



**CLEAN DEVELOPMENT MECHANISM
PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-CPA-DD)
Version 01**

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NOTE:

- (i) This form is for the submission of CPAs that apply a large scale methodology using provisions of the proposed PoA.
- (ii) The coordinating/managing entity shall prepare a CDM Programme Activity Design Document (CDM-CPA-DD)^{1,2} that is specified to the proposed PoA by using the provisions stated in the PoA DD. At the time of requesting registration the PoA DD must be accompanied by a CDM-CPA-DD form that has been specified for the proposed PoA, as well as by one completed CDM-CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the PoA must submit a completed CDM-CPA-DD.


¹ The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

² At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

**SECTION A. General description of CDM programme activity (CPA)****A.1. Title of the CPA:***[Enter CPA name]*Version of CPA-DD: *[Enter version number]*Date: *[Enter date]***A.2. Description of the CPA:***[Enter CPA description]***Project's contribution to sustainable development***[Enter CPA's contribution to sustainable development]***A.3. Entity/individual responsible for CPA:**CPA Developer: *[Enter name]*(hereafter referred as *[Enter CPA name]* or “CPA Developer”),Contact Details: *[Enter details]***A.4. Technical description of the CPA:***[Enter technical description]***A.4.1. Identification of the CPA:****A.4.1.1. Host Party:***[Enter CPA's host country]***A.4.1.2. Geographic reference of other means of identification allowing the unique identification of the CPA (maximum one page):***[Enter CPA's location description]*

Host country	<i>[Enter CPA's host country]</i>
Region	<i>[Enter region, if applicable]</i>
Province	<i>[Enter province, if applicable]</i>
Nearest city/large town	<i>[Enter city, if applicable]</i>

**Figure 1: Location of the project**

Host country <i>[Point out host country in map]</i>	
Location within host country <i>[Point out location in map]</i>	<i>[Enter map of host country]</i>
Specific project site <i>[Point out project site in map]</i>	<i>[Enter map of region/project site]</i>
Site coordinates	<i>[Enter coordinates]</i>

A.4.2. Duration of the CPA:**A.4.2.1. Starting date of the CPA:***[Enter starting date]***A.4.2.2. Expected operational lifetime of the CPA:***[Enter expected operational lifetime]***A.4.3. Choice of the crediting period and related information:***[Choose on option, delete the other]*

Renewable crediting period; OrFixed Crediting period**A.4.3.1. Starting date of the crediting period:***[Enter starting date]***A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:**Length of the crediting period: *[Enter length]*Length of the first crediting period: *[Enter length, if applicable]*Number of renewal periods: *[Enter number, if applicable]*

The total renewal periods will not exceed the PoA validity period. The duration of renewable crediting period of this CPA is limited to the end date of the PoA regardless of when this CPA was added.

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

Emission reductions during the crediting period	
Years	Annual GHG emission reductions (in tonnes of CO ₂ e) for each year
<i>[Add year]</i>	<i>[Enter value]</i>
<i>[Add year]</i>	<i>[Enter value]</i>
<i>[Add year]</i>	<i>[Enter value]</i>
<i>[Add year]</i>	<i>[Enter value]</i>
<i>[Add year]</i>	<i>[Enter value]</i>
<i>[Add year]</i>	<i>[Enter value]</i>
<i>[Add year]</i>	<i>[Enter value]</i>
Total number of crediting years	<i>[Enter value]</i>
Annual average GHG emission reductions over the crediting period	<i>[Enter value]</i>
Total estimated reductions (tonnes of CO₂e)	<i>[Enter value]</i>

A.4.5. Public funding of the CPA:

The CPA will not make use of any public funding or ODA. An affirmation is provided in Annex 2.
[Rephrase statement, if applicable, and provide evidence]


A.4.6. Confirmation that CPA is neither registered as an individual CDM project activity nor is part of another Registered PoA:

The CME can confirm, through the search it performed on the CDM database on the UNFCCC web site, that this CPA is neither registered as an individual CDM project activity nor included in another Registered PoA. The CME has conducted the search in the CDM project database on the UNFCCC web site and confirms that the CPA is not included in the following results³:

- CDM project activities applying ACM0002 registered in *[Enter host country]* as of *[Enter date]* (Source: <http://cdm.unfccc.int/Projects/projsearch.html>) *[update, if required]*
- CDM project activities under validation in *[Enter host country]* as of *[Enter date]* (Source: <http://cdm.unfccc.int/Projects/Validation/index.html>) *[update, if required]*
- CDM PoA registered as of *[Enter date]* (Source: <http://cdm.unfccc.int/ProgrammeOfActivities/registered.html>) *[update, if required]*

The PoA Project Database maintained by the CME contains for the CPA the following information.

Name of the CPA	<i>[Enter name]</i>
Name of the CPA implementer;	<i>[Enter name]</i>
Contact details of the developer including contact person, address, telephone and email address	<i>[Enter details]</i>
Brief project description including installed capacity and other relevant technical specifications of each CPA	<i>[Enter description]</i>
Host country of the CPA and its specific location (e.g. GPS coordinates)	<i>[Enter name and coordinates]</i>

To ensure that the CPA implementer is aware of and has agreed that the project activity is being subscribed to the PoA, the CPA implementer has entered into a contractual arrangement with the coordinating entity (CME) including respective provisions that:

- the CPA has not been and will not be registered as a single CDM project activity or as a CPA under another PoA;
- the project implementer is aware that the CPA will be subscribed to the present PoA; and
- there is an agreement between the CPA and the CME to participate in the PoA.

³ Screenshots of the results have been provided to the DOE during validation.

**SECTION B. Eligibility of CPA and Estimation of emissions reductions****B.1. Title and reference of the Registered PoA to which CPA is added:**

Programme for Grid Connected Renewable Energy in the Mediterranean Region

B.2. Justification of the why the CPA is eligible to be included in the Registered PoA :

CPAs under the PoA are required to fulfil a range of criteria for inclusion with regards to environmental, regulatory, financial and program specific eligibility criteria considering the ‘STANDARD FOR DEMONSTRATION OF ADDITIONALITY, DEVELOPMENT OF ELIGIBILITY CRITERIA AND APPLICATION OF MULTIPLE METHODOLOGIES FOR PROGRAMME OF ACTIVITIES’, Version 01.0.⁴ Each CPA is expected to assess and demonstrate additionality using an investment analysis approach following the approach described in the latest “*Tool for the demonstration and assessment of additionality*”.

Table 1: Definition of eligibility criteria for inclusion of a project activity as a CPA under the PoA

General eligibility criteria for inclusion of a CPA in the PoA	Comments / Mean of verification
(a) The geographical boundary of the CPA including any time-induced boundary has to be consistent with the geographical boundary set in the PoA.	<p><i>[The CPA implementer has to provide documentary evidence (geographical coordinates). The specific location of the CPA is checked through documentary evidence and geographical coordinates provided by the CPA implementer.]</i></p> <p>The CPA is in <i>[Enter region, host country etc.]</i>. Coordinates can be found under section A.4.1.2. The CPA falls in the geographical boundary of the PoA, which comprise <i>[Enter host countries]</i> as host country/-ies.</p> <p>Please refer to A.4.1.2</p>
(b) The CPA under the PoA is a voluntary action	<p><i>[The CPA implementer has to confirm, in the inclusion agreement, that the CPA under the PoA is a voluntary action]</i></p> <p>The CPA is a voluntary action developed by <i>[Enter CPA implementer's name]</i>. <i>[There are no mandatory laws or regulations in [host country] obliging private entities to utilize or develop renewable energy projects.]</i> The CPA implementer has confirmed, in the inclusion agreement, that the</p>

⁴ EB 65, Annex 3



	CPA under the PoA is a voluntary action.
<p>(c) The CPA is neither registered as an individual CDM project activity nor included in another registered CDM-PoA. To avoid double counting of emission reductions each CPA shall be uniquely identified and defined in an unambiguous manner by providing the following data to the CME prior to inclusion in the PoA:</p> <ul style="list-style-type: none"> • Name of the CPA; • Name of the CPA implementer; • Contact details of the implementer including contact person, address, telephone and/or email address; • Brief project description including, installed capacity and other relevant technical specifications of each CPA; • Host country of the CPA and its specific location (e.g. GPS coordinates) 	<p><i>[Besides the provision of the required information the CPA implementer has to confirm, in the inclusion agreement, that the CPA is neither registered as an individual CDM project activity nor included in another registered CDM-PoA.]</i></p> <p><i>[Enter comment]</i></p> <p>CPA implementer has confirmed, in the inclusion agreement, that the CPA is neither registered as an individual CDM project activity nor included in another registered CDM-PoA.</p> <p>Please refer to A.4.1.2., and A.4.6.</p>
<p>(d) Start date of the CPA shall be provided through documentary evidence and comply with latest CDM guidelines and standards. CPA's start date should be after the commencement of validation of the PoA, i.e. the date on which the PoA-DD is first published for global stakeholder consultation, 14/03/2012.</p> <p>Additionally, the starting date of a crediting period of the CPA shall be the date of its inclusion in the registered PoA or any date thereafter. The duration of the crediting period shall not exceed the end date of the PoA.</p>	<p><i>[The CPA implementer has to provide documentary evidence of the CPA start date as defined in the latest version of the CDM Glossary (currently version 06.0)⁵, in order to confirm that the CPA start date is after the commencement of validation of the PoA, i.e. 14/03/2012.</i></p> <p><i>The crediting period as defined in the CPA-DD is not exceeding the end date of the PoA.]</i></p> <p>The start date is <i>[Enter date]</i>, <i>[enter justification]</i>. Please refer to A.4.2.1. The CPA start date hence, will be after the commencement of validation of the PoA, i.e. 14/03/2012.</p> <p>The crediting period as defined in the A.4.3.1. and A.4.3.2.; it is not exceeding the end date of the PoA.</p>
<p>(e) The CPA involves the construction and operation of one or more greenfield grid-connected renewable energy project, using the following technologies: wind, photovoltaic (PV), incl. concentrated</p>	<p><i>[The CPA implementer shall provide in the CPA-DD the specifications of the technology applied including the level (e.g. installed capacity) and type of service (e.g. grid connected power generation for base load or peak load), and</i></p>

