



CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAMME OF ACTIVITIES DESIGN DOCUMENT FORM
(CDM-SSC-PoA-DD) Version 01

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NOTE:

- (i) This form is for the submission of a CDM PoA whose CPAs apply a small scale approved methodology.
- (ii) At the time of requesting registration this form must be accompanied by a CDM-SSC-CPA-DD form that has been specified for the proposed PoA, as well as by one completed CDM-SSC-CPA-DD (using a real case).



SECTION A. General description of small-scale programme of activities (PoA).

A.1 Title of the small-scale programme of activities (PoA):

NuPlanet Small Scale Hydropower PoA

Table 1: PoA DD History

Version Number and Date	Details
1.0 (24 th March 2012)	Version released for validation.

A.2. Description of the small-scale programme of activities (PoA):

1. The General operating and implementing framework of the PoA.

The objective of this programme is to support the development of hydroelectricity renewable energy generation units in the countries that form part of the Southern African Power Pool (SAPP).

The coordinating/managing entity (CME) is NuPlanet Project Development (Pty) Ltd (referred to from now on in the document as NuPlanet) a private company registered in South Africa.

2. Policy/measure or stated goal of the PoA.

The PoA will support the reduction of greenhouse gas emissions by displacing electricity from the SAPP, which is produced mainly from fossil-fuel based generation.

The PoA will increase the proportion of renewable energy being supplied into the Southern African Power Pool (SAPP). In so doing the SAPP will rely less on fossil fuel based electricity generation, resulting in grid electricity becoming less carbon intensive (reflected by a reduced greenhouse gas emission factor for the SAPP).

The PoA will support the three components of sustainable development as follows:

Environmental Component

As well as reducing GHG emissions, the development of hydroelectricity renewable energy generation units will reduce other environmental impacts associated with fossil-fuel based electricity generation. These impacts include: air pollution; and, the production of significant quantities of solid waste.

Social Component

The projects that fall under the auspices of this PoA will create opportunities for temporary and permanent employment in both the construction and operational phases.

Economic Component

The projects will support economic development by improving access to, and the quality of, electricity supply in the SAPP, which will support enterprise development and operation.



3. Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity

NuPlanet as the coordinating/managing entity confirms that this is a voluntary action.

A.3. Coordinating/managing entity and participants of SSC-POA:

1. Coordinating or managing entity of the PoA as the entity which communicates with the Board.

NuPlanet, as the coordinating/managing entity, will communicate with the Board.

2. Project participants being registered in relation to the PoA. Project participants may or may not be involved in one of the CPAs related to the PoA.

Name of the Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Kindly indicate if the Party involved wished to be considered as a project participant (Yes/No)
Republic of South Africa (host)	NuPlanet (Pty) Ltd	No

A.4. Technical description of the small-scale programme of activities:

A.4.1. Location of the programme of activities:

The PoA will support the development of CPAs in the following African countries:

- Angola
- Democratic Republic of Congo.
- Lesotho.
- Mozambique.
- Namibia.
- South Africa.
- Swaziland.
- Zambia.
- Zimbabwe.



Figure 1: Map Showing Countries Included in PoA
(Source: Southern African Power Pool Annual Report 2009)





A.4.1.1. Host Party(ies):

The following countries are expected to be host parties to CPAs that will fall under the umbrella of this PoA:

- Angola.
- Democratic Republic of Congo.
- Lesotho.
- Mozambique.
- Namibia.
- South Africa.
- Swaziland.
- Zambia.
- Zimbabwe.

A.4.1.2. Physical/ Geographical boundary:

The PoA's boundary is the internationally recognised borders of the countries where the PoA is located (see A.4.1. above for the list of these countries).

A.4.2. Description of a typical small-scale CDM programme activity (CPA):

A typical CPA that would fall under the auspices of this PoA would be:

- A hydroelectricity plant that has an installed capacity below 15MW.
- A greenfield plant new installation.
- A capacity addition.
- A retrofit.
- A replacement.
- The CPAs can either be run of river and/or use existing infrastructure such as reservoirs and/or involve the construction of new infrastructure such as reservoirs.

