

المجلس العالمي للبصمة الكربونية  
GLOBAL CARBON COUNCIL



**Project  
Submission  
Form**

V4.0- 2022

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<b>COVER PAGE- Project Submission Form (PSF)</b>														
<i>Complete this form in accordance with the instructions attached at the end of this form.</i>														
BASIC INFORMATION														
<b>Title of the Project Activity as per LON/LOA</b>	<b>Renewable Solar Power Project by Fas Energy</b>													
<b>PSF version number</b>	V4.0													
<b>Date of completion / Updating of this form</b>	22/03/2023													
<b>Project Owner(s) as per LON/LOA</b> <small>(Shall be consistent with De-registered CDM Type B Projects)</small>	FAS Energy LLC													
<b>Country where the Project Activity is located</b>	Egypt													
<b>GPS coordinates of the project site(s)</b>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;">Project Investor</th> <th style="width: 15%;">Latitude Degree</th> <th style="width: 15%;">Latitude Decimal</th> <th style="width: 15%;">Longitude</th> <th style="width: 15%;">Longitude Decimal</th> </tr> </thead> <tbody> <tr> <td>FAS Energy LLC</td> <td>24° 25' 31.93" N</td> <td>24.42554°</td> <td>32° 43' 32.83" E</td> <td>32.72579°</td> </tr> </tbody> </table>				Project Investor	Latitude Degree	Latitude Decimal	Longitude	Longitude Decimal	FAS Energy LLC	24° 25' 31.93" N	24.42554°	32° 43' 32.83" E	32.72579°
Project Investor	Latitude Degree	Latitude Decimal	Longitude	Longitude Decimal										
FAS Energy LLC	24° 25' 31.93" N	24.42554°	32° 43' 32.83" E	32.72579°										
<b>Eligible GCC Project Type as per the Project Standard</b> <small>(Tick applicable project type)</small>	<input checked="" type="checkbox"/> <b>Type A:</b> <input type="checkbox"/> Type A1 <input checked="" type="checkbox"/> Type A2 <input checked="" type="checkbox"/> Sub-Type 1 <input type="checkbox"/> Sub-Type 2 <input type="checkbox"/> Sub-Type 3 <input type="checkbox"/> Sub-Type 4 <input type="checkbox"/> Type A3													

	<input type="checkbox"/> <b>Type B – De-registered CDM Projects:</b> <sup>1</sup> <input type="checkbox"/> Type B1 <input type="checkbox"/> Type B2
<b>Minimum compliance requirements</b>	<input checked="" type="checkbox"/> Real and Measurable GHG Reductions <input checked="" type="checkbox"/> National Sustainable Development Criteria (if any) <input checked="" type="checkbox"/> Apply credible baseline and monitoring methodologies <input checked="" type="checkbox"/> Additionality <input checked="" type="checkbox"/> Local Stakeholder Consultation Process <input checked="" type="checkbox"/> Global Stakeholder Consultation Process <input checked="" type="checkbox"/> No GHG Double Counting <input checked="" type="checkbox"/> Contributes to United Nations Sustainable Development Goal 13 (Climate Action)
<b>Choose optional and additional requirements</b> <small>(Tick applicable label categories)</small>	<input checked="" type="checkbox"/> Do-no-net-harm Safeguards to address Environmental Impacts <input checked="" type="checkbox"/> Do-no-net-harm Safeguards to address Social Impacts <input checked="" type="checkbox"/> Contributes to United Nations Sustainable Development Goals (in addition to Goal 13)
<b>Applied methodologies including version No.</b> <small>(Shall be approved by the GCC or the CDM)</small>	CDM approved consolidated Methodology - ACM0002 (Version 21.0) - Grid-connected electricity generation from renewable sources.
<b>GHG Sectoral scope(s) linked to the applied methodology(ies)</b>	Sectoral scope 1, Energy industries (renewable - / non-renewable sources)

<sup>1</sup> Owners of Type B projects shall fill in the form provided in Appendix 7.

<b>Applicable Rules and Requirements for Project Owners</b> (Tick applicable Rules and Requirements)	Rules and Requirements		Version
	<input checked="" type="checkbox"/> ISO 14064-2		
<input checked="" type="checkbox"/> Applicable host country legal requirements /rules			
<input checked="" type="checkbox"/> GCC Rules and Requirements <sup>2</sup>	<input checked="" type="checkbox"/> Project Standard	V3.1	
	<input type="checkbox"/> Approved GCC Methodology (XXXXXX)		
	<input checked="" type="checkbox"/> Program Definitions	V3.1	
	<input checked="" type="checkbox"/> Environment and Social Safeguards Standard	V3	
	<input checked="" type="checkbox"/> Project Sustainability Standard	V3.1	
	<input checked="" type="checkbox"/> Instructions in Project Submission Form (PSF)-template	V4.0	
	<input checked="" type="checkbox"/> Clarification No. 01	V1.3	
	<input type="checkbox"/> Clarification No. 02		
	<input type="checkbox"/> Clarification No. 03		
	<input type="checkbox"/> Clarification No. 04		
	<input type="checkbox"/> Clarification No. 05		
	<input checked="" type="checkbox"/> Standard on avoidance of double counting	V1	
	<input type="checkbox"/> Add rows if required		
<input checked="" type="checkbox"/> CDM Rules <sup>3</sup>	<input checked="" type="checkbox"/> Approved CDM Methodology (ACM0002)	V21	
	<input checked="" type="checkbox"/> TOOL 1- Tool for the demonstration and assessment of additionality	V7.0.0	
	<input type="checkbox"/> TOOL 02- Combined tool to identify the baseline scenario and demonstrate additionality		
	<input checked="" type="checkbox"/> TOOL 07- Tool to calculate the emission	V7.0	

<sup>2</sup> GCC Program rules and requirements: <http://www.globalcarboncouncil.com/resource-centre/>

<sup>3</sup> CDM Program rules: <https://cdm.unfccc.int/Reference/index.html>

		factor for an electricity system	
		<input type="checkbox"/> TOOL 19- Demonstration of additionality of microscale project activities	
		<input type="checkbox"/> TOOL 21- Demonstration of additionality of small-scale project activities	
		<input type="checkbox"/> TOOL 23- Additionality of first-of-its-kind project activities	
		<input checked="" type="checkbox"/> TOOL 24- Common practice	V3.1
		<input checked="" type="checkbox"/> TOOL 27- Investment analysis	V12.0
		<input type="checkbox"/> TOOL 32- Positive lists of technologies	
		<input type="checkbox"/> Guidelines for objective demonstration and assessment of barriers	
	<input type="checkbox"/> Add rows if required		
<p><b>Choose Third Party Project Verification by approved GCC Verifiers<sup>4</sup></b></p> <p>(Tick applicable verification categories)</p>	<input checked="" type="checkbox"/> GHG emission reductions (i.e., Approved Carbon Credits <b>(ACCs)</b> ) <input checked="" type="checkbox"/> Environmental No-net-harm Label <b>(E<sup>+</sup>)</b> <input checked="" type="checkbox"/> Social No-net-harm Label <b>(S<sup>+</sup>)</b>  <input checked="" type="checkbox"/> United Nations Sustainable Development Goals <b>(SDG<sup>+</sup>)</b> <input type="checkbox"/> Bronze SDG Label <input checked="" type="checkbox"/> Silver SDG Label <input type="checkbox"/> Gold SDG Label <input type="checkbox"/> Platinum SDG Label <input type="checkbox"/> Diamond SDG Label  <input checked="" type="checkbox"/> CORSIA requirements <b>(C<sup>+</sup>)</b> <input checked="" type="checkbox"/> Host Country Attestation on Double counting		

<sup>4</sup> **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.

<p><b>Declaration by the ‘Authorized Project Owner<sup>5</sup> and focal point’</b></p> <p>(Tick all applicable statements<sup>6</sup>)</p>	<p>The Project Owner(s) declares that:</p> <p><b>Generic Requirements applicable to all Project Types:</b></p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> We confirm that the Project Activity is eligible to be registered under the GCC program.</p> <p>We shall ensure the following for the Project Activity (tick at least one of the two options):</p> <p><input checked="" type="checkbox"/> 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<sup>7</sup> program, either for compliance or voluntary purposes, during the entire GCC crediting period; or</p> <p><input checked="" type="checkbox"/> If the project activity has been issued with carbon credits or environmental attributes of compensating nature<sup>8</sup> 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.</p> <p><b>Specific requirements applicable to respective Project Types:</b></p> <p><b><u>For Project Type A1:</u></b></p> <p><input type="checkbox"/> 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.</p>
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<sup>5</sup> The Project Owner means the legal entity or organization that has overall control and responsibility for the Project Activity

<sup>6</sup> **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.

<sup>7</sup> Non-GHG programs could be such as I-REC facilitating reliable energy claims with Renewable Energy Certificate (REC) schemes

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



	<p><b><u>For Project Type A2 (Sub-Type 1):</u></b></p> <p><input checked="" type="checkbox"/> 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.</p> <p><b><u>For Project Type A2 (Sub-Type 2 or Sub-Type 3):</u></b></p> <p>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):</p> <p><input type="checkbox"/> Submit a proof for deregistration from CDM; or</p> <p><input type="checkbox"/> Submit a signed &amp; 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.</p> <p><input type="checkbox"/> 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).</p> <p><b><u>For Project Type A2 (Sub-Type 4):</u></b></p> <p>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):</p> <p><input type="checkbox"/> Submit the proof for exclusion of CPA(s) from registered CDM-POA prior to the date of initial submission to the GCC Program; or</p> <p><input type="checkbox"/> 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.</p> <p><b><u>For Project Type A3:</u></b></p> <p><input type="checkbox"/> 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.</p> <p><b><u>For Project Type B1 or B2:</u></b></p> <p>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):</p> <p><input type="checkbox"/> Submit a proof for deregistration from CDM; or</p>
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	<p><input type="checkbox"/> Submit a signed &amp; 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.</p> <p><b>Requirements to avoid double counting:</b>          We intend to submit or have submitted a written attestation<sup>9</sup> (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<sup>10</sup> (tick at least one of the three options):</p> <p><input type="checkbox"/> The initial submission for GSC; or</p> <p><input type="checkbox"/> Along with the submission for a request for registration (after Project Verification is completed); or</p> <p><input checked="" type="checkbox"/> Along with the submission for a request for the first or subsequent issuance of ACCs.</p> <p><b>Project specific requirements:</b>  <u><b>CORSIA specific requirements:</b></u></p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> We confirm that the Project Activity meets all the requirement of the CORSIA Eligible Emissions Units<sup>11</sup> required for GCC projects and does not fall under the excluded unit types, methodologies, programme elements, and/or procedural classes.</p> <p><input checked="" type="checkbox"/> 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).</p> <p><input checked="" type="checkbox"/> We confirm that the Project Activity will be implemented in a country which is UN member state<sup>12</sup>.</p> <p>Provide details (if any) below for the boxes ticked above:</p>
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<sup>9</sup> In case of any change of Host Country Letter of Authorisation (HCLOA) the project owner shall inform the GCC operations team immediately

<sup>10</sup> 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.

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

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

	<p>The Project Owner(s) declares that:</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p>Provide details below for the boxes ticked above</p>
<p><b>Appendixes 1-9</b></p>	<p>Details about the Project Activity are provided in Appendixes 1 through 9 to this document.</p>
<p><b>Name, designation, date and signature of the Focal point (as per LON/LOA)</b></p>	<p><b>Mr. Manish Dabkara</b>  <b>MD &amp; CEO</b>  <b>Date: 22/03/2023</b></p>  

## 1. PROJECT SUBMISSION FORM

### Section A. Description of the Project Activity

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

The Purpose of this project activity is to generate electricity by harnessing the solar energy by using of solar photovoltaic technology and there by exporting the generated electricity to the respective national grid of Egypt. Project activity involves installation of a 50 MW solar project in Egypt. The project has been implemented by FAS Energy LLC.

The project is commissioned and currently operational. The project details are provided in the table below

Project Owner	Capacity (MW)	Purpose	Commissioning Date (COD)
FAS Energy LLC	50 MW (AC capacity) 62 MW (DC capacity)	Sell to grid	16/01/2019

The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 54,967 tCO<sub>2</sub>e/year, thereon displacing estimated average of 128,699 MWh/year amount of electricity from the generation-mix of power plants connected to the Egyptian grid, which is mainly dominated by thermal/fossil fuel-based power plant. Project activity will mitigate the total GHG emission reductions of 549,673 tCO<sub>2</sub>e over the entire crediting period.

#### Baseline Scenario

The scenario existing prior to the implementation of the project activity, is electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “**Tool to calculate the emission factor for an electricity system**”. This is a green field project activity. There was no activity at the site of the project participant prior to the implementation of this project activity. Hence pre-project scenario and baseline scenario is the same.

#### Sustainable Development Indicators

In addition to contribution to the sustainable environment by reducing the GHG emissions and reducing the dependency on fossil fuels, this project activity also contributing to the sustainable development though supporting the local community and local economy.

**Social well-being:** The project activity provided / provides job opportunity to local people during erection, commissioning and maintenance of the solar project. Frequency of visiting villages and nearby areas by skilled, technical and industrialist increase due to installation /site visit/operation and

maintenance work related to solar plant. This directly and indirectly positively effects the economy of villages and nearby area.

**Environmental well-being:** Solar power is one of the cleanest renewable energy powers and does not involve any fossil fuel. There are no GHG emissions. The impact on land, water, air and soil is negligible. Thus, the project activity contributes to environmental well-being without causing any negative impact on the surrounding environment.

**Economic well-being:** The project activity generates permanent and temporary employment opportunity within the vicinity of the project. The electricity supply in the nearby area improves which directly and indirectly improves the economy and life style of the area.

**Technological well-being:** The project activity is step forward in harnessing the untapped solar potential and further diffusion of the solar technology in the region. The project activity leads to the promotion and demonstrates the success of solar projects in the region which further motivate more investors to invest in solar power projects. Hence, the project activity leads to technological well-being

## A.2. Location of the Project Activity

The location details of the project are mentioned below:

**City:** North-West Aswan City

**Country:** Egypt

The Geo Coordinates of the project is provided below:

Latitude: 24° 25' 31.93" N/ 24.42554°N

Longitude: 32° 43' 32.83" E/ 32.72579°E

The project location is highlighted in the map below



### A.3. Technologies/measures

The Project Activity is a Solar PV project. The total installed capacity of the project is 50 MW of Solar PV plant located in Egypt.