⁵ http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf



<p>photovoltaic (CPV), or concentrated solar power (CSP); connected to the national/sub-national power grid of the individual host country, either directly or via local municipalities or private companies.</p>	<p><i>performance specifications including compliance with testing/certifications (e.g. technical data sheets and certifications)]</i></p> <p><i>[Enter comment, brief description, i.e. provide in the CPA-DD the specifications of the technology applied including the level (e.g. installed capacity) and type of service (e.g. grid connected power generation for base load or peak load), and performance specifications including compliance with testing/certifications (e.g. technical data sheets and certifications)]</i></p> <p>Please refer to A.4. for the technical description of the CPA.</p>				
<p>(f) The CPA implementer has signed an agreement with the CME governing the inclusion of the CPA into the PoA.</p>	<p><i>[The agreement shall be provided to the DOE for validation.]</i></p> <p>Documentary evidence has been provided to the DOE at the time of the validation.</p>				
<p>(g) The CPA must be applicable to and need to apply the CDM baseline and monitoring methodology 'ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources' Version 12.3.0. The following applicability conditions apply:</p> <table><tr><td><p>Applicability conditions in version 12.3.0 of ACM0002</p></td></tr><tr><td><p>The methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).</p></td></tr><tr><td><p>The project activity is the installation of a power plant/unit of one of the following types: wind power plant/unit, solar power plant/unitunitunit</p></td></tr><tr><td><p>The methodology is not applicable to the following:</p><ul style="list-style-type: none">• Project activities that involve switching from fossil fuels to renewable energy at the site of the project activity• Biomass fired power plants• Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the</td></tr></table>	<p>Applicability conditions in version 12.3.0 of ACM0002</p>	<p>The methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).</p>	<p>The project activity is the installation of a power plant/unit of one of the following types: wind power plant/unit, solar power plant/unitunitunit</p>	<p>The methodology is not applicable to the following:</p> <ul style="list-style-type: none">• Project activities that involve switching from fossil fuels to renewable energy at the site of the project activity• Biomass fired power plants• Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the	<p><i>[The CPA-DD shall provide an assessment that the applicability criteria are met.]</i></p> <p>The CPA is a greenfield grid-connected electricity generating power plant applying <i>[Enter technology]</i>, a renewable energy source.</p> <p>An assessment that the applicability criteria are met is provided in B.2. in <i>Table 2</i>.</p>
<p>Applicability conditions in version 12.3.0 of ACM0002</p>					
<p>The methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).</p>					
<p>The project activity is the installation of a power plant/unit of one of the following types: wind power plant/unit, solar power plant/unitunitunit</p>					
<p>The methodology is not applicable to the following:</p> <ul style="list-style-type: none">• Project activities that involve switching from fossil fuels to renewable energy at the site of the project activity• Biomass fired power plants• Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the					



<p>power plant is less than 4 W/m²</p> <p>In addition, the applicability conditions included in the tools referred to in the methodology apply, which are:</p> <ul style="list-style-type: none"> • “Tool to calculate the emission factor for an electricity system”, Version 2.2.1⁶ <ul style="list-style-type: none"> ○ Applicable for project activity that substitutes grid electricity ○ If Option II (consideration of off-grid power plants) of Step 2 is applied, the total capacity of off-grid power plants (in MW) should be at least 10% of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10% of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity. ○ In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country • “Tool for the demonstration and assessment of additionality”, Version 6.0.0⁷ <ul style="list-style-type: none"> ○ Provides a general framework for demonstrating and assessing additionality and is applicable to a wide range of project types. ○ Since the PoA applying ACM002, no further 	
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⁶ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf/history_view

⁷ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.0.0.pdf/history_view



<p>adjustments are required and no additional applicability conditions apply.</p> <p>For solar CSP projects in addition the following tool applies:</p> <ul style="list-style-type: none"> • “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”, Version 02⁸ <ul style="list-style-type: none"> ○ The tool can be used in cases where CO₂ emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties. Methodologies using this tool should specify to which combustion process <i>j</i> this tool is being applied. 	
<p>(h) The additionality of CPAs shall be demonstrated and assessed using the latest version of the “Tool for the demonstration and assessment of additionality” agreed by the Board, which is available on the UNFCCC CDM website. Additionality is proven on the CPA level for each CPA separately, as outlined in Section A.4.3. and E.5.1 of the PoA-DD.</p>	<p><i>[The CPA-DD shall demonstrate the eligibility and additionality of the CPA by using the latest version of the “Tool for the demonstration and assessment of additionality” agreed by the Board, which is available on the UNFCCC CDM website.]</i></p> <p>The project proves additionality by using the <i>[Enter method / option]</i> according to the “Tool for the demonstration and assessment of additionality”. Please see below for details.</p>
<p>(i) The CPA has undertaken an environmental analysis as per requirements of the CDM modalities and procedures as outlined in Section C of the PoA-DD.</p>	<p><i>[The CPA-DD shall provide information of the environmental analysis.</i></p> <p><i>The following documents shall be provided at CPA level:</i></p> <ol style="list-style-type: none"> 1. <i>Legislation on whether the EIA study is required.</i> 2. <i>EIA approval letter from the host country (if EIA is required).]</i>
<p>(j) The CPA has undertaken a local stakeholder consultation as outlined in</p>	<p><i>[The CPA-DD shall provide information of the local stakeholder consultation.</i></p>

⁸ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf/history_view



Section D of the PoA-DD.	<p><i>The following documents shall be provided at CPA level:</i></p> <ol style="list-style-type: none"> <i>1. Minutes of meeting of the local stakeholder consultation meeting</i> <i>2. Attendance list of the stakeholders.]</i> <p>Local stakeholder consultation was conducted. The findings of the LSC are included in Section D.</p>
(k) The CPA has provided an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance.	<i>[The affirmation shall be attached to the CPA-DD.]</i>
(l) The target group of the PoA are greenfield renewable energy projects connected to the grid.	<p><i>[The CPA shall be a greenfield renewable energy projects connected to the grid that is documented in the CPA-DD.</i></p> <p><i>The following documents shall be provided at CPA level:</i></p> <ol style="list-style-type: none"> <i>1. CME database, and</i> <i>2. Technical data sheet, and/or</i> <i>3. Onsite visit, etc.]</i> <p>The CPA is a greenfield renewable energy projects connected to the <i>[host country]</i> grid.</p>

Conditions related to sampling requirements for the PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys are not applicable for the PoA, as it covers projects without sampling and each CPA will be monitored individually.

Application of methodology(ies)

This section shall demonstrate the application of the baseline and monitoring methodology to CPA.

The CPA is a grid-connected *[enter technology]* power project. Details of the technologies applied in the CPA are a provided above. The CPA to be included in this PoA is a greenfield project (option ‘a’) of ACM0002, version 12.3.0, whose applicability is checked in Table 2.

Table 2: Comparison of CPAs’ characteristics and applicability conditions of version 12.3.0 of ACM0002

Applicability conditions in version 12.3.0 of ACM0002	Characteristics of the project activity	Applicability criterion met?
The methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no	The CPA is a grid-connected renewable power generation project activities and falls under	Applicable and met



renewable power plant was operated prior to the implementation of the project activity (greenfield plant).	option (a) mentioned above (greenfield).	
The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit	The CPA is the installation of the following type <i>[enter technology]</i> . The CPA is grid-connected and falls under option (a) mentioned above.	Applicable and met
In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected): the existing plant 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 addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity	The CPA is the installation of the following type: <i>[enter technology]</i> . The CPA is a grid-connected and falls under option (a) mentioned above. Hence, conditions to cases of capacity additions, retrofits or replacements do not apply.	Not Applicable
<p>In case of hydro power plants, one of the following conditions must apply:</p> <ul style="list-style-type: none"> • The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of reservoirs; or • The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than 4 W/m² after the implementation of the project activity; or • The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than 4 W/m² after the implementation of the 	The CPAs are the installation of the following type <i>[enter technology]</i> . The CPA is grid-connected and falls under option (a) mentioned above. Hence, conditions to cases of hydro power plants do not apply.	Not Applicable



project activity.		
In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m ² after the implementation of the project activity all of the [...] conditions must apply, that are listed on page 3 of the methodology.	The CPAs are the installation of the following type: <i>[enter technology]</i> . The CPAs are grid-connected and falls under option (a) mentioned above. Hence, conditions to cases of hydro power plants do not apply.	Not Applicable
<p>The methodology is not applicable to the following:</p> <ul style="list-style-type: none"> • 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; • Biomass fired power plants • A hydro power plant that results in new single reservoir or in the increase in an existing single reservoir where the power density of the power plant is less than 4 W/m² 	The CPAs are the installation of the following type: <i>[enter technology]</i> . The CPAs are grid-connected and falls under option (a) mentioned above. Hence, the CPA does not comprise any (1) switching from fossil fuels to renewable sources, (2) biomass fired power plants, (3) hydro power plants and consequently the application criteria is not applicable.	Met
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 CPAs are the installation of the following type: <i>[enter technology]</i> . The CPA is grid-connected and falls under option (a) mentioned above. Hence, conditions to cases of capacity additions, retrofits or replacements do not apply.	Not Applicable
<p>In addition, the applicability conditions included in the tools referred to in the methodology apply, which are:</p> <ul style="list-style-type: none"> • “Tool to calculate the emission factor for an electricity system”, Version 2.2.1⁹ <ul style="list-style-type: none"> ○ Applicable for project activity that substitutes grid electricity ○ If Option II (consideration of off-grid power plants) of Step 2 is applied, the total capacity of off-grid power plants (in MW) should be at least 10% of the total capacity of grid power plants in 	<p><i>[amend, if required and enter comments, if applicable]</i></p> <p>Applicability conditions according to the “Tool to calculate the emission factor for an electricity system”:</p> <ul style="list-style-type: none"> • The CPA is grid connected and substitutes grid electricity; • Option 2 of Step II is not used • The project electricity system is defined to the 	Applicable and met

