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

CONTENTS

Annexes

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):

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Guacamaya Small Scale Hydropower Programme of Activities

Version: 7
Date: 04/12/2012

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

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The Guacamaya Small Hydropower Programme of Activities aims at developing a series of small hydroelectric projects in Central America.

1. General operating and implementing framework of PoA

The PoA will support the development of new small-scale hydropower projects in Honduras, Nicaragua and Costa Rica that supply electricity to the respective national grid. Each small-scale CDM Programme Activity (referred to later on as **CPA**) under this PoA will comprise one or more such hydropower plants and will have a combined installed capacity of no more than 15 MW, the threshold for small-scale CDM projects. The PoA is a voluntary action being coordinated and managed by Anaconda Carbon S.A. (referred later on as **Anaconda Carbon S.A.** or the managing entity), which will work closely with the developers of the hydropower plants and other organizations active in the hydropower sector in the host countries to facilitate the development of new power plants and their inclusion in this PoA.

2. Policy/measure or stated goal of the PoA

The objective of the PoA is to develop a platform for overcoming institutional, financial and structural hurdles for the construction of a series of small hydro projects. All projects are new, grid-connected, hydropower plants, which will help to stabilize voltage and electricity supply in the surrounding area.

Economic sustainability:

- The PoA increases employment opportunities in the area where the CPA is located, which will increase local communities' income.
- By generating additional electricity, the PoA enhances the local investment and business environment, and thereby improves the local economy.
- The PoA diversifies the sources of electricity generation, important for meeting growing energy demands and the transition away from diesel and coal-supplied electricity generation.
- By only allowing small-hydro, the PoA helps market players with limited capital resources to realize their renewable energy projects which otherwise would not have been implemented due to the low profitability of such projects.
- The decentralized electricity production through the PoA will help to enhance grid stability and therefore decrease the frequent electricity interruptions.

Social sustainability:

- The PoA supports the development of hydropower resources in remote parts of the host country, where electricity supply from the national grid may be lacking in absence of the PoA, thereby providing access to power for populations that are socially disadvantaged.
- During civil works, the CPA is expected to generate considerable employment opportunities for the local population.

- Moreover, the CPAs will generate demand for various kinds of mechanical work, which would generate employment on regular and permanent basis.

Technology sustainability:

- The PoA supports technology and know-how transfer from other regions or even other countries through trainings and practical works.
- The PoA generates demand for local products when spare parts are needed.

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

The PoA is a voluntary action being coordinated and managed by Anaconda Carbon S.A., also referred to as "**The managing entity**". There are no mandatory laws or regulations in place in the host countries that require hydropower plants to seek CDM support. Likewise, no mandatory laws or regulations exist requiring the managing entity or any other party to develop a PoA for hydropower plants in the host countries.

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

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Anaconda Carbon S.A. is the Coordinating/Managing Entity (CME) for the CPAs under this Programme of Activities (PoA) and both Anaconda Carbon S.A. and B.V. Mabanaft are the project participants of this PoA. Anaconda Carbon S.A. and B.V. Mabanaft are responsible as joint focal points for the direct communication with UNFCCC.

Name of Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
The Netherlands	B.V. Mabanaft	No
Honduras (host)	Anaconda Carbon S.A.	No
Nicaragua (host)	Anaconda Carbon S.A.	No
Costa Rica (host)	Anaconda Carbon S.A.	No

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

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A.4.1. Location of the programme of activities:

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A.4.1.1. Host Party(ies):

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The PoA will have the following host countries:

Republic of Honduras
Republic of Costa Rica
Republic of Nicaragua

A.4.1.2. Physical/ Geographical boundary:

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The geographical boundary of the PoA is made up of the geo-political boundaries of the Republic of Honduras, the Republic of Nicaragua and the Republic of Costa Rica, which are the host countries of the Guacamaya PoA.

The geographic center of the countries included in the project boundary are as follows:

- Republic of Honduras: Latitude +15.0000/Long -86.5000
- Republic of Costa Rica: Latitude +10.0000/Long -84.0000
- Republic of Nicaragua: Latitude +13.0000/Long -85.0000

The national and sectoral policies are confirmed at CPA level, taking into account that each of the projects included in the programme will require national approvals (environmental, water use, etc.) to obtain the required Power Purchase Agreements (PPAs).

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

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A typical CPA under this PoA comprises one or more small-scale run of river hydropower plants or power plants with reservoir, but with a power density of at least 4 W/m^2, with an installed capacity not exceeding 15 MW. The hydropower plants are newly constructed by one or more third-party CPA owners and generate electricity from hydropower. As outlined in Section A.4.2.2, a CPA participating in this PoA must not comprise an addition, retrofit or replacement activity in an existing hydro power plant.

