Cow Manure**
Methodology reference	GCCM003
Data unit:	m^3CH4/kg_dm
Description:	Maximum methane producing potential of the volatile solid generated by animal type LT
Measured/calculated /default	Default
Source of data:	IPCC 2019 Refinement, Chapter 10, Volume 4 Table 10.16, Eastern Europe Data is taken[38]
Value(s) of monitored parameter	0.24

[38] https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch10_Livestock.pdf

Measurement/ Monitoring equipment (if applicable)	Default value for Eastern Europe dairy cows.
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
Purpose of data	Baseline/project emission calculation
Additional comments	The value is taken from published sources. The parameter value should be updated on latest available public data source

Data / Parameter Table 5.

Data / Parameter:	**B0,LT for Poultry manure**
Methodology reference	GCCM003
Data unit:	m^3CH4/kg_dm
Description:	Maximum methane producing potential of the volatile solid generated by animal type LT
Measured/calculated /default	Default
Source of data:	IPCC 2019 Refinement, Chapter 10, Volume 4 Table 10.16, Eastern Europe Data is taken[39]
Value(s) of monitored parameter	0.36
Measurement/ Monitoring equipment (if applicable)	Default value for Eastern Europe dairy cows.
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
Purpose of data	Baseline/project emission calculation
Additional comments	The value is taken from published sources. The parameter value should be updated on latest available public data source

[39] https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch10_Livestock.pdf

Data / Parameter Table 6.

Data / Parameter:	**VS_{LT}**
Methodology reference	GCCM003
Data unit:	kg dm/animal/year
Description:	Annual volatile solid excretions for livestock LT entering all AWMS on a dry matter weight basis
Measured/calculated /default	Default
Source of data:	Country specific data
Value(s) of monitored parameter	1.200 (for cattle manure)[40]
Measurement/ Monitoring equipment (if applicable)	-
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
Purpose of data	Baseline emission calculation
Additional comments	-

Data / Parameter Table 7.

Data / Parameter:	**VS_{LT}**
Methodology reference	GCCM003
Data unit:	kg dm/animal/year
Description:	Annual volatile solid excretions for livestock LT entering all AWMS on a dry matter weight basis
Measured/calculated /default	Default
Source of data:	Country specific data[41]

[40] https://biyogazder.org/makaleler/mak12.pdf

[41] https://arastirma.tarimorman.gov.tr/tavukculuk/Belgeler/web%20English%20Doc/journal%20(Dergimiz)/Dergimiz%20Cilt%2011%20Sayi%201/Cilt%2011%20Sayi%201%20Makale%204%20Yeni%20Bir%20Teknoloji%20ile%20Kurutulan%20Tavuk%20D%C4%B1%C5%9Fk%C4%B1s%C4%B1n%C4%B1n.pdf

Value(s) of monitored parameter	5.5 (for poultry manure)
Measurement/ Monitoring equipment (if applicable)	-
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
Purpose of data	Baseline emission calculation
Additional comments	-

Data / Parameter Table 8.

Data / Parameter:	**fCH4,default**
Methodology reference	GCCM003
Data unit:	m3 CH4 / m3
Description:	Default value for the fraction of methane in the biogas (m3 CH4 / m3 biogas)
Measured/calculated /default	Default
Source of data:	Project and leakage emissions from anaerobic digesters https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-14-v2.pdf
Value(s) of monitored parameter	-
Measurement/ Monitoring equipment (if applicable)	-
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
Purpose of data	-
Additional comments	To calculate project and leakage emissions

Data / Parameter Table 9.

Data / Parameter:	Wdefault
Methodology reference	GCCM003
Data unit:	kg
Description:	Default average animal weight of a defined population
Measured/calculated /default	Default
Source of data:	IPCC 2006[42]
Value(s) of monitored parameter	-
Measurement/ Monitoring equipment (if applicable)	-
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
Purpose of data	Used in baseline calculations.
Additional comments	Default value from IPCC is used as per the applied methodology (550 kg for Eastern Europe)

Data / Parameter Table 10.

Data / Parameter:	MCFj
Methodology reference	GCCM003
Data unit:	%
Description:	Methane conversion factor
Measured/calculated /default	Default
Source of data:	2019 IPCC Refinement, Table 10.17, p. 10.74 refered 76% for the uncovered anaerobic lagoon
Value(s) of monitored parameter	0.76
Measurement/ Monitoring equipment (if applicable)	-

[42] https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_10_Ch10_Livestock.pdf, page 10.72

Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
Purpose of data	Used for baseline calculations
Additional comments	-

Data / Parameter Table 11.

Data / Parameter:	**$MS\%_{BJ}$**
Methodology reference	GCCM003
Data unit:	%
Description:	Fraction of manure handled in system j in the baseline
Measured/calculated /default	Default
Source of data:	Project owner
Value(s) of monitored parameter	100
Measurement/ Monitoring equipment (if applicable)	-
Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
Purpose of data	Used for baseline calculations
Additional comments	-

B.6.3. Ex-ante calculation of emission reductions

>> On the other hand, baseline and project emissions are calculated as follows via guidance of applied methodology “Methodology for Energy Generation from Animal Manure and Waste Management Projects (GCCM003 v1)”

$$BE_y = BE_{CH4,total,y} + BE_{elec/heat,y}$$ Equation 01

Where:

BE_y = Baseline emissions in year y (tCO_2e/yr)
$BE_{CH4,total,y}$ = Baseline CH_4 emissions in year y (tCO_2e/yr)
$BE_{elec/heat,y}$ = Baseline CO_2 emissions from electricity and/or heat used in the baseline in year y (tCO_2e/yr)

$$PE_Y = PE_{AD,Y} + PE_{EC,y} + PE_{FC,Y} + PE_{Tran,y}$$ Equation 10

Where:

PE_Y = Project emission in year y (tCO_2e/yr)

$PE_{AD,Y}$ = Project emissions associated with the anaerobic digester in year y (tCO_2e/yr)

$PE_{EC,y}$ = Project emissions from electricity consumption (other than anaerobic digestor) in year y (tCO_2e/yr)

$PE_{FC,y}$ = Project emissions from fossil fuel consumption in year y (tCO_2e/yr)

$PE_{Tran,y}$ = Project emissions from waste transportation in the year y (tCO_2e/yr)

In addition, leakage emissions associated with anaerobic digestion of waste (LEAD,y) calculated according to the latest versions of CDM Methodological Tool 14 “Project and leakage emissions from anaerobic digesters”.

Hence emission reduction calculations were figured out via Equation 12 of applied methodology

$$ER_y = BE_y - PE_y - LE_y$$ Equation 12

Where:

ER_y = Emission reduction in the year y (tCO2e/yr)

BE_y = Baseline emissions in the year y (tCO2e/yr)

PE_y = Project emissions in the year y (tCO2e/yr)

LE_y = Leakage emissions in the year y (tCO2e/yr)

Baseline CH_4 emissions from manure treatment ($BE_{CH4,y}$):

The manure management system in the baseline could be based on different livestock, treatment systems and on one or more stages. Therefore:

$$BE_{CH4,y} = GWP_{CH4} \times D_{CH4} \times \sum_{j,LT} (MCF_j \times B_{0,LT} \times N_{LT,y} \times VS_{LT,y} \times MS\%_{Bl,j})$$

Where:

$BE_{CH4,y}$ = Baseline emissions in year y (t CO_2)

GWP_{CH4} = Global Warming Potential (GWP) of CH_4 applicable to the crediting period (t CO_2e/t CH_4)

D_{CH4} = CH_4 density (0.00067 t/m^3 at room temperature (20 °C) and 1 atm pressure)

$N_{LT,y}$ = Annual average number of animals of type LT for the year y (number)

$VS_{LT,y}$ = Annual volatile solid excretions for livestock LT entering all AWMS on a dry matter weight basis (kg -dm/animal/yr)

LT = Index for all types of livestock

j = Index for animal manure management system

MCF_j = Annual methane conversion factor (MCF) for the baseline Animal Manure Management System (AWMS) j

$B_{0,LT}$ = Maximum methane producing potential of the volatile solid generated for animal type LT (m^3CH_4/kg-dm)

$MS\%_{Bl,y}$ = Fraction of manure handled in system j in the baseline

Baseline emission of the project is calculated only for the manure management (cattle and poultry manure). Baseline emissions due to management of agricultural wastes are excluded. In addition, while calculating project emissions, the transportation of agricultural wastes are also considered by taking the total amount of waste fed to reactor in a year in the related formula. In that way, a conservative approach is followed for the net emission reduction calculations.

For the calculation of NLT,y Option 2 is chosen from applied methodology. Project has signed aggrements with annual average live animal number with farms. Hence these data used for NLT,y calculation. Details of animal number are given below and emission reduction calculation excel document.

For the parameter N_{LT}

Manure Supplier Farms with Name, Location and Distance to the Tire Biogas Project Site Which Have Agreements Between Project With Annual Animal Number Detail

Name of the Farm	Animal Type	Annual Average Number of Animals
Hatice Güler Cattle Farm	Dairy Cattle	1,650
Şerif Demir Cattle Farm	Dairy Cattle	3,250
Ataköy Cattle Farm	Dairy Cattle	190
Bontoro Cattle Farm	Dairy Cattle	390
Dabesaa Cattle Farm	Dairy Cattle	350
Ragyu Cattle Farm	Dairy Cattle	250
Cactus Cattle Farm	Dairy Cattle	1,500
Aziz Güner Cattle Farm	Dairy Cattle	350
Total Cattle Number		**7,930**
Ercanlar Poultry Farm	Poultry	1,300,000
Volkan Güner Poultry Farm	Poultry	160,000
Muzaffer Doydu Hayvancılık	Poultry	115,000
Total Poultry Number		**1,575,000**

For the calculation of VSLT,y Option 1 is chosen from applied methodology which refers to the country specific data. There are country specific data on annual manure amount of per head for both cattle and poultry. Moreover, project latest approved EIA report provides the volatile solid ratio of manure for both cattle and manure (Project EIA report, page 8). Hence this two dataset used to calculate dry matter per head per animal. The VS data is given in not monitored parameters with tables. Details of reference documents and links are given in emission reduction excel document (baseline emission sheet) and in B.6.2 (B.6.2.Data and Parameters Fixed Ex Ante)

As a result of explained calculation pathway (details given in ER calculation sheet):

$BE_{CH4,y}$ = 77,024 tonnes CO2/year

In addition, applied methodology indicates that, in estimating emissions reduction for claiming certified emissions reductions, if the calculated CH_4 baseline emissions from anaerobic lagoons are higher than the measured CH_4 generated in the anaerobic digester in the project situation (QCH_4,y

in the tool “Project and leakage emissions from anaerobic digesters”), then the latter shall be used to calculate the emissions reduction for claiming certified emissions reductions. Therefore, the actual methane captured from an anaerobic digester shall be compared to the ($BECH_{4},y$ - PEAD,y in the tool “Project and leakage emissions from anaerobic digesters”) and if found lower, then (BECH4,y - PEAD,y) (which is a component of BEy -PEy) in equation (31) is replaced by QCH_{4},y.