⁹ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf/history_view



<p>the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10% of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.</p> <ul style="list-style-type: none"> ○ In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country <ul style="list-style-type: none"> ● “Tool for the demonstration and assessment of additionality”, Version 6.0.0¹⁰ <ul style="list-style-type: none"> ○ Provides a general framework for demonstrating and assessing additionality and is applicable to a wide range of project types. ○ Since the PoA is applying ACM002, no further adjustments are required and no additional applicability conditions apply. <p>For solar CSP projects in addition the following tool applies:</p> <ul style="list-style-type: none"> ● “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”, Version 02¹¹ <ul style="list-style-type: none"> ○ The tool can be used in cases where CO₂ emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties. Methodologies using this tool should specify to which combustion process <i>j</i> this tool is being applied. 	<p>national grid of [<i>enter host country</i>], which is not an Annex 1 country.</p> <p>Applicability conditions according to the “Tool for the demonstration and assessment of additionality”:</p> <ul style="list-style-type: none"> ● No additional applicability conditions apply 	
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¹⁰ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.0.0.pdf/history_view

¹¹ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf/history_view



This comparison shows clearly that version 12.3.0 of ACM0002 is applicable to the proposed PoA and the CPA to be included.

B.3. Assessment and demonstration of additionality of the CPA, as per eligibility criteria listed in the Registered PoA:

As described in the PoA-DD, the additionality of the proposed CPA is demonstrated and assessed by applying the following approved methodology and tools:

Applied methodology:

- ACM0002: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 12.3.0¹²

Related tools:

- “Tool to calculate the emission factor for an electricity system”, version 2.2.1¹³
- “Tool for the demonstration and assessment of additionality”, version 6.0.0¹⁴
- “Combined tool to identify the baseline scenario and demonstrate additionality”, version 4.0.0¹⁵
- “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”¹⁶, Version 02

As the CPA is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is pre-defined according to ACM0002, and hence the “Combined tool to identify the baseline scenario and demonstrate additionality” is not required and applied. Additionally, the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” is not applicable to the CPA, as for wind and solar PV projects according to ACM0002, ver. 12.3.0 the project emissions are deemed zero.

[Add clarification on applicability of tools for solar CPA projects]

Assessment and demonstration of additionality for the CPA

According to ACM0002, version 12.3.0, the additionality shall be demonstrated and assessed using the latest version of the “Tool for the demonstration and assessment of additionality” agreed by the Board,

¹² <http://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT>

¹³ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf/history_view

¹⁴ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.0.0.pdf/history_view

¹⁵ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v4.0.0.pdf/history_view

¹⁶ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf/history_view



which is available on the UNFCCC CDM website. The currently latest version, version 06.0.0, of the additionality tool includes the following steps:

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

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

According to the CDM Validation and Verification Manual (EB55, Annex 01, Version 01.2, §105), “the PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required”.¹⁷

According to methodology ACM0002 version 12.3.0, in cases where the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is defined as follows:

“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”.”

Hence, in accordance with methodology ACM0002, version 12.3.0, and the “Tool to calculate the emission factor for an electricity system”, Version 2.2.1, baseline emissions are equal to power generated by the project activity and delivered to the grid, multiplied by the baseline emission factor. The baseline emission factor is equal to the combined margin (CM): a weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor.

Therefore, no further analysis of the alternatives to the project activity is required.

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

The alternative, electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants, is in compliance with all existing applicable legal and regulatory requirements.

Proceed to Step 2 (Investment analysis), Step 3 (Barrier analysis) is not applied

Step 2: Investment analysis

The following steps will determine whether the proposed project activity (CPA) is not:

- (a) The most economically or financially attractive; or

¹⁷ [Clean Development Mechanism Validation and Verification Manual](#) or EB55 [Annex 1 - Clean Development Mechanism Verification and Validation Manual \(version 01.2\)](#)



- (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).

The Guidelines on the assessment of investment analysis, v. 05, are taken into account when applying this step:

Sub-step 2a: Determine appropriate analysis method

[In case a different approach is selected explain and justify the choice.]

Three options can be applied for the investment analysis: the simple cost analysis, the investment comparison and the benchmark analysis.

The latest version of the “*Tool for the demonstration and assessment of additionality*” states:

“If the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income, then apply the simple cost analysis (Option I). Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III)”.

The simple cost analysis is not applicable for the proposed CPAs because the project activities will produce economic benefit other than the CDM related income, notably from electricity sale.

The Guidelines on the assessment of investment analysis (EB 62, Annex 5)¹⁸, para19 states “*If the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services, a benchmark analysis is not appropriate and an investment comparison analysis shall be used. 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.*”

The investment comparison analysis (Option II) is not applicable to the project because the alternative of the project is “equivalent electricity service provided by the grid”, which is not a single project. Hence, the investment comparison analysis (Option II) cannot be applied and the benchmark analysis (Option III) shall be used. The Internal Rate of Return (IRR) of the total investment is the financial indicator used to analyse the project’s economic viability within the Moroccan context, and it will be compared with a benchmark IRR as explained below.

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

.. *[Enter here, the identified financial/economic indicator, such as IRR, and benchmark most suitable for the project type and decision context]*. This benchmark represents the minimal required IRR of the project to be economically attractive.

¹⁸ Source: http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf



If applicable to the CPA, the default values for the expected return on equity defined in the appendix of the “Guidelines on the assessment of investment analysis”¹⁹ shall be used. The expected return on equity is composed of four elements: (a) a risk free rate of return; (b) an equity risk premium; (c) a risk premium for the host country; and (d) an adjustment factor to reflect the risk of projects in different sectoral scopes. All values are expressed in real terms.

The default values for the expected return on equity defined in the appendix 1 of the “Guidelines on the assessment of investment analysis” for *[Enter host country]* and sectoral group 1 is: *[Enter value]*%. This value is applied as the benchmark for the financial analysis. *[Revise or delete this paragraph, if applicable]*

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

The primary assumptions for the financial analysis valid at the time of the investment decision are as follows: *[Add others as appropriate; delete parameters if not applicable]*

Table 3: Assumption for financial analysis

Item	Value	Unit	Source/Comment
Operation			
Installed generation capacity	<i>[Enter value]</i>	MW _P	<i>[Enter source/comment]</i>
Total investment cost (CAPEX)	<i>[Enter value]</i>	Million €	<i>[Enter source/comment]</i>
Net electricity generation	<i>[Enter value]</i>	MWh/year	<i>[Enter source/comment]</i>
Expected commissioning	<i>[Enter value]</i>	date	<i>[Enter source/comment]</i>
Operational lifetime	<i>[Enter value]</i>	Year	<i>[Enter source/comment]</i>
Valuation horizon	<i>[Enter value]</i>	Year	<i>[Enter source/comment]</i>
Cost & Income Assumption			
Approximation of O&M Cost	<i>[Enter value]</i>	% of CAPX per year	<i>[Enter source/comment]</i>
Electricity sales price	<i>[Enter value]</i>	Ct. €/kWh	<i>[Enter source/comment]</i>
Debt/equity ratio	<i>[Enter value]</i>		<i>[Enter source/comment]</i>
Interest rate / lending rate	<i>[Enter value]</i>	%	<i>[Enter source/comment]</i>

Through the economic and financial evaluation of the project activity without considering the sale of CERs, an equity IRR of *[Enter value]*% is obtained. Please, see attached financial model for further details.²⁰

This shows that the IRR of the CPA is below the benchmark and the project is consequently financially unattractive.

Electricity tariff

[Enter clarification and justification]

¹⁹ [Guidelines on the assessment of investment analysis](#), version 05, EB 62, Annex 5

²⁰ *[Enter name]*

Total investment cost*[Enter clarification and justification]*Specific annual energy production*[Enter clarification and justification]*O&M Cost*[Enter clarification and justification]***Sub-step 2d: Sensitivity analysis**

The objective of the sensitivity analysis is to quantify whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.

