THE GOLD STANDARD MICRO-SCALE SCHEME PROJECT DESIGN DOCUMENT FORM - Version 2.2

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SECTION A. General description of micro-scale project activity

A.1 Title of the micro-scale project activity:

>> Title : Solar for Forest

>> Date & version of the PDD : 25/05/2015 – version 03

A.2. Project participants:

Ege Orman Vakfı İktisadi İşletmesi (The Aegean Forest Foundation, EGEVAK) (Project Owner)

The project owner will gain the ownership and full legal title of the carbon credits from the project activity. The project owner is responsible for implementing the project including project feasibility, obtain all necessary permits, equipment, construction phase, maintenance, and the operation of the project.

GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık Ve Ticaret Anonim Şirketi (GTE Carbon) (Project Developer)

The project developer is acting as consultant for project owner to get certification of carbon emission reduction of the project. The project developer is responsible for doing necessary effort to claim the VER certificate by driving the project through the GS project cycle.

Acquired VER credits due to project activities will be solely owned by EGEVAK.
IZKA, (İzmir Development Agency) which has supported the project financially will not claim any VER credits due to project activities.

A.3 Description of the micro-scale project activity:

The Aegean Forest Foundation is a voluntary organization (NGO) which has been founded with the principle of planting trees, saving the forests and building up the environmental awareness in the society.

Within the scope of the proposed Project, The Aegean Forest Foundation (EGEVAK) has installed a photovoltaic (PV) energy system with a capacity of 500 kW in the provincial boundaries of İzmir.

A total of some 926.576 MWh of electricity is estimated to be generated annually. A portion of the generated electricity was intended to meet the energy demand for irrigation pumps which serve for a nearby olive grove consisting of 30,000 trees. However since the direct transmission of electricity from project site to the irrigation site is not possible due to technical reasons all of the generated electricity is fed to the national grid. In order to increase the efficiency of the plant, part of electricity will be used for plant's electricity needs and this amount will be deducted from the monthly gross generation (i.e. watchman's house, security camera, and water treatment). Remaining electricity will be sold to the state within the framework of renewable energy incentives according to which the government commits to buy the any amount of excess electricity produced on a certain tariff. (13.3 C$/kWh for solar systems) The revenues from the electricity sales will again be used for the purpose of planting more trees with an estimation of 40,000 trees/year.

The project also aims to provide a model for the regional industrial and commercial facilities, encouraging them to utilize the unused areas of their buildings or lands to generate electricity.

As per the Turkish regulations; renewable energy generation plants having a capacity of 1MWe or less are not obliged to obtain a generation license from the EMRA (Energy Market Regulatory Authority). Still the incentive framework includes the unlicensed energy producers and the government guarantees to purchase any amount of excess electricity generated. However, unlicensed producers are not allowed to sell electricity to other entities other than the state. The milestones of the project are shown in Table 1.

Energy assessments yielded that the proposed area of implementation has about 1.6 times more sunlight exposure potential than the average of Turkey. This situation can be translated into the fact that a PV Project in Pancar-Menderes region has a shorter payback period compared to the most of the similar implemented or proposed projects within Turkey.

Milestones	**Date**
EIA Exemption	27/02/2013
Connection Agreement	02/09/2013
Board Decision for Consideration of Carbon Revenue	20/11/2013
Solar PV Supply Agreement*	25/12/2013
Commissioning Date (Provisional Acceptance)	31/07/2014
Start Date of Crediting Period	01/08/2014
Objective Observer's Visit	25/12/2014
Stakeholder Feedback Round	06/03/2015 - 10/05/2015

*Project Start Date

Table 1: Milestones of the Project

The project is also contributing sustainable development in the following ways:

- The technology which is used in the Project activity is clean energy and no pollution is caused in the process of generating electricity. Solar Energy is clean, renewable (unlike gas, oil and coal) and sustainable while it does not pollute the environment by releasing carbon dioxide, nitrogen oxide, sulphur dioxide or mercury into the atmosphere unlike other conventional forms of electrical generation.

- The solar energy systems operate silently, have no moving parts, do not cause odour problems and do not require fuel addition.

- Although the created job opportunities are limited, the project supports local economy by providing shelter and regular income for a family.

- The Project owner, EGEVAK, is a foundation whose core activity is afforestation. Apart from that, the organization is also providing environmental education for children and youth, establishing forest tree nurseries, forest protection, and dissemination of importance of trees and forests. The revenue from

electricity generation will be used for the foundation to conduct its activities. Therefore, the Project activity will also indirectly provide positive benefit to the environment.

- Turkey is a huge energy importer country which currently imports more than 70% of its energy needs. Furthermore, Fossil fuel is still dominating the energy mix of Turkey. The Project will contribute to lower the country's dependency on energy import and fossil fuel usage.

- The application of solar energy is not a common practice in Turkey. The Project activity will further set an example for the application of solar energy, which will improve technological know-how and provide transfer of technology.

- With the decision dated 14/05/2013, Governorship of İzmir, Directorate of Provincial Food, Agriculture and Husbandry has approved that the project site is suitable for the proposed activities. All of the trees within the project site (8 wild olive trees) have been moved to nearby locations and kept alive. Below are the photos taken during replanting process.

Figure 1: Project site tree replacement activities conducted by EGEVAK

A.3.1. Location of the micro-scale project activity:

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A.3.1.1. Host Country:

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Turkey

A.3.1.2.	Region/State/Province etc.:

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The project is located in the western Turkey within the provincial borders of İzmir

A.3.1.3.	City/Town/Community etc:

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The project site lies within the district known as Pancar – Menderes of İzmir province.

A.3.1.4.	Details of physical location, including information allowing the unique identification of this micro-scale project activity:

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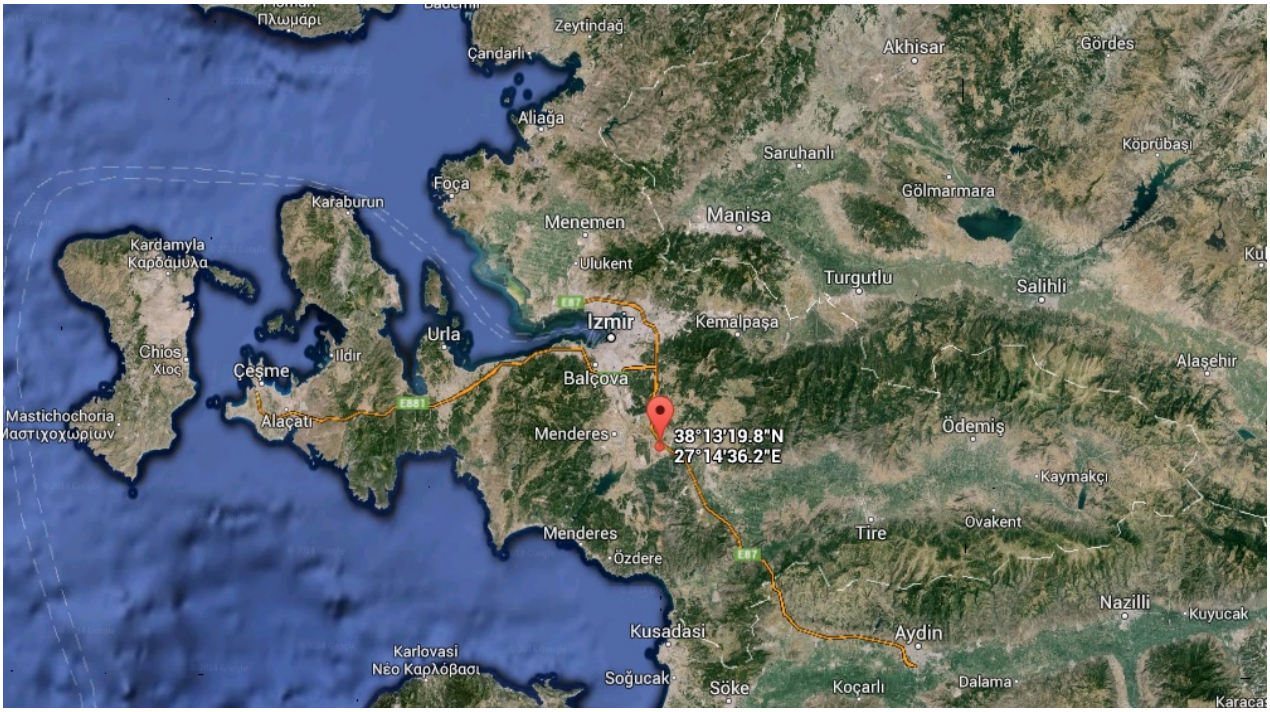

Figure 2: Project Location with Coordinates

Exact projection location is given in the table below.