Any CPA falling under this PoA would need to satisfy all the applicable content of the latest applicable and approved version of the small-scale methodology AMS I.D. Grid Connected Renewable Electricity Generation.

A.4.2.1. Technology or measures to be employed by the SSC-CPA:

The PoA will use commonly available hydroelectricity related technology that transforms the kinetic energy in water flows into electricity.

A.4.2.2. Eligibility criteria for inclusion of a SSC-CPA in the PoA:

The eligibility criteria used for assessing whether or not a SSC-CPA may be enrolled into this PoA have been developed using the guidance contained in the "Standard for Demonstration of Additionality,



Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities” (Version 01.0, EB 65 Annex 3 25th November 2011).

The table below indicates how this has been done.

Minimum Requirements for Eligibility Criteria	CPA Eligibility Criterion Developed to Address Minimum Requirements
(a) The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA;	1. Any CPA must be located within the internationally recognised boundaries of the countries in which the PoA is located.
(b) Conditions that avoid double-counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo).	2. Each CPA must be linked to specific geographical co-ordinates supported by a description of its location (the description should include a reference to a national land registry system, if such a system exists)
(c) The specification of technology/measure including the type of service, performance specifications including testing/certifications.	3. Each CPA will use hydroelectricity renewable energy generation technology only. The technology will satisfy all relevant national testing and certification requirements.
(d) Conditions to check the start date of the CPA through documentary evidence.	4. Each CPA should show that the earliest date of its first real action or implementation or construction was after the date on which the CDM-PoA-DD was published for Global Stakeholder Consultation.
(e) Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs (in this case Small –Scale Methodology I.D. Grid Connected Renewable Electricity Generation).	5. The CPA must have a capacity of less than 15MW.
	6. The CPA must involve either the (a) installation of either a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield Plant) or (b) involve a capacity addition or (c) involve a retrofit of an existing plant or (d) a replacement.
	7. CPAs with reservoirs must satisfy at least one of the following conditions: <ul style="list-style-type: none"> • The CPA is implemented in an existing reservoir with no change in the volume of reservoir. • The CPA is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m². • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m².



(f) The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in section III. A of the “Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities”.	8. CPAs will demonstrate additionality using, either the requirements of the “Guidelines for demonstrating additionality of microscale project activities”, or Attachment A of Appendix B of the “Simplified modalities and procedures for small-scale CDM project activities” or an investment analysis in terms of the “Guidelines on the Assessment of Investment Analysis”.
(g) The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis.	9. CPAs will have undertaken stakeholder consultations, which will have been formally recorded.
	10. CPAs will have undertaken an analysis of their environmental impacts, which will have been formally recorded.
(h) Conditions to provide an affirmation that funding from Annex 1 parties, if any, does not result in a diversion of official development assistance.	11. CPAs that have received development assistance will submit written confirmation from the assistance provider that this has not resulted in a diversion of official development assistance.
(i) Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation).	Not applicable to this PoA due to the characteristics of the CPAs involved.
(j) Where applicable, the conditions related to the sampling requirements for a PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys.	Not applicable as all CPAs under this PoA will be subject to verification.
(k) Where applicable, the conditions that ensure that every CPA in aggregate meets the small-scale or microscale threshold criteria and remains within those thresholds throughout the crediting period of the CPA.	Not applicable to this PoA due to the nature of the projects.
(l) Where applicable, the requirements for the debundling check, in case CPAs belong to small-scale (SSC) or microscale project categories.	12. CPAs shall show that they are not debundled projects through the application of the latest applicable and approved version of the “Guidelines on assessment of debundling for SCC project activities”.

Please note that depending on the specific characteristics of the PoA the validating DoE and/or the Board may specify additional eligibility criteria.

All the eligibility criteria detailed in the table above are verifiable.



A.4.3. Description of how the anthropogenic emissions of GHG by sources are reduced by a SSC-CPA below those that would have occurred in the absence of the registered PoA (assessment and demonstration of additionality):

(i) The proposed PoA is a voluntary co-ordinated action

NuPlanet as the CME confirms that this is a voluntary coordinated action.