The Project Activity is a new facility (Greenfield) and the electricity generated by the project is exported to the Egyptian electricity grid. The Project Activity will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The estimated lifetime of the project activity is considered as 25 years for solar technology. This may increase depending on the operation & maintenance of the plant. In the Pre- project scenario the entire 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.

The project shall result in replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 54,967 tCO<sub>2</sub>e per year, thereon displacing 128,699 MWh/year amount of electricity from the grid.

It is to be noted that the technical specification of the modules (i.e. module capacity or no. of modules) may change but the project capacity and location would remain same throughout the crediting period.

Technical specifications of the project are provided below

Parameter	Details
Project Capacity	50 MW AC capacity 62 MW DC capacity
PV Module Manufacturer	Astronergy
Technology	Polycrystalline
PV Module Model	CHSM6612P/HV_BOM_TUV_1500V
Capacity of PV Module	325 Wp
No. of PV Modules	41800 Modules
Inverter Manufacturer	GE Power conversion 1100
Technology	String Inverter
Inverter Model	LV5-1511-30-IEC-SLR
Inverter Capacity (AC)	1100
No. of Inverters	52 Inverters

### A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable <sup>13</sup> , indicate if the host country has provided approval (Yes/No)

<sup>13</sup> 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).

Egypt	FAS Energy LLC	Not Applicable
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#### A.5. Declaration of intended use of Approved Carbon Credits (ACCs) generated by the Project Activity

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

Period		Name of the Entities	Purpose and Quantity of ACCs to be supplied
From	To		
16/01/2019	15/01/2029	FAS Energy LLC	54,967 tCO <sub>2</sub> e/year

The project owner confirms that the ACC's generated from the project will not be double counted in any other mechanism.

#### 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

**Title:** ACM0002 Grid-connected electricity generation from renewable sources --- Version 21.0<sup>14</sup>

Following tools have been referred during the estimation of emission reduction calculations as per the methodology ACM0002.

“Tool to calculate the emission factor for an electricity system”, Version 7.0<sup>15</sup>.

“Tool for the demonstration and assessment of additionality”, Version 7.0.0<sup>16</sup>

“Tool for the Investment analysis” Version 11.0

“Common practice”, Version 3.11

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

The applicability of the applied methodology ACM0002 (version 21.0) is justified below:

Para	Applicability Conditions as per ACM0002	Applicability to this Project Activity
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<sup>14</sup> <https://cdm.unfccc.int/UserManagement/FileStorage/ZPFJL010U2RYC6N3HASIXV7K84QBG9>

<sup>15</sup> <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

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

No.		
1	<p>The project activity may include renewable energy power plant/unit of one of the following types:</p> <ul style="list-style-type: none"> <li>• hydro power plant/unit with or without reservoir,</li> <li>• Wind power plant/unit,</li> <li>• Geothermal power plant/unit,</li> <li>• Solar power plant/unit,</li> <li>• Wave power plant/unit or Tidal power plant/unit.</li> </ul>	<p>The project activity is grid connected renewable power generation from solar.</p>
2	<p>In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.</p>	<p>This condition is not relevant, as the project activity does not involve capacity additions, retrofits or replacements.</p>
3	<p>In case of hydro power plants, one of the following conditions shall apply:</p> <ol style="list-style-type: none"> <li>(a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</li> <li>(b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup>; or</li> <li>(c) The project activity results in new single or multiple reservoirs and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup>; or</li> <li>(d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density</li> </ol>	<p>This condition is not relevant, as the project activity is not the installation of a hydro power plant.</p>

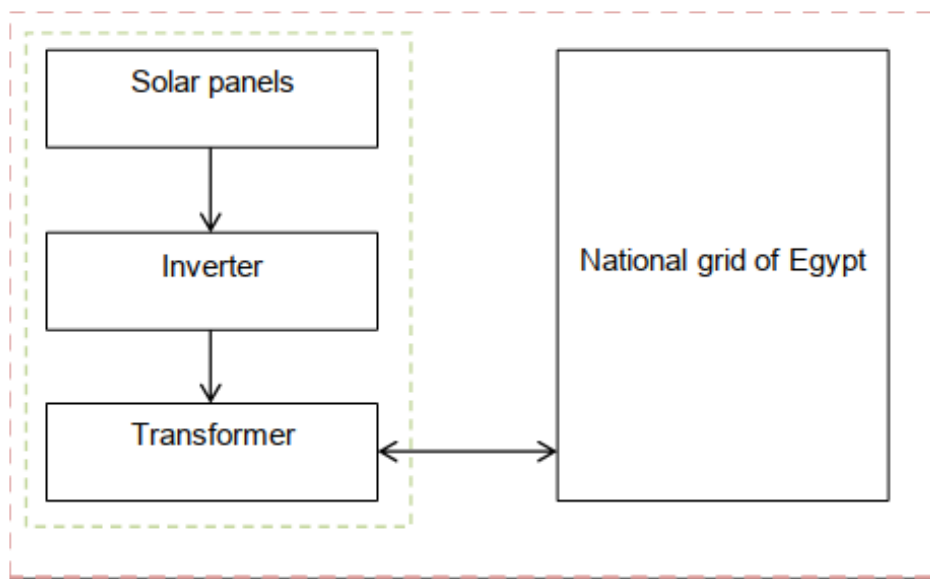


	<p>for any of the reservoirs, as per definitions given in the Project Emissions section, is lower than or equal to 4 W/m<sup>2</sup>, all of the following conditions shall apply.</p> <ul style="list-style-type: none"> <li>(i) The power density calculated using the total installed capacity of the integrated project, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup>;</li> <li>(ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity.</li> <li>(iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m<sup>2</sup> shall be             <ul style="list-style-type: none"> <li>a. Lower than or equal to 15 MW; and</li> </ul> </li> </ul> <p>Less than 10 per cent of the total installed capacity of integrated hydro power project.</p>	
4	<p>In the case of integrated hydro power projects, project proponent shall:</p> <ul style="list-style-type: none"> <li>(a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or</li> </ul> <p>Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.</p>	<p>This condition is not relevant, as the project activity is not the installation of a hydro power plant.</p>
5	<p>The methodology is not applicable to the following:</p>	<p>The project activity does not involve any of the given criteria hence methodology is applicable for the</p>

	<ul style="list-style-type: none"> <li>Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</li> </ul> <p>Biomass fired power plants;</p>	project activity.
6	In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.	The project activity is a new solar power plant. Also, no replacement, modification and retrofit measures are implemented here. Hence, this criterion is also not relevant to the project activity.

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

The project boundary includes the solar project, sub-stations, grid and all power plants connected to grid. The proposed project activity will evacuate power to the Egyptian grid. Therefore, the entire Egyptian grid and all connected power plants have been considered in the project boundary for this project activity.



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

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	CO <sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO <sub>2</sub>	Yes	Main Emission Source
		CH <sub>4</sub>	No	Minor Emission source
		N <sub>2</sub> O	No	Minor Emission source
Project Activity	Solar energy projects under the Project activity	CO <sub>2</sub>	No	As a zero-emission grid connected solar power project, no CO <sub>2</sub> emissions will result.
		CH <sub>4</sub>	No	As a zero-emission grid connected solar power project, no CH <sub>4</sub> emissions will result.
		N <sub>2</sub> O	No	As a zero-emission grid connected solar power project, no N <sub>2</sub> O emissions will result.

#### B.4. Establishment and description of the baseline scenario

The project type, i.e. the installation of a large-scale Greenfield grid connected Solar power plant for renewable electricity generation, follows the methodology ACM0002 for the definition of the baseline scenario. Therefore, the baseline scenario is, as stated by ACM0002:

If the project activity is the installation of a Greenfield power plant, the baseline scenario is 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, as reflected in the combined margin (CM) calculations described in “TOOL07: Tool to calculate the emission factor for an electricity system”.

Currently (based on year 2019/2020), prior to project implementation, the total national grid installed capacity was equivalent to 59,530 MW, of which 5% are hydropower plants and 5% are other renewable energy plants (mostly wind, with a small amount of solar). Fossil fuel thermal generation represents the dominant source of power generation with a total of 90% of total installed generation capacity.

Based on Egypt’s Integrated Sustainable Energy Strategy (ISES) to 2035, the power generation mix shall evolve to a situation where the share of fossil fuel based thermal power generation (coal, natural gas and oil plants) is reduced and renewable technologies (including solar, wind, nuclear and hydro capacities) increase their share. The government’s latest targets call for 20% of Egypt’s power generation to be based on renewables by 2022, and 42% by 2035 (IRENA, 2018).

### B.5. Demonstration of additionality

As The additionality of the Project shall be demonstrated by applying the following approach, consisting of two components:

- (i) A Legal Requirement Test; and
- (ii) An Additionality Test either based on a Positive List test or a projects-specific additionality test.

The project is not enforced by law. Since voluntary commitments/agreements within a sector or by an entity does not constitute the legal requirement, the project is additional as per paragraph 46.

<p>Specify the methodology, activity requirement or product requirement that establishes deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).</p>	<p>This project follows the CDM approved methodology ACM0002. Grid-connected electricity generation from renewable sources” (Version 21)<sup>17</sup></p> <p>Selected methodology has been applied together with the “tool to calculate the emission factor for an electricity system, version 7” and “tool for assessment and demonstration of additionality, version 7”. These are the latest version of the methodology and related additionality &amp; calculation tool.</p>
<p>Describe how the proposed project meets the criteria for deemed additionality.</p>	<p>1. Project without carbon revenue is not financially attractive as discussed in investment analysis section below (benchmark and sensitivity analysis).</p> <p>2. Continuation of the current situation supply of equal amount of electricity by the newly built grid connected power plants. Continuation of the current situation is not considered as a realistic alternative due to increasing electricity demand therefore new power plants should be constructed which includes mainly thermal power plants. Implementation of the project is additional to the baseline scenario which is an alternative 2 above and therefore reduces the emissions.</p>

### Additionality Assessment for large scale project activity Instances

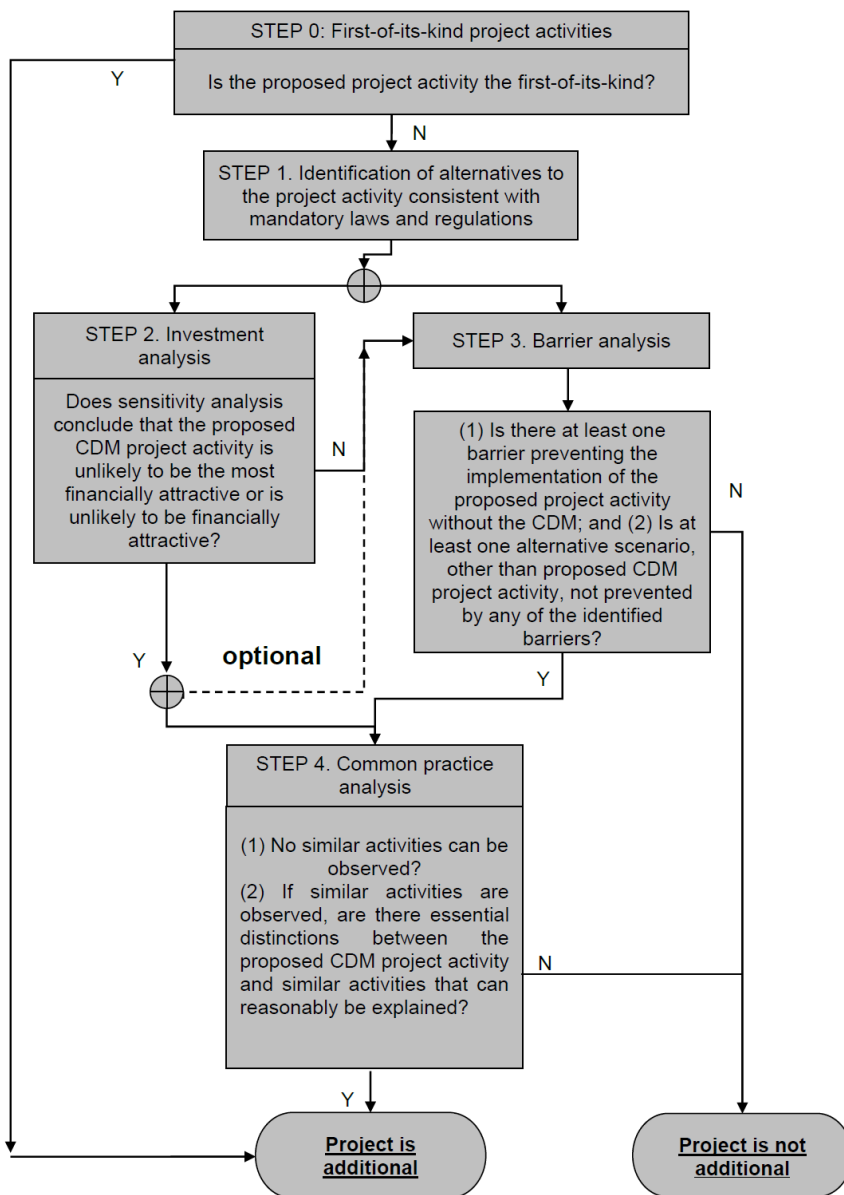
The table below is only applicable if the proposed project activity is a type of project activity which is deemed automatically additional, as defined by the applied approved methodology or standardized baseline.