According to the UNFCCC “Guidance on the Assessment of Investment Analysis” (version 5)²¹ variables that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. The main variables considered in the sensitivity analysis are: *[In case different parameters are selected explain and justify the choice.]*:

1. Total investment cost (CAPEX)
2. Power sales prices (electricity tariff)
3. Net electricity generation
4. Operation & maintenance cost (OPEX)

The financial analysis was performed by modifying each of the parameters by up to +/-10%, and assessing the impact on the IRR (without revenues from selling CERs). Results are presented in the following table and figure:

Table 4: Results sensitivity analysis*[Enter table]***Figure 2:** Results sensitivity analysis*[Enter figure]*

Under all sensitivity analysis scenarios, the IRR does not exceed the benchmark (*[Enter value]*%) without CDM revenues and can be hence deemed economically not feasible.

²¹ http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf



The required deviation of the total investment cost of the project in order to lift the equity IRR to the benchmark would be *[Enter value]*%. Similarly, the project's power generation output would need to increase over the assessment period by *[Enter value]*% to reach an IRR of *[Enter value]*%. The energy sale prices / tariff would need to increase by *[Enter value]*% to obtain a financially attractive IRR. Finally, the OPEX would need to be reduced by *[Enter value]*% to reach financial viability. All these scenarios are unrealistic.

Step 3: Barrier Analysis

Project proponents chose to only undertake Step 2, Investment Analysis, of the tool for demonstrating additionality. *[In case a different approach is selected explain and justify the choice. Follow procedures as outline in the PoA-DD]*

Step 4. Common Practice Analysis

[Enter analysis following the procedures as outline in the PoA-DD]

B.4. Description of the sources and gases included in the project boundary and proof that the CPA is located within the geographical boundary of the registered PoA.

According to of ACM0002, version 12.3.0, the spatial extent of the project boundary includes the project activity and all power plants connected physically to the same electricity system²² to which the proposed CPA is also connected to.

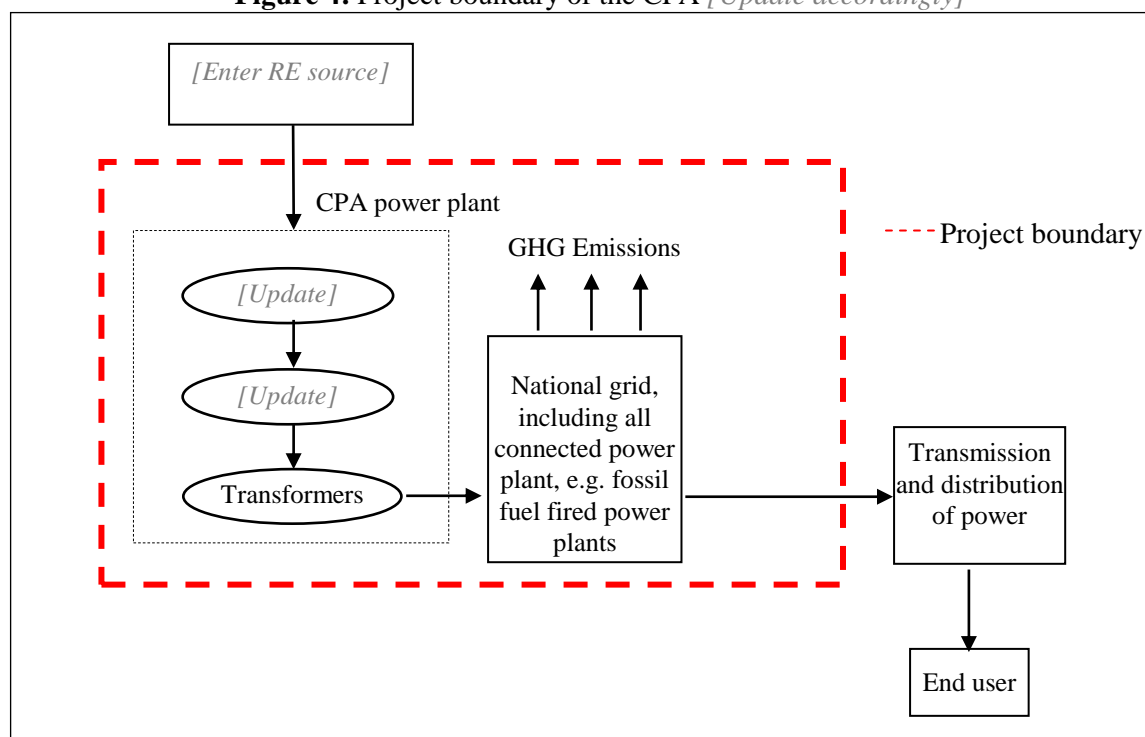
[Enter details about the national grid]

Figure 3: Transmission network in *[host country]*

<i>[Add host country]</i>	<i>[Enter map of national grid, e.g. from Euro-Mediterranean Energy Market Integration Project (MED-EMIP)²³]</i>
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²² Refer to the latest approved version of the “Tool to calculate the emission factor for an electricity system” for definition of an electricity system.

²³ http://www.medemip.eu/Calc/FM/MED-EMIP/AUPTDE/Electricity_Interconnection_Maps/Arab_World.pdf

Source: *[add source]***Figure 4:** Project boundary of the CPA *[Update accordingly]*

The GHGs and emission sources included in the project boundary are shown in the table below: *[Update accordingly]*

**Table 5:** Sources and gases included in or excluded from the project boundary

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
Project scenario	For geothermal power plants, fugitive emissions of CH ₄ and CO ₂ from non-condensable gases contained in geothermal steam	CO ₂	No	Not applicable under the CPA.
		CH ₄	No	Not applicable under the CPA.
		N ₂ O	No	Not applicable under the CPA.
	CO ₂ emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO ₂	[Yes/No]	Main emission source. Applicable for CPAs employing solar thermal power plants only. [Update accordingly]
		CH ₄	No	Minor emission source. Applicable for CPAs employing solar thermal power plants only.
		N ₂ O	No	Minor emission source. Applicable for CPAs employing solar thermal power plants only.
	For hydro power plants, emissions of CH ₄ from the reservoir	CO ₂	No	Not applicable under the CPA.
		CH ₄	No	Not applicable under the CPA.
		N ₂ O	No	Not applicable under the CPA.

B.5. Emission reductions:**B.5.1. Data and parameters that are available at validation:**

The following parameters are applicable in case *ex ante* option is chosen for determining the Simple OM, the Simple Adjusted, Average OM or BM.

[Update tables according to project. Please also refer to applicable parameters provided in the PoA-DD]

Data / Parameter:	EF_{grid,OM,y}
Data unit:	tCO ₂ /MWh
Description:	Operating margin emission factor of the grid
Source of data used:	[Enter source]
Value applied:	[Enter value]
Justification of the choice of data or description of measurement methods	This value is determined ex-ante and applied to the CM with a weighting of $w_{OM} = 0.75$ and $w_{BM} = 0.25$ for the first crediting period according to the “Tool to calculate the emission factor for an electricity system” (version 2.2.1).



and procedures actually applied :	
Any comment:	See calculation in Annex 3 and the attached Excel spread sheet.

Data / Parameter:	EF_{grid,BM,y}
Data unit:	tCO ₂ /MWh
Description:	Build margin emission factor of the grid
Source of data used:	[Enter source]
Value applied:	[Enter value]
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value is determined ex-ante and applied to the CM with a weighting of $w_{OM} = 0.75$ and $w_{BM} = 0.25$ for the first crediting period according to the “Tool to calculate the emission factor for an electricity system” (version 2.2.1).
Any comment:	See calculation in Annex 3 and the attached Excel spread sheet.

Data / Parameter:	EF_{grid,CM,y}
Data unit:	tCO ₂ /MWh
Description:	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system”
Source of data used:	[Enter source]
Value applied:	[Enter value]
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value is determined ex-ante with a weighting of $w_{OM} = 0.75$ and $w_{BM} = 0.25$ for the first crediting period according to the latest “Tool to calculate the emission factor for an electricity system” (Version 2.2.1).
Any comment:	See calculation in Annex 3 and the attached Excel spread sheet.

Data / Parameter:	FC_{i,m,y}, FC_{i,y}, FC_{i,k,y}, FC_{i,n,y} and FC_{i,n,hh} [use applicable parameter]
Data unit:	Mass or volume unit
Description:	Amount of fossil fuel type <i>i</i> consumed by power plant / unit <i>m</i> , <i>k</i> or <i>n</i> (or in the project electricity system in case of FC _{i,y}) in year <i>yyy</i>
Source of data used:	[Enter source]
Value applied:	[Enter value]
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none"> • Simple OM: Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option) • BM: For the first crediting period once <i>ex ante</i>, following the guidance included in Step 5 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). For the second and third crediting period, once <i>ex ante</i> at the start of the second crediting period.