(ii) If the PoA is implementing a voluntary co-ordinated action, it would not be implemented in the absence of the PoA.

The PoA is a voluntary coordinated action by the CME allowing conditional participation of CPAs. The CME is developing and coordinating the PoA due to the expected CER revenues generated by the underlying CPAs. The voluntary coordinated action would not be implemented by the CME in the absence of the PoA.

(iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced

There is no mandatory policy/regulation that would drive the development of the CPAs that fall under the umbrella of this PoA.

(iv) If mandatory a policy/regulation is enforced, the PoA will lead to a greater level of enforcement of the existing policy/regulation.

There is no mandatory policy/regulation that would drive the development of the CPAs that fall under the umbrella of this PoA.

A.4.4. Operational, management and monitoring plan for the programme of activities (PoA):

A.4.4.1. Operational and management plan:

(i) A record keeping system for each CPA under the PoA,

The CME will operate a PoA monitoring database including the CPAs for the PoA. Each CPA will be uniquely identified within the PoA monitoring database of all CPAs. According to the eligibility criteria the following data must be provided to the CME prior to inclusion in the PoA:

Basic CPA related data for inclusion in PoA Monitoring Database	
1.	Name of the CPA
2.	Name of the CPA developer



3.	Contact details of the CPA developer including contact person, address, landline, cellphone and email address
4.	Installed capacity and other relevant technical specifications of each CPA
5.	Location of the CPA (Description and GPS coordinates)
6.	Project start date of the CPA
7.	The commissioning date of the equipment
8.	The crediting period for each CPA
9.	The signed agreement with the CME to participate in the programme
Data during crediting period	
10.	Verification status, CPA monitoring records and monitoring reports of each CPA.

The basic data for inclusion listed above will be provided by each CPA developer prior to inclusion. The CPA developer will record the required monitoring data (CPA monitoring records) and will ensure that the CPA monitoring records are made available to the CME. The CME will be responsible for the management of the PoA monitoring database, consisting of the basic 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.

- (ii) **A system/procedure to avoid double accounting e.g. to avoid the case of including a new CPA that has been already registered either as a CDM project activity or as a CPA of another PoA,**

Each CPA shall be uniquely identified within the PoA monitoring database described in (i) above. The PoA monitoring database will report and contain the physical location of each CPA.

Prior to inclusion of a new CPA within the proposed PoA, the CME will check the UNFCCC CDM project database to verify whether a CDM project activity or CPA of another PoA for hydroelectricity renewable energy generation units has already been registered within the host country. In an instance where a CPA of another PoA or CDM project activity is already registered, the CME will ensure through crosschecking the PoA monitoring database of the other CPA or CDM project that there is no double counting of the individual CPA for this PoA.

- (iii) **The SSC-CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity.**

As part of the eligibility assessment process, CPAs also have to show that there are not debundled projects by applying the latest debundling guidance.



- (iv) **The provisions to ensure that the CPA implementer is aware of, and has agreed that the activity is being subscribed to the PoA;**

NuPlanet, as the CME, will be involved in the implementation phase of the PoA and in the monitoring, however CPA developers will be in charge of monitoring the parameters for the CPA and providing monitoring reports to CME. The CME will interact with the regulatory bodies (e.g. UNFCCC, DOEs and DNAs) and provide CDM services and necessary documentation to the CPA developers. The CME will agree with the CPA developer on a commercial/inclusion agreement. The commercial agreement will, inter alia, define the ownership of CERs.

A.4.4.2. Monitoring plan:

- (i) **Description of the proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA.**

No sampling will be done within any specific CPA.

In the initial stages of the PoA's operation it is envisaged that each CPA will be verified and therefore no sampling is required.