<p>Specify the methodology or standardized baseline that establish automatic additionality for the proposed project activity (including the version number and the specific paragraph, if applicable).</p>	<p>NA</p>
<p>Describe how the proposed project activity meets the criteria for automatic additionality in the relevant methodology or standardized baselines.</p>	<p>NA</p>

<sup>17</sup> <https://cdm.unfccc.int/UserManagement/FileStorage/ZPFJL010U2RYC6N3HASIXV7K84QBG9>

The present project generates power using Solar PV energy which is a renewable, zero emission source of energy. Baseline considerations for the project are based on approved consolidated baseline methodology ACM0002 (Version 21.0). The methodology requires the project investor to determine the additionality based on “Methodological Tool- Tool for the demonstration and assessment of additionality”, Version 7.0.0. The step-wise approach to establish additionality of the project activity has been followed, details of which are provided in the following paragraphs:

Figure 1 Flowchart of the step-wise approach



As per the applied methodology requirement, Additionality of the project activity is demonstrated using the Methodological tool “Tool for the demonstration and assessment of additionality” Version 7.0.0. The tool defines the following steps:

**Sub Step 0: Demonstration whether the proposed project activity is the first-of-its-kind.**

The proposed project activity is not the first-of-its-kind. Hence not applicable.

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

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

Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed project activity.

The purpose of the project activity is to generate electrical power using solar energy and feed the electricity generated to the grid. Hence, the following alternatives are considered:

**Alternative 1: The proposed project activity not undertaken as a GCC project activity.**

The PP could proceed with the implementation of the project without Carbon credit benefits. The electricity produced from the renewable energy project would have been sold to the grid. This is in compliance with all applicable legal and regulatory requirements and can be a part of the baseline. However, the Project activity is not feasible without revenues from sale of Carbon Credits. This argument has been discussed in step 2 of the Additionality section.

**Alternative 2: No proposed project activity and equivalent amount of energy would have been produced by the grid electricity system through its currently running power plants and by new capacity addition to the grid i.e. Continuation of the present situation.**

The PP would have continued without investment in Project activity with usual business activities. The grid would continue with the fossil fuel-based power projects and this would result in GHG emissions. Hence, the new capacity add-on from a fossil fuel-based power plant is appropriate, realistic & credible baseline alternative for the project activity.

**Outcome of Sub-step 1a:** All the realistic alternatives for the project activity have been enlisted above.

Thus though two alternatives are mentioned above as per step of additionality tool, the first alternative is not possible as project activity is not viable without carbon credit benefits and second alternative is the baseline scenario for the project activity as per methodology as mentioned in section B.4 of PSF.

It is to be noted that being the green field project activity, “the baseline scenario is 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, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system Version 7.0”.

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

The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. The project activity comes under white category as per local regulation, thus there shall be no necessity of obtaining the Consent to Operate” for White category of industries. Since project activity falls under white category and the non-polluting nature of project fulfils the compliance to the local laws and regulations (This sub-step does not consider national and local policies that do not have legally-binding status.).

The Project activity conforms to all the applicable laws and regulations in Egypt:

- Power generation using renewable energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage solar power projects.
- These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- There is no legal requirement on the choice of a particular technology for power generation.

The both alternatives are in compliance with laws and regulations required. There is no any mandatory requirement to implement the project activity.

**Outcome of Sub-step 1b:** Hence, both the alternatives enlisted above are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or country and EB decisions on national and/or sectoral policies and regulations. Since solar projects are categorized as white category, no any consent to operate required from pollution control board.

However, Alternative 2 has been selected as the appropriate baseline alternative for this project activity in line with methodology.

### **Step 2: Investment Analysis**

Determine whether the proposed project activity is economically or financially less attractive than at least one other alternative, identified in step 1, without the revenue from the sale of emission reductions credits. To conduct the investment analysis, use the following sub-steps:

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

As per “Tool for the demonstration and assessment of additionality” (version 7.0.0), for financial analysis of the project, the following three options are available:

- Option I: Simple Cost Analysis
- Option II: Investment Comparison Analysis
- Option III: Benchmark Analysis

The project will generate revenues from sale of electricity, therefore Option I is not applicable in line with para 32 of the Methodological tool: “Tool for the demonstration and assessment of additionality”, version 7.0.0. Same applies to the Option II which is applied in case there are alternatives to the

project activity as per para 42 of the “Tool for the demonstration and assessment of additionality”, version 7.0.0.

Since, identified baseline for the proposed project activity is continuation of current practice (i.e. equivalent amount of energy would have been generated by grid electricity system through its currently operating power plants and by new capacity addition) and which is outside the direct control of the project participant, hence benchmark analysis (option III), where the returns on investment in the project activity are compared to benchmark returns that are available to any investors in the country is selected as the most appropriate method.

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

#### **Selection of Benchmark & Financial Indicator:**

According to the “Tool for demonstration and assessment of Additionality<sup>18</sup>”, *the financial indicator can be based either on (1) project IRR or (2) equity IRR. There is no general preference between the approaches (1) or (2). The benchmark chosen for analysis shall be fully consistent with the choice of approach.* Therefore in accordance with the guidance, the relevant financial indicator for project activity has been chosen as post tax equity IRR.

#### **Determine appropriate analysis method**

As per Sub-step 2a, Paragraph (1), as the project activity is selling the generated electricity to grid & getting financial benefits other than GCC benefits, hence, Option- I (Apply simple cost analysis) is not applicable under this situation. Also as per Investment analysis EB-112, Annex 2, “If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate”. Hence, Option-II (Apply investment comparison analysis) is also not applicable under this situation. So, the project promoter has chosen Option- III or benchmark analysis as an appropriate analysis method to demonstrate the investment barrier.

#### **Benchmark Calculation**

For the benchmark, Version 12 of methodological tool "Investment Analysis" (EB 112, Annex 2) was the latest available tool to Project owner. The benchmark is calculated in nominal EGP, after tax, equity terms as  $(1+0.1439) \times (1+0.069) - 1 = 22.28\%$  as per investment tool v12.

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

The period considered for Post Tax Equity IRR calculations is 20 years, which corresponds to the operational lifetime of the project activity.

Key Assumptions supporting financial projections in excel spreadsheet is submitted and the same

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<sup>18</sup> <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>



has been summarized below for all project activities.

### Sub-step 2d: Sensitivity Analysis

The robustness of the conclusion drawn above, that the project is not financially attractive, has been tested by subjecting critical assumptions to reasonable variation. Addressing Guidance under Sensitivity Analysis, following factors has been subjected to sensitivity analysis:

1. Electricity Price
2. O&M Cost
3. Investment
4. Electricity Production

The rationale of sensitivity is, "The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis."

### Result of Sensitivity Analysis

The sensitivity analysis done to identify the percentage variation at which the financial indicators will equal/breach the benchmark and the probability of its occurrence. Based on sensitivity analysis it can be concluded that the proposed project activity is additional even with reasonable variation in values and is not likely to reach the benchmark value.

The results of sensitivity analysis show that even with a variation of  $\pm 5\%$  &  $\pm 10\%$  in Investment, O&M cost, Electricity Price and Electricity Production, the Equity IRR is lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favourable conditions.

	OM change ---->	-10.0%	-5.0%	0.0%	5.0%	10.0%
Output IRR-->	14.48%	14.76%	14.62%	14.48%	14.34%	14.20%
	Electricity production change ---->	-10.0%	-5.0%	0.0%	5.0%	10.0%
Output IRR-->	14.48%	12.67%	13.58%	14.48%	15.35%	16.21%
	Electricity price change ---->	-10.0%	-5.0%	0.0%	5.0%	10.0%
Output IRR-->	14.48%	12.67%	13.58%	14.48%	15.35%	16.21%
	Investment change ---->	-10.0%	-5.0%	0.0%	5.0%	10.0%
Output IRR-->	14.48%	16.16%	15.28%	14.48%	13.75%	13.08%

### Outcome of Step 2:

The outcomes from the investment analysis for all the project activities is demonstrated below

Benchmark IRR:	22.28%		
Difference check between benchmark and IRR:	7.80%		
<b>BREACHING VALUE (% change to breach the benchmark)</b>	<b>First Goalseek results</b>	<b>Corresponding IRR</b>	<b>Verified goalseek results</b>
Operational cost	-306.9%	22.27%	-307%
Electricity selling price	47.9%	22.28%	48%
Investment	-34.3%	22.26%	-34%
Electricity production	47.9%	22.28%	48%

### Step 3: Barrier analysis

Barrier analysis has not been used.

### Step 4: Common practice analysis

As per para 57 of Tool for demonstration and assessment of additionality” (Version 07.0.0), Step 2 analysis shall be complemented with an analysis of extent to which the proposed project type (e.g., technology or practice) has already diffused in the relevant sector and region. This test is a credibility check to complement the investment analysis.

#### Common Practice Analysis for 50 MW solar project:

**Step (1):** Calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

Range	Capacity	Unit
+ 50%	75	MW
Capacity of the proposed project activity	50	MW
-50%	25	MW

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

- The projects are located in the applicable geographical area;
- The projects apply the same measure as the proposed project activity;
- 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;
- 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;
- The capacity or output of the projects is within the applicable capacity or output range calculated
- 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.

### Analysis of Step 2

Identification of the similar projects (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

- As the project is located in Egypt, therefore, projects in the geographical area of Egypt have been chosen for analysis. As the project is located in the Egypt, the policy applicable for the solar power projects is regulated by respective policy.
- The project activity is a green-field solar power project and uses measure (b) “Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies”. Therefore, projects applying same measure (b) are candidates for similar projects.
- The energy source used by the project is solar energy. Hence, only solar energy projects have been considered for analysis.
- The project produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.
- The capacity range of the projects is within the applicable capacity range from 25 MW to 75 MW.
- The start date of the concerned project activity is 16/01/2019. Therefore projects, which have started commercial operation before 16/01/2019 have been considered for analysis.

## Findings of analysis of Step 2

Numbers of Similar projects identified, which fulfil above-mentioned conditions is summarized below

$$N_{\text{solar}} = 0$$

**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 project verification. Note their number  $N_{\text{all}}$ .

Project activities, which are registered or are under registration or are under project verification with CDM/VCS/GS/GCC mechanisms have been excluded in this step. The list of the power plants identified is provided to the GCC Verifier. After excluding the registered and under validation projects the total number of projects.

$$N_{\text{all}} = 0$$

**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  $N_{\text{diff}}$ .

As per the tool on Common Practice, the project activities have been separated from the different technologies on the basis two criteria:

1. Size of Installation – Since project activity is large scale project, small and micro scale projects are considered as different technology project. Based on these criteria, there are no any different technology project out of similar identified projects.
2. Investment climate on the date of the investment decision – The solar projects developed under different phases and different batches of Egypt’s National Solar Mission can considered as different technology projects. For proposed project activity, there are no any different technology project considered out of similar identified projects.

Hence, projects where either of the conditions is satisfied those projects are counted for calculating  $N_{diff}$  projects.

$$N_{diff} = 0$$

**Step (5):** Calculate factor  $F = 1 - N_{diff}/N_{all}$  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.

Calculate

$$F = 1 - N_{diff}/N_{all}$$

$$F = 1 - (0/0) = 1$$

As per the Tool for common practice analysis, version 03.1, the proposed project activity is a common practice within a sector in the applicable geographical area if both the following conditions are fulfilled:

- (a) the factor F is greater than 0.2, and
- (b)  $N_{all} - N_{diff}$  is greater than 0.

**Outcome of Common Practise analysis:**

As,

i.  $F = 1$ ; which is greater than 0.2

ii.  $N_{all} - N_{diff} = 0 - 0 = 0$ ; which is not greater than 3

The project activity does not satisfy second condition. Hence, project activity is not a common practice.

**Thus, the proposed project activity is not a “common practice” within a sector in the applicable geographical area.**

**B.6. Estimation of emission reductions**

As per approved consolidated methodology ACM0002, version 21.0, emission reduction is estimated as difference between the baseline emission and project emission after factoring into leakage.

$$ER_y = BE_y - PE_y$$

As the project activity is a solar project, there won't be any leakage emissions from the project activity. Hence,  $LE_y = 0$

Where:

$ER_y$	=	Emission reductions in year y (t CO2e/yr)
$BE_y$	=	Baseline emissions in year y (t CO2/yr)
$PE_y$	=	Project Emission in year y (t CO2e/yr)
$LE_y$	=	Leakage Emission in year y (t CO2e/yr)

**B.6.1. Explanation of methodological choices**

According to the TOOL07, the baseline methodology procedure to calculate  $EF_{grid,CM,y}$  is the following:

**Step 1: Identify the relevant electricity systems.**

For determining the electricity emission factors, the project participant is identifying the relevant project electricity system or any connected electricity systems. No connected electricity system is located partially or totally in Annex I countries, thus the project electricity system is defined by using the three options stated in TOOL07.

Since the Egyptian DNA has not published a delineation of the project electricity boundary to be used, Option 1 (the priority option) is not feasible. Therefore, the Project Developer will use option 2 (the next option in the priority order).

Option 2. A delineation of the project electricity system defined by the dispatch area of the dispatch center responsible for scheduling and dispatching electricity generated by the project activity. Where the dispatch area is controlled by more than one dispatch center, i.e. layered dispatch area, the higher-level area shall be used as a delineation of the project electricity system (e.g. where regional dispatch centers are required to comply with dispatch orders of the national dispatch center then area controlled by the national dispatch center shall be used).

In Egypt, the Egyptian Electricity Holding Company (EEHC) is the main electricity operator and regulator in Egypt. Among its objectives are producing, transmitting and distributing electrical energy for all uses on the various voltages, and also managing, operating and maintaining electricity transmission and distribution networks at the various voltage levels, selling electrical energy on the various voltages throughout the country and making the optimal utilization of these networks.

Therefore, this company is the responsible for defining all characteristics of the electricity grid in the country.

In its Annual Report for 2017<sup>19</sup>, the EEHC mentions the Unified National Grid as being the national grid for electricity transmission in Egypt.

In Egypt, all the power plants are connected to the unified Egyptian National Grid in which the Egyptian Electricity Transmission Company (EETC), a subsidiary from EEHC, acts as a single buyer of bulk power, purchasing electricity from the generating companies through Power Purchase Agreements (PPAs) and selling it to the distribution companies and UHV and HV customers.