According to *Tool 08: “Tool to determine the mass flow of a greenhouse gas in a gaseous stream*” the mass flow of a greenhouse gas i in a gaseous stream (Fi,t) is determined through measurement of the flow and volumetric fraction of the gaseous stream and table given below 2 shows the different ways to make these measurements and the corresponding calculation option for Fi,t.

Option	Flow of gaseous stream	Volumetric fraction
A	Volume flow – dry basis	dry or wet basis[3]
B	Volume flow – wet basis	dry basis
C	Volume flow – wet basis	wet basis
D	Mass flow – dry basis	dry or wet basis
E	Mass flow – wet basis	dry basis
F	Mass flow – wet basis	wet basis

Therefore, it is necessary to demonstrate that the gaseous stream is dry to use this option. There are two ways to prove the steam is dry or not as per related tool and one of them is demonstrating that the temperature of the gaseous stream (Tt) is less than 60ºC (333.15 K) at the flow measurement point. According to site records, temperature of generated biogas is around 37 ºC. In addition, biogas coming out of the Bioscrubber system is fed to the cogeneration system by a blower at project site (related information is present at PIF of Tire Biogas Project).

Hence, the steam is could be stated as dry steam and Option A could be chosen fort he greenhouse gas mass flow calculations.

Option A:

The mass flow of greenhouse gas i (Fi,t) is determined as follows:

$$F_{i,t} = V_{t,db} \times v_{i,t,db} \times \rho_{i,t}$$

Equation (5) of Tool to determine the mass flow of a greenhouse gas in a gaseous stream[43]

$$\rho_{i,t} = \frac{P_t \times MM_i}{R_u \times T_t}$$

[43] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-08-v3.0.pdf

Equation (6) of Tool to determine the mass flow of a greenhouse gas in a gaseous stream

Where:

Fi,t = Mass flow of greenhouse gas i in the gaseous stream in time interval t (kg gas/h)

Vt,db = Volumetric flow of the gaseous stream in time interval t on a dry basis (m^3 dry gas/h)

Vi,t,db = Volumetric fraction of greenhouse gas i in the gaseous stream in a time interval t on a dry basis (m^3 gas i/m^3 dry gas)

ρi,t = Density of greenhouse gas i in the gaseous stream in time interval t (kg gas i/m^3 gas i)

Pt = Absolute pressure of the gaseous stream in time interval t (Pa)

MMi = Molecular mass of greenhouse gas i (kg/kmol)

Ru = Universal ideal gases constant (Pa.m3 /kmol.K)

Tt = Temperature of the gaseous stream in time interval t (K)

After relevant calculations;

Parameter	Unit	Value
Fi,t, CH_4 (CH_4 generated via anaerobic digester)	tonne CH_4/year	**19,065**
Fi,t, CH_4 (CH_4 generated via anaerobic digester)	kg gas/h	22,830.3
Vt,db	m^3 dry gas/year	8,657,937
Vt,db	m^3 dry gas/h	1,236.8
Vi,t,db	m^3 gas /m^3 dry gas	59%
ρi,t	kg gas /m^3 gas	31.29
Pt	Pa	600
Mmi	kg/kmol	16.04
Ru	Pa.m3 /kmol.K	8.314
Tt	K	310.15 K (37 ºC)
$BECH_4$ (baseline emission calculations for CH_4 production via anaerobic lagoons)	tonne CH_4/year	**2,922**

Measured CH_4 generated in the anaerobic digester in the project situation (19,065 tonne CH_4/year) is higher than the CH_4 production via anaerobic lagoons (2,922 tonne CH_4/year) as baseline emission calculations (details of calculations are present in ER excel sheet of the Project). As a result of the logic of the construction/feasibility of the biogas plant, the result had to come out like this. Therefore, calculated CH_4 baseline emissions from anaerobic lagoons is taken into account for baseline emission reduction calculations as per applied methodology.

Baseline emissions associated with electricity generation (BEEC,y)

The baseline emissions associated with electricity generation in year *y* (*BEEC,y*) shall be calculated using the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption". When applying the tool:

$$BE_{EG} = EG_{BL,y} * EF_{CO_2,grid,y}$$

Where:

BE_{EG} = Baseline emissions associated with electricity generation in year *y* (t CO_2)

$EG_{BL,y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year *y* (MWh)

$EF_{CO2,grid,y}$ = CO_2 emission factor of the grid in year *y* (t CO_2/MWh)

BE_{EG} = 29.876 GWh x 0.5706 tonnes CO2/GWh

BE_{EG} = **17,046 tCO2e** (details are present in ER calculation sheet of the project)

Baseline emissions associated with heat generation (BEEC,y)

The baseline emissions associated with heat generation in year *y* (*BEHG,y*) are determined based on the amount of biogas which is sent to the heat generation equipment in the project activity (boiler or air heater), as follows:

$$BE_{HG,y} = \sum_{k=1}^{n} \frac{HG_{PJ,k,y} \times EF_{CO2,BL,HG,k}}{\eta_{HG,BL,k}} \quad (11)$$

Where:

$BE_{HG,y}$ = Baseline emissions associated with heat generation in year *y* (tCO_2/yr)

$HG_{PJ,k,y}$ = Net quantity of heat generated with biogas by equipment type k in the project in year *y* (TJ/yr)

$EF_{CO2,BL,HG,k}$ = CO_2 emission factor of the fossil fuel type used for heat generation by equipment type *k* in the baseline (t CO_2/TJ)

$\eta_{HG,BL,k}$ = Efficiency of the heat generation equipment type *k* used in the baseline

k = Heat generation equipment (boiler or air heater or kiln)

BE_{EG} = **2,753 tCO2e** (details are present in ER calculation sheet of the project)

Total of Baseline Emissions

$$BE_{Manure} = BE_{CH4,y} + BE_{elec/heat,y}$$

$$BE_{Manure} = 77{,}024 + 17{,}046 + 2{,}753 = \mathbf{96{,}823\ \ tonnes\ CO2/year}$$

Project Emissions

Project emissions in year y are calculated for alternative waste treatment option implemented in the project activity as follows:

$PE_y = PE_{AD,y} + PE_{EC,y} + PE_{FC,y} + PE_{Tran,y}$

Where:

PE_y = Project emission in year y (t CO_2)
$PE_{AD,y}$= Project emissions associated with the anaerobic digester / co-digestion in year t (tCO_2e/yr)
$PE_{EC,y}$= Project emissions from electricity consumption and fossil fuel combustion (tCO_2/yr)
$PE_{FC,y}$= Project emissions from fossil fuel combustion (tCO_2/yr)
$PE_{Tran,y}$ = Project emissions from manure transportation in the year y (tCO_2/yr)

The proposed project activity does not consume fossil fuel for heat purposes, since the heat power generated as a by-product is used within the Project site. Thus, $PE_{FC,y}$ shall be accounted as zero. Hence, the project emission equation could be simplified as;

$$\boldsymbol{PE_y = PE_{AD,y} + PE_{EC,y} + PE_{Tran,y}}$$

Project emissions associated with the anaerobic digester in year y (PE_{AD},y)

The applied methodology states that $PE_{AD,y}$ is determined using the CDM methodological Tool 14 'Project and leakage emissions from anaerobic digesters' (pg. 13). As per this, the methodological tool, Version 02.0[44], as its latest approved version, shall apply to the proposed project activity.

The paragraph 13 of the Tool determines $PE_{AD,y}$ as follows:

$$\boldsymbol{PE_{AD,y} = PE_{EC,y} + PE_{FC,y} + PE_{CH4,y} + PE_{flare,y}}$$

Where:
$PE_{AD,y}$ = Project emissions associated with the anaerobic digester in year y (tCO_2e)
$PE_{EC,y}$ = Project emissions from electricity consumption associated with the anaerobic digester in year y (tCO_2e)
$PE_{FC,y}$ = Project emissions from fossil fuel consumption associated with the anaerobic digester in year y (tCO_2e)
$PE_{CH4,y}$ = Project emissions of methane from the anaerobic digester in year y (tCO_2e)
$PE_{flare,y}$ = Project emissions from flaring of biogas in year y (tCO_2e)

Although, energy requirement for the plant will be supplied from national grid, possible emissions

[44] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-14-v2.pdf

caused by the generator could be calculated and added to the project emission in related year when it is needed. There are two ways to calculate $PE_{,FC,y}$ which are Option A and Option B stated in "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion version 02. Option A should be the preferred approach, if the necessary data is available. In addition, the emissions are negligible when the emission reductions from the Diesel Generator are lower than 1% of the total emission reductions; otherwise, the emissions will be calculated. But for now, since the anaerobic digester facility does not use fossil fuels, $PE_{FC,y}$ shall be accounted as zero for estimated calculations.

Moreover, In this equation, $PE_{EC,y}$ shall be accounted as zero since project emissions from electricity consumption associated with the anaerobic digester is going to be accounted separately. For the proposed project activity will consume electricity from the national grid for internal consumption of electricity at the plant, including the digesters, $PE_{EC,y}$ in this equation shall be regarded as zero since the calculation of project emissions from electricity consumption and fossil fuel combustion ($PE_{EC/FC,y}$) that will be made below is going to consist of $PE_{EC,y}$. This action is taken by the project developer in order to avoid double-counting.