Any comment:	--
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Data / Parameter:	EG_{m,y}, EG_y, EG_{k,y} and EG_{n,hh} <i>[use applicable parameter]</i>
Data unit:	MWh/yr
Description:	Net electricity generated and delivered to the grid by power plant/unit <i>m</i> , <i>k</i> or <i>n</i> (or in the project electricity system in case of EG _y) in year <i>yyy</i>
Source of data used:	<i>[Enter source]</i>
Value applied:	<i>[Enter value]</i>
Justification of the choice of data or description of measurement methods and procedures actually applied :	Simple OM: Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option)
Any comment:	--

Data / Parameter:	NCV_{i,y}
Data unit:	GJ/mass or volume unit
Description:	Net calorific value (energy content) of fossil fuel type <i>i</i> in year <i>y</i>
Source of data used:	<i>[Enter source]</i>
Value applied:	<i>[Enter value]</i>
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none"> Simple OM: Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option) BM: For the first crediting period, once <i>ex ante</i>, following the guidance included in Step 5 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). For the second and third crediting period, once <i>ex ante</i> at the start of the second crediting period.
Any comment:	--

Data / Parameter:	η_{m,y} and η_{k,y}
Data unit:	-
Description:	Average net energy conversion efficiency of power unit <i>m</i> or <i>k</i> in year <i>y</i>
Source of data used:	Use either: <ul style="list-style-type: none"> Documented manufacturer’s specifications (if the efficiency of the plant is not significantly increased through retrofits or rehabilitations); or For grid power plants: data from the utility, the dispatch center or official records if it can be deemed reliable; or The default values provided in the table in Annex 1 of the “Tool to calculate the emission factor for an electricity system” (version 2.2.1) (if available for the type of power plant)
Value applied:	Determined at CPA level
Justification of the	Monitoring frequency: Once for each crediting period If the data obtained



choice of data or description of measurement methods and procedures actually applied :	from the manufacturer, the utility, the dispatch center of official records is significantly lower than the default value provided in Annex 1 (of the “Tool to calculate the emission factor for an electricity system” (version 2.2.1)) for the applicable technology, project proponents should assess the reliability of the values, and provide appropriate justification if deemed reliable. Otherwise, the default values provided in Annex 1 of the “Tool to calculate the emission factor for an electricity system” (version 2.2.1) shall be used.
Any comment:	Applicable if corresponding option according to the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1) is applied.

Data / Parameter:	EF_{CO₂,i,y} and EF_{CO₂,m,i,y}
Data unit:	tCO ₂ /TJ
Description:	CO ₂ emission factor of fossil fuel type <i>i</i> used in power unit <i>m</i> in year <i>y</i>
Source of data used:	[Enter source]
Value applied:	[Enter value]
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none"> • Simple OM: Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option) • BM: For the first crediting period, once <i>ex ante</i>, following the guidance included in Step 5 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). For the second and third crediting period, once <i>ex ante</i> at the start of the second crediting period.
Any comment:	--

B.5.2. Ex-ante calculation of emission reductions:

[In case a different approach is selected, e.g. different option for calculating the OM, explain and justify the choice.]

Emissions reductions are calculated in accordance with the approved consolidated baseline methodology version 12.3.0 of ACM0002 along with the “Tool to calculate the emission factor for an electricity system” (version 02.2.1), as follows:

Project emissions (PE_y)

For most renewable power generation project activities, PE_y = 0.

$$PE_y = 0 \quad (1)$$

Where:

$$PE_y = \text{Project emissions in year } y \text{ (tCO}_2\text{e)}$$

[Add PE_y according to the PoA-DD, if applicable]

**Leakage (LE_y)**

As it is stated in ACM0002 version 12.3.0, no leakage emissions are considered.

Baseline emissions (BE_y)

Baseline emissions include only CO₂ 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:

$$BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y} \quad (2)$$

BE_y = Baseline emissions in year y (tCO₂e)

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

EF_{grid,CM,y} = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

Calculation of EG_{PJ,y}

The calculation of EG_{PJ,y} is done for the greenfield *[add technology]* as follows:

$$EG_{PJ,y} = EG_{facility,y} = [enter value] \text{ (MWh)} \quad (3)$$

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)

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

Calculation of EF_{grid,CM,y}

According to the “Tool to calculate the emission factor for an electricity system” (version 2.2.1) the baseline emission factor (EF_{grid,CM,y}) is calculated as combined margin (CM), consisting of the combination of the operating margin (OM) and the build margin (BM) factors. OM and BM are calculated ex-ante based on official data fixed during the first crediting period; see calculation below and details presented in Annex 3.

[Please amend the following according to the project and by considering the procedures as outlined in the PoA-DD]

Application of procedures provided in “Tool to calculate the emission factor for an electricity system” (version 2.2.1) for determining the grid emission factor are as follows:

STEP 1. Identify the relevant electricity systems.

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



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

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

STEP 5. Calculate the build margin (BM) emission factor.

STEP 6. Calculate the combined margin (CM) emissions factor.

Step 1: Identify the relevant electricity systems

[Please amend according to the project and by considering the procedures as outlined in the PoA-DD]

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

[Please amend according to the project and by considering the procedures as outlined in the PoA-DD]

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

[Please amend according to the project and by considering the procedures as outlined in the PoA-DD]

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

[Please amend according to the project and by considering the procedures as outlined in the PoA-DD]

The simple OM emission factor is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the Moroccan grid, not including low-cost/must-run power plants/units. We use Option A based on the net electricity generation of each power unit and an emission factor for each power unit, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (4)$$

Where:

$EF_{grid,OMsimple,y}$ = Simple operating margin CO₂ emission factor in year y (tCO₂/MWh)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$ = CO₂ emission factor of power unit m in year y (tCO₂/MWh)

m = All power units serving the grid in year y except low-cost / must-run power units

y = The relevant year as per the data vintage chosen in Step 3

Determination of $EF_{EL,m,y}$

The emission factor of each power unit m is determined per

- **Option A1** as data on fuel consumption and electricity generation is available for each power plant:



$$EF_{EL,m,y} = \frac{\sum_i (FC_{i,m,y} \cdot NCV_{i,y} \cdot EF_{CO2,i,y})}{EG_{m,y}} \quad (5)$$

Where:

$EF_{EL,m,y}$	=	CO ₂ emission factor of power unit m in year y (t CO ₂ /MWh)
$FC_{i,m,y}$	=	Amount of fossil fuel type i consumed by power unit m in year y (Mass or volume unit)
$NCV_{i,y}$	=	Net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)
$EF_{CO2,i,y}$	=	CO ₂ emission factor of fossil fuel type i in year y (t CO ₂ /GJ)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
m	=	All power units serving the grid in year y except low-cost/must-run power units
i	=	All fossil fuel types combusted in power unit m in year y
y	=	The relevant year as per the data vintage chosen in Step 3

Determination of $EG_{m,y}$

For grid power plants, $EG_{m,y}$ is determined as per the provisions in the monitoring tables, where subscript m refers to the power plants/units delivering electricity to the grid, not including low-cost/must-run power plants/units, and including electricity imports to the grid. Electricity imports should be treated as one power plant m .

As per the values provided in section B.5.1 and Annex 3, the generation weighted $EF_{OM,xxx}$ is calculated as follows:

$$EF_{grid,OMsimple,y} = [add\ value] \text{ (tCO}_2\text{/MWh)}$$

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

[Please amend according to the project and by considering the procedures as outlined in the PoA-DD]

Regarding data vintage option 1 “Tool to calculate the emission factor for an electricity system” (version 2.2.1) has been chosen. So the calculation of the Build Margin (BM) emission factor $EF_{grid,BM,y}$ *ex-ante* based on the most recent information available (*year*) on plants already built for sample group m at the time of CPA-DD submission has been carried out.

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 per the following procedure. We



- (a) Identified the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently (SET5-units) and determine their annual electricity generation ($AEG_{SET5-units}$, in MWh);
- (b) Determined the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEG_{total} , in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEG_{total} (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ($SET_{\geq 20\%}$) and determine their annual electricity generation ($AEG_{SET_{\geq 20\%}}$, in MWh);
- (c) From $SET_{5-units}$ and $SET_{\geq 20\%}$ selected the set of power units that comprises the larger annual electricity generation (SET_{sample});

The date when the power units in SET_{sample} started to supply electricity to the grid was identified. As none of the power units in SET_{sample} started to supply electricity to the grid more than 10 years ago, we use SET_{sample} to calculate the build margin.

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units m during the most recent year y for which electricity generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \cdot EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (6)$$

Where:

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

The calculation of the Build Margin (BM) emission factor $EF_{grid,BM,y}$ is done *ex-ante* based on the most recent information available (*year*) on plants already built for sample group m at the time of CPA-DD submission.

The sample group of power units m used to calculate the build margin has been determined as follows, consistent with the data vintage selected above:

Table 6: Calculation of build margin
[Please present calculation]



The resulting build margin $EF_{grid,BM,y}$ is

$$EF_{grid,BM,y} = [Please\ add\ value] \text{ tCO}_2/\text{MWh}$$

Step 6: Calculate the combined margin (CM) emissions factor

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

$$EF_{grid,CM,y} = EF_{grid,OM-adj,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad (7)$$

Where:

$EF_{grid,BM,y}$	= Build Margin CO ₂ emission factor in year y (tCO ₂ /MWh)
$EF_{grid,OM,y}$	= Operating Margin CO ₂ emission factor in year y (tCO ₂ /MWh)
w_{OM}	= Weighting of operating margin emissions factor (%)
w_{BM}	= Weighting of build margin emissions factor (%)

As per “Tool to calculate the emission factor for an electricity system”²⁴ for wind and solar power generation: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ are used owing to their intermittent and non-dispatchable nature.

The combined margin emissions factor is calculated as follows

Table 7: Calculation of combined margin
[Please present calculation]

Baseline Emissions

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

$$BE_y = [add\ value] \text{ (MWh/yr)} \times [add\ value] \text{ (tCO}_2/\text{MWh)} = [add\ value] \text{ t CO}_2/\text{yr}$$

Emissions reduction (ER_y)

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad (8)$$

²⁴ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf>



$$ER_y = [add\ value] \text{ t CO}_2/\text{yr} - 0 [add\ value] \text{ t CO}_2/\text{yr}$$

B.5.3. Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions (tonnes of CO ₂ e)	Estimation of baseline emissions (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e)	Estimation of overall emission reductions (tonnes of CO ₂ e)
[Add year]	[Add value]	[Add value]	[Add value]	[Add value]
[Add year]	[Add value]	[Add value]	[Add value]	[Add value]
[Add year]	[Add value]	[Add value]	[Add value]	[Add value]
[Add year]	[Add value]	[Add value]	[Add value]	[Add value]
[Add year]	[Add value]	[Add value]	[Add value]	[Add value]
[Add year]	[Add value]	[Add value]	[Add value]	[Add value]
[Add year]	[Add value]	[Add value]	[Add value]	[Add value]
Total (tonnes of CO ₂ e)	[Add value]	[Add value]	[Add value]	[Add value]

B.6. Application of the monitoring methodology and description of the monitoring plan:
B.6.1. Description of the monitoring plan:

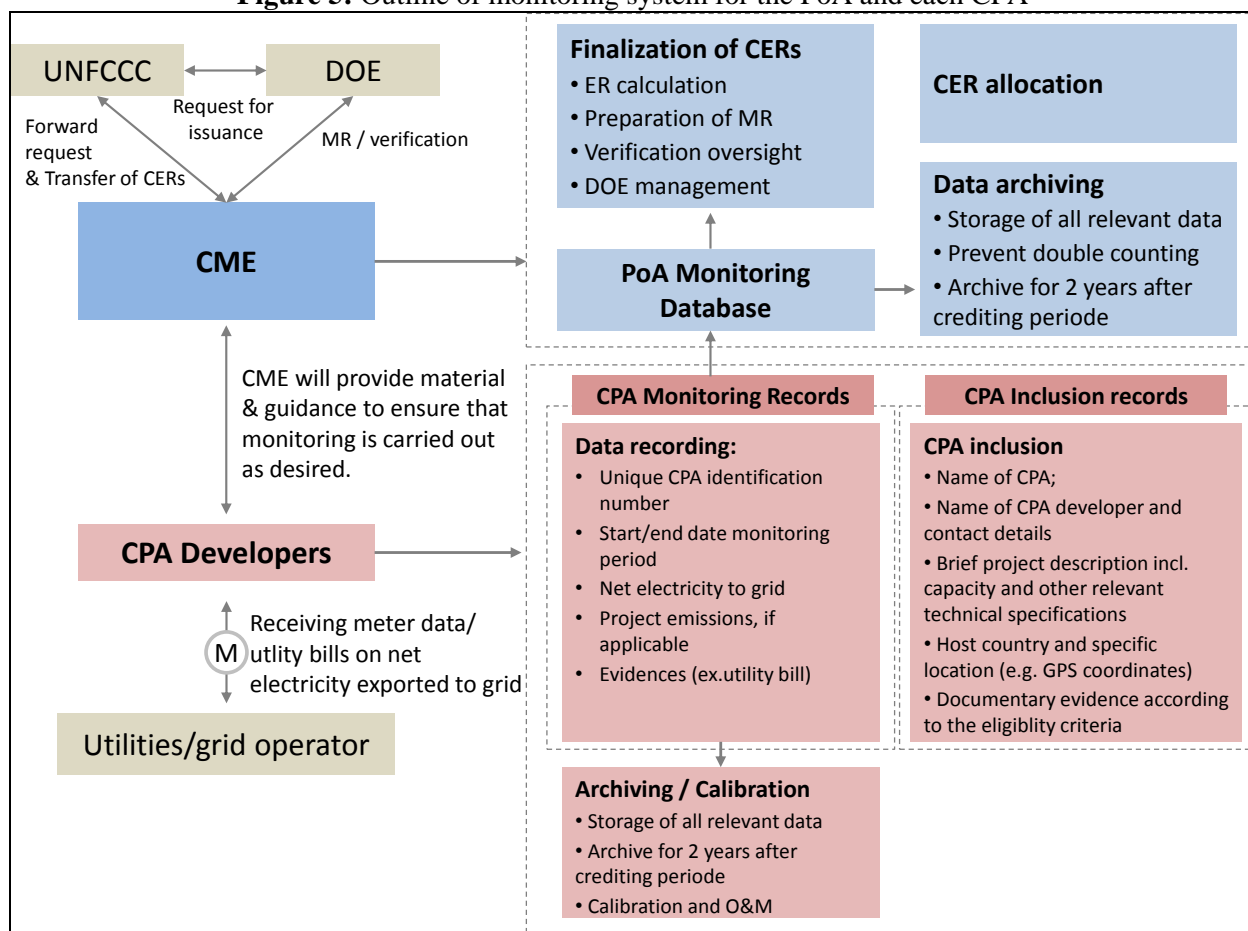
The purpose of the monitoring plan will be to measure and record the net electricity delivered to the electrical grid.

[Update and add information to the following as appropriate]

Management structure and responsibilities

The CME will implement a monitoring protocol consolidating all individual monitoring reports allowing the Designated Operational Entity (DOE) to verify all CPAs in the PoA. Hence, monitoring will be carried out by each CPA. For the proposed CPA, all parameters included in Section E.7.1 of the PoA-DD will be monitored, if applicable. The main task for the CPA is the measurement of net electricity supplied to the grid and assuring the correct operation and maintenance of the measuring equipment.

The detailed organisational structure with specific functions of the CPA implementer and the CME is provided in Figure 7 in A.4.4.2. of the PoA-DD and in the figure below.

**Figure 5:** Outline of monitoring system for the PoA and each CPA**Data collection**

According to the eligibility criteria of the PoA the following data must be provided by [CPA implementer] to the CME prior to inclusion in the PoA and will be stored in the PoA Project Database:

Name of the CPA	[Enter name]
Name of the CPA implementer	[Enter name]
Contact details of the developer including contact person, address, telephone and email address	[Enter details]
Brief project description including installed capacity and other relevant technical specifications of each CPA	[Enter description]
Host country of the CPA and its specific location (e.g. GPS coordinates)	[Enter name and coordinates]

The following data will be collected and stored in the PoA Monitoring Database:



Data during crediting period (CPA Monitoring Records)	<i>[Enter details]</i>
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[CPA implementer] will record the required monitoring data (CPA Monitoring records) and will ensure that the CPA monitoring records are made available to the CME by record file either by email or secured data transfer. The CME will be responsible for the management of the PoA Project Database and the PoA Monitoring Database, consisting of the data for inclusion and of all CPA monitoring records. All records will be stored for a period of two years after the end of the relevant crediting period. Relevant data capture, verification and storage procedures will be followed in maintaining the data to ensure its accuracy, validity and completeness.

The net energy generation data will be monitored directly at the CPA project site. Monitoring will be carried out by the CPA implementer through reading the net meter and recorded at least monthly in the CPA monitoring records. The CME will provide guidance to the CPA implementer—on how the monitoring should be conducted and data should be collected with regards to emission reduction calculations by introductory workshops and on the job training, if required. The start and end dates of each monitoring period for this CPA, together with the CPA monitoring records to that monitoring period will be recorded in the PoA Monitoring Database.

Data recording

The net generation of the CPA, $EG_{\text{facility},y}$, will be monitored by the *[CPA implementer]* and recorded electronically. The CPA implementer will provide the CPA monitoring records to the CME. The CME will document and store all data included in the CPA monitoring record provided by CPA implementer in an electronic PoA monitoring database, while primary data will be stored by *[CPA implementer]*.

Data calibration

Data calibration will be done considering the calibration frequency as per manufacturer's requirements. The calibration will be performed at least *[enter calibration frequency]*, except for the first year for which a calibration certificate is provided by the supplier of the meter. The CME will store all the data in the PoA monitoring database. Primary data will be stored by *[CPA implementer]*.

Data reporting

[CPA implementer] will be responsible for the preparation of the monitoring report and the CME will be responsible for communicating with the DOE during verification activities. The monitoring reports will compile all required monitoring information, in order to allow the DOE to verify the emission reductions for each monitoring period of each individual CPA. The monitoring reports will unambiguously set out the data on emission reductions generation by each CPA during the monitoring period consistent with the requirements of the PoA-DD and this CPA-DD. Record keeping procedures for the PoA monitoring database undertaken by the CME will ensure that the data attributed to a monitoring period can be clearly attributed to an individual CPA and will furthermore prevent double counting of emission reduction data.

Data archiving

The CME will be responsible for the management of the monitoring records associated with each CPA, which will be included in the consolidated PoA monitoring database comprising monitoring records of all CPAs. All CPA monitoring records will be stored for a period of two years after the end of the relevant crediting period of the CPA. *[CPA implementer]* is also responsible to keep a copy of the raw monitored data and the CPA monitoring record.



Parameter to be monitored [Update table(s) according to project. Please also refer to applicable parameters provided in the PoA-DD]

Data / Parameter:	EG_{facility,y} / EG_{PJ,y}
Data unit:	MWh/yr
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data to be used:	Project activity site: Direct, physical measurements as recorded by metering equipment (electricity meter) at CPA project site
Value of data applied for the purpose of calculating expected emission reductions in section B.5	[Enter value]
Description of measurement methods and procedures to be applied:	Direct, physical measurements as recorded by metering equipment (electricity meter). Continuous measurement and at least monthly recording.
QA/QC procedures to be applied:	Meters shall be calibrated periodically according to relevant industry standards or local standards. Generation data of the CPA shall be cross checked with records for sold electricity to ensure data reliability. [Enter details, if applicable] [Enter details, if applicable]
Any comment:	--

The following parameters are only applicable in case *ex post* option is chosen for determining the Simple OM, the Simple Adjusted, Average OM or BM as well as in case Dispatch data analysis OM is applied.

Data / Parameter:	EF_{grid,CM,y}
Data unit:	tCO ₂ /MWh
Description:	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system”
Source of data to be used:	Calculated as per the “Tool to calculate the emission factor for an electricity system”
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Determined at CPA level
Description of measurement methods and procedures to be applied:	Determined at CPA level according to the latest “Tool to calculate the emission factor for an electricity system” (Version 2.2.1).
QA/QC procedures to be applied:	-



Any comment:	-
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Data / Parameter:	$EF_{grid,OM,y}$
Data unit:	tCO ₂ /MWh
Description:	Operating margin emission factor of the grid
Source of data used:	Determined at CPA level
Value applied:	Determined at CPA level
Justification of the choice of data or description of measurement methods and procedures actually applied :	<p>Determined at CPA level according to the “Tool to calculate the emission factor for an electricity system” (version 2.2.1).</p> <ul style="list-style-type: none"> Simple OM, simple adjusted OM, average OM: Either <u>once</u> for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option) or annually during the crediting period for the relevant year, following the guidance in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1) Dispatch data OM: If available, <u>hourly</u>, otherwise <u>annually</u> for the year y in which the project activity is displacing grid electricity. Further guidance can be found in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1)
Any comment:	-

Data / Parameter:	$EF_{grid,BM,y}$
Data unit:	tCO ₂ /MWh
Description:	Build margin emission factor of the grid
Source of data used:	Determined at CPA level
Value applied:	Determined at CPA level
Justification of the choice of data or description of measurement methods and procedures actually applied :	<p>Determined at CPA level according to the “Tool to calculate the emission factor for an electricity system” (version 2.2.1).</p> <p>BM: For the first crediting period, either once <i>ex ante</i> or annually <i>ex post</i>, following the guidance included in Step 5 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). For the second and third crediting period, once <i>ex ante</i> at the start of the second crediting period.</p>
Any comment:	-

Data / Parameter:	$FC_{i,m,y}$, $FC_{i,v}$, $FC_{i,k,y}$, $FC_{i,n,y}$ and $FC_{i,n,h}$
Data unit:	Mass or volume unit
Description:	Amount of fossil fuel type <i>i</i> consumed by power plant / unit <i>m</i> , <i>k</i> or <i>n</i> (or in the project electricity system in case of $FC_{i,y}$) in year y
Source of data used:	Utility or government records or official publications. Determined at CPA level
Value applied:	Determined at CPA level
Justification of the choice of data or description of measurement methods and procedures	<ul style="list-style-type: none"> Simple OM, simple adjusted OM, average OM: Either <u>once</u> for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option) or annually during the crediting period



actually applied :	<p>for the relevant year, following the guidance in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1)</p> <ul style="list-style-type: none"> Dispatch data OM: If available, <u>hourly</u>, otherwise <u>annually</u> for the year y in which the CPA is displacing grid electricity. Further guidance can be found in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1) BM: For the first crediting period, either once <i>ex ante</i> or annually <i>ex post</i>, following the guidance included in Step 5 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). For the second and third crediting period, once <i>ex ante</i> at the start of the second crediting period.
Any comment:	-

Data / Parameter:	$EG_{m,y}$, EG_y, $EG_{k,y}$ and $EG_{n,h}$
Data unit:	MWh/yr
Description:	Net electricity generated and delivered to the grid by power plant/unit m , k or n (or in the project electricity system in case of EG_y) in year y
Source of data used:	Utility or government records or official publications
Value applied:	Determined at CPA level
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none"> Simple OM, simple adjusted OM, average OM: Either <u>once</u> for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option); or annually during the crediting period for the relevant year, following the guidance in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1); Dispatch data OM: Hourly. Further guidance can be found in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1); BM: For the first crediting period, either once <i>ex ante</i> or annually <i>ex post</i>, following the guidance included in Step 5 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). For the second and third crediting period, only once <i>ex ante</i> at the start of the second crediting period
Any comment:	-

Data / Parameter:	$NCV_{i,v}$						
Data unit:	GJ/mass or volume unit						
Description:	Net calorific value (energy content) of fossil fuel type i in year y						
Source of data used:	<p>The following data sources may be used if the relevant conditions apply:</p> <table border="1"> <thead> <tr> <th>Data source</th><th>Conditions for using the data source</th></tr> </thead> <tbody> <tr> <td>Values provided by the fuel supplier of the power plants in invoices</td><td>If data is collected from power plant operators (e.g. utilities)</td></tr> <tr> <td>Regional or national average default values</td><td>If values are reliable and documented in regional or national</td></tr> </tbody> </table>	Data source	Conditions for using the data source	Values provided by the fuel supplier of the power plants in invoices	If data is collected from power plant operators (e.g. utilities)	Regional or national average default values	If values are reliable and documented in regional or national
Data source	Conditions for using the data source						
Values provided by the fuel supplier of the power plants in invoices	If data is collected from power plant operators (e.g. utilities)						
Regional or national average default values	If values are reliable and documented in regional or national						



		energy statistics / energy balances
	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.2 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	
Value applied:	Determined at CPA level	
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none"> Simple OM, simple adjusted OM, average OM: Either <u>once</u> for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option) or <u>annually</u> during the crediting period for the relevant year, following the guidance in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). Dispatch data OM: Annually for the year y in which the CPA is displacing grid electricity or, if available, hourly. Further guidance can be found in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). BM: For the first crediting period, either once <i>ex ante</i> or <i>annually ex post</i>, following the guidance included in Step 5 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). For the second and third crediting period, once <i>ex ante</i> at the start of the second crediting period. 	
Any comment:	Applicable if corresponding option according to the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1) is applied. The gross calorific value (GCV) of the fuel can be used, if gross calorific values are provided by the data sources used. Make sure that in such cases also a gross calorific value basis is used for CO ₂ emission factor	

Data / Parameter:	$\eta_{m,y}$ and $\eta_{k,y}$
Data unit:	-
Description:	Average net energy conversion efficiency of power unit <i>m</i> or <i>k</i> in year <i>y</i>
Source of data used:	Use either: <ul style="list-style-type: none"> Documented manufacturer’s specifications (if the efficiency of the plant is not significantly increased through retrofits or rehabilitations); or For grid power plants: data from the utility, the dispatch center or official records if it can be deemed reliable; or The default values provided in the table in Annex 1 of the “Tool to calculate the emission factor for an electricity system” (version 2.2.1) (if available for the type of power plant)
Value applied:	Determined at CPA level
Justification of the choice of data or	Monitoring frequency: Once for each crediting period If the data obtained from the manufacturer, the utility, the dispatch center of



description of measurement methods and procedures actually applied :	official records is significantly lower than the default value provided in Annex 1 (of the “Tool to calculate the emission factor for an electricity system” (version 2.2.1)) for the applicable technology, project proponents should assess the reliability of the values, and provide appropriate justification if deemed reliable. Otherwise, the default values provided in Annex 1 of the “Tool to calculate the emission factor for an electricity system” (version 2.2.1) shall be used.
Any comment:	Applicable if corresponding option according to the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1) is applied.

Data / Parameter:	EF _{CO₂,i,y} and EF _{CO₂,m,i,y}									
Data unit:	tCO ₂ /GJ									
Description:	CO ₂ emission factor of fossil fuel type <i>i</i> used in power unit <i>m</i> in year <i>y</i>									
Source of data used:	The following data sources may be used if the relevant conditions apply: <table><tr><td>Data source</td><td>Conditions for using the data source</td></tr><tr><td>Values provided by the fuel supplier of the power plants in invoices</td><td>If data is collected from power plant operators (e.g. utilities)</td></tr><tr><td>Regional or national average default values</td><td>If values are reliable and documented in regional or national energy statistics / energy balances</td></tr><tr><td>IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories</td><td></td></tr></table>		Data source	Conditions for using the data source	Values provided by the fuel supplier of the power plants in invoices	If data is collected from power plant operators (e.g. utilities)	Regional or national average default values	If values are reliable and documented in regional or national energy statistics / energy balances	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	
Data source	Conditions for using the data source									
Values provided by the fuel supplier of the power plants in invoices	If data is collected from power plant operators (e.g. utilities)									
Regional or national average default values	If values are reliable and documented in regional or national energy statistics / energy balances									
IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories										
Value applied:	Determined at CPA level									
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none">Simple OM, simple adjusted OM, average OM: Either <u>once</u> for each crediting period using the most recent three historical years for which data is available at the time of submission of the CPA-DD to the DOE for validation (<i>ex ante</i> option) or <u>annually</u> during the crediting period for the relevant year, following the guidance in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1).Dispatch data OM: Annually for the year <i>y</i> in which the CPA is displacing grid electricity or, if available, hourly. Further guidance can be found in Step 3 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1).BM: For the first crediting period, either once <i>ex ante</i> or <i>annually ex post</i>, following the guidance included in Step 5 of the “Tool to calculate the emission factor for an electricity system” (Version 2.2.1). For the second and third crediting period, once <i>ex ante</i> at the start of the second crediting period.									



Any comment:	-
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The following parameters are only applicable for project emissions from solar thermal (CSP) projects, which also use fossil fuels for electricity generation according to the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”.

Data / Parameter:	PE_{FF,y}
Data unit:	tCO ₂ /yr
Description:	Project emissions from fossil fuel consumption in year y
Source of data to be used:	As per the “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion”
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Determined at CPA level
Description of measurement methods and procedures to be applied:	As per the “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion” Continuous measurement and at least monthly recording.
QA/QC procedures to be applied:	As per the “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion”
Any comment:	Applicable to solar thermal (CSP) projects, which also use fossil fuels for electricity generation

Data / Parameter:	FC_{i,j,y}
Data unit:	Mass or volume unit per year (e.g. ton/yr or m ³ /yr)
Description:	Quantity of fuel type <i>i</i> combusted in process <i>j</i> during the year y
Source of data to be used:	Onsite measurements
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Determined at CPA level
Description of measurement methods and procedures to be applied:	Continuously measurement <ul style="list-style-type: none"> • Use either mass or volume meters. In cases where fuel is supplied from small daily tanks, rulers can be used to determine mass or volume of the fuel consumed, with the following conditions: The ruler gauge must be part of the daily tank and calibrated at least once a year and have a book of control for recording the measurements (on a daily basis or per shift); • Accessories such as transducers, sonar and piezoelectronic devices are accepted if they are properly calibrated with the ruler gauge and receiving a reasonable maintenance; • In case of daily tanks with pre-heaters for heavy oil, the calibration



	will be made with the system at typical operational conditions.
QA/QC procedures to be applied:	The consistency of metered fuel consumption quantities should be cross-checked by an annual energy balance that is based on purchased quantities and stock changes. Where the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel consumption quantities should also be cross-checked with available purchase invoices from the financial records.
Any comment:	Applicable to solar thermal (CSP) projects, which also use fossil fuels for electricity generation

Data / Parameter:	$w_{C,i,y}$						
Data unit:	tC/mass unit of the fuel						
Description:	Weighted average mass fraction of carbon in fuel type <i>i</i> in year <i>y</i>						
Source of data to be used:	The following data sources may be used if the relevant conditions apply: <table border="1"> <thead> <tr> <th>Data source</th><th>Conditions for using the data source</th></tr> </thead> <tbody> <tr> <td>a) Values provided by the fuel supplier in invoices</td><td>This is the preferred source</td></tr> <tr> <td>b) Measurements by the project participants</td><td>If a) is not available</td></tr> </tbody> </table>	Data source	Conditions for using the data source	a) Values provided by the fuel supplier in invoices	This is the preferred source	b) Measurements by the project participants	If a) is not available
Data source	Conditions for using the data source						
a) Values provided by the fuel supplier in invoices	This is the preferred source						
b) Measurements by the project participants	If a) is not available						
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Determined at CPA level						
Description of measurement methods and procedures to be applied:	Measurements should be undertaken in line with national or international fuel standards The mass fraction of carbon should be obtained for each fuel delivery, from which weighted average annual values should be calculated						
QA/QC procedures to be applied:	Verify if the values under a) and b) are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values fall below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories in b) should have ISO17025 accreditation or justify that they can comply with similar quality standards.						
Any comment:	Applicable to solar thermal (CSP) projects, which also use fossil fuels for electricity generation. Applicable where Option A is used of the “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion”						

Data / Parameter:	$\rho_{i,y}$				
Data unit:	Mass unit/volume unit				
Description:	Weighted average density of fuel type <i>i</i> in year <i>y</i>				
Source of data to be used:	The following data sources may be used if the relevant conditions apply: <table border="1"> <thead> <tr> <th>Data source</th><th>Conditions for using the data source</th></tr> </thead> <tbody> <tr> <td>a) Values provided by the fuel</td><td>This is the preferred source</td></tr> </tbody> </table>	Data source	Conditions for using the data source	a) Values provided by the fuel	This is the preferred source
Data source	Conditions for using the data source				
a) Values provided by the fuel	This is the preferred source				



	supplier in invoices	
	b) Measurements by the project participants	If a) is not available
	c) Regional or national default values	If a) is not available These sources can only be used for liquid fuels and should be based on well-documented, reliable sources (such as national energy balances).
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Determined at CPA level	
Description of measurement methods and procedures to be applied:	Measurements should be undertaken in line with national or international fuel standards The density of the fuel should be obtained for each fuel delivery, from which weighted average annual values should be calculated	
QA/QC procedures to be applied:	-	
Any comment:	Applicable to solar thermal (CSP) projects, which also use fossil fuels for electricity generation. Applicable where Option A of the “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion” is used and where FC _{i,j,y} is measured in a volume unit. Preferably the same data source should be used for w _{C,i,y} and ρ _{i,y} .	

Data / Parameter:	NCV_{i,y}	
Data unit:	GJ per mass or volume unit (e.g. GJ/m ³ , GJ/ton)	
Description:	Weighted average net calorific value of fuel type <i>i</i> in year <i>y</i>	
Source of data to be used:	The following data sources may be used if the relevant conditions apply:	
	Data source	Conditions for using the data source
	a) Values provided by the fuel supplier in invoices	This is the preferred source
	b) Measurements by the project participants	If a) is not available
	c) Regional or national default values	If a) is not available These sources can only be used for liquid fuels and should be based on well-documented, reliable sources (such as national energy balances).
	d) IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National	If a) is not available



	GHG Inventories	
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Determined at CPA level	
Description of measurement methods and procedures to be applied:	<p>For a) and b): Measurements should be undertaken in line with national or international fuel standards</p> <p>For a) and b): The NCV should be obtained for each fuel delivery, from which weighted average annual values should be calculated</p> <p>For c): Review appropriateness of the values annually</p> <p>For d): Any future revision of the IPCC Guidelines should be taken into account</p>	
QA/QC procedures to be applied:	Verify if the values under a), b) and c) are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values fall below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories in a), b) or c) should have ISO17025 accreditation or justify that they can comply with similar quality standards.	
Any comment:	Applicable to solar thermal (CSP) projects, which also use fossil fuels for electricity generation. Applicable where Option B of the “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion” is used.	

Data / Parameter:	EF _{CO₂,i,y}	
Data unit:	tCO ₂ /GJ	
Description:	Weighted average CO2 emission factor of fuel type <i>i</i> in year <i>y</i>	
Source of data to be used:	The following data sources may be used if the relevant conditions apply:	
	Data source	Conditions for using the data source
	a) Values provided by the fuel supplier in invoices	This is the preferred source
	b) Measurements by the project participants	If a) is not available
	c) Regional or national default values	If a) is not available These sources can only be used for liquid fuels and should be based on well-documented, reliable sources (such as national energy balances).
	d) IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available
Value of data applied	Determined at CPA level	



for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	For a) and b): Measurements should be undertaken in line with national or international fuel standards. For a) and b): The CO ₂ emission factor should be obtained for each fuel delivery, from which weighted average annual values should be calculated. For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account
QA/QC procedures to be applied:	-
Any comment:	Applicable to solar thermal (CSP) projects, which also use fossil fuels for electricity generation. Applicable where Option B of the “Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion” is used. For a): If the fuel supplier does provide the NCV value and the CO ₂ emission factor on the invoice and these two values are based on measurements for this specific fuel, this CO ₂ factor should be used. If another source for the CO ₂ emission factor is used or no CO ₂ emission factor is provided, Options b), c) or d) should be used.

[Enter monitoring details]

.

Figure 6: Metering of net generation

[Enter figure illustration monitoring details, e.g. location of meters]

2. Data quality control

The data on $EG_{\text{facility},y}$ and reports provided by [CPA implementer] to the CME will be checked internally to ensure the accuracy and completeness of data. In case of mistakes, corrective action will be applied to avoid future similar mistakes.

3. Training and monitoring personnel

The CME will provide all necessary information and guidance to enable [CPA implementer] to conduct the monitoring process as required by the PoA. The CPA implementer ensures that each person that participates in the actual monitoring process for the CPA will be suitably qualified and trained in the operation and maintenance of the project activity. If required, these individuals will also receive training on the application of the monitoring plan by the CME.

**SECTION C. Environmental analysis**

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

☐ Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

[Add summary of findings and impacts]

C.3. Please state whether in accordance with the host Party laws/regulations, an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA);

[Add details]

SECTION D. Stakeholders' comments

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

☐ Please tick if this information is provided at the PoA level. In this case sections D.2. to D.4. need not be completed in this form.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

[Add details]

D.3. Summary of the comments received:

[Add details]

D.4. Report on how due account was taken of any comments received:

[Add details]

**Annex 1****CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE CPA**

Organization:	[Add details]
Street/P.O.Box:	[Add details]
Building:	[Add details]
City:	[Add details]
State/Region:	[Add details]
Postfix/ZIP:	[Add details]
Country:	[Add details]
Telephone:	[Add details]
FAX:	[Add details]
E-Mail:	[Add details]
URL:	[Add details]
Represented by:	[Add details]
Title:	[Add details]
Salutation:	[Add details]
Last Name:	[Add details]
Middle Name:	[Add details]
First Name:	[Add details]
Department:	[Add details]
Mobile:	[Add details]
Direct FAX:	[Add details]
Direct tel:	[Add details]
Personal E-Mail:	[Add details]



Annex 2

INFORMATION REGARDING PUBLIC FUNDING

[Add details, if applicable, otherwise state: Left blank intentionally]



Annex 3

BASELINE INFORMATION

[Add details, if applicable, otherwise state: Left blank intentionally]



Annex 4

MONITORING INFORMATION

[Add details, if applicable, otherwise state: Left blank intentionally]
