




**Validation report form for renewal of CDM programme of activities period
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the programme of activities (PoA)	CDM Africa Wind and Solar Programme of Activities for South Africa #8260
Number and duration of the next PoA period	2 nd renewal period, 21 November 2019 - 20 November 2026
Version number of the validation report	02
Completion date of the validation report	04 October 2021
Version number of PoA-DD to which this report applies	12
Coordinating/managing entity (CME)	PoA Africa Wind and Solar (Pty) Ltd
Host Parties	South Africa
Applied methodologies and standardized baselines	ACM0002 Version 20.0: "Large-scale Consolidated Methodology for Grid-connected electricity generation from renewable sources" ASB0040-2018 Grid emission factor for the Southern African power pool" (Version 01.0).
Mandatory sectoral scopes	Scope 1 (Energy industries (renewable / non-renewable sources))
Conditional sectoral scopes, if applicable	NA
Name and UNFCCC reference number of the DOE	E-0016 ERM Certification and Verification Services Limited (ERM CVS)
Name, position and signature of the approver of the validation report	Melanie Eddis, Partner 

SECTION A. Executive summary

>> ERM CVS has carried out the validation of the Programme of Activities (PoA) period renewal request for the CDM PoA 'CDM Africa Wind and Solar Programme of Activities for South Africa'. The PoA is designed to promote the development and implementation of renewable energy, grid connected wind power projects, grid connected solar photovoltaic (PV) projects and grid connected solar thermal projects (without fossil fuel backup), with the objective to contribute towards increased electricity generation from renewable energy in South Africa.

ERM CVS reviewed the updated PoA-DD and supporting documents and evidence to determine whether the CME has updated sections of the PoA-DD relating to the eligibility criteria for inclusion of CPAs in the PoA, the baseline, estimated GHG emission reductions or net anthropogenic GHG removals, the monitoring plan and the PoA period, using the valid version of the approved methodologies, standardised baselines and tools. ERM CVS applied the means of validation set out in the CDM validation and verification standard for programmes of activities, including document review and interviews. No site inspection was performed for this validation of crediting period renewal due to the restrictions associated with the Covid-19 pandemic and the fact that the validation could be performed remotely by review of evidence documents and interviews.

In line with the CDM project standard for programmes of activities the impact of national and/or sectoral policies and circumstances on the baseline emissions did not need to be reassessed, as the PoA applies a standardized baseline.

No post-registration changes to the PoA are requested.

ERM CVS concluded that the PoA-DD has been updated in accordance with the relevant requirements in the "CDM project standard for programmes of activities", and the PoA meets the requirements as set out in the CDM project standard for PoAs, and therefore requests the renewal of the Programme of Activities.

SECTION B. Validation team, technical reviewer and approver**B.1. Validation team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader	IR	Avis	Jonathan	ERM CVS, London	X	n/a	X	X

B.2. Technical reviewer and approver of the validation report for renewal of PoA period

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	EI	Pumputyte	Neringa	ERM CVS, London
2.	Approver	IR	Eddis	Melanie	ERM CVS, London

SECTION C. Means of validation**C.1. Desk/document review**

>> A detailed document review of the PoA-DD, methodology and all other associated documentation and references took place, and additional documents that were not available for the desk review were requested for review during the interviews. The document review included:

- A review of data and information to verify the correctness, credibility and interpretation of presented information;
- Cross checks between information provided in the PoA-DD and information from other sources, not limited to those provided by the CME, applying ERM CVS's sectoral or local expertise and, if necessary, with independent background investigations
- Reference to available information relating to projects or technologies similar to the proposed project activity
- Review, based on the approved methodology being applied, of the appropriateness of formulae and accuracy of calculations

Where the review of the PoA-DD at the document review stage raised issues, these were further reviewed and validated through supporting documentation and cross-checking from other sources and interviewing the CME. Where appropriate, the validation team assessed the appropriateness of formulae and the correctness of calculations presented by the CME. A list of all documents reviewed or referred to in the course of this validation is included in Appendix 3.

C.2. On-site inspection

Duration of on-site inspection: not applicable				
No.	Activity performed on-site	Site location	Date	Team member
1.	n/a			
...				