All power stations connected to the unified electric grid, are managed as a pool. The priority of dispatch is defined on the basis of least marginal cost optimization where priority is given to renewable sources, then to thermal units with low specific fuel consumption (Ton Oil equivalent/MWh) and cost as base load and with those that have high operational costs as peak load. The great majority of the annual electricity generation is concentrated within a 250 Km radius around Cairo, which is the country's load center. Hydro plants are concentrated at Aswan, about 900 Km south of

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<sup>19</sup> <http://www.eehc.gov.eg/eehcportal/Eng/YearlyReports.aspx>

Cairo, and provide another substantial portion. The Unified national grid, comprising all those power plants that are physically connected through transmission and distribution lines to the project activity, constitutes a clear grid boundary. Egypt is a net exporter of electricity so no emission calculations for imported electricity are to be included.

### Step 2: Choose whether to include off-grid power plants in the project electricity system

The Project Developer chooses Option I: Only grid power plants are included in the calculation. Power plants, which are isolated and not connected to the power grid, are not considered part of this grid boundary.

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

The calculation of the operating margin emission factor ( $EF_{\text{grid,OM},y}$ ) is based on one of the following methods:

(a) Simple OM, or (b) Simple adjusted OM, or (c) Dispatch data analysis OM, or (d) Average OM.

Any of the four methods can be used, however, the simple OM method (option a) can be used if low cost/must-run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydro electricity production. Approach 1 has been used to verify that the low-cost/must-run resources constitute less than 50% of total grid generation on average of the five most recent years.

$$\text{Share}_{\text{LCMR}} = \text{average} \left[ \frac{EG_{\text{LCMR}(y-4)}}{\text{total}_{(y-4)}}, \dots, \frac{EG_{\text{LCMR}y}}{\text{total}_y} \right]$$

Where:

- $\text{Share}_{\text{LCMR}}$  = Share of the low cost/must run resources (per cent)
- $EG_{\text{LCMR}y}$  = Electricity generation supplied to the project electricity system by the low cost/must run resources in year y (MWh)
- $\text{Total}_y$  = Total electricity generation supplied to the project electricity system in year y (MWh)
- y = The most recent year for which data is available

The following values are provided by the Egyptian Electricity Holding Company annual reports for years<sup>20</sup> 2016/2017; 2017/2018; 2018/2019; 2019/2020; and 2020/2021<sup>21</sup>.

**Table: Electricity Generation per type of source for the past 5 years**

Electricity Generated (GWh)					
Type	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Hydro Power Plants	12,726	12,610.8	13,003.5	14,908	14,641
Wind Parks	2,173	2,315	2,999	4,224	5,257
Solar	580	518	1,494	4,296.8	4,673.4

<sup>20</sup> The administrative year for Egypt's power sector and statistic starts and ends on 30 June and initiates on 01 July of each year.

<sup>21</sup> [http://www.moee.gov.eg/english\\_new/report.aspx](http://www.moee.gov.eg/english_new/report.aspx)

<b>Total - low-cost/must run</b>	<b>15,479</b>	<b>15,444</b>	<b>17,497</b>	<b>23,429</b>	<b>24,571</b>
Private sector (BOOT plants)	11,383	10,892	10,802	10660	10,441
Electricity purchased from IPP	35	42	43	19.5	24
Thermal	156,574	164,193	164,883.5	156,542	177,520.3
<b>Total Net - all plants<sup>22</sup></b>	<b>183,471</b>	<b>190,571</b>	<b>193,225</b>	<b>190,650</b>	<b>212,557</b>
Low-cost/must-run portion	8.44%	8.10%	9.05%	12.29%	11.56%
<b>Five-year average for low cost/must-run plants:</b>	<b>9.89%</b>				

Since low cost/must run electricity generation sources resources represent 9.89% of the total grid electricity generation and constitute less than 50% of total grid generation on average of the five most recent years, therefore, Simple OM can be applied.

For the simple OM, the emission factor is calculated using the following data vintage:

- (a) Ex ante option: the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. Since only grid power plants are being considered, a period of 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation is being used.

#### **Step 4: Calculate the operating margin emission factor according to the selected method**

The ex-ante option will be used for the calculation of the simple OM. The simple OM may be calculated by one of the following two options:

**Option A:** Based on the net electricity generation and a CO<sub>2</sub> emission factor of each power unit; or

**Option B:** 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 can only be used if:

- i. The necessary data for Option A is not available; and
- ii. Only nuclear and renewable power generation are considered as low-cost/must-run power sources and the quantity of electricity supplied to the grid by these sources is known; and
- iii. Off-grid power plants are not included in the calculation (i.e. if Option I have been chosen in Step 2).

Since data on each power unit is not available for the project's case, only renewable is being considered for low-cost/must-run (with quantity of electricity known) and Option I has been chosen in Step 2, Option B will be used for the calculation of simple OM emission factor.

<sup>22</sup> Excluding Isolated Plants

Information regarding Net Electricity Production and fossil fuels amounts consumed in the project electricity system in the most recent 3 years (2018/2019; 2019/2020; 2020/2021) is summarized in the tables below.

### Net Electricity Production for the most recent 3 years including low-cost/must-run power plants

Net Electricity Production GWh			
	2018/2019	2019/2020	2020/2021
Hydro	13003.5	14908	14641
Generated Energy from Wind (Zafarana)	2999	4224	5257
Solar (Kurayemat)	1494	4296.8	4673.4
Thermal	164883.5	156542	177520.3
Purchased Energy from IPPs	43	19.5	24
Generated from private sector (BOOT)	10802	10660	10441
<b>Total Net electricity generated (excluding isolated units), Egy (GWh)</b>	<b>1,93,225</b>	<b>1,90,650</b>	<b>2,12,557</b>

### Net Electricity Production for the most recent 3 years excluding low-cost/must-run power plants

Net Electricity Production GWh			
	2018/2019	2019/2020	2020/2021
Thermal	1,64,884	1,56,542	1,77,520
Purchased Energy from IPPs	43	20	24
Generated from private sector (BOOT)	10,802	10,660	10,441
<b>Total Net electricity generated (excluding isolated and low cost must run units), Egy (GWh)</b>	<b>1,75,729</b>	<b>1,67,222</b>	<b>1,87,985</b>

### Fossil fuels amounts consumed in the project electricity system in the most recent 3 years

Fuel Consumption by Type				
Fuel type	Units	2018/2019	2019/2020	2020/2021
HFO	Tonnes	2,458,000	1,858,000	584,700
NG	m <sup>3</sup>	38,32,70,00,000	35,927,000,000	37,787,000,000
NG	Tonnes	2,98,26,459	2,79,58,754.86	2,94,06,225.68
LFO & Special LFO	Tonnes	54,200	22,700	4,600

Where Option B is used, the simple OM emission factor is calculated as follows:

$$ER_{\text{grid, OM Simple, y}} = \frac{\sum_i FC_{i, y} \cdot NCV_{i, y} \cdot EF_{CO_2, i, y}}{EG_y}$$



Where:

$EF_{grid,OMsimple,y}$  = Simple operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$FC_{i,y}$  = Amount of 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)

$EF_{CO_2,i,y}$  = CO<sub>2</sub> emission factor of fossil fuel type i in year y (tCO<sub>2</sub>/GJ)

$EG_{y}$  = 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)

i = All fuel types combusted in power sources in the project electricity system in year y

Y = The relevant year as per the data vintage chosen in step 3 (Ex-ante option)

**Table: Simple Operating Margin for Year 2018/2019**

Fuel type	Consumption <sup>23</sup>	Units	NCV TJ/Tonne <sup>24</sup>	CO <sub>2</sub> emissions factor (tCO <sub>2</sub> /TJ) <sup>25</sup>	CO <sub>2</sub> Emissions (tCO <sub>2</sub> / t fuel)
HFO	2,458,000	Tonnes	0.0398	75.5	7,386,044
NG	38,327,000,000	m <sup>3</sup>	-	-	-
NG(converted to tonnes from data above)	29,826,459	Tonnes	0.0465	54.3	75,310,318
LFO & Special LFO	54,200	Tonnes	0.0414	72.6	162,906
<b>CO<sub>2</sub> emissions (tCO<sub>2</sub>)</b>					<b>82,859,268</b>
<b>Simple operating margin CO<sub>2</sub> emission factor 2018/2019 (tCO<sub>2</sub>/MWh)</b>					<b>0.4715</b>

**Table: Simple Operating Margin for Year 2019/2020**

Fuel type	Consumption <sup>26</sup>	Units	NCV TJ/Tonne	CO <sub>2</sub> emissions factor (tCO <sub>2</sub> /TJ)	CO <sub>2</sub> Emissions (tCO <sub>2</sub> / t fuel)
HFO	1,858,000	Tonnes	0.0398	75.5	5,583,104
NG	35,927,000,000	m <sup>3</sup>	-	-	-
NG(converted to tonnes from data above)	27,958,755	Tonnes	0.0465	54.3	70,594,458
LFO & Special LFO	22,700	Tonnes	0.0414	72.6	68,228
<b>CO<sub>2</sub> emissions (tCO<sub>2</sub>)</b>					<b>76,245,790</b>
<b>Simple operating margin CO<sub>2</sub> emission factor 2019/2020 (tCO<sub>2</sub>/MWh)</b>					<b>0.4560</b>

<sup>23</sup> Source: MOEE Annual Reports for the indicated year, Table: Fuel Consumption by Type. Website: [http://www.moe.gov.eg/english\\_new/report.aspx](http://www.moe.gov.eg/english_new/report.aspx)

<sup>24</sup> IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval as provided in table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories

<sup>25</sup> IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval as provided in table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories

<sup>26</sup> Source: MOEE Annual Reports for the indicated year, Table: Fuel Consumption by Type. Website: [http://www.moe.gov.eg/english\\_new/report.aspx](http://www.moe.gov.eg/english_new/report.aspx)

**Table: Simple Operating Margin for Year 2020/2021**

Fuel type	Consumption <sup>27</sup>	Units	NCV TJ/Tonne	CO <sub>2</sub> emissions factor (tCO <sub>2</sub> /TJ)	CO <sub>2</sub> Emissions (tCO <sub>2</sub> / t fuel)
HFO	584,700	Tonnes	0.0398	75.5	1,756,965
NG	37,787,000,000	m <sup>3</sup>	-	-	-
NG(converted to tonnes from data above)	29,406,226	Tonnes	0.0465	54.3	74,249,250
LFO & Special LFO	4,600	Tonnes	0.0414	72.6	13,826
<b>CO<sub>2</sub> emissions (tCO<sub>2</sub>)</b>					<b>76,020,041</b>
<b>Simple operating margin CO<sub>2</sub> emission factor 2020/2021 (tCO<sub>2</sub>/MWh)</b>					<b>0.4044</b>

The Simple OM is then calculated as the average Net CO<sub>2</sub> emissions from electricity generation / Net electricity supplied to the grid in the most recent 3 years.

**Simple Operating Margin (OM) Grid Emissions factor = 0.4429 tCO<sub>2</sub>/MWh**

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

In terms of vintage of data, project participants choose

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;

Capacity additions from retrofits of power plants are not included in the calculation of the build margin emission factor.

The sample group of power units (m) used to calculate the build margin is determined as follows:

a. Identify the set of five power units, other than the power units registered as CDM project activities<sup>28</sup>, that started to supply electricity to the grid most recently (SET<sub>5 units</sub>) and determine their annual electricity generation (AE<sub>GET-5-units</sub>, in MWh). In fact, the annual electricity generation from the set of five power units, other than the power units registered as CDM project activities, that started to supply electricity to the grid most recently (year 2017) is 4.1%.

#### **The set of five power units, other than the power units registered as CDM project activities**

<sup>27</sup> Source: MOEE Annual Reports for the indicated year, Table: Fuel Consumption by Type. Website: [http://www.moee.gov.eg/english\\_new/report.aspx](http://www.moee.gov.eg/english_new/report.aspx)

<sup>28</sup> The list of Registered Egyptian CDM Projects (as of January 2018) can be found on: <http://www.eeaa.gov.eg/portals/0/eeaaReports/NCC/Update%20of%20registered%20CDM%20Projects%20January%202018.pdf>

that started to supply electricity to the grid most recently ( $SET_{5 \text{ units}}$ )

Power Plant	No. of Units	Installed capacity (MW)	Fuel	Net Electricity generated (GWh)	Commissioning Date	% of system Net Total
October Ext	4x150+1x318.7	918.7	N.G- L.F.O	3231.1	2015-2019	1.5%
Assiut West	8 x 125 +2 x 250	1500	N.G-L.F.O	5614.9	2015-2019-2020	2.6%
South Helwan	3x650	1950	N.G-H.F.O	6660.6	2019	3.1%
Cairo West 9	1	650	N.G- H.F.O	520.6	2021	0.2%
Assiut-Walideya 3	1	650	N.G- H.F.O	104.7	2021	0.0%
<b>Total</b>				<b>16131.9</b>		<b>7.6%</b>

b. Determine the annual electricity generation of the project electricity system, not including power units registered as CDM project activities ( $AE_{Gtotal}$ , in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to provide electricity to the grid most recently and that include 20 per cent of  $AE_{Gtotal}$  (if 20 per cent falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ( $SET_{>20 \text{ per cent}}$ ) and control their annual electricity generation ( $AE_{SET \geq 20 \text{ per cent}}$ , in MWh).

**The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently**

Power Plant	No. of Units	Installed capacity (MW)	Fuel	Net Electricity generated (GWh)	Commissioning Date	% of system Net Total
October Ext	4x150+1x318.7	918.7	N.G- L.F.O	3231.1	2015-2019	1.5%
West Damietta Ext	4x125 + 1x250	750	N.G-L.F.O	1275.2	2016-2018	0.6%
West Damietta	4x125 + 1x250	750	N.G-L.F.O	2253.8	2012-2013-2018	1.1%
Assiut West	8 x 125 +2 x 250	1500	N.G-L.F.O	5614.9	2015-2019-2020	2.6%
South Helwan	3x650	1950	N.G-H.F.O	6660.6	2019	3.1%
Burullus	8 x 400 + 4 x 400	4800	N.G	20786.5	2017-2018	9.8%
Beni Suef	8 x 400 + 4 x 400	4800	N.G	16749.5	2017-2018	7.9%
New Capital	8 x 400 + 4 x 400	4800	N.G	12477.2	2017-2018	5.9%
Cairo West 9	1	650	N.G- H.F.O	520.6	2021	0.2%
Assiut-Walideya 3	1	650	N.G- H.F.O	104.7	2021	0.0%
<b>Total</b>				<b>69674.1</b>		<b>32.8%</b>

c. From  $SET_{5 \text{ units}}$  and  $SET_{>20 \text{ per cent}}$  identify the set of power units that includes the larger annual electricity generation ( $SET_{\text{sample}}$ ). The set of power units that includes the larger annual electricity generation is option b (the set of power units excluding power units registered as CDM project activities, that started to provide electricity to the grid most recently and that include 20 per cent of  $AE_{Gtotal}$ ).