Moreover, since the anaerobic digester facility does not use fossil fuels, $PE_{FC,y}$ shall be accounted as zero.

In addition, since the flare device is equipped for emergency situations only, $PE_{flare,y}$ shall also be accounted as zero.

Accordingly, project emissions associated with the anaerobic digester in year y ($PE_{AD,y}$) is equivalent to project emissions of methane from the anaerobic digester in year y ($PE_{CH4,y}$) as follows:

$$\boldsymbol{PE_{AD,y} = PE_{CH4,y}}$$

As per the paragraph 23 of the Tool, $PE_{CH4,y}$ is calculates as follows:

$$\boldsymbol{PE_{CH4,y} = Q_{CH4,y} \times EF_{CH4,default} \times GWP_{CH4}}$$

Where:

$PE_{CH4,y}$ = Project emissions of methane from the anaerobic digester in year y (tCO_2e)
$Q_{CH4,y}$ = Quantity of methane produced in the anaerobic digester in year y (tCH_4)
$EF_{CH4,default}$= Default emission factor for the fraction of CH_4 produced that leaks from the anaerobic digester (fraction)
GWP_{CH4}= Global warmin potential of CH_4 (28 tCO_2/tCH_4) (IPCC Fifth Assessment Report)
$PE_{CH4,y}$ = 2,157tonnes CO2/year (details are present in ER calculation sheet of the Project)

***Hence, $PE_{AD,y}$* = 2,157 tonnes CO2/year**

Project emissions from use of electricity (PEelec,y)

Project emissions from electricity consumption will be calculated following the latest version of ' Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation ver.03.0[45]' (pg. 17). Accordingly, the methodological tool 'Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity'[46], Version 03.0, is applied to the proposed project activity to calculate $PE_{elec,y}$.

$$PE_{EC,y} = \sum_{j} EC_{PJ,j,y} \times EF_{EF,j,y} \times (1 + TDL_{j,y})$$

Where:

$PE_{EC,y}$ = Project emissions from electricity consumption in year y (tCO_2/yr)

$EC_{PJ,j,y}$ = Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr) (29,876 MWh/year as assumed %10 of yearly electricity generation)

$EF_{EF,j,y}$ = Emission factor for electricity generation for source j in year y (tCO_2/MWh) (Combined Margin = 0.5706 tCO2/MWh)

$TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to source j in year y

Accordingly,

$PE_{EC,y}$ = 1,705 tCO_2/year (details are present in ER calculation sheet of the Project)

Project emissions from waste transportation ($PE_{Tran,y}$)

Project emissions from manure transportation from collection points to the central treatment plant shall be calculated according to the Methodological tool *"Project and leakage emissions from transportation of freight"* Accordingly the methodological tool 'Project and leakage emissions from road transportation of freight', Version 01.1.0[47], is applied to the proposed project activity.

As per the paragraph 20 of the Tool, $PE_{Tran,y}$,

[45] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v3.0.pdf
[46] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v3.0.pdf
[47] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-12-v1.1.0.pdf

$$\left.\begin{matrix} PE_{TR,m} \\ LE_{TR,m} \end{matrix}\right\} = \sum_{f} D_{f,m} \times FR_{f,m} \times EF_{CO2,f} \times 10^{-6} \qquad \text{Equation (1)}$$

Where:

$PE_{TR,m}$ = Project emissions from transportation of freight monitoring period *m* (t CO_2)

$LE_{TR,m}$ = Leakage emissions from transportation of freight monitoring period *m* (t CO_2)

$D_{f,m}$ = Return trip distance between the origin and destination of freight transportation activity *f* in monitoring period *m* (km)

$FR_{f,m}$ = Total mass of freight transported in freight transportation activity *f* in monitoring period *m* (t)

$EF_{CO2,f}$ = Default CO_2 emission factor for freight transportation activity *f* (g CO_2/t km)

f = Freight transportation activities conducted in the project activity in monitoring period *m*

For this project, average return distance between the origin and the destination is taken as 129 km which is the distance to farthest farm to project site. By taking this distance the most conservative approach is taken for the emission due to transportation of wastes. Daily waste amount taken by project is 95 tonne/day (total of manure and agricultural wastes) according to finalized EIA (Reference: Project Approved EIA Report, page 8) Hence yearly amount of total waste becomes 34,675 tonne. Emissions due to agricultural waste is also considered.

Address Information and Coordinates of Manure Supplier Farms Which Have Agreements Between Project With Annual Animal Number Details

Name of the Farm	Address	Coordinates	Distance to project site
Hatice Güler Cattle Farm	Center OF Ödemiş District, Izmir Province	38.228330685432056 27.975387313888252	44
Şerif Demir Cattle Farm	Işikli Mahallesi Tire Izmir	38°05'03.8"N 27°44'30.9"E	5.4
Ataköy Cattle Farm	Kalabak Küme Evleri No:31/ 2 Ataköy Mahallesi Menderes Izmir	38.07792446783403 27.181441645375063	76.5
Bontoro Cattle Farm	Laklak Mevkii Menderes Izmir	38.07792446783403 27.181441645375063	
Dabesaa Cattle Farm	Inişdibi Mevkii 5602 Sokak No:18 Ataköy Mahallesi Menderes Izmir	38.07792446783403 27.181441645375063	76.5

Ragyu Cattle Farm	Çakaltepe Mahallesi Menderes Izmir	38.071320603313104, 27.21118153533317	82.4
Cactus Cattle Farm	Çakaltepe Mahallesi 7300 Sokak No:31 Menderes Izmir	38.071320603313104, 27.21118153533317	82.4
Aziz Güner Cattle Farm	Ayrancilar Mahallesi 73 Sk.No.2 / 1 Torbali Izmir	38.2451115991037, 27.26592337485689	56.6
Ercanlar Poultry Farm	Yahşelli Mahallesi 6332 Sokak No:7/1-1 Menemen Izmir	38.61639410806327, 27.107098027792627	129
Volkan Güner Poultry Farm	Uluönder Caddesi No:81 / 1-A Yeşilyut Izmir	38.398263779622, 27.115012997143147	
Muzaffer Doydu Hayvancılık	Eşrefpaşa Mahallesi Binbaşi Sokak No:10/2 Menemen Izmir	38.60579358312266, 27.074215997151196	129

Default CO_2 emission factor for freight transportation is chosen as 245 g CO2/t.km since light trucks will be used which could carry 20 tonnes in a round (each).

Hence;

$PE_{Tran,y}$ = 1,096 tCO_2/year (details are given in ER calculation sheet)

Accordingly, The Total of Project Emissions

$PE_y = PE_{AD,y} + PE_{EC/FC,y} + PE_{Tran,y}$

PE_y *= 2,157 tCO_2/yr + 1,705 tCO_2/yr + 1,096 tCO_2/yr =* ***4,957 tonnes CO2/year***

Leakage emissions

The GCCM003[48] calculates leakage emissions, as follows

$$LE_y = \left(LE_{PJ,N2O,y} - LE_{BL,N2O,y}\right) + \left(LE_{PJ,CH4,y} - LE_{BL,CH4,y}\right) + LE_{Comp,y} + LE_{AD,y} + LE_{Trans,y}$$

Where:

$LE_{PJ,N2O,y}$ = Leakage N_2O emissions released during project activity from land application of the treated manure in year y (tCO_2e/yr)

$LE_{BL,N2O,y}$ = Leakage N_2O emissions released during baseline scenario from land application of the treated manure in year y (tCO_2e/yr)

$LE_{PJ,CH4,y}$ = Leakage CH_4 emissions released during project activity from land application of the treated manure in year y (tCO_2e/yr)

$LE_{BL,CH4,y}$ = Leakage CH_4 emissions released during baseline scenario from land application of

[48] GCCM003-Methodology-for-Energy-Generation-from-Animal-Manure-and-Waste-Management-Projects-v1

the treated manure in year y (tCO_2e/yr)
$LE_{Comp,y}$ = Leakage emissions associated with the storage and disposal of compost in year y (tCO_2e)
$LE_{AD,y}$ = Leakage emissions associated with the anaerobic digester in year y (tCO_2e)
$LE_{Trans,y}$ = Emissions from incremental distance travelled for waste/final compost/residue transportation in tCO_2e/yr
As noted earlier, since the proposed project activity does not involve land application of the treated manure or composting, $LE_{PJ,N2O,y}$, $LE_{PJ,CH4,y}$ and $LE_{Comp,y}$ shall be accounted as zero.

In addition, as per the statement made by the applied methodology as "leakage covers the emissions from land application of treated manure as well as the emissions related to anaerobic digestion in a digester, occurring outside the project boundary" (pg. 18), leakage emissions associated with the anaerobic digester ($LE_{AD,y}$) and emissions from incremental distance travelled for waste/final compost/residue transportation ($LE_{Trans,y}$) shall also be accounted as zero since these emissions are occurring within the project boundary and already accounted as project emissions.

Accordingly, net leakage shall be negative. As per the applied methodology LE_y shall be accounted as zero.

LE_y = 0 tCO_2/yr

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

>>

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
01/06/2016 - 31/12/2016	56,767	2,906	0	53,861
2017	96,823	4,957	0	91,866
2018	96,823	4,957	0	91,866
2019	96,823	4,957	0	91,866
2020	96,823	4,957	0	91,866
01/01/2020- 31/05/2020	40,056	2,051	0	38,005
Total	387,292	19,829	0	367,463
Total number of crediting years	4 years			
Annual average over	96,823	4,957	0	91,866

the crediting period				

B.7. Monitoring plan

>>

B.7.1. Data and parameters to be monitored *ex-post*

>> **Data / Parameter Table 01.**

Data / Parameter:	$BG_{burnt,y}$
Methodology reference	ACM 0010
Data unit	m^3
Description	Biogas volume recovered in year y
Measured/calculated /default	Measured
Source of data	Gas meters on site
Value(s) of monitored parameter	8,657,937m3/year (recorded site data for the period between 01/01/2019-31/12/2019)
Measurement/ Monitoring equipment	Via calibrated flowmeters. Calibration documents are to be provided to verifier.
Measuring/reading/ recording frequency	
Calculation method (if applicable)	
QA/QC procedures:	The system should be built and operated to ensure that there is no air ingress into the biogas pipeline. Data will be archived electronically during the crediting period plus 2 years. Computerized monitoring for the whole system is available in order to keep track of pressure and temperature of the gas, gas meters will be calibrated as per the relevant industry standard. Equipment will be subject to regular maintenance. Calibration test results will be requested once in at most three years.
Purpose of data	Baseline emission calculations
Additional comments	-

Data / Parameter Table 02.