Project Location	
Latitude	38°13'19.8" N
Longitude	27°14'36.2" E
Province	İzmir
Town / District	Pancar - Menderes

Table 2: Project Location

Project site is private property and owned by the Chief Executive Officer of the EGEVAK foundation. Leasing fee is very low and only been applied to satisfy the legal requirements.

Figure 3: Project Site

A.3.2. Description including technology and/or measure of the micro-scale project activity:

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Project site lies on a land 118m above the sea level. Proposed site of installation occupies an area of 9000m^2 and the assessments on the subject land yielded that the terrain is conveniently plane but not suitable for agricultural activities. Also it has been observed that the transportation is easily available to the Project site in and out. Transmission line is connected to the switchyard via 700-800m long high voltage line.

In order to harness the sunlight in the most efficient way; collector angling studies have been performed and the optimum inclination has been tested.

The applied technology involves using 2,000 collector panels which make use of crystal silicon modules and the below table summarizes the main system parameters:

Number of Collectors	2,000
Collector Capacity (Each)	250 W
Total Capacity	500 kW
Collector Efficiency	15%
Inverter Efficiency	98%
Transmission Losses	1.5 %
Other Losses (Temperature, Shadowing, Dust etc.)	10 %

Overall System Efficiency	13 %

Table 3: System Parameters

Figure 4: Monthly Energy Generation Estimations

Main components of the applied technology are listed below:

1- Photovoltaic Module:

The project makes use of crystal silicon modules technology (c-Si)

2- Inverter:

Inverter is used to convert the direct current (DC) to alternative current (AC). Project has implemented SMA Sunny Tripower inverters (STP 17000TL).

3- Electrical connection components:

These components consist of electrical cabling, connection jacks, cable tray, DC collection pane, DC brake, AC cable, AC field pane, metering devices, grounding and lightning protection systems

4- Transformer room:

A cabinet is constructed, in which the inverters are placed and high voltage line is connected to the distribution hub.

5- Holder Mechanic Construction Components:

Structure is made of stainless materials and shadowing effect is taken into account when placing the holders.

6- Data Monitoring/Archiving Equipment:

Computerized monitoring system is integrated to the generation equipment. Hourly, daily and monthly inputs/outputs are monitored and recorded in real time. Any failure during operation is notified by the

system over the internet and remote monitoring of operation parameters such as module and environment temperature or light intensity is possible.

Figure 5 : Positioning of the collectors on the project site

Solar panels require very little maintenance since there are no moving parts. A few times a year, the panels should be inspected for any dirt or debris that may collect on them. PV systems should be periodically inspected. The purpose of the PV system inspection is to ensure that all system components are functioning properly. At a minimum, this inspection should confirm the following:[1]

- All cables and connector attachments are undamaged and properly secured
- No sharp objects are in contact with the PV module surfaces
- PV modules are not shaded by unwanted obstacles and/or foreign material
- Mounting and grounding components are tightly secured with no corrosion

A.3.3 Estimated amount of emission reductions over the chosen crediting period:

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The project activity is estimated to reduce 3,836 tCO2e over the crediting period (01/08/2014-31/07/2021)

[1] http://d9no22y7yqre8.cloudfront.net/assets/uploads/manual/downloads/Installation_and_User_Manual_IEC_EN_201202.pdf

A.3.4. Public funding of the micro-scale project activity:

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There is public funding involved in the project activity. The proposed project is supported partly (50%) by İZKA (İzmir Development Agency) as the project is a non-profit activity. However, the funding institution (or its country origin) will not gain any ownership of the carbon credit as stated in the ODA declaration.

SECTION B. Application of an existing baseline and monitoring methodology or of a new methodology submitted as part of this project activity

B.1. Title and reference of the existing or new baseline and monitoring methodology applied to the micro-scale project activity:

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The proposed project applies the approved small scale CDM methodology;
AMS-I.D.: Grid connected renewable electricity generation --- Version 17.0 [2]

The above methodology refers to the following tools:

- Tool to calculate project or leakage CO2 emissions from fossil fuel combustion , version 02[3]
- Tool to calculate the emission factor for an electricity system , version 04.0[4]

B.2 Justification of the choice of the methodology and applicability:

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As per Paragraph 1 of the applied methodology, proposed project is the installation of a Greenfield, grid connected photovoltaic system for energy generation. Therefore the selected methodology is applicable.

As cited in Paragraph 2 of the applied methodology AMS-I.D is applicable to grid connected small scale project activities. Proposed project is a Greenfield 500kW capacity PV plant with emission reductions less than 10,000 tCO_2e , therefore eligible for application of the methodology.

As per Paragraph 3 of the applied methodology; this methodology is applicable to project activities that install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity , since the project is a Greenfield plant, the methodology is applicable.

[2] http://cdm.unfccc.int/UserManagement/FileStorage/V9LRSXKP24Q7YT6HZDUBO3C0ING8AJ
[3] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf
[4] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf

B.3. Description of the project boundary:

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As per Paragraph 9 of the applied methodology; the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. Proposed project will be connected to national grid therefore the project power plant and all grid connected plants will be included in the system boundary.

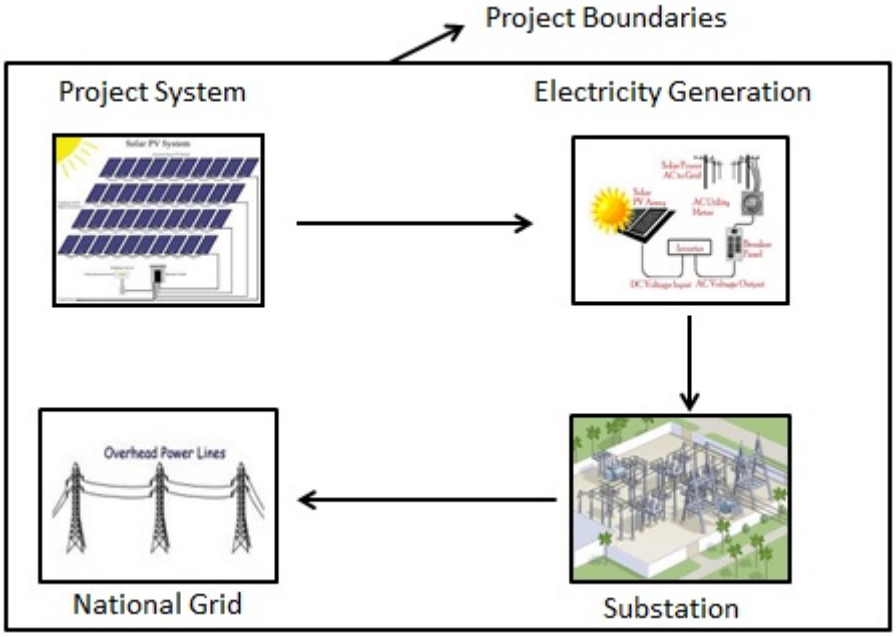

Figure 6 : Project Boundaries

B.4. Description of the baseline and its development as per the chosen methodology:

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The proposed project involves the installation of a 500kWp photovoltaic for the purpose of electricity generation to be connected to the grid. The electricity will be sold to the state within the framework of incentives towards renewable energy generation. The revenue from selling the electricity will be used to plant new trees. Small part of electricity will be intended to fulfil energy needs within the plant (i.e. watchman's house, security camera, water treatment facility, etc.). In the baseline scenario the energy required for the plant is met from the fossil fuel dominated national grid.