Set the date when the power units in  $SET_{\text{sample}}$  began to supply electricity to the grid. If none of the power units in  $SET_{\text{sample}}$  started to provide electricity to the grid more than 10 years ago, then use  $SET_{\text{sample}}$  to calculate the build margin. In this case, the date is year 2012. Thus, none of the power

units in  $SET_{sample}$  started to provide electricity to the grid more than 10 years ago, and  $SET_{>20}$  per cent is used to calculate the build margin. Therefore, steps (d), (e) and (f) are ignored.

The set of power units that have been built most recently are provided below.

Power Plant	No. of Units	Installed capacity (MW)	Fuel	Net Electricity generated (GWh)	Commissioning Date
October Ext	4x150+1x318.7	918.7	N.G- L.F.O	3231.1	2015-2019
Assiut West	8 x 125 +2 x 250	1500	N.G-L.F.O	5614.9	2015-2019-2020
South Helwan	3x650	1950	N.G-H.F.O	6660.6	2019
Cairo West 9	1	650	N.G- H.F.O	520.6	2021
Assiut-Walideya 3	1	650	N.G- H.F.O	104.7	2021
<b>Total</b>				<b>16131.9</b>	

The build margin emissions factor is the generation-weighted average emission factor (tCO<sub>2</sub>/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows:

$$EF_{grid, BM, y} = \frac{\sum_m EG_{m, y} \cdot EF_{EL, m, y}}{\sum_m EG_{m, y}}$$

Where:

$EF_{grid, BM, y}$  = Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/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<sub>2</sub> emission factor of power unit m in year y (tCO<sub>2</sub>/MWh)

M = Power units included in the build margin

Y = Most recent historical year for which power generation data is available

The list of each power unit and its specific CO<sub>2</sub> emissions per MWh are specified in the table below.

**Table: Calculation of the build margin emission factor**

Power Plant	Net Electricity Generated (MWh)	tCO <sub>2</sub> /MWh	tCO <sub>2</sub>
October Ext	3231100	0.419	1353219
Cairo West 9	520600	0.600	312543.2
West Damietta Ext	1275200	0.419	534523.8
West Damietta	2253800	0.420	946481.6
Burullus	20786500	0.287	5971005
Beni Suef	16749500	0.436	7309244
New Capital	12477200	0.357	4456634
Assiut-Walideya 3	104700	0.830	86931.04
Assiut West	5614900	0.422	2368701

South Helwan	6660600	0.469	3126113
<b>Total</b>	<b>69674100</b>		<b>26465395</b>

The CO<sub>2</sub> emission factor of each power unit *m* ( $EF_{EL,m,y}$ ) is determined as per the guidance in Step 4 above for the simple OM using Options A1, using for *y* the most recent historical year for which electricity generation data is available, and using for “*m*” the power units included in the build margin.

### Build Margin Grid Emissions Factor = 0.3798 tCO<sub>2</sub>/MWh

#### Step 6: Calculate the combined margin emissions factor

The calculation of the combined margin (CM) emission factor ( $EF_{grid,CM,y}$ ) is based on the Weighted average CM, as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$$

Where:

$EF_{grid,BM,y}$  = Build margin CO<sub>2</sub> emission factor in year *y* (tCO<sub>2</sub>/MWh)

$EF_{grid,OM,y}$  = Operating margin CO<sub>2</sub> emission factor in year *y* (tCO<sub>2</sub>/MWh)

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

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

The following default values are used for this wind power generation project activity (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods:  $W_{OM} = 0.75$  and  $W_{BM} = 0.25$

### Combined Margin (CM) Grid Emissions factor = 0.4271 tCO<sub>2</sub>/MWh

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

##### Data / Parameter Table 1.

<b>Data / Parameter:</b>	<b><math>EF_{grid,OM,y}</math></b>
Methodology reference	ACM0002 (Version 21.0)
Data unit	tCO <sub>2</sub> /MWh
Description	Operating Margin CO <sub>2</sub> emission factor in the year <i>y</i>
Measured/calculated/default	Calculated
Data source	Calculated using data from Egyptian Electricity Holding Company annual reports
Value(s) of monitored parameter	0.4429
Measurement/ Monitoring equipment (if applicable)	Not Applicable
Measuring/reading/ recording frequency (if applicable)	Not applicable

Calculation method (if applicable)	Calculated as per TOOL07 using the ex-ante option. The 03 most recent years being used are 2018/2019; 2019/2020; 2020/2021.
QA/QC procedures	Not applicable
Purpose of data	To calculate baseline emissions
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

<b>Data / Parameter:</b>	<b>EF<sub>grid, BM, y</sub></b>
Methodology reference	ACM0002 (Version 21.0)
Data unit	tCO <sub>2</sub> /MWh
Description	Build Margin CO <sub>2</sub> emission factor in the year y
Measured/calculated/default	Calculated
Data source	Calculated using data from Egyptian Electricity Holding Company annual reports
Value(s) of monitored parameter	0.3798
Measurement/ Monitoring equipment (if applicable)	Not Applicable
Measuring/reading/ recording frequency (if applicable)	Not Applicable
Calculation method (if applicable)	Calculated as per TOOL07 using the ex-ante option. The 03 most recent years being used are 2018/2019; 2019/2020; 2020/2021.
QA/QC procedures	Not applicable
Purpose of data	To calculate baseline emissions
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

<b>Data / Parameter:</b>	<b>EF<sub>grid, CM, y</sub></b>
Methodology reference	ACM0002 (Version 21.0)
Data unit	tCO <sub>2</sub> /MWh
Description	Combined Margin CO <sub>2</sub> emission factor in the year y
Measured/calculated/default	Calculated.
Data source	Calculated from EF <sub>grid, OM, y</sub> and EF <sub>grid, BM, y</sub> above.
Value(s) of monitored parameter	0.4271
Measurement/ Monitoring equipment (if applicable)	Not applicable
Measuring/reading/ recording frequency (if applicable)	Not applicable
Calculation method (if applicable)	The combined margin emissions factor is calculated as follows:  $EF_{grid, CM, y} = EF_{grid, OM, y} * W_{OM} + EF_{grid, BM, y} * W_{BM}$ Where:

	$EF_{grid,BM,y}$ = Build margin CO <sub>2</sub> emission factor in year y (tCO <sub>2</sub> /MWh) $EF_{grid,OM,y}$ = Operating margin CO <sub>2</sub> emission factor in year y (tCO <sub>2</sub> /MWh) $W_{OM}$ = Weighting of operating margin emissions factor (%) = 75% $W_{BM}$ = Weighting of build margin emissions factor (%) = 25%
QA/QC procedures	Not applicable
Purpose of data	To calculate baseline emissions
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

### B.6.3. Ex-ante calculation of emission reductions

#### Project emissions

The proposed project activity will calculate project emissions according to ACM0002 (Version 21.0). Thus, for all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. Since this proposed project activity is not geothermal, solar or hydro:

$$PE_y = 0$$

#### Baseline emissions

The proposed project activity will calculate baseline emissions according to ACM0002. Baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad \text{ACM0002 Equation 11}$$

Where:

$BE_y$  = Baseline emissions in year y (t CO<sub>2</sub>/yr)

$EG_{PJ,y}$  = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid,CM,y}$  = Combined margin CO<sub>2</sub> emission factor for grid connected power generation in year y calculated using the latest version of "TOOL07: Tool to calculate the emission factor for an electricity system" (t CO<sub>2</sub>/MWh)

Since the project activity is the installation of a Greenfield power plant, then:

$$EG_{PJ,y} = EG_{facility,y} \quad \text{ACM0002 Equation 12}$$

Where:

$EG_{PJ,y}$  = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

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

### Leakage

No leakage emissions are considered according to ACM0002. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

ACM0002 Equation 17

Where:

$ER_y$  = Emission reductions in year y (t CO<sub>2</sub>e/yr)

$BE_y$  = Baseline emissions in year y (t CO<sub>2</sub>e/yr)

$PE_y$  = Project emissions in year y (t CO<sub>2</sub>/yr)

### B.6.4. reductions

Year	Baseline emissions (t CO <sub>2</sub> e)	Project emissions (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions (t CO <sub>2</sub> e)
Year 1	57,658	0	0	57,658
Year 2	56,217	0	0	56,217
Year 3	55,823	0	0	55,823
Year 4	55,433	0	0	55,433
Year 5	55,045	0	0	55,045
Year 6	54,659	0	0	54,659
Year 7	54,277	0	0	54,277
Year 8	53,897	0	0	53,897
Year 9	53,519	0	0	53,519
Year 10	53,145	0	0	53,145
<b>Total</b>	<b>549,673</b>	<b>0</b>	<b>0</b>	<b>549,673</b>
<b>Total number of crediting years</b>	<b>10</b>			
<b>Annual average over the crediting period</b>	<b>54,967</b>	<b>0</b>	<b>0</b>	<b>54,967</b>

### B.7. Monitoring plan



The monitoring plan is developed in accordance with the modalities and procedures for GCC project activities and is proposed for grid-connected solar power project being implemented. The monitoring plan, which will be implemented by the GCC Project Owner describes about the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The effective Monitoring Plan to be put in place will have the following objectives:

- Allocate roles and responsibilities to project staff
- Gather data on the net electricity supplied to the grid by the project;
- Establish Quality Assurance & Quality Control procedures, as well as data archiving procedures;
- Generate periodical reports for verification purposes indicating the amounts of CO<sub>2</sub> reduced by the project.

Electricity generation will be monitored automatically by the Project owner and will be crosschecked using electricity dispatch reports (or electricity invoices, or sales receipts. A reliable third-party reference will be preferred, if available. Otherwise, the most reliable reference possible). Electricity data will be aggregated monthly and presented as a summary in periodical monitoring report.

## **Metering**

The project electricity generation will be monitored through the use of metering equipment at the relevant delivery point connecting the power generated to the grid.

There will be sets of two metering system equipment:

1. Main metering system equipment
2. Backup metering system equipment

Regarding the metering system, Fas Energy LLC is responsible for adjust, operate, check and maintain the Primary Meters and the Back Up Meters. The Fas Energy LLC and EETC both have the right to read either meter and the two meters will have the provisions to record on memory the accumulated kilowatt hours. The metering results will be supplied by EETC on a monthly basis.

## **Recording and Archiving:**

Electricity generated by the Project and supplied to the national grid will be monitored and recorded by a Data Management System at the on-site control centre. Collected data will be cross-checked against relevant minutes of meetings as well as any other pertinent records concerning the electricity production upon which the invoices to EETC are prepared. The Project owner will ensure that the meter readings be readily available for verification.

Data will be recorded electronically as well as on paper for backup. All the records or copies of these will be kept by the project owner for verification purposes. All data collected as part of monitoring should be archived electronically and kept for at least 2 years after the end of the last crediting period.

## **O&M Logs**

Each shift leader will maintain daily operation and maintenance logs on a real time basis. They will provide detailed on-the-spot information about the operations at the plant and any event of significance will be reported.

### Calibration

Project developers will be responsible for the equipment calibration and will do this according to national standards. Project developers will install and maintain all electricity metering equipment and associated transformers conforming to specifications set by EETC. The metering equipment is to be sealed in the presence of both Fas Energy LLC and EETC representatives. Seals can only be opened in the presence of Fas Energy LLC and EETC representatives for inspection, testing or calibration. The measured electricity meter installed is bidirectional type (meter technical details described in section B.7.1 above), and will be calibrated according to national standards. The national entity entrusted by the Ministry of Electricity and Energy, and NREA to do so is the Egyptian Electricity Transmission Company (EETC).

### Management structure

Project staff have been identified to carry out the above tasks and ensure that the objectives of the monitoring plan are met. The Project Co-ordinator, will be the person responsible for data monitoring and recording activities. He will report to, the project’s General Manager. The daily monitoring activities will be performed by technical Operators on-site, reporting to the Site Manager, who in turn reports to the Project Co-ordinator.

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

**Data / Parameter Table 2.**

<b>Data / Parameter:</b>	<b>EG<sub>P,J,y</sub> (SDG -7)</b>
Methodology reference	ACM0002 (Version 21.0)
Data unit	MWh /year
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Measured/calculated /default	Measured
Data source	Direct measurement or calculated based on measurements from more than one electricity meters
Value(s) of monitored parameter	128,699 MWh (Average annual generation for 10 years)

Measurement/ Monitoring equipment		
	Type of meter	Electronic Tri-vector and Bidirectional Energy Meters
	Location of meter	Substation
	Accuracy of meter	0.2s or 0.5s
	Serial number of meter	To be confirmed during issuance time as per records
	Calibration frequency	Once in five years
	Date of Calibration/ validity	To be confirmed during verification
	Reference No. of Calibration Certificate	To be confirmed during verification
	Calibration Status	To be confirmed during verification
Measuring/reading/ recording frequency	Continuous measurement & monthly recording	
Calculation method (if applicable)	<p>The main monitoring data will be provided by electricity meters (main and backup meters) installed for monitoring the electricity export to grid. Meters are located in the delivery point of the electricity generated to the grid.</p> <p>Total MWh delivered by the project to the grid will be recorded by the export meters of accuracy Class 0.2%, or similar, calibrated at least every three years as certified by the Egyptian Electricity Transmission Company (EETC).</p>	
QA/QC procedures	<p>Meters (main and backup) will be calibrated according to the Grid Procedures.</p> <p>Data will be recorded using an automatic electronic system and will be crosschecked with a reliable reference (ex.: dispatch reports).</p>	
Purpose of data	To calculate baseline emissions	
Additional comments	Data will be archived in paper & electronically for a period of 2 years beyond the end of crediting period or of the last issuance of credits for this project activity, whichever occurs later.	