The CME may however at some point decide that it wishes to select a sample of CPAs for verification purposes. If so, a proposed Sampling Plan will be submitted to a DoE for validation before the sampling programme is implemented. The sampling plan will be developed in line with latest applicable version of the guidance titled "Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities" (at the time of the POA-DD's development this is Version 02.00, EB 65, Annex 2, 25th November 2011)

- (ii) **In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA (whether in groups or not, with different or identical verification periods) a transparent system is to be defined and described that ensures that no double accounting occurs and that the status of verification can be determined anytime for each CPA;**

The CME will implement a monitoring protocol that allows the DOE to verify all CPAs in the PoA. As described previously a PoA monitoring database will be established that contains all the CPA specific data required to identify and locate each CPA. Each CPA will comprise a single project activity, and hence the data will be monitored directly and submitted to the CME.

Monitoring will be carried out by each CPA developer. For each CPA, all parameters included in E.7.1 will be monitored and recorded in the CPA monitoring records by the CPA developer according to the procedures established in E.7.2. Each CPA is responsible to appropriately measure the net electricity supplied to the grid and assuring the correct operation and maintenance of the measuring equipment. The CME will store all the data submitted by the CPA developer in an electronic database (the PoA monitoring database). Primary data will be stored by the CPA as back-up.

Verification initiated by the CME will occur either separately for each CPA or for several CPAs at the same time. The CME will typically be responsible for the preparation of the monitoring reports, based on the CPA monitoring records using the monitoring report form, and communication with the DOE during



verification activities. However CPA developers can opt to develop the monitoring reports based on the nature of the commercial agreement with the CME. The monitoring reports will aggregate all required monitoring information, i.e. CPA monitoring records, in order to allow the DOE to verify the emission reductions for each monitoring period of each CPA. Each monitoring report will unambiguously set out the data on emission reductions generation by each CPA during the monitoring period consistent with the requirements of this PoA-DD and the corresponding CPA-DD. The use of the PoA monitoring database of CPA information and QA/QC procedures will ensure that double counting is not possible.

The start and end date of each monitoring period for each individual CPA, together with the CPA monitoring records attributable to that monitoring period will be recorded in the PoA monitoring database. Record keeping procedures undertaken by the CME will ensure that the CPA monitoring records attributed to a monitoring period can be clearly attributed to an individual CPA and will furthermore prevent double counting of emission reduction data.

The monitoring plan for parameters included in section E.7.1 will be implemented for each CPA with assistance from the CME as follows:

- CPA developer will monitor and record all parameters included in section E.7.1 (CPA monitoring record).
- The CME will provide guidance to the CPA developer on how the monitoring should be conducted and how data should be collected with regards to emission reduction calculations.
- The CPA developer will provide data on monitored parameters included in section E.7.1, required calculations (if any) and any documentary evidence to the CME.
- The CME will document and store all data related to parameters included in section E.7.1 provided by CPA developer in a central electronic database (PoA monitoring database), while primary data will be stored by each CPA developer. The data for each CPA will be kept for at least two years after the end of the last crediting period for the CPA.
- The CME will review relevant CPA monitoring records, prepare the monitoring report and provide the monitoring report to the DOE.

A.4.5. Public funding of the programme of activities (PoA):

No public funding has been used in the development of this PoA.

SECTION B. Duration of the programme of activities (PoA)

B.1. Starting date of the programme of activities (PoA):

The starting date of the PoA is the 10/04/2012

B.2. Length of the programme of activities (PoA):

28 Years 0 Months



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:

1. Environmental Analysis is done at PoA level
2. Environmental Analysis is done at SSC-CPA level

As typical CPAs will likely require an Environmental Impact Assessment (EIA), the environmental analysis at CPA level will assist in ensuring the environmental integrity of the PoA. This is particularly important as local conditions and potential impacts will vary according to the specific geographical location of the CPA.

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

This will be done at CPA level.

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):

It is likely that an Environmental Impact Assessment will be required for a typical CPA.

SECTION D. Stakeholders' comments

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

1. Local stakeholder consultation is done at PoA level
2. Local stakeholder consultation is done at SSC-CPA level

As CPAs under this PoA will be located in different locations with varying local conditions it is appropriate that comments are invited at CPA level. This will ensure that the PoA supports sustainable development appropriately in the CPA locality.

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

Will be done at CPA level.

D.3. Summary of the comments received:

Not done at PoA level.

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

Not done at PoA level.