As per paragraph 10 of the applied methodology; the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid. Therefore the applied methodology corresponds to the defined baseline scenario.

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered micro-scale project activity:

The project would not have commenced without the consideration of carbon credits. The prior consideration of carbon revenue is obtained through a board decision dated 20/11/2013.[5]

The proposed project utilizes photovoltaic energy modules to generate electricity. Photovoltaic systems which convert the potential energy of sunlight into electrical energy are considered a renewable source. A portion of the generated electricity will be used for irrigation activities and the remaining amount will be sold to the national grid, replacing the fossil.

The assessment of additionality is referred to "Guidelines on the Demonstration of Additionality of Small-Scale Project Activities" version 09.0.[6] As per the guideline, a selection of at least one of the barrier tests may be employed for small-scale project activities, covering: investment barriers, technological barriers, prevailing practice or other barriers. However, paragraph 2 of the guideline listed a "positive list of technologies and project activities" that are exempted to perform the barrier test and therefore "automatically additional". The project activity is application of grid-connected solar PV with capacity less than 15 MW. The project activity is suitable for the number (a)(i) of the positive list: "Grid-connected and off-grid renewable electricity generation technologies: Solar technologies (photovoltaic and solar thermal electricity generation)." Thus, the project activity is additional.

B.6 Emission reductions:

B.6.1. Explanation of methodological options or description of new proposed approach:

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Baseline Emissions:

The baseline emissions are the product of electrical energy baseline expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

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

BE_y	Baseline Emissions 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)

The emission factor was calculated in a transparent and conservative manner using option (a) of paragraph 12 of the applied methodology:

[5] Board decision on consideration of carbon revenues.
[6] https://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC_guid05.pdf

(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the Emission Factor for an electricity system version 4.0 [7]"

Details of CM calculation are given as Annex 3.

Project Emissions:

Since the project is a solar photovoltaic plant and classified as a renewable energy project, the emissions due to project activities, $PE_y = 0$ (As per paragraph 20 of the applied methodology)

Leakage Emissions:

Since the energy generating equipment is not transferred from another activity, leakage is not considered. $LE_y = 0$ (As per paragraph 22 of the applied methodology)

Emission Reductions:

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y	Emission reductions in year *y* (t CO_2/y)
BE_y	Baseline Emissions in year *y* (t CO_2/y)
PE_y	Project emissions in year *y* (t CO_2/y)
LE_y	Leakage emissions in year *y* (t CO_2/y)

[7] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf

B.6.2. Data and parameters that are available at validation:

Data / Parameter:	$EF_{CO2,2012}$
Data unit:	t CO_2e/kWh
Description:	CO_2 emission factor of the grid electricity in year *2012*
Source of data used:	Latest TEIAS (National Energy Transmission Company) statistics and capacity report published on January 2014 based on the data from the year 2012, have been used.
Value applied:	0.000592
Justification of the choice of data or description of measurement methods and procedures actually applied:	A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the Emission Factor for an electricity system , version 4.0" Calculated as following: $EF_{CO2,2012} = 0.75 * EF_{OM,2012} + 0.25 * EF_{BM,2012}$
Any comment:	-

B.6.3 Ex-ante calculation of emission reductions:

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Emission Reduction is calculated according to following formula
$ER_y = BE_y – PE_y – LE_y$
Where;
ER_y: Emission reduction in a year y
BE_y: Baseline emission in a year y
PE_y: Project emission in a year y
LE_y: Leakage emission in a year y

Estimation of baseline emissions:
Baseline emission is calculated using following equation as per para-11 of AMS I.D. version-17:

$BE_y = EG_{BL,y} \times EF_{CO2,2012}$

$EG_{BL,y}$ has been assumed as 926,576 kWh/y[8]

Therefore;

BEy = 926,576 x 0.000592 = 548 tCO2e/y (rounded down as a conservative approach)

Estimation of project emissions:

Since the project is a solar photovoltaic plant and classified as a renewable energy project, the emissions due to project activities, $PE_y = 0$ (As per paragraph 20 of the applied methodology.)

There are no significant emissions from on-site fossil fuel consumption.

Estimation of leakage emissions:

Since the energy generating equipment is not transferred from another activity, leakage is not considered. $LE_y = 0$

Estimation of emission reductions:

Emission Reduction is calculated according to following formula
$ER_y = BE_y – PE_y – LE_y$

Therefore;

$ER_y = 548 – 0 – 0 = 548\ tCO_2e$

[8] Project Feasibility Report , page 5

B.6.4 Summary of the ex-ante estimation of emission reductions:

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Year	Estimation of project activity emission (tCO_2)	Estimation of baseline emissions (tCO_2)	Estimation of leakage (tCO_2)	Estimation of overall emission reductions (tCO_2)
2014 (01/08/2014-31/12/2014)	228	0	0	228
2015	548	0	0	548
2016	548	0	0	548
2017	548	0	0	548
2018	548	0	0	548
2019	548	0	0	548
2020	548	0	0	548
2021 (01/01/2021-31/07/2021)	320	0	0	320
Total (tCO_2)	**3,836**	**0**	**0**	**3,836**

B.7 Application of a monitoring methodology and description of the monitoring plan as per the existing or new methodology applied to the micro-scale project activity:

B.7.1 Data and parameters monitored:	
Data / Parameter:	$EG_{facility,,y}$
Data unit:	MWh/y
Description:	Quantity of net electricity supplied to the grid in year *y*
Source of data to be used:	Energy meter readings will be used
Value of data	926.576
Description of measurement methods and procedures to be applied, inc. frequency:	Measurements are undertaken using energy meters. Continuous monitoring, hourly measurement and at least monthly recording
QA/QC procedures to be applied:	Measurement results will be cross checked with records for sold electricity (e.g. invoices/receipts). Calibration of the metering devices will be in the responsibility of the transmission company and will be performed at least once in ten years as per regulations. Three separate energy meters are installed for the monitoring of the project activity (SN: 21000040, 21000041, 21000042). The one with the most conservative reading will be subject to invoicing and therefore will be used as the source of emission reduction calculations. Kohler AEL.TF.21 brand and model energy meters with an accuracy class of 0.5S are used for the measurements.[9] Latest calibration of the devices has been performed on 01/11/2013.
Any comment:	-

[9] http://www.kohlersayac.com.tr/Download/Urunler/eKatalog.PDF page 11

B.7.2 Description of the monitoring plan:

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

Generation data collected during crediting period will be submitted to GTE Carbon who will be responsible for calculating the emission reduction subject to verification: Generation 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.