**For Parameters to be monitored for E+/S+ assessments and SDG labels (positive impacts)**

<b>Data / Parameter:</b>	<b>Local Employment Generation (SDG 8)</b>
Purpose:	<i>To justify SDG 8- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</i>

Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Emission reductions achieved per year											
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG	<table border="1"> <tr> <td colspan="2" data-bbox="508 516 1414 558"></td> </tr> <tr> <td data-bbox="508 558 808 621">Parameter to be monitored</td> <td data-bbox="816 558 1414 621">Emission reductions achieved per year</td> </tr> <tr> <td data-bbox="508 621 808 684">Frequency of monitoring</td> <td data-bbox="816 621 1414 684">Yearly</td> </tr> <tr> <td data-bbox="508 684 808 747">Legal /regulatory / corporate limits (if any)</td> <td data-bbox="816 684 1414 747">NA</td> </tr> <tr> <td data-bbox="508 747 808 810">QA/QC</td> <td data-bbox="816 747 1414 810">Reduced quantum of Greenhouse gases emitted to the atmosphere.</td> </tr> </table>				Parameter to be monitored	Emission reductions achieved per year	Frequency of monitoring	Yearly	Legal /regulatory / corporate limits (if any)	NA	QA/QC	Reduced quantum of Greenhouse gases emitted to the atmosphere.
Parameter to be monitored	Emission reductions achieved per year											
Frequency of monitoring	Yearly											
Legal /regulatory / corporate limits (if any)	NA											
QA/QC	Reduced quantum of Greenhouse gases emitted to the atmosphere.											
Remarks	Data will be archived in paper & electronically for a period of 2 years beyond the end of crediting period or of the last issuance of credits for this project activity, whichever occurs later.											

<b>Data / Parameter:</b>	<b>Climate Action (SDG 13)</b>											
Purpose:	<i>To justify SDG 13- Take urgent action to combat climate change and its impacts.</i>											
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Number of local employment generation including both direct or indirect employment during project construction and project operation.											
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG	<table border="1"> <tr> <td colspan="2" data-bbox="508 1430 1414 1472"></td> </tr> <tr> <td data-bbox="508 1472 808 1535">Parameter to be monitored</td> <td data-bbox="816 1472 1414 1535">Number of local employments</td> </tr> <tr> <td data-bbox="508 1535 808 1598">Frequency of monitoring</td> <td data-bbox="816 1535 1414 1598">Yearly</td> </tr> <tr> <td data-bbox="508 1598 808 1661">Legal /regulatory / corporate limits (if any)</td> <td data-bbox="816 1598 1414 1661">NA</td> </tr> <tr> <td data-bbox="508 1661 808 1724">QA/QC</td> <td data-bbox="816 1661 1414 1724">Monitored data will be stored and archived till the end of the crediting period</td> </tr> </table>				Parameter to be monitored	Number of local employments	Frequency of monitoring	Yearly	Legal /regulatory / corporate limits (if any)	NA	QA/QC	Monitored data will be stored and archived till the end of the crediting period
Parameter to be monitored	Number of local employments											
Frequency of monitoring	Yearly											
Legal /regulatory / corporate limits (if any)	NA											
QA/QC	Monitored data will be stored and archived till the end of the crediting period											
Remarks	Data will be archived in paper & electronically for a period of 2 years beyond the end of crediting period or of the last issuance of credits for this project activity, whichever occurs later.											

<b>Data / Parameter:</b>	<b>Long-term jobs (&gt; 10 year) created/ lost (SJ01)</b>	
Purpose:	The project activity leads long term to the employment generation	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The project activity leads long term to the employment generation	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Number of people employed by the project will be monitored
	Frequency of monitoring	Yearly
	Legal /regulatory / corporate limits (if any)	Not Applicable
	QA/QC	Not Applicable
Remarks	Not Applicable	

<b>Data / Parameter:</b>	<b>Short-term jobs (1 &lt; year) created/ lost (SJ02)</b>	
Purpose:	The project activity leads short term to the employment generation	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The project activity leads short term to the employment generation	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Number of people employed by the project will be monitored
	Frequency of monitoring	Yearly
	Legal /regulatory / corporate limits (if any)	Not Applicable
	QA/QC	Not Applicable
Remarks	Not Applicable	

<b>Data / Parameter:</b>	<b>Reducing / increasing accidents/incidents/fatality (SH03)</b>								
Purpose:	to demonstrate positive impacts of aspects with baseline scenario / BAU / preexisting scenario and to demonstrate that they do not cause any net harm to environment / society or have an impact on SDG as per selected indicators.								
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	Cause of Physical hazards in project sites due to human intervention or technical failure or emergency								
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG	<table border="1"> <tr> <td>Parameter to be monitored</td> <td>Number of trainings &amp; physical hazards/incidents</td> </tr> <tr> <td>Frequency of monitoring</td> <td>Yearly</td> </tr> <tr> <td>Legal /regulatory / corporate limits (if any)</td> <td>Not Applicable</td> </tr> <tr> <td>QA/QC</td> <td>Not Applicable</td> </tr> </table>	Parameter to be monitored	Number of trainings & physical hazards/incidents	Frequency of monitoring	Yearly	Legal /regulatory / corporate limits (if any)	Not Applicable	QA/QC	Not Applicable
Parameter to be monitored	Number of trainings & physical hazards/incidents								
Frequency of monitoring	Yearly								
Legal /regulatory / corporate limits (if any)	Not Applicable								
QA/QC	Not Applicable								
Remarks	Not Applicable								

<b>Data / Parameter:</b>	<b>Specialized training / education to local personnel (SE01)</b>								
Purpose:	The project owner has introduced component of training/ skilling of employed resources								
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	The project owner has introduced component of training/ skilling of employed resources								
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG	<table border="1"> <tr> <td>Parameter to be monitored</td> <td>Number of trainings undertaken</td> </tr> <tr> <td>Frequency of monitoring</td> <td>Yearly</td> </tr> <tr> <td>Legal /regulatory / corporate limits (if any)</td> <td>Not Applicable</td> </tr> <tr> <td>QA/QC</td> <td>Not Applicable</td> </tr> </table>	Parameter to be monitored	Number of trainings undertaken	Frequency of monitoring	Yearly	Legal /regulatory / corporate limits (if any)	Not Applicable	QA/QC	Not Applicable
Parameter to be monitored	Number of trainings undertaken								
Frequency of monitoring	Yearly								
Legal /regulatory / corporate limits (if any)	Not Applicable								
QA/QC	Not Applicable								
Remarks	Not Applicable								

<b>Data / Parameter:</b>	<b>CO<sub>2</sub> emissions (EA03)</b>	
Purpose:	The project activity will displace fossil fuel-based electricity generation that would have otherwise been provided by the operation and expansion of the fossil fuel-based power plants in Egyptian grid.	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	This aspect has a positive impact. There is no associated environment /social/ SDG risk.	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	Monitoring and calculation of CO <sub>2</sub> emission reduction
	Frequency of monitoring	Yearly
	Legal /regulatory / corporate limits (if any)	Not Applicable
	QA/QC	Not Applicable
Remarks	Not Applicable	

<b>Data / Parameter:</b>	<b>Replacing fossil fuels with renewable sources of energy (ENR07)</b>	
Purpose:	To measure the total quantum of fossil fuel replaced due to the project activity against the indicator of quantum of fossil fuel-based electricity replaced due to the project activity	
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	This aspect has a positive impact. There is no associated environment /social/ SDG risk.	
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG		
	Parameter to be monitored	total quantum of fossil fuel replaced due to the project activity against the indicator of quantum of fossil fuel-based electricity replaced due to the project activity
	Frequency of monitoring	Yearly
	Legal /regulatory / corporate limits (if any)	Not Applicable
	QA/QC	Not Applicable
Remarks	Not Applicable	

<b>Data / Parameter:</b>	<b>End of life products/ equipment (EL06)</b>																																									
Purpose:	To mitigate/reduce an environmental impact identified as harmful in the risk assessment and to develop a Program of Risk Management Actions plan to address the risk of PRMA 03. Improper disposal of generated at the end-of-life products/ equipment may create soil contamination.																																									
Describe the related environment /social/ SDG risk or SDG impact as a function of likelihood of occurrence and severity of impact.	This aspect has a positive impact. There is no associated environment /social/ SDG risk.																																									
Describe the parameters to be monitored to demonstrate compliance with requirements to demonstrate “harmless” condition or demonstrate Impact on SDG																																										
	Parameter to be monitored	End of life products/ equipment (EL06)																																								
	Frequency of monitoring	Yearly																																								
	Legal /regulatory / corporate limits (if any)	Not Applicable																																								
	QA/QC	Record of end-of-life solar PV module, associated auxiliaries and related structures will be maintained and summited during verification.																																								
Program of Risk Management Actions to mitigate risk related to aspect (if any for aspects assessed to be harmful)	<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>1</td> <td>Expire d-waste records</td> <td>Organizatio n’s managem ent</td> <td>1</td> <td>15/01/2029</td> <td>Expired - waste records</td> <td>15/01/2029</td> </tr> <tr> <td>2</td> <td>Filing of return</td> <td>Organizatio n’s managem ent</td> <td>1</td> <td>15/01/2029</td> <td>Filled Return forms</td> <td>15/01/2029</td> </tr> <tr> <td colspan="3">Date of Closing the Program:</td> <td colspan="2">15/01/2029</td> <td colspan="2">15/01/2029</td> </tr> <tr> <td colspan="7"></td> </tr> </tbody> </table>							S.No.	Action and targets	Responsibility	Resource Requirement	Target to be Achieved by (insert date)	Key Performance Indicators (KPI)	Targets achieved on (insert date)	1	Expire d-waste records	Organizatio n’s managem ent	1	15/01/2029	Expired - waste records	15/01/2029	2	Filing of return	Organizatio n’s managem ent	1	15/01/2029	Filled Return forms	15/01/2029	Date of Closing the Program:			15/01/2029		15/01/2029								
	S.No.	Action and targets	Responsibility	Resource Requirement	Target to be Achieved by (insert date)	Key Performance Indicators (KPI)	Targets achieved on (insert date)																																			
	1	Expire d-waste records	Organizatio n’s managem ent	1	15/01/2029	Expired - waste records	15/01/2029																																			
	2	Filing of return	Organizatio n’s managem ent	1	15/01/2029	Filled Return forms	15/01/2029																																			
	Date of Closing the Program:			15/01/2029		15/01/2029																																				

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

No negative Impacts

**B.7.3. Sampling plan**



Sampling is not required for this project activity.

**B.7.4. Other elements of the monitoring plan**

Refer monitoring plan details mentioned in section B.7

**Section C. Start date, crediting period type and duration**

**C.1. Start date of the Project Activity**

As per the paragraph 38 of the project standard V3.1, start of commercial operations has been considered as the start date. Hence project commissioning date (COD), on which project is connected to grid and started generating power and exporting to the grid there by started generating GHG emission reductions is considered as start date. Start date for all the projects of the bundle is given in the below table.

<b>Project</b>	<b>Start Date</b>
Project 1 (50 MW solar project)	16/01/2019

The start date of the project is after 1<sup>st</sup> January 2016 and complies with the GCC project standard guidelines. The start date for this project is the date of the commercial operation of the project i.e 16/01/2019.

**C.2. Expected operational lifetime of the Project Activity**

25 Years

**C.3. Crediting period of the Project Activity**

Crediting period start date: 16/01/2019

Crediting period end date: 15/01/2029 (both days included)

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

Crediting period start date: 16/01/2019

Crediting period end date: 15/01/2029 (both days included)

**C.3.2. Duration of crediting period**

10 years i.e from 16/01/2019 to 15/01/2029

**Section D. Environmental impacts**

### **D.1. Analysis of environmental impacts**

The project activity does not involve any major construction activity. It primarily requires the installation of the solar PV panels, inverters, and interface of the generators with the Egyptian Electricity Company by setting up HT transmission lines and installation of other accessories.

### **D.2. Environmental impact assessment and management action plans**

The following environmental impacts were evaluated as part of Environmental & Social Impact Assessment (ESIA):

Potential impacts on Meteorology, Climate & Air Quality; Soils & Geology; Hydrology & Hydrogeology; Noise & Vibration; Landscape and Visual; Terrestrial Biodiversity; Archaeology & Cultural Heritage; Traffic & Transport Infrastructure; Socio -Economic Aspects; Utilities Infrastructure and Usage; Waste Management; Health and Safety Aspects.

There will be no trans boundary effects from this project activity as any potential impacts are confined within the borders of Egypt. The Environmental & Social Impact Assessment (ESIA) process for the proposed establishment of a solar power plants has been not required.

In assessing the environmental feasibility of the project activity, the requirements of all relevant legislations have been considered. This relevant legislation has informed the identification and development of appropriate management and mitigation measures that will be implemented to minimize the potential impacts associated with the project activity. No potential impact identified in Air, Water, Noise and Soil monitoring during EIA process.

## **Section E. Environmental and social safeguards**

## E.1. Environmental safeguards

>>

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards								Project Owner's Conclusion		
		Description of Impact <i>(positive or negative)</i>	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 frequency and of	Ex- Ante scoring of the environmental impact (as per scoring matrix Appendix-02)		
<b>Environmental Aspects on the identified categories</b> <sup>29</sup> <b>indicated below.</b>	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 <b>Not Applicable</b>	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 <b>Harmful</b>	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 <b>'Harmful</b> 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 <b>Harmful</b> .	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.	