Data / Parameter:	$EG_{,BL,y}$
Methodology reference	-
Data unit	m^3

Description	Net quantity of power generated by the project in year y
Measured/calculated /default	Measured
Source of data	Electricity meters on site
Value(s) of monitored parameter	Estimated annual electricity generation forming the basis for emission reduction calculation is 29.876 GWh
Measurement/ Monitoring equipment	<table><tr><td colspan="2"></td></tr><tr><td>Type of meter</td><td></td></tr><tr><td>Location of meter</td><td></td></tr><tr><td>Accuracy of meter</td><td></td></tr><tr><td>Serial number of meter</td><td></td></tr><tr><td>Calibration frequency</td><td></td></tr><tr><td>Date of Calibration/ validity</td><td></td></tr><tr><td>Reference No. of Calibration Certificate</td><td></td></tr><tr><td>Calibration Status</td><td></td></tr></table>
Measuring/reading/ recording frequency	Continuously
Calculation method (if applicable)	-
QA/QC procedures:	Two calibrated ammeters will back up each other. Maintenance and calibration of the metering devices will be made by TEIAS periodically. If there is a noticeable difference between the readings of two devices, maintenance and tests of the metering devices and the associated equipment will be done before waiting for the periodical maintenance. The meters complies with EPDK regulations which define the accuracy class of the meters as 0.2 or 0.5 depending on the capacity of the circuit as given in document in link (http://www.epdk.gov.tr/web/elektrik-piyasasi-dairesi/44).
Purpose of data	Baseline emission calculations. To assess the contribution to SDG 7 and 13
Additional comments	-

Data / Parameter Table 03.

Data / Parameter:	$Q_{manure,j,LT,y}$
Methodology reference	-
Data unit	tonne
Description	Quantity of manure treated from livestock type LT at animal manure management system j
Measured/calculated /default	Measured
Source of data	By using calibrated weight meters on site

Value(s) of monitored parameter	83,843 tonne/year (sum of dairy cow manure and poultry manure)
Measurement/ Monitoring equipment	Calibrated weight meters on site. Calibration documents are to be provided to verifier.
Measuring/reading/ recording frequency	Continuously
Calculation method (if applicable)	-
QA/QC procedures:	By using calibrated weight meters on site
Purpose of data	Baseline emission calculations. To assess the contribution to SDG 6
Additional comments	-

Data / Parameter Table 04.

Data / Parameter:	**MCF_j**
Methodology reference	
Data unit:	-
Description:	Methane conversion factor for the baseline $AWMS_j$
Measured/calculated /default	
Source of data:	IPCC 2006 table 10.17, chapter 10, volume 4 (appendix 3)
Value(s) of monitored parameter	77% a) MCF values depend on the annual average temperature where the anaerobic manure treatment facility in the baseline existed. For average annual temperatures below 10ºC and above 5ºC, a liner interpolation should be used to estimate the MCF value at the specific temperature assuming an MCF value of 0 at an annual average of 5ºC. Future revisions to the IPCC Guidelines for National Greenhouse Gas Inventories should be taken into account. b) A conservativeness factor should be applied by multiplying MCF values (estimated as per above bullet) with a value of 0.94, to account for the 20 per cent uncertainty in the MCF values as reported by IPCC 2006.
Measurement/ Monitoring equipment (if applicable)	-

Measuring/reading/ recording frequency (if applicable)	-
Calculation method (if applicable)	-
QA/QC procedures	IPCC 2006 table 10.17, chapter 10, volume 4 (appendix 3)
Purpose of data	Baseline emission calculation
Additional comments	

Data / Parameter Table 05.

Data / Parameter:	**HGpj,k,y**
Methodology reference	
Data unit	TJ/y
Description	Net quantity of heat with biogas by equipment type *k* in the project t in year *y*
Measured/calculated /default	Measured
Data source	Project owner
Value(s) of monitored parameter	15.15 TJ
Measurement/ Monitoring equipment	<table><tr><td colspan="2"></td></tr><tr><td>Type of meter</td><td></td></tr><tr><td>Location of meter</td><td></td></tr><tr><td>Accuracy of meter</td><td></td></tr><tr><td>Serial number of meter</td><td></td></tr><tr><td>Calibration frequency</td><td></td></tr><tr><td>Date of Calibration/ validity</td><td></td></tr><tr><td>Reference No. of Calibration Certificate</td><td></td></tr><tr><td>Calibration Status</td><td></td></tr></table> Calibrated meters on site. Calibration documents are to be provided to verifier.
Measuring/reading/ recording frequency	Monthly
Calculation method (if applicable)	-
QA/QC procedures	Project owners will use the heat in their own dairy facility, therefore the heat used will be measured in the facility inlet. Amount of heat energy transferred to the dairy facility is monitored via computerized system which is connected to the CHP unit. Temperature or pressure does not needed to be monitored as the system gives a normalised measurement

Purpose of data	Baseline emission reduction calculations. To assess the contribution to SDG 9 and 13
Additional comments	Measurement results will be cross checked with operation records (Plant records). Enthalpies are determined based on the mass (or volume) flows, the temperatures and the pressure. Steam tables or appropriate thermodynamic equations will be used to calculate the enthalpy as a function of temperature and pressure. Data is monitored daily. Heat generation is determined as the difference of the enthalpy of the steam or hot fluid and/or gases generated by the heat generation equipment and the sum of the enthalpies of the feed-fluid and condensate returns.

Data / Parameter Table 06.

Data / Parameter:	**Quantitative Employment**
Methodology reference	GCC Environment-and-Social-Safeguards-Standard-v3.0 (related with SDG 8)
Data unit	Number of recruited staff during operation
Description	Creating new employment opportunities
Measured/calculated /default	Calculated
Source of data	Employment records
Value(s) of monitored parameter	At least 22 people to be employed
Measurement/ Monitoring equipment	-
Measuring/reading/ recording frequency	Annually
Calculation method (if applicable)	Employment records will be checked to confirm the number of employed staff.
QA/QC procedures:	Two calibrated ammeters will back up each other. Maintenance and calibration of the metering devices will be made by TEIAS periodically. If there is a noticeable difference between the readings of two devices, maintenance and tests of the metering devices and the associated equipment will be done before waiting for the periodical maintenance. The meters complies with EPDK regulations which define the accuracy class of the meters as 0.2 or 0.5 depending on the capacity of the circuit as given in document in link (http://www.epdk.gov.tr/web/elektrik-piyasasi-dairesi/44).
Purpose of data	To assess the contribution to SDG 8 Economic Growth - SDG Target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”.
Additional comments	-

Data / Parameter Table 07.

Data / Parameter:	**CO2 Emissions**
Methodology reference	GCC Environment-and-Social-Safeguards-Standard-v3.0 & GCC Project Sustainability Standard Version 3.0 (Related with SDG 13)
Data unit	tonne
Description	Reduction of CO2 emissions due to implementation of project activity that would otherwise be emitted by thermal power plants
Measured/calculated /default	Calculated
Source of data	Electricity meters and on site and managed animal manure via biogas power plant
Value(s) of monitored parameter	91,866 tonne CO2 anually
Measurement/ Monitoring equipment	Calculated via renewable electricity generation
Measuring/reading/ recording frequency	Continuously
Calculation method (if applicable)	-
QA/QC procedures:	Two calibrated electricity meters will back up each other. Maintenance and calibration of the metering devices will be made by TEIAS periodically. If there is a noticeable difference between the readings of two devices, maintenance and tests of the metering devices and the associated equipment will be done before waiting for the periodical maintenance. The meters complies with EPDK regulations which define the accuracy class of the meters as 0.2 or 0.5 depending on the capacity of the circuit as given in document in link (http://www.epdk.gov.tr/web/elektrik-piyasasi-dairesi/44).
Purpose of data	To assess the contribution SDG 13 Climate Action / 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions development
Additional comments	-

B.7.2. Data and parameters to be monitored for E+/S+ assessments (negative impacts)

>>

<table>
<tr><td>Data / Parameter:</td><td>XX</td></tr>
<tr><td>Purpose:</td><td>To demonstrate compliance of XXXX aspects to legal/regulatory/corporate requirements or to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.</td></tr>
<tr><td>Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.</td><td></td></tr>
<tr><td>Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG</td><td>
<table>
<tr><td colspan="2"></td></tr>
<tr><td>Parameter to be monitored</td><td></td></tr>
<tr><td>Frequency of monitoring</td><td></td></tr>
<tr><td>Legal /regulatory / corporate limits (if any)</td><td></td></tr>
<tr><td>QA/QC</td><td></td></tr>
</table>
</td></tr>
<tr><td>Program of Risk Management Actions to mitigate risk related to aspect (if any for aspects assessed to be harmful)</td><td>
<table>
<tr><th>S.No.</th><th>Action and targets</th><th>Responsibility</th><th>Resource Requirement</th><th>Target to be Achieved by (insert date)</th><th>Key Performance Indicators (KPI)</th><th>Targets achieved on (insert date)</th></tr>
<tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="7"></td></tr>
<tr><td colspan="3">Date of Closing the Program:</td><td></td><td colspan="3"></td></tr>
<tr><td colspan="7"></td></tr>
</table>
</td></tr>
</table>

B.7.3. Sampling plan

>>

N/A

B.7.4. Other elements of the monitoring plan

>>

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

Net electricity generation will be measured and recorded by both TEIAS and project owners for billing purposes therefore no new additional protocol will be needed for monitoring emission

reduction. Plant Manager, will be responsible for the electricity generated, gathering all relevant data and keeping the records.