SECTION E. Application of a baseline and monitoring methodology

E.1. Title and reference of the approved SSC baseline and monitoring methodology applied to a SSC-CPA included in the PoA:

The latest version of AMS I.D Grid Connected Renewable Energy Generation

At the time of the development of the PoA-DD this was Version 17 (EB 61, Annex 17, 3rd June 2011).

E.2. Justification of the choice of the methodology and why it is applicable to a SSC-CPA:

The table below provides the justification of the choice of AMS I.D. for the CPAs that fall under this PoA.

AMS I.D Applicability Criteria	Justification of Applicability
<p>1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass:</p> <p>(a) Supplying electricity to a national or a regional grid; or</p> <p>(b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.</p>	<p>All the CPAs that fall under the ambit of this PoA will be renewable energy generation units that use hydro technology. They will be either supplying electricity directly to a national or regional grid or to an identified consumer facility via a national/regional grid through a contractual arrangement such as wheeling.</p>
<p>2. This methodology is applicable to project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) Involve a capacity addition;¹ (c) Involve a retrofit² of (an)</p>	<p>All the CPAs that fall under the ambit of this PoA will; either, involve the installation of new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); involve a</p>

¹ A capacity addition is an increase in the installed power generation capacity of an existing power plant through: (i) The installation of a new power plant besides the existing power plant/units; or (ii) The installation of new power units, additional to the existing power plant/units. The existing power plant/units continue to operate after the implementation of the project activity.

² Retrofit (or rehabilitation or refurbishment). It involves an investment to repair or modify an existing power plant/unit, with the purpose to increase the efficiency, performance or power generation capacity of the plant, without adding new power plants or units, or to resume the operation of closed (mothballed) power plants. A retrofit restores the installed power generation capacity to or above its original level. Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures.



<p>existing plant(s); or (d) Involve a replacement³ of (an) existing plant(s).</p>	<p>capacity addition; a retrofit; or, a replacement.</p>
<p>3. Hydro power plants with reservoirs⁴ that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <ul style="list-style-type: none"> • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir,⁵ where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m²; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m². 	<p>The CPAs falling under the ambit of this PoA will involve hydro power plants and may have reservoirs. In which case they will need to satisfy one of the three conditions specified.</p>
<p>4. If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel,⁶ the capacity of the entire unit shall not exceed the limit of 15 MW.</p>	<p>All the CPAs that fall under the ambit of this PoA will have renewable components only and will be less than 15 MW (in terms of installed capacity).</p>
<p>5. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project</p>	<p>For all that CPAs that fall under the ambit of this PoA, that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units</p>

³ Replacement. It involves investment in a new power plant or unit that replaces one or several existing unit(s) at the existing power plant. The installed capacity of the new plant or unit is equal to or higher than the plant or unit that was replaced.

⁴ A reservoir is a water body created in valleys to store water generally made by the construction of a dam.

⁵ A reservoir is to be considered as an “existing reservoir” if it has been in operation for at least three years before the implementation of the project activity.

⁶ A co-fired system uses both fossil and renewable fuels, for example the simultaneous combustion of both biomass residues and fossil fuels in a single boiler. Fossil fuel may be used during a period of time when the biomass is not available and due justifications are provided.



should be lower than 15 MW and should be physically distinct ⁷ from the existing units.	added by the project will be lower than 15 MW and will be physically distinct from the existing units.
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E.3. Description of the sources and gases included in the SSC-CPA boundary

The spatial extent of the project boundary includes the project power plant and all power plants physically connected to the electricity system that the CDM power plant is connected to.

Table E.3: Emissions sources included in or excluded from the CPA boundary

Source		Gas	Included?	Justification / Explanation
Baseline	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
CPA	For hydro power plants with no reservoirs or existing reservoirs.	CO ₂	No	No GHG emissions associated with the CPA.
		CH ₄	No	
		N ₂ O	No	
	For hydro power plants with new reservoirs.	CO ₂	No	Minor emission source.
		CH ₄	Yes	Main emission source.
		N ₂ O	No	Minor emission source.

E.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

The baseline is identified through the guidance given in AMS I.D and is the electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of grid-connected power plants and by addition of new generation sources into the grid.