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Terblanche	Ciska	CDM Africa	04/09/2020	The PoA design, eligibility criteria for CPA inclusion, baseline and emission reductions calculations, monitoring plan, etc.	Jonathan Avis

C.4. Sampling approach

>>Not applicable

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Programme of activities			
Compliance with PoA-DD form			
Programme of activities period			
Coordinating/managing entity and the project participants			
Post-registration changes			
Generic component project activities			
Application and selection of methodologies and		1	

standardized baselines			
Validity of original baseline or its update			
Estimated emission reductions or net anthropogenic removals			
Validity of monitoring plan			
Eligibility criteria for inclusion of CPAs			
Others (please specify)			
Total	0	1	0

SECTION D. Validation findings

D.1. Programme of activities

D.1.1. Compliance with PoA-DD form

Means of validation	ERM CVS reviewed the PoA-DD and compared it with the latest template and guidelines for completing the PoA-DD form published by the UNFCCC.
Findings	ERM CVS confirmed that the latest PoA-DD form has been used, and that the project participants have correctly completed the PoA-DD form as per the UNFCCC guidelines. The coordinating/managing entity used a later valid version of the PoA-DD form than the version used in the original registered PoA-DD, therefore ERM CVS confirmed that the information transferred to the later version of the PoA-DD form is materially the same as that in the registered PoA-DD.
Conclusion	ERM CVS confirmed that the latest PoA-DD form has been used, and that the project participants have correctly completed the PoA-DD form as per the UNFCCC guidelines. ERM CVS confirmed that the information transferred to the later version of the PoA-DD form is materially the same as that in the registered PoA-DD.

D.1.2. Programme of activities period

Means of validation	ERM CVS confirmed whether the next PoA period commences on the day immediately after the expiration of the current PoA period.
Findings	The next PoA period commences on the day immediately after the expiration of the current PoA period.
Conclusion	The next PoA period commences on the day immediately after the expiration of the current PoA period.

D.1.3. Coordinating/managing entity and the project participants

Means of validation	ERM CVS reviewed the updated PoA-DD to confirm whether the names of the coordinating/managing entity and the project participants in the updated PoA-DD are consistent with the names of the coordinating/managing entity and the project participants in the latest version of the MoC statement.
Findings	The names of the coordinating/managing entity and the project participants in the updated PoA-DD are consistent with the names of the coordinating/managing entity and the project participants in the latest version of the MoC statement.
Conclusion	The names of the coordinating/managing entity and the project participants in the updated PoA-DD are consistent with the names of the coordinating/managing entity and the project participants in the latest version of the MoC statement.

D.1.4. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Corrections	N		
Inclusion of monitoring plan	N		
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other	N		

methodological regulatory documents			
Changes to the programme design	N		
Addition of CPA inclusion template	N		
Changes specific to afforestation and reforestation activities	N		
Change of coordinating/managing entity	N		

D.2. Generic component project activities

D.2.1. Application and selection of methodologies and standardized baselines

Means of validation	By means of document review of part II of the PoA-DD and applied methodology, standardised baseline and tools, ERM CVS has validated whether the selected methodology, standardised baseline and tools are applicable to the PoA & generic CPA and that the selected versions are valid at the time of submission of the PoA for renewal.		
Findings	<p>The PoA applies methodology ACM0002 Version 20.0: "Large-scale Consolidated Methodology for Grid-connected electricity generation from renewable sources". This is the latest available version at the time of validation.</p> <p>The PoA also applies standardised baseline ASB0040-2018 "Grid emission factor for the Southern African power pool" (Version 01.0). This is the latest available version at the time of validation.</p> <p>The PoA also applies the following tools:</p> <ul style="list-style-type: none"> • Tool for the demonstration and assessment of additionality (version 7.0.0); • Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" (version 3.0) • Tool to calculate the emission factor for an electricity system (version 7.0) • Tool to determine the remaining lifetime of equipment (Version 01) <p>The PoA-DD did not discuss the applicability of the Tool for the demonstration and assessment of additionality' or the Tool to determine the remaining lifetime of equipment. CAR 01 was raised.</p> <p>In response, the PoA-DD was revised to discuss the applicability of the Tool for the demonstration and assessment of additionality' or the Tool to determine the remaining lifetime of equipment. CAR 01 was closed.</p> <p>N.B. the 'Combined tool to identify the baseline scenario and demonstrate additionality' (version 7.0.0), referred to in ACM0002, is only used to determine the baseline scenario for retrofit or rehabilitation or replacement of an existing power plant. Therefore it does not apply to this PoA.</p> <p><u>Tool for 'Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period', version 03.0.1:</u> As per the Project Standard for PoAs, the CME is not required to assess and incorporate the impact of national and/or sectoral policies and circumstances existing at the time of requesting renewal of the PoA period on the modalities to estimate baseline GHG emissions for the subsequent crediting period of each corresponding CPA. This requirement is not applicable to a registered CDM PoA applying the valid version of an applicable approved standardized baseline that standardizes baseline scenario. This PoA applies the standardised baseline ASB0040-2018 "Grid emission factor for the Southern African power pool" (Version 01.0) (which provides the grid emission factor). Therefore the Tool for 'Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period' is not applied.</p> <p>The latest versions of the applicable tools have been applied at the time of validation.</p> <p>The applicability of the methodology was validated as follows:</p> <table border="1"> <thead> <tr> <th>Criterion</th><th>How this was validated</th></tr> </thead> </table>	Criterion	How this was validated
Criterion	How this was validated		

	<p>This methodology is applicable to grid-connected renewable energy power generation project activities that:</p> <p>(a) Install a Greenfield power plant;</p> <p>(b) Involve a capacity addition to (an) existing plant(s);</p> <p>(c) Involve a retrofit of (an) existing operating plants/units;</p> <p>(d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or</p> <p>(e) Involve a replacement of (an) existing plant(s)/unit(s).</p>	<p>The PoA requires that each CPA is a grid connected renewable power generation activity that (a) Installs a Greenfield power plant or (b) involves a capacity addition of a renewable energy technology to an existing renewable energy plant of the same technology.</p> <p>In this PoA retrofits, rehabilitation of existing plants and replacements of existing plants are excluded.</p>
	<p>The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit</p>	<p>The PoA requires that each CPA in the PoA is the installation of a new grid connected wind or solar PV or solar thermal power plant or capacity addition of a wind or solar PV or solar thermal power plant to an existing power plant of the same technology type.</p> <p>Retrofits or replacements of a power plant/unit are excluded from the PoA.</p>
	<p>In the case of capacity additions, retrofits, rehabilitation or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity</p>	<p>Not applicable – the PoA is for wind and solar projects only.</p>
	<p>In case of hydro power plants...</p>	<p>Not applicable</p>
	<p>In the case of integrated hydro power projects...</p>	<p>Not applicable</p>
	<p>The methodology is not applicable to:</p> <p>(a) 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;</p> <p>(b) Biomass fired power plants/units</p>	<p>The PoA excludes projects where there is a switch from a fossil fuel plant to a wind or solar power plant at the site of the CPA. The PoA requires that the CPA site in each instance has no fossil fuel power generation facility constructed at the time when the wind/solar power plant will be established.</p> <p>Biomass plants are not included in the PoA.</p>
	<p>In the case of retrofits, rehabilitations, 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, that is to use the power generation equipment that was already in use prior to the</p>	<p>Replacements and retrofits are excluded from the scope of the PoA.</p> <p>In the case of capacity additions, the PoA states that in the absence of the CPA, the existing facility would continue to supply electricity to the grid at historical levels, until the time at which the generation facility would</p>

	implementation of the project activity and undertaking business as usual maintenance”.	likely be replaced or retrofitted (DATEBaselineRetrofit). From that point of time onwards, the baseline scenario is assumed to correspond to the CPA, and no emission reductions are assumed to occur. In the case of capacity additions, the CPA will demonstrate that the most likely baseline scenario is the continuation of the current situation.						
	<p>ERM CVS confirmed that the generic CPA includes provisions to ensure that each CPA meets all the applicability conditions of the selected methodology. This was done by reviewing the project description (see above) and eligibility criteria, and by verifying that the methodology and tools are correctly quoted and interpreted in the generic CPA-DD.</p> <p>The methodology was also confirmed to have been correctly applied with respect to the following:</p> <p>(a) Project boundary;</p> <p>(b) Baseline identification;</p> <p>(c) Algorithms and/or formulae used to determine emission reductions;</p> <p>(d) Additionality;</p> <p>(e) Monitoring methodology.</p> <p>Please see below for details.</p> <p><u>Applicability criteria for the “Standardized baseline Grid emission factor for the Southern African power pool, Version 01.0”</u></p> <table><tr><th>Criterion</th><th>How this was validated</th></tr><tr><td>This standardized baseline is applicable to the CDM projects in the following countries, which are the SAPP member countries: (a) The Republic of Botswana; (b) The Democratic Republic of the Congo (DRC); (c) The Kingdom of Lesotho; (d) The Republic of Mozambique; (e) The Republic of Namibia; (f) The Republic of South Africa; (g) The Kingdom of Swaziland; (h) The Republic of Zambia; (i) Zimbabwe.</td><td>The PoA applies to South Africa – based on the eligibility criteria.</td></tr><tr><td>The CDM project activities can apply this standardized baseline under the following conditions: (a) The project activity is connected to the project electricity system; (b) The CDM approved methodology that is applied to the project activity requires the determination of CO2 emission factor(s) through the application of the grid tool; and (c) The project activity uses the ex-ante options for both the operating margin and build margin grid emissions factors, as described in the grid tool, and therefore no monitoring</td><td>The PoA requires that each CPA in the PoA is the installation of a new grid connected wind or solar PV or solar thermal power plant or capacity addition of a wind or solar PV or solar thermal power plant to an existing power plant of the same technology type – based on the eligibility criteria. ACM0002, version 20: Grid-connected electricity generation from renewable sources, applies the tool for the determination of baseline emissions, project emissions and leakage emissions. Part II of the PoA-DD (generic CPA) requires that CPAs determine the grid</td></tr></table>		Criterion	How this was validated	This standardized baseline is applicable to the CDM projects in the following countries, which are the SAPP member countries: (a) The Republic of Botswana; (b) The Democratic Republic of the Congo (DRC); (c) The Kingdom of Lesotho; (d) The Republic of Mozambique; (e) The Republic of Namibia; (f) The Republic of South Africa; (g) The Kingdom of Swaziland; (h) The Republic of Zambia; (i) Zimbabwe.	The PoA applies to South Africa – based on the eligibility criteria.	The CDM project activities can apply this standardized baseline under the following conditions: (a) The project activity is connected to the project electricity system; (b) The CDM approved methodology that is applied to the project activity requires the determination of CO2 emission factor(s) through the application of the grid tool; and (c) The project activity uses the ex-ante options for both the operating margin and build margin grid emissions factors, as described in the grid tool, and therefore no monitoring	The PoA requires that each CPA in the PoA is the installation of a new grid connected wind or solar PV or solar thermal power plant or capacity addition of a wind or solar PV or solar thermal power plant to an existing power plant of the same technology type – based on the eligibility criteria. ACM0002, version 20: Grid-connected electricity generation from renewable sources, applies the tool for the determination of baseline emissions, project emissions and leakage emissions. Part II of the PoA-DD (generic CPA) requires that CPAs determine the grid
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	or recalculation of the emission factor during the crediting period is required.	emissions factor ex-ante.							
	The latest approved and valid values of this standardized baseline are the only values of the CO2 emission factor(s) that shall be applied for the project electricity system in the SAPP member countries listed in this section.	The PoA-DD (Part II – generic CPA) requires that this be applied in the CPA DD.							
	<u>Applicability of tools:</u>								
	Applicability criteria for the “Tool to calculate the emission factor for an electricity system”:								
	<table><tr><th>Criterion</th><th>How this was validated</th></tr><tr><td>This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).</td><td>The PoA requires (section K, eligibility criteria for inclusion of CPAs) that the renewable energy power plant (the CPA) must be grid connected to the South African national electricity grid which forms part of the Southern African Power Pool and fall within the boundaries of the Republic of South Africa, as they may exist at the time of CPA inclusion.</td></tr><tr><td>Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in “Appendix 1: Procedures related to off-grid power generation” should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.</td><td>The PoA states and requires (in part II – generic CPA) that the emission factor for the project electricity system will be calculated for grid power plants only and will exclude off-grid power plants.</td></tr><tr><td>The tool is not applicable if the project electricity system is located partially or totally in an Annex I country.</td><td>The project electricity system is not located partially in an Annex 1 country. All South Africa's neighbouring countries are developing countries. The PoA requires (section K, eligibility criteria for inclusion of CPAs) that the renewable energy power plant (the CPA) must be grid connected to the South African national electricity grid which forms part of the Southern African Power Pool and fall within the</td></tr></table>	Criterion	How this was validated	This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	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		boundaries of the Republic of South Africa, as they may exist at the time of CPA inclusion.
	Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The PoA-DD states and requires (in Part II – generic CPA) that in such a case that biofuels are used in plants connected to the electricity system, this condition will be applied in the PoA calculations.
	Applicability conditions of TOOL05: “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (Version 03.0).	
	Criterion	How this was validated
	<p>1. This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project scenarios applies to the recipient of the electricity generated:</p> <p>(a) Scenario I: Electricity is supplied to the grid; (b) Scenario II: Electricity is supplied to consumers/electricity consuming facilities; or (c) Scenario III: Electricity is supplied to the grid and consumers/electricity consuming facilities.</p> <p>This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO₂ emissions.</p>	<p>The PoA requires that the CPAs supply electricity to a grid – based on the eligibility criteria.</p> <p>The PoA requires (Part II – generic CPA) that no captive renewable power generation technology is installed. The PoA is for CPAs that supply electricity to a grid.</p>
<p>Applicability of the ‘Tool for the demonstration and assessment of additionality’ (version 7.0.0): once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory. Therefore the tool is applicable.</p> <p>The tool to determine the remaining lifetime of equipment (Version 01) may be used for project activities which involve the replacement of existing equipment with new equipment or which retrofit existing equipment, therefore is applicable to capacity addition projects).</p> <p>ERM CVS determined that the selected methodology and tools are correctly quoted and applied by comparing them with the actual text of the valid version of these documents, and relevant requirements in the “CDM project standard for programmes of activities”.</p>		
Conclusion	The selected methodologies and other applied methodological regulatory documents are applicable to the proposed CDM project activity and the selected versions are valid at the time of submission of the Programme of Activities being renewed. The selected methodology and tools are correctly quoted and applied.	

D.2.2. Validity of original baseline or its update

Means of validation	ERM CVS reviewed the updated PoA-DD including the Part II (generic CPA), and compared them with the valid versions of the methodology and selected standardised baseline.
Findings	The PoA applies methodology ACM0002 Version 20.0: “Large-scale Consolidated Methodology for Grid-connected electricity generation from renewable sources”.

	<p>This is the latest available version at the time of validation. The methodology defines the baseline as follows:</p> <ul style="list-style-type: none"> • If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system". >>This is correctly defined in the generic CPA. • If the project activity is a capacity addition to existing grid-connected renewable energy power plant/unit, the baseline scenario is the existing facility that would continue to supply electricity to the grid at historical levels, until the time at which the generation facility would likely be replaced or retrofitted (DATEBaselineRetrofit), and electricity delivered to the grid by the added capacity would have otherwise been generated by the operation of gridconnected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system". From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and no emission reductions are assumed to occur. >>This is correctly defined in the generic CPA. <p>The PoA also applies standardised baseline ASB0040-2018 "Grid emission factor for the Southern African power pool" (Version 01.0) to determine the combined margin of the project electricity system. This standardised baseline provides the values of the CO₂ emission factors for the interconnected electricity system of the Southern African Power Pool (SAPP). The PoA uses the ex-ante options for both the operating margin and build margin grid emissions factors, as described in the grid tool, and therefore no monitoring or recalculation of the emission factor during the crediting period is required, hence the standardised baseline can be applied. The latest approved and valid values of this standardised baseline are the only values of the CO₂ emission factor(s) that shall be applied for the project electricity system in the SAPP member countries, hence this standardised baseline is mandatory for projects in South Africa and therefore is applicable to the PoA and to the methodologies applied. This standardized baseline entered into force upon adoption by the CDM Executive Board on 7 October 2018. This standardized baseline is valid from 7 October 2018 to 6 October 2021 hence is valid at the time of requesting renewal of PoA period.</p> <p><u>Impact of national/sectoral policies:</u></p> <p>As per the Project Standard for PoAs, the CME is not required to assess and incorporate the impact of national and/or sectoral policies and circumstances existing at the time of requesting renewal of the PoA period on the modalities to estimate baseline GHG emissions for the subsequent crediting period of each corresponding CPA. This requirement is not applicable to a registered CDM PoA applying the valid version of an applicable approved standardized baseline that standardizes baseline scenario. This PoA applies the standardised baseline ASB0040-2018 "Grid emission factor for the Southern African power pool" (Version 01.0) (which provides the grid emission factor). Therefore the Tool for 'Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period' is not applied.</p>
Conclusion	<p>The determination of the baseline in the updated PoA-DD complies with the applicable requirements in the CDM project standard for programmes of activities, and the valid version of the methodologies and the standardised baseline and the other methodological regulatory documents that are applied.</p>

D.2.3. Estimated emission reductions or net anthropogenic removals

Means of validation	ERM CVS has reviewed the PoA-DD, and compared it to the applied methodology
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	and applied standardised baseline.	
Findings	<p>Project emissions: CPAs eligible for inclusion in this PoA may utilise solar thermal, photovoltaic or wind power. The eligibility criteria specify that solar thermal CPAs are eligible only if they do not use fossil fuel as backup fuel for generating electricity into the grid. Therefore project emissions are zero.</p> <p>Baseline emissions: Baseline emissions are CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the CPA(s). 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. For both greenfield and capacity addition wind and solar projects, it is assumed that project electricity generation is equal to the quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM CPA.</p> <p>Baseline emissions in year y (t CO₂/yr) are therefore calculated as the quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA(s) in year y (MWh/yr) multiplied by the combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Standardized baseline: Grid emission factor for the Southern African power pool, latest version available” (tCO₂/MWh). This is correctly described in the generic CPA section of the PoA-DD.</p> <p>Leakage According to the methodology, leakage is zero.</p>	
Conclusion	<p>Project emissions, baseline emissions and leakage have been determined in accordance with the applied methodology.</p> <p>The grid emissions factor for a CPA will be determined according to the standardised baseline: Grid emission factor for the Southern African power pool, latest version available.</p> <p>The PoA-DD with its generic CPA transparently explain how the procedures provided in the methodology/standardised baseline and applicable tools are applied. ERM CVS confirms that all choices of options required in calculating emission reductions are correctly presented, in accordance with the applied methodology, standardised baseline and applicable tools.</p> <p>Formulae required for the determination of project emissions and baseline emissions are correctly presented in a complete and transparent manner, enabling a complete identification of parameters to be used and / or monitored. The formulae are in accordance with the provisions of the applied methodology, standardised baseline and tools and the choices made by the PPs.</p> <p>ERM CVS confirms that, based on the information reviewed: The modalities for estimating GHG emission reductions in the updated PoA-DD comply with the applicable requirements in the “CDM project standard for programmes of activities”, and the valid version of the methodology and standardized baseline and the other methodological regulatory documents that are applied in the updated PoA-DD.</p>	

D.2.4. Validity of monitoring plan

Means of validation	ERM CVS evaluated the monitoring plan in the generic CPA part of the PoA-DD to ensure that it is based on the approved monitoring methodology that has been applied. ERM CVS evaluated the updated generic CPA part of the PoA-DD to ensure that the monitoring plan includes all parameters necessary for monitoring of this type of project in accordance with the approved methodology applied, the parameters are clearly described and the means of monitoring described in the plan complies with the requirements of the methodology.	
Findings	The monitoring parameters required by the methodology and applicable tools for	

	this type of project are:		
	Parameter	Description	Monitoring plan in line with methodology/tools?
	EG _{facility,y}	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	Yes. This will be based on readings of electricity meter installed at the project site. It will be continuously measured and recorded monthly. Data will be archived electronically for 2 years after the end of the crediting period and paper backup copies will be archived. The precision of the meter will be not lower than 0.5s. The net electricity supplied to the grid by the proposed project will be monitored using bi-directional energy meter or calculated through electricity supplied by the project to the grid (EG _{output,y}) deducting electricity purchased from the grid. If it is calculated, then the PoA-DD requires that the following parameters shall be measured: (a) The quantity of electricity supplied by the project plant/unit to the grid; and (b) The quantity of electricity delivered to the project plant/unit from the grid.
	EG _{PJ_Add,y}	Quantity of net electricity generation supplied to the grid in year y by the project plant/unit that has been added under the CPA	Yes. This will be based on readings of electricity meter installed at the project site. It will be continuously measured and recorded monthly. Data will be archived electronically for 2 years after the end of the crediting period and paper backup copies will be archived. The precision of the meter will be not lower than 0.5s. The net electricity supplied to the grid by the proposed project will be calculated through electricity supplied by the project to the grid (EG _{output,y}) deducting electricity purchased from the grid.
	ERM CVS evaluated the feasibility and sufficiency of the monitoring plan. The key components of the monitoring plan are as follows.		
	<p><u>Operational and management structure:</u> Responsibility for monitoring lies with the CPA operator. Each CPA will be required to confirm that there will be a monitoring officer who will be responsible for monitoring, and mention whether this person will undergo training in the monitoring requirements and procedures. The CPA will need to provide a list of the responsibilities of the monitoring officer.</p> <p><u>Equipment:</u> Calibration of Meters: The generic CPA requires that the calibration frequency is at least once a year or as specified by the equipment supplier. The generic CPA also sets out the required capabilities of meters to be used, and that the Metering Installation shall have the capability to download and transmit such real time data to a Supervisory Control and Data Acquisition ("SCADA") system.</p> <p><u>Quality Assurance and Quality Control (QA/QC) of equipment and data:</u> Monitored data will be entered into a spreadsheet template and then transferred to the CME's database monthly. The CME will conduct an audit on each CPA every 6 months to ensure that all the relevant data is collected and that the necessary support documentation is collected and stored adequately for verification purposes. All data for the CPA will be archived for a minimum period of 2 years after the end of the crediting period for the CPA.</p>		
Conclusion	<p>ERM CVS confirms that the monitoring plan requirements set out in the PoA-DD ensure that all required parameters are included in the monitoring plan, and are monitored in line with the required tools and methodology.</p> <p>The modalities for developing the monitoring plan in the updated PoA-DD comply with the applicable requirements in the "CDM project standard for programmes of activities", and the valid version of the methodology and standardised baseline and the other methodological regulatory documents.</p>		

D.2.5. Eligibility criteria for inclusion of CPAs

Means of validation	ERM CVS reviewed the updated PoA-DD to validate whether the eligibility criteria for inclusion of corresponding CPAs in the registered PoA have been updated by the CME and whether the eligibility criteria are defined in accordance with the “CDM project standard for programmes of activities”	
Findings	The eligibility criteria for inclusion of CPAs have not changed (other than editorial changes that do not have an impact on the technical requirements).	
Conclusion	The eligibility criteria for inclusion of corresponding CPAs in the registered PoA have been reviewed by the CME but have not needed to be changed. The eligibility criteria are defined in accordance with the “CDM project standard for programmes of activities”.	

SECTION E. Internal quality control

>> The process of validation and decision of the validation team has been subject to an independent Technical Review. The scope of the Technical Review process is to independently assess that all procedures have been followed, necessary requirements have been met, and all conclusions are justified. The final validation decision is based on the findings and conclusions of the validation team, assessing the compliance of the project activity with the CDM requirements, and the technical evaluation of the independent technical reviewer. The final report is then reviewed and approved by the qualified signatory / final decision maker within ERM CVS.

SECTION F. Validation opinion

>> ERM CVS has carried out the validation of the Programme of Activities (PoA) period renewal request for the CDM PoA ‘CDM Africa Wind and Solar Programme of Activities for South Africa’. The PoA is designed to promote the development and implementation of renewable energy, grid connected wind power projects, grid connected solar photovoltaic (PV) projects and grid connected solar thermal projects (without fossil fuel backup), with the objective to contribute towards increased electricity generation from renewable energy in South Africa.

The validation was carried out in accordance with the CDM validation and verification standard for programmes of activities, Version 02.0. ERM CVS applied the means of validation set out in the CDM validation and verification standard. ERM CVS reviewed the updated PoA-DD and supporting documents and evidence, and conducted follow up interviews with the CME. No site inspection was performed due to the restrictions associated with the Covid-19 pandemic and the fact that the validation could be performed remotely by review of evidence documents and interviews.

ERM CVS confirmed that:

- The updated PoA-DD has been completed using the valid version of the applicable PoA-DD form, following the instructions therein.
- The information transferred to the later valid version of the PoA-DD form is materially the same as that in the registered PoA-DD, where applicable.
- The CME has updated sections of the PoA-DD relating to the eligibility criteria for inclusion of CPAs in the PoA, the baseline, estimated GHG emission reductions, the monitoring plan and the PoA period, using the valid version of the approved methodology, standardised baseline and tools.
- The methodology, standardised baseline and tools were applied in accordance with the applicable requirements in the “CDM project standard for programmes of activities”.
- The modalities for estimating the baseline, estimating GHG emission reductions, and developing the monitoring plan in the updated PoA-DD comply with the applicable requirements in the “CDM project standard for programmes of activities”, and the valid version of the methodology, standardised baseline and tools.
- The next PoA period commences on the day immediately after the expiration of the current PoA period.

- The names of the coordinating/managing entity and the project participants in the updated PoA-DD are consistent with the names of the coordinating/managing entity and the project participants in the latest version of the MoC statement.

ERM CVS confirmed the validity of the baseline through an assessment of

The correctness of the application of the approved methodology, approved standardised baseline and the other methodological regulatory documents for the determination of the continued validity of the baseline or its update, and the modalities for estimating GHG emission reductions.

ERM CVS confirmed that the baseline is still applicable and that the modalities for estimating emission reductions have been correctly presented.

The review of the updated PoA-DD and additional documents related to the PoA, the baseline and monitoring methodology, the subsequent background investigation, and follow-up interviews have provided ERM CVS with sufficient evidence to validate the fulfilment of the eligibility of the CDM PoA for renewal.

No post-registration changes to the PoA are requested.

ERM CVS therefore requests the renewal of the Programme of Activities.

Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CL	Clarification Request
CME	Coordinating and Managing Entity
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CPA	Component Project Activity
CPA-DD	CPA Design Document
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas
GS	Gold Standard
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
PoA	Programme of Activities
PoA-DD	PoA Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention for Climate Change
VVS	CDM Validation and Verification Standard for PoAs

Appendix 2. Competence of team members and technical reviewers

Jonathan Avis has acted as the auditor or technical reviewer for more than 150 carbon offset projects in a range of sectors including power (hydro, wind, solar, geothermal, biomass), waste management, industrial energy recovery, and household energy in developing countries. Jonathan also has substantial experience in the assessment of environmental and social impacts of energy projects, against a variety of criteria including the Gold Standard for carbon offset projects, and the World Commission on Dams for large hydro. In addition to this, Jonathan is an experienced assessor of environment (ISO 14001), health and safety (EHS) management systems (OHSAS 18001/ISO 45001) and energy management systems (ISO 50001) in a range of sectors. Prior to joining ERM CVS, Jonathan worked as a researcher into clean energy in developing countries at the University of Oxford, and as a manager at the carbon trading firm EcoSecurities Ltd. Jonathan holds a BA in Geography (1st Class Hons) from the University of Oxford, and an MSc in Environmental Change and Management, also from the University of Oxford (Distinction).

Neringa Pumputyte has over ten years of experience in climate change and GHG emission reductions. While at ERM CVS, Neringa has worked on validations and verifications of emission reduction projects and PoAs in renewable energy, energy demand, manufacturing, landfill gas and fugitive emissions (oil and gas), as well as corporate GHG assurance work in a range of sectors. She led development of the Gold Standard programme in ERM CVS. Before joining ERM CVS, Neringa worked on hydro, cook stove and animal waste handling projects as a project developer. Now she works as a contractor. Neringa has completed the ERM CVS CDM training, Gold

Standard training, and GHGMI renewable energy training. Neringa also has a BSc and MSc in Geography, and an MSc in Environmental Change and Management from the University of Oxford.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	CME	PoA-Design Document (including generic CPA design document)	Version 12, 04 October 2021	CME
2	ERM CVS	Validation report for first crediting period https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/SC57UB2980APHZIWFEEDRNY4MOLVQTX/vie_w	15 November 2012	Available on CDM website
3	CME	Modalities of Communication https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/SC57UB2980APHZIWFEEDRNY4MOLVQTX/vie_w	Valid as of 08/11/2013	Available on CDM website
...				

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

CL ID	n/a	Section no.	Date: DD/MM/YYYY
Description of CL			
<i>No CLs raised</i>			
Project participant response			Date: DD/MM/YYYY
Documentation provided by project participant			
DOE assessment			Date: DD/MM/YYYY

Table 2. CAR from this validation

CAR ID	01	Section no.	D.2.1	Date: 06/01/2021
Description of CAR				
The PoA-DD does not discuss the applicability of the Tool for the demonstration and assessment of additionality' or the Tool to determine the remaining lifetime of equipment.				
Project participant response				Date: 26/07/2021
The PoA-DD has been revised to discuss the applicability of the Tool for the demonstration and assessment of additionality' or the Tool to determine the remaining lifetime of equipment.				
Documentation provided by project participant				
<i>Revised PoA-DD</i>				

DOE assessment	Date: 17/08/2021
<p>The PoA-DD has been revised to discuss the applicability of the Tool for the demonstration and assessment of additionality' or the Tool to determine the remaining lifetime of equipment.</p> <p>The additionally tool is included in the approved methodology, its application by the CPAs is therefore mandatory. This is appropriately stated in the PoA-DD.</p> <p>The tool to determine the remaining lifetime of equipment is used for project activities which involve the replacement of existing equipment with new equipment or which retrofit existing equipment, therefore is applicable to capacity addition projects. CPAs will apply the tool to determine the remaining lifetime of the relevant equipment. This is appropriately stated in the PoA-DD.</p>	
CAR closed	

Table 3. FAR from this validation

FAR ID	N/A	Section no.	Date: DD/MM/YYYY
Description of FAR			
<i>No FARs raised</i>			
Project participant response			Date: DD/MM/YYYY
Documentation provided by project participant			
DOE assessment			Date: DD/MM/YYYY

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	7 January 2021	Revision to: <ul style="list-style-type: none"> Remove the row of “Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next programme of activities period” from cover page and related instructions; Make editorial improvements.
02.0	31 May 2019	Revision to: <ul style="list-style-type: none"> Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN) and version 02.0 of the “CDM project cycle procedure for programmes of activities” (CDM-EB93-A09-PROC); Make editorial improvements.
01.0	29 December 2017	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Renewal of crediting period Keywords: crediting period, programme of activities, validation report		