The project has agreements with six different farms for manure handling. These agreements are to be uploaded to the project page on GCC account as Confidential Documents. The agreements are yearly basis and may change in different verification terms belonged to different years due to needs of the project to operate the plant in a feasible way and comply with its capacity. The project concludes the agreement with the animal farms on the basis of the annual manure amount and the manure coming from the farms is weighed and recorded with a weighbridge, which is regularly calibrated.

Data for manure input and biogas generation will be measured and recorded as described above. A weightbridge will be used to quantify the amount of manure transported in the facility. The scale is connected to an electronic monitor which is calibrated at least once in three years. Internal electricity consumption of the plant and transport emissions will also be monitored ex post and used in project emission calculations. Temperature and pressure of the fermenters will be optimized via electronic control devices and monitoring tools.

Data collected during crediting period will be submitted to GTE Carbon who will be responsible for calculating the emission reduction subject to verification. Data will be used to prepare monitoring reports which will be used to determine the vintage from the project activity. These reports will be submitted to the duly authorized and appointed Designated Operational Entity 'DOE' before each verification period.

ACR Team Members is expected to include the following staff of the plant:

Plant Manager: Responsibility for running the plant and compliance with ACR monitoring plan
Environmental engineer: Responsible for keeping data about generation and consumption.
GTE Carbon: Responsible for emission reduction calculations, preparing monitoring report and periodical verification process.

Installation of electricity meters and data monitoring will be carried out according to the regulations by TEIAS. Two metering devices (one of them used as spare) will be used for monitoring the electricity generated by the power plant. Readings will be done using main metering devices and spare metering device will be used for comparison only. Data from metering devices will be recorded by TEIAS monthly. In addition to the two metering devices, generation of the plant can be cross checked from TEIAS – EPİAŞ web site which is accessible using a password provided to electricity generation companies. Net electricity fed to the grid will be calculated as the difference between consumption from the grid and net electricity fed to the grid. Consumption from the grid will occur only when there is no electricity generated by the proposed project activity and will be met by the plant's own generation when electricity is generated by the project activity.

The net electricity fed to the grid will be measured continuously and recorded monthly by the TEIAS and plant staff. All data will be kept for at least two years after the crediting period for QA/QC purposes.

Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

>>01/06/2016 is stated as start date of project activity which is commissioning of the project activity.

C.2. Expected operational lifetime of the Project Activity

>> The expected lifetime of the project is about 11years as per the license issued. License amendments will be made in the future periods in order for the project to continue its operation after this date. This is the reason why IRR calculations carried out for 19 years. Project owner plan is covered the 19 years of operation duration for this project.

C.3. Crediting period of the Project Activity

>>01/06/2016 – 31/5/2020 (4 years). Project activity may seek for other certification scheme after this period.

C.3.1. Start and end date of the crediting period

>> Crediting period will be fixed for 4 years

C.3.2. Duration of crediting period

>>4 years

Section D. Environmental impacts

D.1. Analysis of environmental impacts

>>

Expected environmental impacts of the project activity are listed below:

- Animal manure collected from animal barns is converted to a more stable form which can be used as odorless and environmental-friendly fermented fertilizer.
- Sludge coming from the end of the aerobic wastewater treatment system can be stabilized anaerobically. Therefore, electricity which would be used in aerobic stabilization process is saved. Sludge coming from food industry is recovered by this way.
- Organic wastes collected from the surrounded environment of the plant are recovered. Those wastes often need long time for stabilization in the ambient air conditions. However, they are more easily stabilized in mesophilic and thermophilic conditions and used for biogas and fertilizer generation.

- Manure, sludge and other organic wastes are used for the generation of biogas. The biogas is the used for heat and electricity generation by cogeneration unit.
- Fertilizers obtained at the end of the process contain more free N in their content. They also free from the harmful organisms that may damage the agricultural activities. These fertilizers are also more fluidal in nature due to fermentation which enables people to pump them more easily to their farms.
- CO_2 formation caused by fertilizer storage and sludge stabilization is diminished.[49]
- Waste water will be partially recirculated for mixing with fresh raw material and excess will be sent to water treatment plant if needed.

D.2. Environmental impact assessment and management action plans

>> Biogas projects are environmentally friendly facilities which turn manure and waste into energy and fertilizer. In that sense, impact on climate and environment is positive in many aspects. Proposed project serves several SDGs including climate action, water quality and other goals.

Environmental impacts of the project are assessed in detail in the EIA report and precautions are defined. Proposed project will be implemented in line with the local regulations and monitoring parameters defined in the PSF.

Section E. Environmental and social safeguards

>>

[49] Tire BPP EIA, page 202-203

E.1. Environmental safeguards

>>

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards								Project Owner's Conclusion	
		Description of Impact *(positive or negative)*	**Legal/ voluntary corporate requirement / regulatory/ voluntary corporate threshold Limits**	**Do-No-Harm Risk Assessment (choose which ever is applicable)**			**Risk Mitigation Action Plans for aspects marked as Harmful**		**Performance indicator for monitoring of impact**	***Ex-ante* scoring of environmental impact**	***Explanation of the Conclusion***
				Not Applicable	**Harmless**	**Harmful**	**Operational Controls**	**Program of Risk Management Actions**	**Monitoring parameter and frequency of monitoring**	**Ex- Ante scoring of the environmental impact (as per scoring matrix Appendix-02)**	**Ex- Ante description and justification/explanation of the scoring of the environmental impact**
Environmental Aspects on the identified categories [50] ***indicated below.***	*Indicators for environmental impacts*	*Describe and identify anticipated and actual significant environmental impacts, both positive and negative from all sources (stationary and mobile) during normal and abnormal/emergency conditions, that may result from the construction and operations of the Project Activity, within and outside the project boundary, over which the Project Owner(s) has/have control.*	*Describe the applicable national regulatory requirements /legal limits / voluntary corporate limits related to the identified risks of environmental impacts.*	*If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable***	*If environmental impacts exist but are expected to be in compliance with applicable national regulatory /stricter voluntary corporate requirements and will be within legal/ voluntary corporate limits by way of plant design and operating principles, then the Project Activity is unlikely to cause any harm (is*	*If negative environmental impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be un-safe) and shall be indicated as* ***Harmful***	*Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as '****Harmful*** *at least to a level that is in compliance with applicable legal/regulatory requirements or industry best practice or stricter voluntary corporate requirements*	*Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce or eliminate the risk of impacts that have been identified as* ***Harmful****.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well including the data source.*	*-1* *0* *+1*	*Confirm the score of environmental impact of the project with respect to the aspect and its monitored value in relation to legal /regulatory limits (if any) including basis of conclusion.*

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

					*safe) and shall be indicated as **Harmless** /If the project has a positive impact on the environment mark it as "harmless" as well.*						
Reference to paragraphs of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 (c)*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragraph 13 (d) (iii)*	*Paragraph 13 (e) (i)*	*Paragraph 13 (e) (ii)*	*Paragraph 12 (c) and Paragraph 13 (f)*	*Paragraph 22*	
Environment - *Air*	*SO_x emissions (EA01)*	N/A	Limit:60 kg/hr[51]	**N/A**	-	-	**-**	-	-	**-**	-
	NO_x emissions (EA02)	N/A	20 kg /hr[52]	**N/A**	-	-	**-**	-	-	**-**	-
	CO_2 emissions (EA03)	The project reduces CO2 emissions since it reduces the amount of fossil fuel used. In case of "no project", stated amount of electricity would be generated from fossil fuels and cause air pollution.	Not applicable for biodegradable waste processing facilities.	**N/A**	**Harmless**	-	**-**	-	Project reduce CO2 emissions with electricity generation via renewable sources. Hence monitoring parameter is generated electricity. Generated electricity monitored with calibrated electricity meters. Records of the meters saved monthly by project owner.	**+1**	The electricity generation will be monitored by using electricity meters. Therefore, emission reduction will be calculated accordingly.

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

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

	CO emissions (EA04)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Suspended particulate matter (SPM) emissions (EA05)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Fly ash generation (EA06)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Non-Methane Volatile Organic Compounds (NMVOCs) (EA07)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Odor (EA08)	Project will positively affect odor formation due to manure and other wastes compared to baseline.	N/A	-	All incoming wastes will be fed to the digesters immediately to prevent loss of organic matter. System will be operated in line with local regulations.	-	N/A	N/A	N/A	N/A	N/A
	Noise Pollution (EA09)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Others (EA10)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A

	Add more rows if required and corresponding notation with EA as prefix)										
Environment - *Land*	*Solid waste Pollution from Plastics (EL-01)*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Solid waste Pollution from Hazardous wastes (EL02)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Solid waste Pollution from Bio-medical wastes (EL03)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Solid waste Pollution from E-wastes (EL04)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Solid waste Pollution from Batteries (EL05)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Solid waste Pollution from end-	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A

	of-life products/ equipment (EL06)										
	Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury) (EL07)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	land use change (change from cropland /forest land to project land) (EL08)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Others (EL09)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Add more rows if required										
Environment - *Water*	*Reliability/ accessibility of water supply (EW01)*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Water Consumption from ground and other sources (EW02)	N/A	N/A	Excess waste water (after recirculation) will be sent to water treatment plant or	-	-	N/A	N/A	N/A	N/A	N/A

				stored for later use.							
	Generation of wastewater (EW03)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Wastewater discharge without/with insufficient treatment (EW04)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Pollution of Surface, Ground and/or Bodies of water (EW05)	Project will prevent ground water pollution in the region via preventing improper dumping of manure and wastes to the soil.	N/A	No action is required as the project activity will by nature positively affect water quality.	-	-	N/A	N/A	N/A	N/A	N/A
	Discharge of harmful chemicals like marine pollutants / toxic waste (EW06)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Others (EW07)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Add more rows if required										
Environment – *Natural Resources*	*Conserving mineral resources (ENR01)*	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Protecting/ enhancing	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A

	plant life (ENR02)										
	Protecting/ enhancing species diversity (ENR03)	Project site is within the area of Organized Industrial Zone in Tire District of İzmir Province in Turkey.	N/A	**N/A**	-	-	**-**	-	-	**-**	-
	Protecting/ enhancing forests (ENR04)	Project site is within the area of organized Industrial Zone in Tire District of İzmir Province in Turkey. Therefore, no forest area used for the project	N/A	**N/A**	-	-	**-**	-	-	**-**	-
	Protecting/ enhancing other depletable natural resources (ENR05)	Project site is within the area of Organized Industrial Zone in Tire District of İzmir Province in Turkey.	N/A	**N/A**	-	-	**-**	-	-	**-**	-
	Conservin g energy (ENR06)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Replacing fossil fuels with renewable sources of energy (ENR07)	Project use animal manure and agricultural waste for electricity generation via anaerobic digestion. Therefore, project replaced fossil fuels for electricity generation.	**N/A**	**N/A**	-	-	**-**	-	-	**-**	-
	Replacing ODS with non-ODS refrigerant s (ENR08)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Others (ENR09)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
	Add more rows if required										

Net Score:		**+1**
Project Owner's Conclusion in PSF:		The Project Owner confirms that the Project Activity will not cause any net harm to Environment.
GCC Project Verifier's Opinion:		The GCC Verifier certifies that the Project Activity [is not likely to cause any] or [is likely to cause] net harm to the environment...