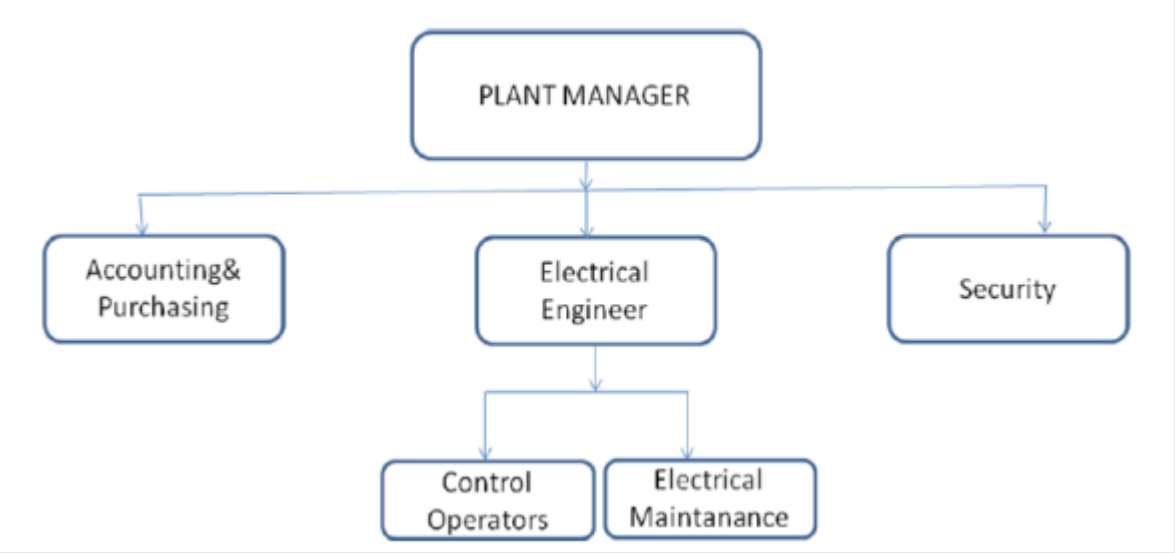
VER Team Members is expected to include the following staff of the PV plant:

Plant Manager: Responsibility for running the plant and compliance with VER monitoring plan. Electrical engineers or technicians will be assisting the plant manager through controlling and electrical maintenance.

Accounting Manager: Responsible for keeping data about generation and consumption.

and

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



Installation of energy meters and data monitoring will be carried out according to the regulations by TEIAS. Three metering devices will be used for monitoring the electricity generated by the power plant and the most conservative reading will form the basis of invoicing.

All data will be kept for at least two years after the crediting period for QA/QC purposes. Electronic and on-site measurement logs signed by operators will ensure that data monitored and required for verification and issuance be kept and archived both electronically and as hard copy for two years after the end of the crediting period or the last issuance of credits, whichever occurs later. Accounting manager will be in charge of keeping track of the documents. KOHLER AEL.TF.21 brand meters which have an accuracy class of 0.5S have been used in the project. The meters were subject to a batch control and their calibrations were approved on 01/11/2013. As per the regulations the meters should not require calibration for at least ten years, however in case of an inconsistency between figures in main and spare meters, the transmission company will calibrate the devices.

B.8 Date of completion of the application of the existing or new baseline and monitoring methodology and name of the responsible person(s)/entity(ies)

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SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

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25/12/2013 date of turnkey project contract.

C.1.2. Expected operational lifetime of the project activity:

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Expected operational lifetime of the project is 25 years 0 months as per the used technology.

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

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The first crediting period is starts in 01/08/2014 (Provisional acceptance date is 31/07/2014)

C.2.1.2. Length of the first crediting period:

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First crediting period will be valid until 31/07/2021 (7 years 0 months). (Two times renewable)

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

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C.2.2.2. Length:

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SECTION D. Stakeholders' comments

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Project has been implemented within the retro-active cycle. Stakeholders' Feedback Round (SFR) was held between 06/03/2015 -10/05/2015. Prior to SFR, an objective observer was invited to provide opinion on the project. Below is a summary of comments compiled by the Objective Observer in the validation report.

Erol Narin : Ege Orman Vakfı (EGEVAK - Project Owner), Vice President of Board of Directors
Yasemen Bilgili : EGEVAK, Vice General Manager
Kadir Bilgili : EGEVAK, Project Responsible (from the Solar for Forest)
Aygün Altıparmak : EGEVAK , Project Responsible (from Development Agency projects)
EGEVAK is founded by a prominent businessman, Cem Bakioğlu, the owner of Bakioğlu Holding. Their mission is increase forest plantation and environmental awareness. They have been granted several

government and IZKA grants which were used in projects like training women for the production and sales of forest related products etc.

Kemal Demirkol: GTE Carbon - Project Developer, Managing Director
Gani Eldeleklioğlu: GTE Carbon, Project Associate
This company is the leading Carbon consultancy company in Turkey and has completed several reports for Gold Standard as well.

Fırat Müminoğlu: Merk Solar
Merk Solar won the IZKA tender and acted as the EPC company of the project. They are one of the oldest PV suppliers of Turkey and is a part of Akfel Group which make natural gas investments. The only problem is that most of the Merk Solar engineers have resigned after they completed the project. So the OO could not obtain very detailed information about their involvement. However, Merk Solar reported no complications or problems with EGEVAK. They were glad that their counterpart was well informed about the application procedures and that they were very co-operative during the construction stage.

Hüseyin Şairoğlu: Pancar Industrial Zone, President of Board of Directors
Nazlı Yemişçi: Pancar Industrial Zone, Environmental Engineer
They have been interviewed to verify whether environmental, work safety and social issues have been regarded during the construction stage of the plant and whether Merk Solar employees have worked in co-operation.

Murat Yılmazçoban: Izmir Development Agency (İZKA), Secretary General.
The project won an IZKA grant. EGEVAK has filled in a very detailed application file, submitted documentation about the economic feasibility, purchased a land and proven the sustainability of the financial and social aspects of the solar plant. Yılmazçoban has been involved in the assessment, inspection and final decision processes.

Öznur İnce: GEDİZ A.Ş. , EMM (Energy Market Module) Coordinator
Ince is responsible from the invoices from the private sector at the local distribution company.
Adem Karabal: GEDİZ A.Ş, Senior System Operation Engineer.
He was responsible from EGEVAK's grid-connection permits and acceptance procedures- which possibly was one of the most complicated stages of the whole project. Because when the initial application was made, the unlicensed grid connection procedures were not very well defined for and carried out by the EPC companies. Karabal mentioned that the fact that Merk Solar's (the EPC Company) representative was not very thorough at the early stages of the project application, had been a common problem for all EPC companies at that time.

Mete Çubukçu: Research Scientist at Ege University, Institute of Solar Energy. Çubukçu did the Monthly Energy Generation Estimations of the PV system installed. He used PVGIS for his study and he is very pleased to see that the total yield of the system is very close to his estimations.

Cebrail Taştekin, Menderes Dursun and Mahir Turgut Şafak: villagers who were interviewed at the local tea house at the presence of other villagers. They have not been affected during the construction of the plant, as the site is far away from the residential area. However they were pleased that some daily jobs were created while opening the pathway to the plant. They are curious about the solar energy and want to learn if this technology is applicable in their daily lives.

İclal Pirim: "Technology Lesson" teacher at the primary school of the village where EGAVAK organized a seminar on Renewable Energy. He suggested a visit to the plant site for the children. He lives in the village.

Dursun İlter : Watchman responsible from the security of the plant. He and his wife reside in the house provided by EGEVAK which is in the premises of the plant. He is paid the minimum wage and is insured. He is also responsible from the water treatment facility of the plant which is used to generate clean deionised water to clean the modules periodically.

D.1. Brief description how comments by local stakeholders have been invited and compiled:

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Local stakeholders and NGOs were invited through e-mails and fax. In addition, logbook has been placed in the Mukhtar's Office of Bulgurca Village in order to gather feedbacks. Physical meeting was not suggested by the Objective Observer due to the fact that a satisfying number of stakeholders were visited during validation site visit (25-26 December 2014) and there were no negative comments. The SFR was started on 06/03/2015 and finalized on 10/05/2015.

D.2. Summary of the comments received:

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SFR has been completed on 10/05/2015. In general, positive comments were received about the project activity. Tables below show the summary of the comments received during the SFR.

Name	Institution	Air Quality	Water Quality and Quantity	Soil Condition	Other Pollutants	Biodiversity	Quality of Employment	Livelihood of the Poor
Nazlı Yemişçi	Izmir Pancar Organize Sanayi Bolgesi	+	+	+	+	+	+	+
Bahtiyar Zeybek	Menderes Ilçesi Bulgurca Mahallesi Muhterliği	+	+	+	+	+	+	+
Çağdaş Güneş	IZKA	+	+	+	+	N/A	+	+
Dursun İlter	EGEVAK	+	+	+	+	+	+	+
A. Doğan Hüner	Izmir Ataturk Bolge Sanayi Organize	+	+	+	+	+	+	+

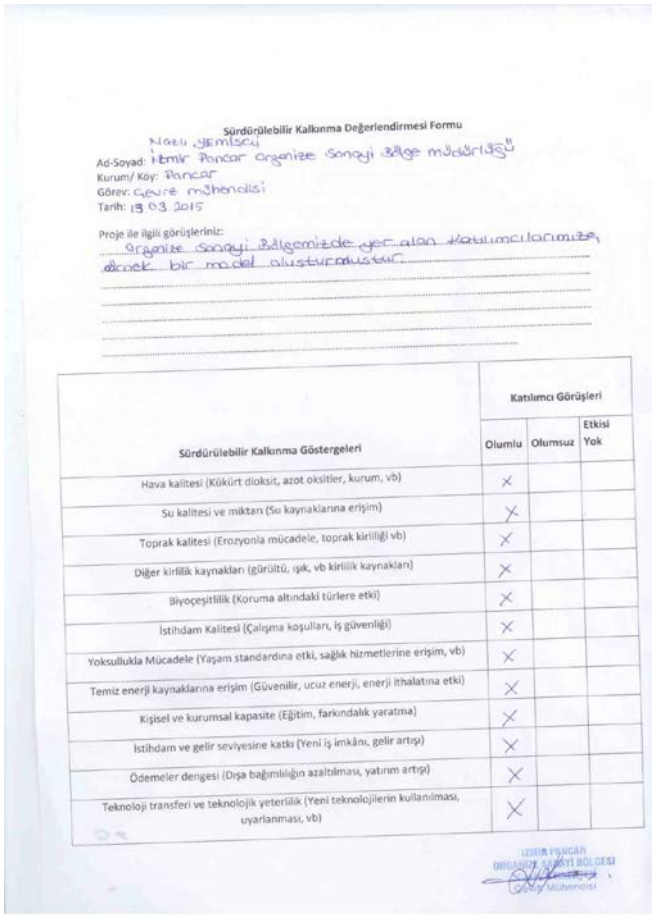
Name	Access to Affordable and Clean Energy Service	Human and Institutional Capacity	Quantitative Employment and Income Generation	Balance of Payments and Investment	Technology Transfer and Technological Self-reliance
Nazlı Yemişçi	+	+	+	+	+

Bahtiyar Zeybek	+	+	+	+	+
Çağdaş Güneş	+	+	+	+	+
Dursun İlter	+	+	+	+	+
A. Doğan Hüner	+	+	+	+	+

+ : Positive impact
- : Negative impact
N/A : Not relevant

Name	Institution	Comments
Nazlı Yemişçi	Izmir Pancar Organize Sanayi Bolgesi	The project has been a role model to our members.
Bahtiyar Zeybek	Menderes Ilçesi Bulgurca Mahallesi Muhterliği	I think the project is benefitting our society. We saw water irrigation, solar power, which is a role model. The project does not have any negative impact. We hope the project will continue.
Çağdaş Güneş	IZKA	The project is becoming a role model. The project is very good for the development.
Dursun İlter	EGEVAK	I am working in the project site. The project has helped me fulfill my financial needs. Together with my family, I am living in the project site.
A. Doğan Hüner	Izmir Ataturk Bolge Sanayi Organize	This is an important and good project as a role model.

Furthermore, below are samples of the documentations of the SFR.



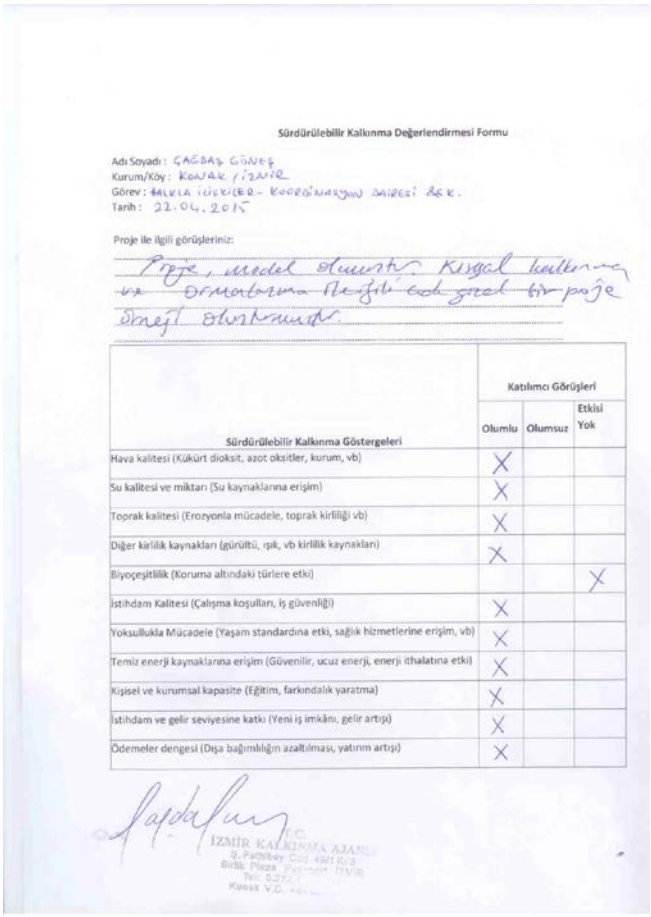
Sürdürülebilir Kalkınma Değerlendirmesi Formu

Ad-Soyad: Nazlı Yemişçi
Kurum/ Köy: İzmir Pancar Organize Sanayi Bölge Müdürlüğü
Görev: Çevre Mühendisi
Tarih: 13.03.2015

Proje ile ilgili görüşleriniz:
Organize Sanayi Bölgemizde yer alan Katılımcılarımıza örnek bir model oluşturmaktadır.

Sürdürülebilir Kalkınma Göstergeleri	Katılımcı Görüşleri		
	Olumlu	Olumsuz	Etkisi Yok
Hava kalitesi (Kükürt dioksit, azot oksitler, kurum, vb)	X		
Su kalitesi ve miktarı (Su kaynaklarına erişim)	X		
Toprak kalitesi (Erozyonla mücadele, toprak kirliliği vb)	X		
Diğer kirlilik kaynakları (gürültü, ışık, vb kirlilik kaynakları)	X		
Biyoçeşitlilik (Koruma altındaki türlere etki)	X		
İstihdam Kalitesi (Çalışma koşulları, iş güvenliği)	X		
Yoksullukla Mücadele (Yaşam standardına etki, sağlık hizmetlerine erişim, vb)	X		
Temiz enerji kaynaklarına erişim (Güvenilir, ucuz enerji, enerji ithalatına etki)	X		
Kişisel ve kurumsal kapasite (Eğitim, farkındalık yaratma)	X		
İstihdam ve gelir seviyesine katkı (Yeni iş imkânı, gelir artışı)	X		
Ödemeler dengesi (Dışa bağımlılığın azaltılması, yatırım artışı)	X		
Teknoloji transferi ve teknolojik yeterlilik (Yeni teknolojilerin kullanılması, uyarlanması, vb)	X		

İZMİR PANCAR ORGANİZE SANAYİ BÖLGESİ
Çevre Mühendisi



Sürdürülebilir Kalkınma Değerlendirmesi Formu

Adı Soyadı: ÇAĞDAŞ GÜNEŞ
Kurum/Köy: KONAK / İZMİR
Görev: HALKLA İLİŞKİLER - KOORDİNASYON UZMANI ASK.
Tarih: 22.04.2015

Proje ile ilgili görüşleriniz:
Proje, model olmuştur. Kırsal kalkınma ve ormanlarına benzer çok sosyal bir proje örneği olmuştur.

Sürdürülebilir Kalkınma Göstergeleri	Katılımcı Görüşleri		
	Olumlu	Olumsuz	Etkisi Yok
Hava kalitesi (Kükürt dioksit, azot oksitler, kurum, vb)	X		
Su kalitesi ve miktarı (Su kaynaklarına erişim)	X		
Toprak kalitesi (Erozyonla mücadele, toprak kirliliği vb)	X		
Diğer kirlilik kaynakları (gürültü, ışık, vb kirlilik kaynakları)	X		
Biyoçeşitlilik (Koruma altındaki türlere etki)			X
İstihdam Kalitesi (Çalışma koşulları, iş güvenliği)	X		
Yoksullukla Mücadele (Yaşam standardına etki, sağlık hizmetlerine erişim, vb)	X		
Temiz enerji kaynaklarına erişim (Güvenilir, ucuz enerji, enerji ithalatına etki)	X		
Kişisel ve kurumsal kapasite (Eğitim, farkındalık yaratma)	X		
İstihdam ve gelir seviyesine katkı (Yeni iş imkânı, gelir artışı)	X		
Ödemeler dengesi (Dışa bağımlılığın azaltılması, yatırım artışı)	X		

İZMİR KALKINMA AJANSI A.Ş.

D.3. Report on how due account was taken of any comments received and on measures taken to address concerns raised:

>>

There were no negative comments received during the SFR. Thus, no measures need to be taken.

D.4. Report on the Continuous input / grievance mechanism:

>>

Continuous input / grievance mechanism expression method and details are as follow:

	Method Chosen (include all known details e.g. location of book, phone, number, identity of mediator)	Justification
Continuous Input / Grievance Expression Process Book	Logbook has been placed in the Mukhtar's Office of Bulgurca Village Address: Bulgurca Mh. Muhtarı - İZMİR Türkiye Telephone:	The Bulgurca Village is the closest village to the project site. The headman of the village and local people were also informed about the SFR and logbook.

	+90 535 878 13 21	
Telephone access	Project Owner: +90 232 463 80 80 Project Developer: +90 312 472 35 00 Gold Standard Ankara Office: +90 312 426 30 61	Alternative Method
Internet/email access	Project Owner: yasemen.bilgili@egeorman.org.tr Project Developer: gte@gtecarbon.com Gold Standard Regional Manager: pinar.ozturk@goldstandard.org	Alternative Method
Nominated Independent Mediator (optional)	N/A	N/A

D.5. Report on stakeholder consultation feedback round:

>>

SFR was held between 06/03/2015 – 10/05/2015. Since there were many stakeholders visited during the validation site visit and no negative comments raised, physical meeting was not conducted during the SFR. The SFR has been finalized without any negative comments received.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	GTE Carbon
Street/P.O.Box:	Ehlibeyt Mahallesi 1259 Sk.
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State/Region:	Balgat
Postfix/ZIP:	06520
Country:	Turkey
Telephone:	+ 90 312 472 35 00
FAX:	+ 90 312 472 33 66
E-Mail:	gte@gtecarbon.com
URL:	www.gtecarbon.com
Represented by:	
Title:	Managing Director
Salutation:	Mr
Last Name:	Demirkol
Middle Name:	Kemal
First Name:	Mehmet
Department:	Management
Mobile:	
Direct FAX:	+ 90 312 472 33 66
Direct tel:	+ 90 312 472 35 00 - 19
Personal E-Mail:	kemal@gtecarbon.com

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Street/P.O.Box:	Şair Eşref Bul.
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City:	İzmir
State/Region:	Konak
Postfix/ZIP:	35260
Country:	Turkey
Telephone:	+90 232 464 51 60
FAX:	+90 232 464 50 73
E-Mail:	egeorman@egeorman.org.tr
URL:	http://www.egeorman.org.tr
Represented by:	
Title:	Vice General Manager
Salutation:	Mrs
Last Name:	Bilgili
Middle Name:	
First Name:	Yasemen
Department:	Management
Mobile:	+90 533 305 34 17
Direct FAX:	+90 232 463 80 80
Direct tel:	+90 232 463 80 80
Personal E-Mail:	yasemen.bilgili@egeorman.org.tr

Annex 2 - **Information regarding Public Funding**

The project is partly (50%) funded by İZKA (İzmir Development Agency).

Annex 3 - **Combined Margin Emission Factor Calculation**

As per the tool, the following six steps for calculation of emission reductions have been applied:

Step 1. Identification of the relevant electrical power system

According to the ‘‘Tool to calculate the emission factor for an electricity system’’, Version 7.0, a project electricity system has to be defined by the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity, and that can be dispatched without significant transmission constraints. Therefore, in this project activity the project electricity system includes the project site and all power plants attached to the Interconnected Turkish National Grid, which has an installed capacity of 49,524.1 MW and gross generation about 239,496.8 by 2012[10,11].

Since there exists no delineation of project electricity system or connected electricity systems by DNA, following criteria has been used to determine the existence of significant transmission constraints:

(a) *In case of electricity systems with spot markets for electricity: there are differences in electricity prices (without transmission and distribution costs) of more than 5 percent between the systems during 60 percent or more of the hours of the year.*

(b) *The transmission line is operated at 90% or more of its rated capacity during 90% percent or more of the hours of the year.*

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

For imports from connected electricity systems located in another host country (ies), the emission factor is taken as “0” tCO_2/MWh as requested by the methodology.

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional)

Option I has been chosen by the project developer hence only grid power plants are included in calculations.

10 http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/kguc(1-13)/4.xls
11 http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/uretim%20tuketim(23-47)/24.xls

Step 3. Select a method to determine the operating margin (OM)

The Simple Operating Margin (OM) emission factor ($\mathbf{EF}_{grid, OM, y}$) is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all the generating plants serving the system, excluding low-cost/must-run power plants. As electricity generation from solar and low cost biomass facilities is insignificant and there are no nuclear plants in Turkey, the only low cost /must run plants considered are hydroelectric, wind and geothermal facilities.

The tool gives two options for the calculation of $\mathbf{EF}_{grid, OM, y}$;

(a) Ex-ante option
A 3-year generation-weighted average, based on the most recent data available at the time of submission of the VER-PDD to the DOE for validation, without the requirement to monitor and recalculate the emissions factor during the crediting period, or

(b) Ex-post option
The year in which the project activity displaces grid electricity with the requirement that the emissions factor to be updated annually during monitoring.

For this project the ex-ante approach is selected. Data for calculating the three year average is obtained from the period 2010-2012, the most recent data available at the time of PDD submission to the DOE.

Step 4. Calculate the operating margin emission factor according to the selected method.

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost / must run plants / units. The Simple OM has been calculated using option B which is based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system. Option B has been selected since;

- Generation and CO_2 data for individual power units are not available
- Only renewable are considered as low cost/must run resources and the quantity of electricity supplied to the grid by these sources is known;
- Off-Grid power plants are not included in calculations.

As fuel consumption and average efficiency data for each power plant / unit are not available, Option B is used for simple OM calculation. Under Option B, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must run power plants / units, and based on fuel type(s), and total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_{i,m} FC_{i,y} * NCV_{i,y} * EF_{CO_2,i,y}}{EG_y}$$ **(Equation 1)**

Where:

$EF_{grid, OM, y}$: Simple operating margin CO_2 emission factor in year "y" (tCO_2/GWh)

$FC_{i, y}$: Amount of fossil fuel type "i" consumed in the project electricity system in year "y" (mass or volume unit)

$NCV_{i, y}$: Net calorific value (energy content) of fossil fuel type "i" in year "y" (GJ / mass or volume unit)

$EF_{CO2, i}$: CO_2 emission factor of fossil fuel type "i" in year "y" (tCO_2/GJ)

EGy: Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must run power plants / units, in year "y" (MWh)

For the calculation of the Simple OM, the amount of fuel consumption ($FC_{i, y}$) and heating values of fuels are taken from website of TEIAS[12,13], the official source of related data. Fuel consumption values for the relevant years are given in table below:

	$FC_{i,y}$ unit [Ton, except for Natural Gas (NG) (1000 m^3)]			
Fuel Type	**2010**	**2011**	**2012**	**Total**
Hard Coal	7,419,703	10,574,434	12,258,462	30,252,599
Lignite	56,689,392	61,507,310	55,742,463	173,939,165
Fuel Oil	891,782	531,608	564,796	1,988,186
Diesel Oil	20,354	15,047	176,379	211,780
LPG	0	0	0	0
Naphtha	13,140	0	0	13,140
Natural Gas	21,783,414	22,804,587	23,090,121	67,678,122

Table 4: Fuel Consumption in Thermal Power Plants

The NCV of the fuels consumed have been calculated using data from the TEIAS web page. The emission factors required for calculation of CO_2 emission coefficient have been obtained through IPCC 2006 guidelines for GHG inventories for fuels.

[12] http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/yak%C4%B1t48-53/49.xls
[13] http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/yak%C4%B1t48-53/51.xls

	COEF (tCO_2/kt)	Consumption (2010-2012) (tons or $1000m^3$)	Total Emission (2010-2012) (tCO_2)
Coal	2,086	30,252,599	63,096,587
Lignite	651	173,939,165	113,164,419
Fuel Oil	3,096	1,988,186	6,155,722
Diesel Oil	3,227	211,780	683,369
LPG	0	0	0
Naphtha	2,321	13,140	30,503
Natural Gas	2,017	67,678,122	136,478,177
Total Emissions			319,608,776

Table 5:Calculation of emission factors for fuels

Net electricity generated and supplied to the Grid by thermal plants has been calculated using data obtained from the TEIAS web page[14]. The ratio between gross and net generation has been calculated first, and assuming that the same ratio is valid for thermal plants; gross generation by thermal power plants has been multiplied by this ratio in order to find net generation by thermal plants. The calculation of $EF_{grid,OM,y}$ requires the inclusion of electricity imports with an emission factor of 0 tCO_2/GWh. By including the imports in the electricity production this requirement is fulfilled. Summing up this with the imported electricity, total supply excluding low cost / must run sources are determined as given in table below.

Year	Grid Loss[15]	Gross Gen. Thermal[16]	Net Gen. Thermal	Import[17]	Total Supply to the Grid
2010	*3.9%*	*155,828*	*149,750*	*1,144*	*150,894*
2011	*5.2%*	*171,638*	*162,713*	*4,556*	*167,269*
2012	*4.9%*	*174,872*	*166,303*	*5,827*	*172,130*

[14] http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/uretim%20tuketim(23-47)/27(99-2012).xls
[15] http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/uretim%20tuketim(23-47)/34(84-12).xls
[16] http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/kgucunkullan%C4%B1m(14-22)/14.xls
[17] http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/uretim%20tuketim(23-47)/34(84-12).xls

Total Net Thermal Gen.	478,766	11,526	490,292.72

Table 6:Gross/Net electricity generation by Turkish Grid

Having calculated the total fuels emissions and net generation by thermal power plants as given in previous two tables, The $EF_{grid, OM ,y}$, is calculated by simply dividing total emission by total net thermal electricity generation as defined in equation **(1)** above;

$\mathbf{EF}_{grid, OM, y}$ = **319,608,776** tCO_2 / 490,292.72 MWh

= 0.652 tCO_2/MWh.

In calculating the $EF_{grid, OM ,y}$, data for NCV has been calculated using weighted average values for each fuel.

Step 5. Identifying the cohort of the power units to be included in the build margin.

Step 5. Calculate the build margin (BM) emission factor:

In terms of vintage of data, project participants can choose between one of the following two options to calculate $EF_{grid,BM,y}$.

Option 1. *For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.*

Option 2. *For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.*

In this PDD, **Option1** is chosen to calculate the build margin emission factor. The sample group of power units m used to calculate the build margin should be determined as per the following procedure, consistent with the data vintage selected above:

(a) *Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently (SET5-units) and determine their annual electricity generation (AEGSET-5-units, in MWh).*

Since the Turkish National Electricity Transmission Company (TEIAS) no longer provides the exact comissiong dates of new plants, it is not possible to determine the five most recently comissioned plants. Still the yearly report documents the list of plants comissioned within the last year and for the purposes of CM calculation, five plants with the largest capacity which were comissioned in 2012 were selected as a conservative approach to determine the AEGset-5-units. Even with the largest capacity set of plants, total achieved capacity (5,642 GWh) is far below the 20% of the last year's total generation (45,361.8 GWh). Hence AEGset-5-units shall not be used in any case.

Five Power Unit started the supply electricity to the grid has been tabulated below:

Plant Name	Annual Firm Generation Capacity (GWh)	Technology	Commissioning Date
ENERJİ-SA (KÖSEKÖY)	930	Natural Gas	2012
Soda Sanayii A.Ş.	1,765	Natural Gas	2012
BİLECİK NGCC (DEDELİ NG EL.)	945	Natural Gas	2012
Afyon NGCC	945	Natural Gas	2012
AGE NGCC (AGE DENİZLİ)	1,057	Natural Gas	2012
TOTAL	**5,642**		

Table 7. List of five plants with largest capacity commissioned in 2012 ($AEG_{set\text{-}5\text{-}units}$) *

(b) *Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEGtotal, in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEGtotal (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) (SET≥20%) and determine their annual electricity generation (AEGSET-≥20%, in MWh);*

The list of the most recent capacity additions to the grid and their average and actual generation capacities are available at the TEİAŞ web page. For determination of plants that comprise 20% of the system's generation- AEG_{total}, gross generation in year 2012 which is 226,808.8 GWh (excluding VER projects) has been taken as reference and its 20% has been determined as about 45,361.8 GWh. $AEG_{set\geq 20percent}$ is determined as 52,880.1 GWh, since certain plants are fully included in the calculations as requested by the methodological tool applied.

(c) *From SET5-units and SET≥20% select the set of power units that comprises the larger annual electricity generation (SETsample);*

SET≥20% is selected as (SETsample) because the set of power units that comprises the larger annual electricity generation.

Identify the date when the power units in SETsample started to supply electricity to the grid. If none of the power units in SETsample started to supply electricity to the grid more than 10 years ago, then use SETsample to calculate the build margin. In this case ignore steps (d), (e) and (f).

There is no power units in SETsample started to supply electricity to the grid more than 10 years ago. Therefore the steps (d), (e) and (f) are ignored.

The Build Margin emission factor $\mathbf{EF}_{grid,\,BMs,\,y}$ is calculated as the generation-weighted average emission factor of a sample of power plants "m" for a specific year, as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \qquad \textbf{(Equation 1)}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year "y" (tCO_2/MWh)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit "m" in year "y" (MWh)
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit "m" in year "y" (tCO_2/MWh)
m	=	Power units included in the build margin
y	=	Most recent historical year for which power generation data is available

"Tool to Calculate the Emission Factor for an Electricity System" has been used for plant efficiency data although this approach is very conservative. Since tool does not contain any specific data for plants with LPG, Naphtha etc. all of the plants consuming liquid fuels have been considered as open cycle plants. Plants using lignite and coal have been assumed as using subcritical technology, whereas natural gas plants have been assumed as combined cycle plants. The assumptions have been based on TEIAS statistics which gives heating values of fuels consumed in thermal power plants[18] and corresponding electricity generation which shows that values used are very conservative compared to actual situation.

	EF CO_2 (tCO2/Tj)	**Generation Efficiency**	**EF (tCO_2/MWh)**
Coal	89.50	39.0%	0.826
Lignite	90.90	39.0%	0.839
Fuel Oil	75.50	39.5%	0.688

[18] http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2012/yak%C4%B1t48-53/51.xls

Diesel	72.60	39.5%	0.662
LPG	61.60	39.5%	0.561
Naphtha	69.30	39.5%	0.632
Natural Gas	54.30	60.0%	0.326

Table 8 Calculation of emission factor from most recent power plants

The build margin emission factor has been determined for the most recent capacity additions as shown in table below. The Build margin emission factor in the last column has been determined by multiplying each EF value with the corresponding electricity generation value for that fuel and dividing it by the total generation by the most recent capacity additions.

	2010(After 15/07)	2011	2012	TOTAL	EF tCO2/GWh	emissions(tCO2)
Hard Coal+Imported Coal+Asphaltite	9,080.0	4,320.0	6.0	13,406.0	0.826	11,075.4
Lignite	0.0	0.0	145.0	145.0	0.839	121.7
Fuel Oil	93.0	225.0	380.0	698.0	0.688	480.3
Diesel oil	0.0	0.0	0.0	0.0	0.662	0.0
LPG	0.0	0.0	0.0	0.0	0.561	0.0
Naphtha	0.0	96.0	0.0	96.0	0.632	60.6
Natural Gas	11,912.5	10,077.6	8,968.0	30,958.1	0.326	10,086.1
Renewables (Biomass, Waste, Hdro, Wind, Geothermal)	431.0	2,294.8	4,851.2	7,577.0	0.000	0.0
TURKEY'S TOTAL	21,516.5	17,013.4	14,350.2	52,880.1		21,824.2

Table 9. Most recent capacity additions corresponding to 20% by fuel source, excluding VER projects

List of Plants built using VER revenue and their total capacities between 2010 and 2012 (7,991.0 MW) (those excluded in BM calculation) are given in CM Calculation sheet.

Finally, by summing up the weighted EF values, overall build margin emission factor has been calculated as:

$EF_{grid, BM, y}$ =21,824.2 tCO_2 / 52,880.1 GWh

= 0.413 tCO_2/GWh

STEP 7 - Calculate the combined margin (CM) emission factor

As the project activity is not located in a least developed country or small island states or in a country with less than 10 registered CDM projects at time of validation, Option (a) Weighted Average CM calculation is used.

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \qquad \textbf{Equation 2}$$

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year "y" (tCO_2/MWh) as calculated from equation (2) above.

$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year "y" (tCO_2/MWh) as calculated from equation (1) above.

w_{OM} = Weighting of operating margin emissions factor (%)

w_{BM} = Weighting of build margin emissions factor (%)

The default values of the weights, w_{OM} and $w_{BM,}$ as recommended by the selected methodology are 0.75 and 0.25 respectively. These default values have been used in calculating CM emission factor together without rounding the values of EF_{OM} and EF_{BM}.

Based on the formula above (**3**), baseline emission factor is calculated as;

$EF_{grid, CM, y}$ = 0.75 *0.652 + 0.25 * 0.413 **= 0.592**

The combined margin emission factor is therefore **0.592 tCO_2/MWh.**

Emission factor will remain same during the first crediting period as recommended by the methodology.

Annex-4 - **ODA Declaration**

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ANNEX D - OFFICIAL DEVELOPMENT ASSISTANCE DECLARATION

Date: *11/06/2014*

The Gold Standard Foundation

79 Avenue Louis Casai

Geneva Cointrin, CH-1216

Switzerland

RE: Declaration of Non-Use of Official Development Assistance by Project Owner of GS3305

Ege Orman Vakfı Agaclandirma ve Agac Urunleri İktisadi İsletmesi (The Aegean Forest Foundation)

As Project Owner of the above-referenced project, and acting on behalf of all Project Participants, I now make the following representations:

Yasemen Bilgili

I hereby declare that I am duly and fully authorized by the Project Owner of the above-referenced project to act on behalf of all Project Participants and make the following representations:

I. The Gold Standard Documentation

I am familiar with the provisions of The Gold Standard Documentation relevant to Official Development Assistance (ODA). I understand that the above-referenced project is not eligible for Gold Standard registration if the project receives or benefits from Official Development Assistance with the condition that some, or all, of the carbon credits [CERs, ERUs, or VERs] coming out of the project are transferred to the ODA donor country. I hereby expressly declare that no financing provided in connection with the above-referenced project has come from or will come from ODA that has been or will be provided under the condition, whether express of implied, that any or all of the carbon credits issued as a result of the project's operation will be transferred directly or indirectly to the country of origin of the ODA.

II. Duty to Notify Upon Discovery

If I learn or if I am given any reason to believe at any stage of project design or implementation that ODA has been used to support the development or implementation of the project, or that an entity providing ODA to the host country may at some point in the future benefit directly or indirectly from the carbon credits generated from the project as a condition of investment, I will notify The Gold Standard immediately using the Amended ODA Declaration Form provided below.

III. Investigation

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The Gold Standard reserves the right to conduct an investigation into any project it reasonably believes may be receiving ODA with the condition that some or all of the carbon credits from the project will be transferred to the ODA donor country.

IV. Sanctions

I am fully aware that the sanctions identified in The Gold Standard Terms and Conditions may be applied to me or the above-referenced project in the event that any of the information provided above is false or I fail to notify The Gold Standard of any changes to ODA in a timely manner.

I swear that all of the statements contained herein are true to the best of my knowledge.

Signed: _____

EGEVAK

Name: ___Yasemen Bilgili_____

Title: ___Vice General Manager_____

On behalf of: ___ **Ege Orman Vakfı Agaclandirma ve Agac Urunleri İktisadi İsletmesi (The Aegean Forest Foundation)**

Place: ___Izmir_____

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