E.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the SSC-CPA being included as registered PoA (assessment and demonstration of additionality of SSC-CPA):

E.5.1. Assessment and demonstration of additionality for a typical SSC-CPA:

To assess and demonstrate additionality CPAs will use the latest version of the “Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities”.

At the time of the development of the PoA this was version 01.0 (EB 65, Annex 3, 25th November 2011).

⁷ Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered “physically distinct”.



The standard indicates that additionality shall be demonstrated by establishing that in the absence of the CDM, none of the implemented CPAs shall occur.

As per the standard this guidance has been incorporated into the eligibility assessment.

Small-Scale Projects will use the latest version of the “Tool for the demonstration and assessment of additionality” (at the time of this PoA DD’s development this was version 06.0.0, EB 65, Annex 21, 25th November 2011).

In the case of PoAs that consist of one or more small-scale projects (as is the case with this PoA) CPAs shall include eligibility criteria derived from all the relevant requirements of Attachment A of Appendix B of the “Simplified modalities and procedures for small-scale CDM project activities”.

This indicates that project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- (a) **Investment barrier:** a financially more viable alternative to the project activity would have led to higher emissions;
- (b) **Technological barrier:** a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
- (c) **Barrier due to prevailing practice:** prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- (d) **Other barriers:** without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

Alternatively each CPA could develop an investment analysis as per the latest “Guidance on the Assessment of Investment Analysis (at the time of the PDD’s development this was version 05, EB 62, Annex 5, 15th July 2011). This will determine whether the proposed project activity is not the most economically or financially attractive, or economically or financially feasible, without the revenue from the sale of CERs.

For Micro-Scale projects it is expected that, during the period of the PoA’s validity, the Designated National Authorities of countries within the PoA’s boundary will motivate to the EB for grid connected hydro power projects (equal to or smaller than 5 MW) to be automatically additional. This in terms of the “Guidelines for Demonstrating Additionality of Microscale Project Activities (latest version 03 EB 63, Annex 23, 29th September 2011) and the “Procedure for Submission and Consideration of Microscale Renewable Energy Technologies for Automatic Additionality (latest version 01.0 EB 65, Annex 33, 25th November 2011).

If this is the case and hydro projects are approved by the EB as specific renewable technologies/measures conferring additionality on microscale CDM project activities implemented in the country for which the DNA submitted the proposal, then this will be used to demonstrate additionality.



E.5.2. Key criteria and data for assessing additionality of a SSC-CPA:

For CPAs microscale projects the criteria to be used will those defined in the latest version of “Guidelines for Demonstrating Additionality of Microscale Project Activities”. At the time of the development of the PoA-DD the relevant criteria were as follows:

Project activities up to five (5) megawatts that employ renewable energy technology are additional if any one of the conditions below is satisfied:

- (a) The geographic location of the project activity is in one of the least developed countries or the small island developing States (LDCs/SIDS) or in a special underdeveloped zone of the host country identified by the government before 28th May 2010;
- (b) The project activity is an off-grid activity supplying energy to households/communities (less than 12 hours grid availability per 24 hours is also considered “off-grid” for this assessment);
- (c) The project activity is designed for distributed energy generation (not connected to a national or regional grid) with both conditions (i) and (ii) satisfied;
 - (i) Each of the independent subsystems/measures in the project activity is smaller than or equal to 1500kW electrical installed capacity;
 - (ii) End users of the subsystems or measures are households/communities /small and medium enterprises (SMEs).
- (d) The project activity employs specific renewable energy technologies /measures recommended by the host country designated national authority (DNA) and approved by the Board to be additional in the host country.

For small scale projects the relevant requirements of Attachment A of Appendix B of the “Simplified modalities and procedures for small-scale CDM project activities” in terms of barrier analysis would apply.

For the investment analysis the data required would be guided by the latest version of the “Guidelines on the Assessment of Investment Analysis”. As far as possible the default values for the expected return on equity detailed in the appendix will be used to determine whether or not the project would be financially viable without the incentive of the CDM.