E.2. Social Safeguards

>>

Impact of Project Activity on	**Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards**							**Project Owner's Conclusion**	
	Description of Impact (*positive or negative*)	**Legal requirement /Limit, Corporate policies / Industry best practice**	**Do-No-Harm Risk Assessment** (Choose which ever is applicable)			**Risk Mitigation Action Plans (for aspects marked as Harmful)**	**Performance indicator for monitoring of impact.**	**Ex-ante scoring of environmental impact**	**Explanation of the Conclusion**
			Not Applicable	**Harmless**	**Harmful**	**Operational / Management Controls**	**Monitoring parameter and frequency of monitoring (as per scoring matrix Appendix-02)**	**Ex- Ante scoring of social impact of the project**	**Ex- Ante description and justification/explanation of the scoring of social impact of the project**

Social Aspects on the identified categories[53] indicated below.	*Indicators for social impacts*	*Describe and identify actual and anticipated impacts on society and stakeholders, both positive or negative, from all sources during normal and abnormal/emergency conditions that may result from constructing and operating of the Project Activity within or outside the project boundary, over which the project Owner(s) has/have control*	*Describe the applicable national regulatory requirements / legal limits or organizational policies or industry best practices related to the identified risks of social impacts*	*If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Not Applicable***	*If social impacts exist but are expected to be in compliance with applicable national regulatory requirements/ stricter voluntary corporate limits by way of plant design and operating principles then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as* ***Harmless****), project having positive impact on society. To the BAU / baseline scenario must also mark their aspect as* ***"harmless"***	*If negative social impacts exist that will not be in compliance with the applicable national legal/ regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm and shall be indicated as* ***Harmful***	*Describe the operational or management controls that can be implemented as well as best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as* ***Harmful****.*	*Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless of harmful. The frequency of monitoring to be specified as well. Monitoring parameters can be quantitative or qualitative in nature along with the data source*	*-1* *0* *+1*	*Confirm the score of the social impacts of the project with respect to the aspect and its monitored value in relation to legal/regulatory limits (if any) including basis of conclusion*
Reference to paragraphs of Environmental and Social Safeguards Standard		*Paragraph 12 (a)*	*Paragraph 13 (c)*	*Paragraph 13 (d) (i)*	*Paragraph 13 (d) (ii)*	*Paragraph 13 (d) (iii)*	*Paragraph 13 (e) (i)*	*Paragraph 12 (c) and Paragraph 13 (f)*	*Paragraph 23*	
Social - ***Jobs***	*Long-term jobs (> 10 year) created/ lost (SJ01)*	The project creates long term job opportunities during operation. 22 people have been employed as long terms employee.	All employments are done according to the national employment regulations.	N/A	Harmless since project created job opportunity which was not valid in baseline scenario. In addition, workers educated with Occupational Health and Safety trainings. Hence project has positive impact on society	-	N/A	Social security documents are the monitoring parameters. These documents are to be monitored annually.	+1	There is no such job opportunity in baseline scenario

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

	New short-term jobs (< 1 year) created/ lost (SJ02)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Sources of income generation increased / reduced (SJ03)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Avoiding discrimination when hiring people from different race, gender, ethnics, religion, marginalized groups, people with disabilities (SJ04) *(Human rights)*	N/A	N/A	N/A	-	-	N/A	N/A	-	-
Social - *Health & Safety*	*Disease prevention (SHS01)*	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Occupational health hazards (SHS02)	N/A	N/A	N/A	-	-	N/A	N/A	-	-

	Reducing / increasing accidents /Incidents/fatality (SHS03)	Employees were taken first aid, HSE and other relevant trainings& certificates.	N/A	N/A	-	-	N/A	N/A	-	-
	Reducing / increasing crime (SHS04)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Reducing / increasing food wastage (SHS05)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Reducing / increasing indoor air pollution (SHS06)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Efficiency of health services (SHS07)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Sanitation and waste management (SHS08)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Other health and safety issues (SHS09)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Add more									

	rows if required									
Social - *Education*	*specialized training / education to local personnel (SE01)*	Trainings will be provided to staff regarding HSE ,first aid and other relevant topics. Protective equipment will be provided to staff.	N/A	N/A	-	-	N/A	N/A	-	-
	Educational services improved or not (SE02)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Project-related knowledge dissemination effective or not (SE03)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Other educational issues (SE03)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Add more rows if required (SE04)									
Social - *Welfare*	*Improving/ deteriorating working conditions (SW01)*	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Community and rural welfare (indigenous	N/A	N/A	N/A	-	-	N/A	N/A	-	-

	people and communities) (SW02)									
	Poverty alleviation (more people above poverty level) (SW03)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Improving / deteriorating wealth distribution/ generation of income and assets (SW04)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Increased or / deteriorating municipal revenues (SW05)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Women's empowerment (SW06) (Human rights)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Reduced / increased traffic congestion (SW07)	N/A	N/A	N/A	-	-	N/A	N/A	-	-

	Exploitation of Child labour *(Human rights)* *(SW08)*	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Minimum wage protection *(Human rights) (SW09)*	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Abuse at workplace. (With specific reference to women and people with special disabilities / challenges) *(Human rights) (SW10)*	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Other social welfare issues (SW11)	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Avoidance of human traffickin g and forced labour	N/A	N/A	N/A	-	-	N/A	N/A	-	-

	(Human rights) *(SW12)*									
	Avoidance of forced eviction and/or partial physical or economic displacement of IPLCs *(Human rights)* *(CW13)*	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Provisions of resettlement and human settlement displacement *(Human rights)* *(CW14)*	N/A	N/A	N/A	-	-	N/A	N/A	-	-
	Add more rows if required									
Net Score:				**+1**						
Project Owner's Conclusion in PSF:				The Project Owner confirms that the Project Activity will not cause any net harm to society.						

GCC Project Verifier's Opinion:	The GCC Verifier certifies that the Project Activity [is not likely to cause any] or [is likely to cause] net harm to society.

Section F. United Nations Sustainable Development Goals (SDG)

>>

UN-level SDGs	**UN-level Target**	**Declared Country-level SDG**	**Defining Project-level SDGs**				**GCC Project Verifier's Conclusion** (To be included in Project Verification Report only)	
			Project-level SDGs	**Project-level Targets/Actions**	**Contribution of Project-level Actions to SDG Targets**	**Monitoring**	**Verification Process**	**Are Goal/ Targets Likely to be Achieved?**
Describe UN SDG targets and indicators *See: https://unstats.un.org/sdgs/indicators/indicators-list/*	*Describe the UN-level target(s) and corresponding indicator no(s)*	*Has the host country declared the SDG to be a national priority? Indicate Yes or No*	*Define project-level SDGs by suitably modifying and customizing UN/ Country-level SDGs to the project scope or creating a new indicator(s). Refer to previous column for guidance.*	*Define project-level targets/actions in line with nee project level indicators chosen. Define the target date by which the project Activity is expected to achieve the project-level SDG target(s).*	*Describe and justify how actions taken under the Project Activity are likely to result in a direct positive effect that contributes to achieving the defined project-level SDG targets*	*Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG indicator and its correspondi ng target, frequency of monitoring*	*Describe how the GCC Verifier has verified the claims that the project is likely to achieve the identified Project level SDGs target(s).*	*Describe whether the project-level SDG target(s) is likely to be achieved by the target date (Yes or no)*

							and data source		
Goal 1: End poverty in all its forms everywhere	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 3. Ensure healthy lives and promote well-being for all at all ages	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 5. Achieve gender equality and empower all women and girls	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 6. Ensure availability and sustainable management of water and sanitation for all	SDG Target 6.3 "By 2030, improve water quality by reducing pollution,	Yes	Prevent water pollution via collection and abatement of manure and organic wastes.	Project will collect around 800 tons of manure per day and prevent pollution in the baseline.	Project will collect around 800 tons of manure per day and prevent pollution in the baseline.	Project will enable proper management of organic wastes and convert into organic fertilizer.	Monitoring frequency: Annual Amount of waste/manure collected used to monitore.		

	eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally". Indicator: 6.3.2 Proportion of bodies of water with good ambient water quality								
Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all	SDG Target 7.2 "By 2030, increase substantially the share of renewable energy	Yes	Increase the share of renewables in the total installed power capacity connected to the national grid.	Enhance the share of installed electricity generation capacity from renewable energy sources.. Provides 29.876 GWh clean energy annually	Provides 29.876 GWh clean energy annually	The project increases the renewable energy share in Turkey's energy production mix. It provides 29.876 GWh annual clean	Monitoring frequency: Annual Quantity of electricity generated and supplied to grid by the project		

	in the global energy mix" by the utilization of biomass as a renewable energy source." Indicator 7.2.1 Renewable energy share in the total final energy consumption					energy to the grid.			
Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all	SDG Target 8.5 "By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for	Yes	Generated job opportunities and income	Provide a minimum number of 22 employment opportunity.	Provide a minimum number of 22 employment opportunity.	The project created job opportunity for both construction and operation period. It created long term employment for Minimum 22 people who are directly working at the site	Monitoring frequency: Annual Monitoring employment records are to be used		

	work of equal value". Indicator 8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities								
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	SDG Target 9.4 requires "By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and	Yes	Provides one clean and resilient energy generation facility	Project implementation is a 29.876 GWh resilient energy generation facility.	Project provides clean energy avoding 91,866 tco2 annually in comply with renewable energy generation	The project helps adaptation of clean energy technologies by implementing a wind power plant.	Monitoring frequency: Annual Calculate GHG emissions per unit of value added through monitoring quantity of electricity generated and supplied to grid by the project and grid emission factor		

	industrial processes, with all countries taking action in accordance with their respective capabilities". Indicator 9.4.1 CO2 emission per unit of value added								
Goal 10. Reduce inequality within and among countries	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 11. Make cities and human settlements inclusive, safe, resilient, and sustainable	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 12. Ensure sustainable consumption and production patterns	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 13. Take urgent action to combat climate change and its impacts	Target 13.2: Integrate climate change measures into national policies, strategie	Yes	Using non-fossil energy sources (renewables) and eliminates CO2 emissions.	Eliminates 91,866 tCO2 emission annually	Reduction of 91,866 tCO2 annually in comply with renewable energy generation	Eliminates 91,866 tCO2 emission annually	Monitoring frequency: Annual Calculated avoided GHG emissions every year		

	s and planning Indicator 13.2.2: Total greenhouse gas emissions per year						through monitoring quantity of electricity generated and supplied to grid by the project and grid emission factor		
Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 15. Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
SUMMARY						**Targeted**		**Likely to be Achieved**	
Total Number of SDGs						**5**		**5**	
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF						**Platinum**		**Platinum**	

Section G. Local stakeholder consultation

G.1. MODALITIES FOR LOCAL STAKEHOLDER CONSULTATION

>> Local Stakeholder Meeting for ENFAŞ Tire BPP was organized at 14:00 on 19/01/2016 in Tire Industrial Zone Meeting Hall. The stakeholders and the list of invitation are identified accordingly.

The meeting covered all agenda items recommended by the GCC.

Agenda

14:00-14:20 Opening and Introduction of the project

14:20- 14:30 Climate Change and Certification Process

14:30-14:45 Sustainability Assessment

14:45-15:00 Question and Answers

15:00-15:15 Evaluation and feedback session

15:30 Closure

District Department of Ministry of Environment and Urbanization and Directorate of Provincial Food Agriculture and Livestock have been invited as relevant Government Authority. Directorate General for Renewable Energy of Ministry of Energy and Natural Resources has also been included as relevant Government Authorities. When possible, participation of the invitees was confirmed in order to make necessary arrangements for the meeting.

Local and national government institutions and other identified stakeholders have been informed through invitation letters in Turkish along with non-technical summary sent by registered mail and facsimile messages.

Since the project area is an organized industrial zone, the other companies working within the boundary of Tire Organized Industrial Zone are identified as locals and invited to the meeting. Additionally local people were informed about the meeting by the project owner orally and newspaper invitation, who live in the village around industrial zone.

1975 yılından beri sadece süt ve süt ürünlerine odaklı olarak faaliyet gösteren ve son 11 yıldır sektörünün lider kuruluşu olan Sütaş, 2016 yılı itibari ile de yatırımlarına devam etmektedir. Sütaş tarafından planlanan yeni yatırımlar kapsamında, Tire Organize Sanayi Bölgesi'nde (TOSBİ) Süt İşleme Entegre Tesisi ve Biyogaz tesisi yatırımı planlanmaktadır.

Yatırım planı kapsamında yer alan biyogaz tesisi ile bölgedeki tarımsal ve gıda üretiminden kaynaklanan atıklar bertaraf edilirken aynı zamanda enerji üretimi sağlanması planlanmaktadır. Söz konusu yatırım kapsamında, iklim değişikliğine neden olan önemli gazlardan birisi olan metan (CH_4) ve karbondioksit (CO_2) gazlarının salımı azaltılmış olacaktır.

Firmamız, yukarıda belirtilen sera gazı azaltımının belgelendirilmesi amacı ile karbon sertifikasyonu sürecini başlatmış bulunmaktadır.

Bu kapsamda düzenleyeceğimiz "Bilgilendirme Toplantısı"nda sizleri aramızda görmekten memnunluk duyacağımızı belirtmek isteriz.

Toplantımız 19 Ocak 2016 tarihinde, saat 14:00'da Tire Organize Bölgesi Toplantı Salonu'nda gerçekleştirilecektir.

Kıymetli katılımlarınızın firmamız için önemli olduğunu tekrar belirtir, konu ile ilgili olarak bilgi ve gereğini arz ederiz.

Saygılarımızla,

Toplantı Programı:

14:00 Açılış konuşması ve projenin tanıtılması

14:20 İklim değişikliği ve karbon sertifikalandırması

14:30 Sürdürülebilirlik değerlendirmesi

14:45 Soru ve cevaplar

Text of individual invitations

Büyük Tire

12. yaşında BÜYÜYEN TİRE'NİN BÜYÜK GAZETESİ

Basın toplumun müşterek sesidir.

05 Ocak 2016 Salı 50 Kuruş Sayı: 2896 www.buyuktire.com e-posta:buyuktire@hotmail.com

sütaş

1975 yılından beri sadece süt ve süt ürünlerine odaklı olarak faaliyet gösteren ve son 11 yıldır sektörünün lider kuruluşu olan Sütaş, 2016 yılı itibari ile de yatırımlarına devam etmektedir. Sütaş tarafından planlanan yeni yatırımlar kapsamında, Tire Organize Sanayi Bölgesi'nde (TOSBİ) Süt İşleme Entegre Tesisi ve Biyogaz tesisi yatırımı planlanmaktadır.

Yatırım planı kapsamında yer alan biyogaz tesisi ile bölgedeki tarımsal ve gıda üretiminden kaynaklanan atıklarbertaraf edilirken aynı zamanda enerji üretimi sağlanması planlanmaktadır.Sözkonusu yatırım kapsamında, iklim değişikliğine neden olan önemli gazlardan birisi olan metan (CH_4) ve karbondioksit (CO_2) gazlarının salımı azaltılmış olacaktır.

Firmamız, yukarıda belirtilen sera gazı azaltımının belgelendirilmesi amacı ile karbon sertifikasyonu sürecini başlatmış bulunmaktadır.

Bu kapsamda düzenleyeceğimiz "Bilgilendirme Toplantısı"nda sizleri aramızda görmekten memnunluk duyacağımızı belirtmek isteriz.

Toplantımız 19 Ocak 2016 tarihinde, saat 14:00'daTire Organize Bölgesi Konferans Salonu'nda gerçekleştirilecektir.

Kıymetli katılımlarınızın firmamız için önemli olduğunu tekrar belirtir, konu ile ilgili olarak bilgi ve gereğini arz ederiz.

Saygılarımızla,

Toplantı Programı:
14:00 Açılış konuşması ve projenin tanıtılması
14:20 İklim değişikliği ve karbon sertifikalandırma süreci anlatımı
14:30 Sürdürülebilirlik değerlendirmesi
14:45 Soru ve cevaplar

Text of public invitations

From: Zeynep Cansever [mailto:zeynep@gtecarbon.com]
Sent: Wednesday, January 06, 2016 4:19 PM
To: 'info@reeep.org'; 'info@uk.mercycorps.org'; 'info.int@greenpeace.org'; 'Neha Rao'
Cc: 'kemal@gtecarbon.com'; 'engin@gtecarbon.com'
Subject: Invitation to consultation meeting of Tire Biogas Facility Project

İleri Son

Dear All,

You are kindly invited to the Local Stakeholder Consultation meeting of Tire Biogas Facility Project owned by SÜTAŞ Dairy Products Inc. in Tire District of İzmir province of Turkey.

Please, find the information about the project attached . Please, also let us know about your participation so that we can update you regarding any changes.

Best regards,

Zeynep Naz Cansever
Project Associate

GTE CARBON

Ehlibeyt Mh. 1259. Sokak No:7/2 06520
Balgat – Çankaya Ankara TÜRKİYE

e-mail invitations

Meeting was started with the speech of Muharrem Yılmaz (Chairman of the executive board of Sütaş A.Ş.). During his speech, Mr. Yılmaz gave information about the brief history and future investment plans of Sütaş A.Ş. Then, Mr. Yılmaz gave the floor to Mustafa Toprak (Head Governor of İzmir) and Mehmet Demirezer (Head Official of Tire) respectively. Both Mr. Toprak and and Mr. Demirezer emphasized the importance of the Sütaş A.Ş. investment in Tire in terms of economic development of the organized industrial zone and nearer related regions dealing with milk and milk products. After Mr. Demirezer, Ahmet Güldal (İzmir Directorate of Provincial Food Agriculture and Livestock) delivered his presentation about the importance of the quality standardises and production efficiency of agricultural products. Finally, Ekrem Demirtaş (chamber of commerce of İzmir) and Kosat Gürler (Tire Organized Industrial Zone) expressed institutional support for the project and took attentions to the growing economical impact factor of the region within this investment.

After the speeches of protocol, R&D department officer Murat Arat represented their presentation on the importance of biogas plant implementation to deal with manure wastes and wastewater in the Tire Organized Industrial Zone in terms of both waste management and GHG emission reduction. Additionally, brief and non-technical information were given in this speech.

The officer of Sütaş A.Ş. emphasized that within this biogas facility, wastes belonged to agricultural activities and food production will be decomposed under anaerobic conditions and biogas will be produced. Generated biogas will be used for electrical energy production. By this way, both waste elimination and renewable energy generation will be provided. In addition, methane (CH4) and

carbon dioxide (CO2) emissions will be reduced which are the one of the most important greenhouse gases which causes climate change.

After these speeches, GTE Carbon Director Kemal Demirkol took the floor and delivered his presentation for “Local Stakeholder Consultation Meeting”. Mr. Demirkol briefly mentioned about climate change and carbon certification process, including the purpose of the meeting within that framework. He stressed that the purpose of the meeting was to collect their ideas about the project and how they would be followed-up in future. He introduced also introduced the grievance mechanism and the sustainability criteria to the participants and opened the floor to discussions and questions. In the questionnaire part of the meeting, there was no question asked by the participants about any speech.

The level and the quality of participation were satisfactory. There were more than 90 participants according to the camera records and most of them signed attendance sheet. Thus, no other consultations were carried out.

G.2. SUMMARY OF COMMENTS RECEIVED

>>

Name	What is your impression of the meeting?	What do you like about the project?	What do you not like about the project?	Signature
Hüseyin Çapkınoğlu (Chairman of Tire Chamber of Commerce)	It consists very beneficial information.	Project is respectful towards the environment	None	
Bilgin Oğuz (Türer Agricultural Production)	An informational meeting	Handling of both waste management and renewable energy production at the same time	None	
Nilgün Uzun (Yaşınoğlu Milk and Milk Products Co.)	The presentation was transparent and concise. We had information on many different issues in terms of milk processing, waste management and renewable energy	informational perspective was sufficient	None	
Ayşe Durmaz (GBC Construction, Tourism Industry and Trading Co.)	This project is important in terms of employment and economical development of the Tire region	Tire is one of the important region based on milk and milk product in Turkey and this situation makes this project more meaningful	None	

Serkan Öztürk (GBC Construction, Tourism Industry and Trading Co.)	A very useful and explanatory meeting	This project will increase employment options and contribute to waste management	None	
Fikret Çaybaşı (Kiraz Village)	Positive	All Positive	None	
Osman Kantık (Ovakent – Cooperation)	A very positive and good investment	All positive	None	
Şahin Kuyucu (Kuyucuoğlu Agriculture, Tire)	An important investment for the sector	All positive	None	
Adnan Özdoğan (Özvet Milk and Milk Production)	Positive	All Positive	None	
Adnan İnanır (Bayındır Chamber of Commerce)	Positive	Beneficial for the region	None	
Kadir Arıkan (S.S. Ovakan Agricultural Development)	A beneficial meeting	All positive	None	
İbrahim Sakınlı (Chairman of Ödemiş Milk Cooperation)	Positive	All Positive	None	
Bilal Duman (SS. Aydoğdu Village Agricultural Development Cooperation)	Positive	A beneficial project	None	
Myhammet Efe (Milk Collection Cooperation of the Arkacılar Region)		A beneficial project for the region	None	

Durmuş Duman (Aydoğdu Village, Kiraz)	An informational meeting	A positive project for the region	None	
Ahmet Dana (Karaburç Village, Kiraz)	Being invited such a meeting was a pleasure	A positive project for the region	None	
Vildan Gündoğdu (Gündoğdu Environmental Consulting Co.)	The meeting was too long	Waste management and renewable energy production are important	Technical detail about Sütaş dairy plant was limited, it was like a introductory meeting.	
Süleyman Kantarcıoğlu (Arapbaşı Village)	We learnt about the biogas technology with this meeting	GHG emissions will be reduced with this project	None	
Erdoğan Güngör (Karateke Village)	-	Wastes will be treated with this project	None	
Mehmet Olgun (Karateke Village)	Positive	Positive	None	
Erkan Tutkaç (Karateke Village)	An informative meeting for us	Wastes will be treated with this project	None	
Lekan Helvacılar (Tire Chamber of Milk and Milk Product Industries)	It was a presentation and informative meeting for us to understand the project	Positive	None	

G.3. CONSIDERATION OF COMMENTS RECEIVED

>> During the local stakeholder meeting, most of the feedbacks are in positive sign and related explanations of project owner satisfied the audience.

Section H. Approval and authorization

ENFAŞ

To:

The President,
Global Carbon Council,
Doha, Qatar

Date: 10/05/2020

Dear Sir,

Sub: Authorisation to act on our behalf

This refers to our GHG reduction project titled "Tire Biogas Power Plant" situated at Tire District of İzmir Province of Turkey. We are pleased to submit the project to Global Carbon Council (GCC) for its registration and issuance of carbon credits.

Please accept this letter as granting GTE KARBON SÜRDÜRÜLEBİLİR ENERJİ EĞİTİM DANIŞMANLIK VE TİCARET A.Ş. the exclusive right to act on our behalf in respect of the following

- Sign an Emission Reduction Purchase Agreement(s) with respective entities on our behalf for the entire crediting period of the project.
- Including GTE KARBON SÜRDÜRÜLEBİLİR ENERJİ EĞİTİM DANIŞMANLIK VE TİCARET A.Ş as project co-owner in the project submission made to GCC Program.
- Be our focal point to GCC Program, IHS Markit (GCC carbon registry operator) and independent GCC verifier carrying out project and emission reduction verification.
- Submitting the request for registration and requests for issuance to GCC.
- Responding to GCC questions and clarification requests.
- Open the account in the GCC carbon registry on our behalf.
- Permitting to transfer and retire the GCC-issued carbon credits as deemed appropriate by them.

In granting this authorisation we accept that the ownership of GCC-issued carbon credits is passed to GTE KARBON SÜRDÜRÜLEBİLİR ENERJİ EĞİTİM DANIŞMANLIK VE TİCARET A.Ş. and that we have received, or will receive, valuable consideration from them for that.

Yours sincerely,

Murat ARAT
Chief R&D and Technology Officer
ENFAŞ ENERJİ ELEKTRİK ÜRETİM A.Ş.

Enfaş Grubu Enerji Faaliyetler Kuruluşudur.

ENFAŞ Enerji Elektrik Üretim A.Ş.
Uluabat Köyü 16700 Karacabey/BURSA (Sütaş Süt Fabrikası)
Tel: +90 224 688 52 62 Faks: +90 224 688 52 66 www.sutas.com.tr

>>

APPENDIX 1. CONTACT INFORMATION OF PROJECT OWNERS

Project Owner name (as per LON/LOA)	GTE Karbon Surdurulebilir Enerji Egitim Danismanlik ve Tic. A.S.
Country	Turkey
Address	MAIDAN -Mustafa Kemal Mahallesi 2118. Cad. No: 4C Blok 42 Çankaya/Ankara
Telephone	+90 312 514 63 63
Fax	+90 312 415 63 63
E-mail	Kemal.demirkol@gte.com.tr
Website	www.gte.com.tr
Contact person	M. Kemal Demirkol

APPENDIX 2. AFFIRMATION REGARDING PUBLIC FUNDING

>> No public funding has been used for the project.

APPENDIX 3. APPLICABILITY OF METHODOLOGY(IES)

>> Applicability of methodologies are explained above.

APPENDIX 4. FURTHER BACKGROUND INFORMATION ON EX ANTE CALCULATION OF EMISSION REDUCTIONS

>>N/A

APPENDIX 5. FURTHER BACKGROUND INFORMATION ON MONITORING PLAN

>>N/A

APPENDIX 6. SUMMARY REPORT OF COMMENTS RECEIVED FROM LOCAL STAKEHOLDERS

>>Explained above

APPENDIX 7. SUMMARY OF DE-REGISTERED CDM PROJECT OR PROJECTS FROM OTHER GHG / NON-GHG PROGRAMS (TYPE B)

>> N/A

Complete this form in accordance with the instructions attached at the end of this form.	
Program Name	
Project registration number	
Date of registration in the program	
Title of the Project Activity	
Project de-registration reference number	
Date of de-registration of the Project	
Project Participants (Authorized by the host / annex 1 country letter of approval)	
Country where the project is located	
Applied methodology(ies) (Provide reference and version number(s))	

Pre-registration changes to the Project Activity

(Tick as applicable)

Pre-registration Changes	Reference number	Approved	Provide a summary of pre-registration changes
Deviations from approved baseline and monitoring methodology		☐	
Deviations from applied Tool & Guidance		☐	
Deviations from the rules		☐	
Other…….		☐	

Post-registration changes to the Project Activity

(Tick as applicable)

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

Crediting Period(s)

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

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

Appendix 8. FURTHER INFORMATION ON DETERMINATION OF BUNDLE IN PROJECT ACTIVITY.

>> N/A

Appendix 9. PUBLIC DECLARATION FOR A2 (Sub Type 2 and 3), B1 & B2 PROJECTS ON NON CONTINUATION FROM CDM/GHG/NON-GHG PROGRAMS.

>> N/A

DOCUMENT HISTORY

Version	Date	Comment
V 4.0	27/09/2022	▪ Revised version released on approval by Steering Committee as per GCC Program Process. ▪ Revised version contains following changes: ○ Introduced A3 type projects A2 project sub-types. ○ Included revised Declaration by the 'Authorized Project Owner and focal point' on GCC requirements. ○ Included modified format for E+/S+/ SDG assessment. ○ Revised instructions for filling in the PSF. ○ Editorial changes to the document.
V 3.2	31/12/2020	▪ The name of GCC Program's emission units has been changed from "Approved Carbon Reductions" or ACRs to "Approved Carbon Credits" or ACCs.
V 3.1	17/08/2020	▪ Editorial revisions made ○ Revised Table in section B.7.2 on Monitoring-program of risk management actions ○ Revised Table in section E.1 on Environmental Safeguards ○ Revised Table in section E.1 on Social Safeguards ○ Revised Table in section F on United Nations Sustainable Development Goals (SDG)
V 3.0	05/07/2020	▪ Revised version released on approval by Steering Committee as per GCC Program Process. ▪ Revised version contains following changes: ○ Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC). ○ Considered and addressed comments raised by Steering Committee: ➢ during physical meeting (SCM 01, dated 29 Oct 2019, Doha Qatar); and ➢ electronic consultations EC01-Round 01 (15.09.2019 – 25.09.2019), EC01-Round 02 (27.03.2020 – 27.06.2020). ○ Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA[54];

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

V 2.0	25/06/2019	▪ Revised version released for approval by the GCC Steering Committee. ▪ Revised version includes additional details and instructions on the information to be provided, consequent to the latest developments world-wide (e.g., CORSIA EUC).
V 1.0	01/11/2016	Initial version released under the GCC Program Version 1

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