<sup>29</sup> sourced from the CDM SD Tool and the sample reports are available (<https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx>)

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					safe) and shall be indicated as <b>Harmless</b> /If the project has a positive impact on the environment mark it as "harmless" as well.						
<b>Reference to paragraphs of Environmental and Social Safeguards Standard</b>		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	
<b>Environment - Air</b>	SO <sub>x</sub> emissions (EA01)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	NO <sub>x</sub> emissions (EA02)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	CO <sub>2</sub> emissions (EA03)	In absence of the project activity stated the amount of electricity generated would be by the operation of grid - connected power plants. The CO <sub>2</sub> emissions by the connected power plants is expressed as grid emission factor, i.e. t CO <sub>2</sub> /MWh generated grid electricity, due to fossil fuel based grid power plants. Therefore the non-fossil fuel,	Law 4/1994 amended by Law 9/2009 and ER 710/2012	N/A	N/A	N/A	N/A	N/A	The generated electricity the project activity will be continuously measured and the CO <sub>2</sub> emission reduction will be calculated according to the applied methodology ACM0002 (Version 21.0)	+1	However, in the baseline scenario (grid) some of the fossil fuel power plants may have emitted CO <sub>2</sub> emissions, which has been calculated by the combined margin emission factor as mentioned in the PSF. Therefore, emission reductions are expected to be reduced which will be regularly monitored and verified ex-post and therefore is

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	zero emission - generated electricity by the project activity will substitute the grid and CO2 emissions, CO2 reduction generated electricity by the project activity x emission factor.										
CO emissions (EA04)	N/A	Law 4/1994 amended by Law 9/2009 and ER 710/2012	N/A	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	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	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	N/A	N/A	N/A
Odor (EA08)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Noise Pollution (EA09)	NA	Article 42 of Law 4/1994 amended	N/A	N/A	N/A	N/A	N/A	This is a solar power project and hence there is no noise pollution from this project.	N/A	No significant noise emission is expected from project activity during	

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			by Law 9/2009 Article 44 of ER 710/2012						Therefore the monitoring of this parameter is not required.		operational phase as there is no major equipments in solar project who generate noise.
	<i>Others (EA10)</i>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Environment - Land</b>	<i>Solid waste Pollution from Plastics (EL-01)</i>	This is a solar power project and hence this aspect has no impact on the project activity	NA	NA	NA	NA	NA	NA	This is a solar power project and hence there is no pollution from plastic from this project. Therefore the monitoring of this parameter is not required.	NA	NA
	<i>Solid waste Pollution from Hazardous wastes (EL02)</i>	NA	Law 4/1994 amended by Law 9/2009 and ER 1095/2011 amended by Decree 710/2012)	Not Applicable as no emissions occur in the project scenario and therefore is not expected to or does not cause any harm.	NA	NA	NA	NA	NA	NA	NA
	<i>Solid waste Pollution from Bio-medical wastes (EL03)</i>	NA	NA	NA	NA	NA	NA	NA	NA	NA	No significant bio-medical waste will be generated from the project activity. Hence,, this parameter will not be scored.
	<i>Solid waste Pollution from E-wastes (EL04)</i>	<i>There is no e-waste generated at the project site.</i>	Law 4/1994 amended by Law 9/2009 and ER 1095/2011 amended by Decree 710/2012)	NA	NA	NA	NA	NA	NA	NA	NA

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	<i>Solid waste Pollution from Batteries (EL05)</i>	<i>There is no battery waste generated at the project site.</i>	Not Applicable	Not Applicable	-	-	NA	Not Applicable	Not Applicable	Not Applicable	NA
	<i>Solid waste Pollution from end-of-life products/equipment (EL06)</i>	Damaged/ disposed Solar PV modules at site might have negative environmental impacts if not managed well after their end-of-life	Law 4/1994 amended by Law 9/2009 and ER 1095/2011 amended by Decree 710/2012)	-	-	-	Sold waste from the project activity must be disposed as applicable law	Fas Energy LLC management is responsible to maintain records and dispose all products after ending lifecycle as per applicable law	-	+1	Project Owner is responsible to maintain records and dispose all products after ending lifecycle as per applicable law. Project owner will be responsible to maintain records and filling of record as per applicable law and will not have no significant impact. This aspect will be monitored throughout the entire crediting period and the monitoring measures for the same has been incorporated in section B.7.2..
	<i>Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury) (EL07)</i>	<i>There is no soil pollution caused by chemicals at the project site.</i>	N/A	-	-	-	N/A	N/A	N/A	N.A.	N/A
	<i>land use change</i>	Negative	N/A	-	-	-	N/A	N/A	N/A	0	There is no chance of soil

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	(change from cropland /forest land to project land) (EL08)											erosion during operation phase of the project activity  However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted soil erosion emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.
	Others (EL09)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Environment - Water</b>	Reliability/ accessibility of water supply (EW01)	N/A	Ministerial Decree 44/2000, Decree of Law 93/1962	N/A	-	-	-	N/A	N/A	N/A	N/A	Supply water from local body will be used and necessary approval to be obtained.  However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted accessibility of water emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and



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											therefore this parameter will not be scored.
<i>Water Consumption from ground and other sources (EW02)</i>	<i>There is no water consumption from ground for the project use.</i>	Ministerial Decree 44/2000, Decree of Law 93/1962	N/A	-	-	N/A	N/A	N/A	<i>There is no water consumption from ground for the project use.</i>	No ground water will be consumed in all sites of the project activity & necessary permission to be obtained from concerned local authority in case use ground water in future.  However, the in the baseline scenario (grid) some of the fossil fuel power plants may have emitted water consumption emissions, on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.	
<i>Generation of wastewater (EW03)</i>	NA	Ministerial Decree 44/2000, Decree of Law 93/1962	N/A	-	-	N/A	N/A	N/A	NA	There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of	

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											<p>toilets, soak pits and septic tanks, waste collection areas should be away from natural drainage channels</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have generation of waste water on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.</p>
	Wastewater discharge without/with insufficient treatment (EW04)	NA	Ministerial Decree 44/2000, Decree of Law 93/1962	N/A	-	-	N/A	N/A	N/A	NA	<p>There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas should be away from natural drainage channels</p> <p>However, the in the baseline scenario (grid)</p>

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											some of the fossil fuel power plants may have generation of waste water or its treatment on which data is not available and can't be quantified and therefore the emission reductions cannot be quantified and therefore this parameter will not be scored.
	<i>Pollution of Surface, Ground and/or Bodies of water (EW05)</i>	NA	Ministerial Decree 44/2000, Decree of Law 93/1962	N/A	-	-	N/A	N/A	N/A	NA	<p>There is no significant effect as provisions of septic tank and soak pits will be provided onsite for treatment and disposal of sewage, thereby minimizing the impacts of wastewater discharge. Planning of toilets, soak pits and septic tanks, waste collection areas should be away from natural drainage channels</p> <p>However, the in the baseline scenario (grid) some of the fossil fuel power plants may have from surface water on which data is not available and can't be quantified and therefore the</p>

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											emission reductions cannot be quantified and therefore this parameter will not be scored.
	<i>Discharge of harmful chemicals like marine pollutants / toxic waste (EW06)</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Environment – Natural Resources</b>	<i>Conserving mineral resources (ENR01)</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N.A.	N/A
	<i>Protecting/enhancing plant life (ENR02)</i>	NA	Law 102 of 1983	N/A	-	-	N/A	N/A	N/A	NA	The project activity has been implemented in barrel land and no trees have been removed from the site due to project activity.  Therefore this parameter will not be scored.
	<i>Protecting/enhancing species diversity (ENR03)</i>	NA	Law 102 of 1983	N/A	-	-	N/A	N/A	N/A	NA	The project activity has been implemented in barrel land and no trees have been removed from the site due to project activity.  Therefore this parameter will not be scored.

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	<i>Protecting/enhancing forests (ENR04)</i>	NA	Law 102 of 1983	N/A	-	-	N/A	N/A	N/A	NA	No forest land has been used for the project activity.  Therefore this parameter will not be scored.
	<i>Protecting/enhancing other depletable natural resources (ENR05)</i>	NA	Law 102 of 1983	N/A	-	-	N/A	N/A	N/A	NA	The project activity has been implemented in barrel land and no trees have been removed from the site due to project activity or no other natural resource has been used to operate project activity  Therefore this parameter will not be scored.
	<i>Conserving energy (ENR06)</i>	N/A	(Decree No 203/2014)	N/A	-	-	N/A	N/A	N/A	N.A.	All efficient products & instruments has been used in the project activity, hence no significant impact due to this. Therefore this parameter will not be scored.
	<i>Replacing fossil fuels with renewable sources of energy (ENR07)</i>	Positive	(Decree No 203/2014)	N/A	-	-	N/A	N/A	N/A	+1	<i>The project replaces fossil fuels with renewable sources of energy since it is a Solar power plant.</i>
	<i>Replacing ODS with</i>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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	non-ODS refrigerants (ENR08)										
<b>Net Score:</b>		<b>+3</b>									
<b>Project Owner's Conclusion in PSF:</b>		The Project Owner confirms that the Project Activity will not cause any net harm to Environment.									

E.2. Social Safeguards

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Impact of Project Activity on	Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards						Project Owner's Conclusion		
	Description of Impact <i>(positive or negative)</i>	Legal requirement /Limit, Corporate policies / Industry best practice	Do-No-Harm Risk Assessment <i>(Choose which ever is applicable)</i>			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				

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<b>Social Aspects on the identified categories<sup>30</sup> indicated below.</b>	<i>Indicators for social impacts</i>	<i>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</i>	<i>Describe the applicable national regulatory requirements / legal limits or organizational policies or industry best practices related to the identified risks of social impacts</i>	<i>If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as <b>Not Applicable</b></i>	<i>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 <b>Harmless</b>, project having positive impact on society. To the BAU / baseline scenario must also mark their aspect as "harmless"</i>	<i>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 <b>Harmful</b></i>	<i>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 <b>Harmful</b>.</i>	<i>Describe the monitoring approach and the parameters (KPI) to be monitored for each impact irrespective of whether it is harmless or harmful. The frequency of monitoring to be specified as well. Monitoring parameters can be quantitative or qualitative in nature along with the data source</i>	-1 0 +1	<i>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</i>
<b>Reference to paragraphs of Environmental and Social Safeguards Standard</b>		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 h 23	
<b>Social - Jobs</b>	<i>Long-term jobs (&gt; 10 year) created/ lost (SJ01)</i>	The project activity leads to the employment generation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	There are no harmful impacts of the project activity as it leads to the employment generation.	There have been no additional actions that have been identified as harmful.	+1	
	<i>New short-term jobs (&lt; 1 year) created/ lost (SJ02)</i>	The project activity leads to the employment generation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	There are no harmful impacts of the project activity as it leads to the employment generation.	There have been no additional actions that have been identified as harmful.	+1	

<sup>30</sup> sourced from the CDM SD Tool and the sample reports are available ( <https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx> )

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	<i>Sources of income generation increased / reduced (SJ03)</i>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	
	<p><i>Avoiding discrimination when hiring people from different race, gender, ethnics, religion, marginalized groups, people with disabilities (SJ04)</i></p> <p><i>(Human rights)</i></p>	The project owner Avoid discrimination when hiring people.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	0	<p>The project will not make employment decisions based on personal characteristics unrelated to inherent job requirements. The project will base the employment relationship on the principle of equal opportunity and fair treatment and will not discriminate with respect to any aspects of the employment relationship. The project will take measures to prevent and address harassment, intimidation</p>



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										, and/or exploitation , therefore this parameter will not be scored.
<b>Social - Health &amp; Safety</b>	<i>Disease prevention (SHS01)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Occupational health hazards (SHS02)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Reducing / increasing accidents /Incidents/fatality (SHS03)</i>	The project developer will provide safety trainings to ensure security	EHS policy implemented by the project developer	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Training records	+1	Site employees receive complete safety training
	<i>Reducing / increasing crime (SHS04)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Reducing / increasing food wastage (SHS05)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Reducing / increasing indoor air pollution (SHS06)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity

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	<i>Efficiency of health services (SHS07)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Sanitation and waste management (SHS08)</i>	Suitable and sufficient portable sanitary conveniences are provided at readily accessible places. Sanitary facilities comply with HSE requirements. Wastewater discharge complies with legal limits.	National law regulates generation, handling, storage, collection, transportation, and disposal of waste.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	NA	0	Sanitary facilities comply with HSE requirements. And it can't be monitored so it will not be scored
	<i>Other health and safety issues (SHS09)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Add more rows if required</i>										
<b>Social - Education</b>	<i>specialized training / education to local personnel (SE01)</i>	The project owner has introduced component of training/ skilling of employed resources	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Training Records produced/maintained by the project owner will be used to monitor. Refer to Section B.7.1 of the PSF	+1	Project Owner will take Initiative towards provisionin g of on-job training to employee
	<i>Educational services improved or not (SE02)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Project-related knowledge dissemination</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity

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	<i>effective or not (SE03)</i>									
	<i>Other educational issues (SE03)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Add more rows if required (SE04)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
<b>Social - Welfare</b>	<i>Improving/deteriorating working conditions (SW01)</i>	To avoid the potential negative impacts association with substandard labour practices a detailed strategy is to be developed setting common standards for labour and working conditions, and code of conduct	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Community and rural welfare (indigenous people and communities) (SW02)</i>	It is expected that the project will result in revenue for local business.	National law regulates businesses and taxation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Can't be monitored	0	This aspect is can't be monitored so it will not be scored.
	<i>Poverty alleviation (more people above poverty level) (SW03)</i>	It is not expected that the project will impact poverty	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity

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<i>Improving / deteriorating wealth distribution / generation of income and assets (SW04)</i>	It is expected that the project will generate income.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Can't be monitored	0	This aspect is can't be monitored so it will not be scored.
<i>Increase d or / deteriorating municipal revenues (SW05)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
<i>Women's empowerment (SW06) (Human rights)</i>	The project is solar power plan and there is no women's empowerment in this project	Not Applicable	Not Applicable	Harmless	Not Applicable	Not Applicable	Not Applicable	0	The project is solar power plan and there is no women's empowerment in this project , and there is no legal requirement
<i>Reduced / increase d traffic congestion (SW07)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
<i>Exploitation of Child labour (SW08) (Human rights)</i>	Positive impact is created by the project activity throughout project life as no person below the legal working limit will be employed at the site.	Egyptian labor law	Not Applicable	Harmless Child Labour and forced labour are strictly prohibited by law	Not Applicable	Not Applicable	HR records	0	The project is unlikely to cause any harm.