E.6. Estimation of Emission reductions of a CPA:

E.6.1. Explanation of methodological choices, provided in the approved baseline and monitoring methodology applied, selected for a typical SSC-CPA:

The CPAs will fall under the following four project activity types, as defined in terms of AMS I.D: Greenfield projects; capacity addition; retrofit; and, replacement.

These project types guide the methodological choices in AMS I.D. as to how the emission reductions will be estimated.

In terms of the emission factor derivation the following methodological choices were made:



- Ex-ante approach used;
- Simple OM emission factor is calculated; and,
- Weightings of 50% and 50% were used for the operating margin emissions factor and the build margin emissions factor (as directed for hydro projects).

E.6.2. Equations, including fixed parametric values, to be used for calculation of emission reductions of a SSC-CPA:

The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

Baseline for a Greenfields Site

The baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y} \quad (1)$$

Where:

- BE_y Baseline Emissions in year y (t CO₂)
- $EG_{BL,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)
- $EF_{CO_2,grid,y}$ CO₂ emission factor of the grid in year y (t CO₂/MWh)

The emission factor used in the baseline calculations $EF_{CO_2,grid,y}$ will be calculated using the latest version of the “*Tool to Calculate the Emission Factor for an Electricity System*”.

Baseline for a Retrofit\Capacity Addition

For capacity additions and retrofits in hydro projects where power generation can vary significantly from year to year, due to natural variations in the availability of the renewable source i.e. varying rainfall, the use of few historical years to establish the baseline electricity generation can therefore involve a significant uncertainty. The methodology addresses this uncertainty by adjusting the historical electricity generation by its standard deviation. This ensures that the baseline electricity generation is established in a conservative manner and that the calculated emission reductions are attributable to the project activity. Without this adjustment, the calculated emission reductions could mainly depend on the natural variability observed during the historical period rather than the effects of the project activity. The baseline emissions ($BE_{retrofit,CO_2,y}$) are thus calculated as follows:

$$BE_{retrofit,CO_2,y} = [EG_{BL,retrofit,y}] * EF_{CO_2} \quad (2)$$

Where:

$$EG_{BL,retrofit,y} = EG_{pl,facility,y} - (EG_{historical} + \sigma_{historical}) \quad (3)$$



$$EG_{BL,retrofit,y} = 0 \text{ on / after } DATE_{BaselineRetrofit} \quad (4)$$

Where:

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

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

$EG_{historical}$ Annual average historical net electricity generation by the existing renewable energy hydro plant that was operated at the project site prior to the implementation of the project activity (MWh)

Average of historical net electrical energy levels delivered by the existing facility, spanning all data from the most recent available year (or month, week or other time period) to the time at which the facility was constructed, retrofit, or modified in a manner that significantly affected output (i.e. by 5% or more), shall be used.

To determine $EG_{historical}$, project participants may choose between the following two historical periods (This allows some flexibility; the use of the longer time period may result in a lower standard deviation and the use of the shorter period may allow a better reflection of the (technical) circumstances observed during the more recent years):

- (a) The three last calendar years (five calendar years for hydro project) prior to the implementation of the project;
- (b) The time period from the calendar year following $DATE_{hist}$, up to the last calendar year prior to the implementation of the project, as long as this time span includes at least three calendar years (five calendar years for hydro project), where $DATE_{hist}$ is latest point in time between:
 - (i) The commercial commissioning of the plant/unit;
 - (ii) If applicable: the last capacity addition to the plant/unit; or
 - (iii) If applicable: the last retrofit of the plant/unit

$\sigma_{historical}$ Standard deviation of the annual average historical net electricity supplied to the grid by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity (MWh)

$DATE_{BaselineRetrofit}$ Point in time when the existing equipment would need to be replaced in the absence of the project activity (date)

Calculation of Project Emissions

For CPAs that are either run of river projects or use existing reservoirs:

$$PE_y = 0$$

However for CPAs that involve the development of new reservoirs then project emissions have to be considered following the procedure described in the most recent version of ACM0002.



Leakage

If the energy generating equipment is transferred from another activity, leakage is to be considered.