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	<i>Minimum wage protection</i>  <i>(Human rights)</i> <i>(SW09)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Abuse at workplace. (With specific reference to women and people with special disabilities / challenges)</i>  <i>(Human rights)</i> <i>(SW10)</i>	There is no abuse at the workplace	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Can't be monitored	0	This aspect is scored 0 as it can't be monitored
	<i>Other social welfare issues</i> <i>(SW11)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Avoidance of human trafficking and forced labour</i>  <i>(Human rights)</i> <i>(SW12)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Avoidance of forced</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable

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	<i>eviction and/or partial physical or economic displacement of IPLCs</i>  <i>(Human rights)</i>  <i>(CW13)</i>									to this project activity
	<i>Provisions of resettlement and human settlement displacement</i>  <i>(Human rights)</i>  <i>(CW14)</i>	This aspect is not applicable to this project activity	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	This aspect is not applicable to this project activity
	<i>Add more rows if required</i>									
<b>Net Score:</b>			+4							
<b>Project Owner's Conclusion in PSF:</b>			The Project Owner confirms that the Project Activity will not cause any net harm to society.							

## Section F. United Nations Sustainable Development Goals (SDG)

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UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs			
			Project-level SDGs	Project-level Targets/Actions	Contribution of Project-level Actions to SDG Targets	Monitoring
<p><b>Describe UN SDG targets and indicators</b></p> <p>See: <a href="https://unstats.un.org/sdgs/indicators/indicators-list/">https://unstats.un.org/sdgs/indicators/indicators-list/</a></p>	<p>Describe the UN-level target(s) and corresponding indicator no(s)</p>	<p>Has the host country declared the SDG to be a national priority? Indicate Yes or No</p>	<p>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.</p>	<p>Define project-level targets/actions in line with the project level indicators chosen. Define the target date by which the project Activity is expected to achieve the project-level SDG target(s).</p>	<p>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</p>	<p>Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG indicator and its corresponding target, frequency of monitoring and data source</p>
<p><b>Goal 1: End poverty in all its forms everywhere</b></p>	<p>Not Applicable</p>	<p>Not Applicable</p>	<p>Not Applicable</p>	<p>Not Applicable</p>	<p>Not Applicable</p>	<p>Not Applicable</p>

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<b>Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 3. Ensure healthy lives and promote well-being for all at all ages</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 5. Achieve gender equality and empower all women and girls</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 6. Ensure availability and sustainable management of water and sanitation for all</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all</b>	SDG target 7.2, "By 2030 increase substantially the share of renewable energy in the global energy mix" by the utilization of solar power as a renewable energy source" Indicator 7.2.1	Yes	Increase the share of renewables in the total installed power capacity connected to the national grid	128,699 MWh/y From the start of operation onwards the project activity will deliver renewable energy to the grid .	128,699 MWh/y From the start of operation onwards the project activity will deliver renewable energy to the grid .	The net electricity which will be supplied to the grid by the project activity will be monitored continuously through energy meter (main and check meter) installed at the sub-station. The meters remain under the



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	Renewable energy share in the total final energy consumption.  KPI - Amount of renewable energy supplied to grid for consumption.					custody of state utility.  Please refer to Section B.7.1 for monitoring details.
<b>Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all</b>	SDG Target 8.2 "Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high value added and labor intensive sectors". Indicator 8.2.1: Annual growth rate of real GDP per employee	Yes	The number Of permanent created jobs, will be used as project-level indicator	The project activity will create at least 2 permanent jobs in the renewable power sector	power plant contributes directly to achieve the SDG target, because the project activity The project activity creates jobs in the renewable energy sector, which diversify and upgrades the commonly used technology in the energy	The number Of permanent created jobs

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					sector of Egypt.	
<b>Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 10. Reduce inequality within and among countries</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 11. Make cities and human settlements inclusive, safe, resilient, and sustainable</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 12. Ensure sustainable consumption and production patterns</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>Goal 13. Take urgent action to combat climate change and its impacts</b>	<p>SDG Target 13.A Integrate climate change measures into national policies, strategies and planning.</p> <p>KPI - Amount of emission reduction achieved by project under UNFCCC/ GORD / Domestic market mechanism.</p>	Yes	Quantum of GHG avoided due to the project activity	The project activity is expected to result in avoidance of 54,967 tCO <sub>2</sub> e per annum.	Project activity results in avoidance of GHG emission by generation of electricity using renewable energy resources and its supply to the grid, which will avoid generation of equivalent	<p>Avoidance of GHG emission is estimated as product of electricity generated and supplied to the grid and grid emission factor.</p> <p>Please refer to Section B.7.1 for monitoring details.</p>

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					t quantum of electricity from fossil fuel-based power plant resulting in emission of CO <sub>2</sub> .	
<b>Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>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</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>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</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

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<b>Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development</b>	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
<b>SUMMARY</b>						
				<b>Targeted</b>	<b>Likely to be Achieved</b>	
<b>Total Number of SDGs</b>				<b>3</b>	<b>3</b>	
<b>Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF</b>				<b>Silver</b>	<b>Silver</b>	

## Section G. Local stakeholder consultation

### G.1. MODALITIES FOR LOCAL STAKEHOLDER CONSULTATION

Local stakeholder consultation was carried out as a part of the project activity with the objective of obtaining view of the project stakeholders about the planned project including their feedbacks, and concerns. The Local Stakeholder consultation documents will be provided to GCC Verifier during validation of the project activity.

Project Owner	Capacity	Meeting dates
Fas Energy LLC	50 MW	13/05/2022

Identification of the stakeholder for the stakeholder meeting is provided below.

Stakeholders identified (Group of stakeholders identified)	Mode of invitation (means for inviting stakeholders)	Mode of communication
Stakeholders includes – 1. Local villagers 2. Local community leaders of the vicinity 3. Local Labors 4. O&M contractors/Local vendors	Through notice	Feedback/Suggestion can be provided through the grievance register

Project representatives explained the project benefits and how project would help to fight against climate change and no any negative comments received during the local stakeholder round. The Minutes of meeting with commenting sheet from LSH, invitation letter receipt copy is submitted to the GCC Verifier for further check. Few queries raised during local stakeholder consultation are addressed satisfactorily.

Villagers were totally in support for setting up of these kinds of projects in the region. The Project owner also placed a grievance register onsite in where the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately. Also, regular stakeholder engagement is one the key focus at the site.

The ongoing communication is being done via grievance register. The grievance register is placed on each site for the stakeholders to mention their concerns.

No grievance has been received till date.

### G.2. SUMMARY OF COMMENTS RECEIVED

The Meeting started with opening speech by representative of project owner. As a part of the consultation process, the project representatives explained all stakeholders about the type of

development through the project and the technology used for power generation towards enhancing stakeholders' awareness about the project. The stakeholders were also made aware about the employment opportunities and other benefits likely to be rendered through this project and the importance of setting up solar PV power plant, not only to tap the cleaner sources for energy generation but most to meet the ever-increasing energy demand of state and its contribution towards fighting against climate change. Project owner representative also elaborated about carbon mechanism & its requirement for the current project. After the detailed discussions, the session was open for questions from stakeholders.

Most of the questions were related to employment opportunities, economic development, benefits from project to villagers and other development activities. The question raised by the villagers are summarised below:

Q: Will there be employment generation due to the project activity for persons from the adjoining areas?

A: Responding about the increased possibilities for employment of local personals due to the project activity, it was pointed out that preference would be given for locals in the employment opportunities.

Q: Can local villagers obtain electricity directly from the project activity?

A: Responding to the queries, representative of the project owner explained that the project is supplying power to the grid through the local substation. It the grid from which the power is supplied to the village households.

### **G.3. CONSIDERATION OF COMMENTS RECEIVED**

The communities and the community representatives in and around study area were aware about and in favor of the proposed solar power project and expressed their assurance for support and cooperation for project activity. They didn't seem to have any objections or problem related to the development of solar power project in their area.

There were no comments raised by the stakeholders and they were totally in support for setting up of these kinds of projects in the region.

**Information about the participants of the stakeholder meeting and their comments are tabulated below**

Information About the Participant					
Name Surname	Gender (M/F)	How did they hear about the meeting?	Was the information given about the project enough? (Y/N)	Comments in the Local language	Comments on the environmental or social effects of the project
Mohammad Saed	M	Notice	Y	خلق فرص عمل طويلة الامد	The project created a long-term job opportunity
Omar Ibrahim	M	Notice	Y	تخفيف البطالة	Unemployment reduction
Ahmad Ali	M	Notice	Y	خلق فرص عمل ، وإعطاء خبرة جيدة للفنيين	The project created a job opportunity, and give good experience for the technicians
Sharaf Mohammad	M	Notice	Y	تأثير ايجابي	Positive Impact

## Section H. Approval and authorization

Not applicable

**APPENDIX 1. CONTACT INFORMATION OF PROJECT OWNERS**

<b>Project Owner name (as per LON/LOA)</b>	FAS Energy LLC
<b>Country</b>	Saudi Arabia
<b>Address</b>	PO Box 341904, Lynx Spring Towers Bldg. 5, Prince Mohammed Bin Salman Road, Riyadh, Saudi Arabia
<b>Telephone</b>	+966112934141
<b>Fax</b>	+966112934869
<b>E-mail</b>	<a href="mailto:salah.herzallah@lynxcontracting.com">salah.herzallah@lynxcontracting.com</a>
<b>Website</b>	<a href="http://www.fas-energy.com/page/Home">http://www.fas-energy.com/page/Home</a>
<b>Contact person</b>	Mr. Salah Herzallah

**APPENDIX 2. AFFIRMATION REGARDING PUBLIC FUNDING**

Not Applicable

**APPENDIX 3. APPLICABILITY OF METHODOLOGY(IES)**

Refer Section B.2

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

Please refer to section B.6.2

**APPENDIX 5. FURTHER BACKGROUND INFORMATION ON MONITORING PLAN**

Please refer to section B.7

**APPENDIX 6. SUMMARY REPORT OF COMMENTS RECEIVED FROM LOCAL STAKEHOLDERS**

Please refer to section G.2



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

>>

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

<b>Pre-registration changes to the Project Activity</b> (Tick as applicable)	<b>Pre-registration Changes</b>	<b>Reference number</b>	<b>Approved</b>	<b>Provide a summary of pre-registration changes</b>
	Deviations from approved baseline and monitoring methodology		<input type="checkbox"/>	
	Deviations from applied Tool & Guidance		<input type="checkbox"/>	
	Deviations from the rules		<input type="checkbox"/>	
	Other.....		<input type="checkbox"/>	
<b>Post-registration changes to the Project Activity</b> (Tick as applicable)	<b>Post registration Changes</b>	<b>Reference number</b>	<b>Approved</b>	<b>Provide a summary of post-registration changes</b>
	Change in project design		<input type="checkbox"/>	
	Request for revision of monitoring plan		<input type="checkbox"/>	
	Request for change in start date of crediting period		<input type="checkbox"/>	
	Renewal of crediting period		<input type="checkbox"/>	
	Temporary deviations		<input type="checkbox"/>	
	Other.....		<input type="checkbox"/>	

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)	1 <sup>st</sup>			
			2 <sup>nd</sup>			
			3 <sup>rd</sup>			
	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					-	

<b>Details of Previous Issuance Requests</b>	<b>Issuance Request</b>	<b>Period</b> (start & end dates)	<b>ERs as per registered PDD</b>	<b>Quantity of Credits requested to be issued</b>	<b>Quantity of Credits issued</b>
	1 <sup>st</sup>				
	2 <sup>nd</sup>				
	3 <sup>rd</sup>				
	4 <sup>th</sup>				
	5 <sup>th</sup>				
	Add rows .....				
	<b>Total</b>				
<b>List any open issues in the Validation and last Verification Report (e.g., FARs, if any) and how they have been addressed</b>					
<b>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</b>					
<b>Provide the list of all the registered documents related to this project, as available on the program’s website and the corresponding URLs.</b>					



## DOCUMENT HISTORY

Version	Date	Comment
V 4.0	27/09/2022	<ul style="list-style-type: none"> <li>▪ Revised version released on approval by Steering Committee as per GCC Program Process.</li> <li>▪ Revised version contains following changes:               <ul style="list-style-type: none"> <li>○ Introduced A3 type projects A2 project sub-types.</li> <li>○ Included revised Declaration by the 'Authorized Project Owner and focal point' on GCC requirements.</li> <li>○ Included modified format for E+/S+/ SDG assessment.</li> <li>○ Revised instructions for filling in the PSF.</li> <li>○ Editorial changes to the document.</li> </ul> </li> </ul>
V 3.2	31/12/2020	<ul style="list-style-type: none"> <li>▪ The name of GCC Program's emission units has been changed from "Approved Carbon Reductions" or ACRs to "Approved Carbon Credits" or ACCs.</li> </ul>
V 3.1	17/08/2020	<ul style="list-style-type: none"> <li>▪ Editorial revisions made               <ul style="list-style-type: none"> <li>○ Revised Table in section B.7.2 on Monitoring-program of risk management actions</li> <li>○ Revised Table in section E.1 on Environmental Safeguards</li> <li>○ Revised Table in section E.1 on Social Safeguards</li> <li>○ Revised Table in section F on United Nations Sustainable Development Goals (SDG)</li> </ul> </li> </ul>
V 3.0	05/07/2020	<ul style="list-style-type: none"> <li>▪ Revised version released on approval by Steering Committee as per GCC Program Process.</li> <li>▪ Revised version contains following changes:               <ul style="list-style-type: none"> <li>○ Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC).</li> <li>○ Considered and addressed comments raised by Steering Committee:                   <ul style="list-style-type: none"> <li>➤ during physical meeting (SCM 01, dated 29 Oct 2019, Doha Qatar); and</li> <li>➤ electronic consultations EC01-Round 01 (15.09.2019 – 25.09.2019), EC01-Round 02 (27.03.2020 – 27.06.2020).</li> </ul> </li> <li>○ Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA<sup>31</sup>;</li> </ul> </li> </ul>

<sup>31</sup>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](https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf)

V 2.0	25/06/2019	<ul style="list-style-type: none"><li>▪ Revised version released for approval by the GCC Steering Committee.</li><li>▪ Revised version includes additional details and instructions on the information to be provided, consequent to the latest developments world-wide (e.g., CORSIA EUC).</li></ul>
V 1.0	01/11/2016	Initial version released under the GCC Program Version 1

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