Estimated Project Emissions

Finally the estimated project emissions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (5)$$

Where:

- ER_y Emission reductions in year y (t CO₂/y)
 BE_y Baseline Emissions in year y (t CO₂/y)
 PE_y Project emissions in year y (t CO₂/y)
 LE_y Leakage emissions in year y (t CO₂/y)

E.6.3. Data and parameters that are to be reported in CDM-SSC-CPA-DD form:

Data / Parameter:	$EG_{PJ,y}$
Data unit:	(MWh/yr)
Description:	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
Source of data used:	Meters
Value applied:	-
Justification of the choice of data or description of measurement methods and procedures actually applied :	Measurement will be done using the meters on site. The parameter will be monitored continuously and the data aggregated monthly for monitoring purposes.
Any comment:	

Data / Parameter:	$EF_{grid, CM, y}$
Data unit:	tCO ₂ /MWh
Description:	The Combined margin CO ₂ emission factor for grid connected power generation in year y
Source of data used:	Calculation by Promethium Carbon (Pty) Ltd using the latest version of the “Tool to calculate the emission factor for an electricity system”.
Value applied:	-
Justification of the choice of data or description of measurement methods	



and procedures actually applied :	
Any comment:	

E.7. Application of the monitoring methodology and description of the monitoring plan:

D.7.1. Data and parameters to be monitored by each SSC-CPA:

Data / Parameter:	$EG_{p,y}$
Data unit:	MWh/yr
Description:	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA in year y
Source of data to be used:	Meters at project activity site.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Not Applicable.
Description of measurement methods and procedures to be applied:	Electricity meters separately measure each CPA, at the boundary between the CPA and the electricity grid. The parameter will be monitored continuously and the data aggregated monthly for monitoring purposes. The meter accuracy will be determined when installed through an assessment of the appropriate national standards for the meter type to be used.
QA/QC procedures to be applied:	Cross check measurement results with records for sold electricity. Any differences to be discussed in monitoring report. Calibration schedule for electricity meters to be developed and implemented. This will be done in accordance with the manufacturer's specifications and if required by an accredited organisation.
Any comment:	



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:	As per the “Tool to calculate the emission factor for an electricity system”. Calculations done by Promethium Carbon (Pty) Ltd
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Not applicable.
Description of measurement methods and procedures to be applied:	
QA/QC procedures to be applied:	
Any comment:	-

E.7.2. Description of the monitoring plan for a SSC-CPA:

All CPA s will be monitored separately.

1. Monitoring Period

The monitoring period will start from the date of commissioning of the CPA. An annual monitoring report will be produced for full calendar years (or part thereof for the first year depending on the commissioning date).

2. Data Monitored and Sources

The quantity of net electricity generation that is produced and fed into the grid by the CPA in year y shall be determined on the basis of the measurements taken by the electricity meters. As an accuracy check the meters will be cross-checked with records for sold electricity. If there is a material difference (defined as being more than 1%), this would be investigated, explained and discussed in the monitoring report.

Each CPA will have two bi-directional meters recording net electricity production. The first is the Main Meter which is the primary source for all data readings. The second is a check meter, which is a back-up meter which records data concurrently with the main meter. It is used if the Main meter is considered faulty or inaccurate. Data gathering is done remotely or if the remote system is down the data is downloaded manually at the facility.



3. Monitoring Plan Management

The CPA facility manager is responsible for the effective implementation of the monitoring management plan. All elements of the monitoring plan will be supported by formal procedures and regular training of delegated personnel, as appropriate.

The CME is responsible for managing and monitoring the data set that generates the grid emission factor.

4. Storage of Data

All data collected will be archived electronically in multiple locations (at least two) to ensure no data is lost. All data will be kept for at least two years after the end of the crediting period.

5. Meter Calibration

Meters will be calibrated in accordance with the manufacturer's requirements. The results of each calibration will be recorded in a formal report and the report archived.

E.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

March 2012

Promethium Carbon (Pty) Ltd



Annex 1

**CONTACT INFORMATION ON COORDINATING/MANAGING ENTITY and
PARTICIPANTS IN THE PROGRAMME of ACTIVITIES**

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION