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

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All CPAs under the PoA will be small-scale run-off-river hydro power plants or power plants with reservoir, but with a power density of at least 4 W/m^2, with an installed capacity below or equal to 15 MW connecting to the national electricity grid of the relevant Host Country. Though detailed technical characteristics will differ the following general conditions will apply for all CPAs:

- The projects will be run-of-the-river or power plants with reservoir, but with a power density of at least 4 W/m^2..
- Water will be diverted to the power plant through the most environmentally-friendly manner while ensuring the ecological flow remains.
- The water is conducted through a penstock to the power house.
- In the power house one or more turbines and suitable generator(s) are located.
- The power house connects to the closest sub-station through a new or modified existing power line.
- A discharge channel returns the water to the natural riverbed.

It should be noted there is technology transfer for the CPAs, particularly for certain aspects of the civil works and the electromechanical equipment.

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

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The CME will be in charge of checking if a defined CPA complies with the conditions required in order to be incorporated into the programme. CPA Personnel will be trained if required and hold internal meetings and conference calls for experience exchanges. The CME will operate the programme following the

process defined in the operational manual, for example in areas such as training of the personnel.

For the inclusion of the CPAs more than one person belonging to the CME staff will be part of the process, so it can be assure that someone will always participate as technical reviewer.

A CPA to be included in the present PoA shall (as per the "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities" version 02.0):

1. Be a newly installed hydroelectric power plant in Honduras, Nicaragua or Costa Rica.
2. Be a newly built plant and must not involve retrofitting or modifying of an existing facility for renewable energy generation.
3. Have no energy generating equipment which is transferred from another activity and no existing equipment is transferred to another activity;
4. Have an installed capacity of ≤ 15MW. The technology shall be provided by an experienced provider.
5. Have a plant power density of no less than 4 W/m2 (in case hydro power plants with reservoir are included).
6. Connect to the National Electricity Grid of the host country;
7. Not be the result of the CPA implementer seriously considering grid connected electricity generation with a different technology as an alternative to the project. This is supported by a written statement by the project owner.
8. No ODA funds from Annex I countries will be used for the development of the projects. This is supported by a written statement by the project owner. Comply with the latest version of the "Guidelines on Assessment of Debundling for SSC Project Activities".Not seek registration in other emission reduction schemes, or as a stand-alone project under the CDM, or by being included in other Programmes of Activities to avoid any possibility of double counting. This item is included and assured through the signature of the ERPA with the carbon credit buyer. Demonstrate additionality in line with the requirements of the "Guidelines on the Demonstration of Additionality of Small-Scale Project Activities" or, if applicable, with the "Guidelines for Demonstrating Additionality of Microscale Project Activities". The CME shall use the latest version of these guidelines at the time of the inclusion of the new CPA.

   If the CPA applies the "Guidelines on the Demonstration of Additionality of Small-Scale Project Activities" to demonstrate additionality an explanation will be provided by the project participants to show that the project activity would not have occurred anyway due to at least one of the following barriers:

   I. Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions;

   II. 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;

   III. Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;

   IV. 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.

If the CPA applies "Guidelines for Demonstrating Additionality of Microscale Project Activities" to demonstrate additionality for project activities up to five megawatts that employ renewable energy technology, the project is considered additional if any one of the conditions below is satisfied:

I) 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 (SUZ) of the host country.

(i) SUZ is a region in the host country (zone, municipality or any other designated official administrative unit) identified by the Government in official notifications for development assistance including for planning, management, and investment satisfying any one of the following conditions using most recent available data:
- The proportion of population with income less than USD 2 per day (PPP) in the region is greater than 50%;
- The GNI per capita in the country is less than USD 3000 and the population of the region is among the poorest 20% in the poverty ranking of the host country as per the applicable national policies and procedures;

(ii) In cases where, based on the recommendation of the designated national authority of the host country, the SUZ in the host country has been approved by Executive Board (hereinafter referred to as the Board) of the clean development mechanism (CDM), the list of such SUZ shall be maintained on the UNFCCC website (e.g. at <http://cdm.unfccc.int/DNA/submissions/index.html>). In the case of these SUZ listed on the CDM website there is no need for the project proponents to provide proofs as indicated in paragraph 2 (a) above.

9. The start date of the CPA (purchase of the main equipment) shall not be before commencement of validation of the PoA.
10. Have performed the local stakeholder consultation process before start of inclusion in the programme and must comply with environmental approval requirements of the host country.
11. The CPA shall meet the small-scale or microscale threshold criteria and remain within those thresholds throughout the crediting period of the CPA.

The applicability of the methodology is further described in chapter E.2.

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):

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The proposed PoA is a voluntary coordinated action

The proposed PoA is a voluntary and coordinated action, which will promote the development of micro- and small hydroelectric power plants by facilitating access to CER-based funding. In doing so, the PoA will encourage renewable energy electricity generation in the host countries. There are no mandatory laws or regulations in the host countries stipulating implementation of CDM or PoAs to develop hydropower facilities.

The proposed voluntary measure would not have been implemented in the absence of the CDM as both

the financing and managing entities involved in the PoA are involved with it specifically because of its CDM potential.

Demonstration of additionality for micro and small-scale project activities (as per EB70 annex 5)

Additionality shall be demonstrated by establishing that in the absence of CDM, none of the implemented CPAs would occur.

PoAs that consist of one or more microscale projects as CPAs shall include eligibility criteria derived from all the relevant requirements of the "Guidelines for demonstrating additionality of microscale project activities".

PoAs that consist of one or more small-scale projects as CPAs shall include eligibility criteria derived from all the relevant requirements of the "Guidelines for demonstrating additionality of small-scale project activities"

The project participants choose to demonstrate additionality at the CPA level. This is appropriate since the various prohibitive barriers to small hydro plants in the different countries of Central America may apply differently to different CPAs under the PoA.

The project participants reserve the choice of applying either: (a) barrier analysis, in accordance with "Guidelines for demonstrating additionality of small-scale project activities" and the latest version of "Non-binding best practice examples to demonstrate additionality for SSC project activities" approved in Annex 34, EB 35; or (b) the EB regulation in the "Guidelines for demonstrating additionality of microscale project activities" Annex 26; EB 68 which creates a platform for CDM projects located in "**special underdeveloped zones**", which are taken into account in this PoA.

Status of utilization of hydro power plants in the countries included in the boundary is as follows:

Honduras:
As per the official information published by ENEE (http://204.249.98.211/Pagina_Web/Estadisticas2009/estadisticasPDF_2009/CUA1_2009%20.pdf) the installed capacity of private hydro power plants corresponds to 3.6 % (57.5MW) of the total installed capacity of the Honduran grid.

Costa Rica:
In Costa Rica the generation from privately owned hydro power plants has a very low participation in the total generation, as can be seen under http://www.grupoice.com/wps/wcm/connect/3bd3a78047cdebee904df9f079241ace/PEG2011rev1.pdf?MOD=AJPERES and http://www.dse.go.cr/.

Nicaragua:
For Nicaragua the installed capacity of hydro power plants represents 10% of the total installed capacity, as can be observed in the Nicaraguan EF calculation sheet.

Hence, implementation of this PoA and avoidance of anthropogenic GHG emissions are additional to those that would have occurred in absence of this PoA. Thus, the PoA as a whole, once implemented, is expected to lead to greater promotion of small-scale renewable energy generation (EB55 Annex 38, e) i))

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

A.4.4.1. Operational and management plan:

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The managing entity, Anaconda Carbon S.A. will maintain an electronic database with the following information for each CPA subscribing to the PoA, and in line with the Operational Manual developed as per requirements of EB 70 annex 5, following features will be checked:

(a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;
(b) Records of arrangements for training and capacity development for personnel;
(c) Procedures for technical review of inclusion of CPAs;
(d) A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or a CPA of other PoA
(e) Records and documentation control process for each CPA under the PoA;
(f) Measures for continuous improvements of the PoA management system;
(g) Any other relevant elements.

The database will include:

- Name of the CPA
- Implementing entity of the CPA
- Installed capacity of the CPA
- Location of the CPA (GPS coordinates of the power house)Description of the CPA

This information shall also be utilized by the validating DOE to determine that a CPA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity and may not apply the SSC methodology used for the PoA.

Like all project information this data will exist in a minimum of two geographically distinct, secure digital locations. The information can be made remotely available to the DOE for validation and/or verification.

The implementing entity of each CPA will enter into a verifiable contractual arrangement with Anaconda Carbon S.A. and B.V. Mabanaft, which will stipulate that the CPA entered into the Guacamaya PoA voluntarily and that the entity is aware of and has agreed to the rights and responsibilities this entails. Under the provisions of the aforementioned agreement each CPA stipulates that while the CPA remains a participant of the Guacamaya POA:

1. The implementing entity is aware that the CPA will be subscribed to the present PoA.
2. The implementing entity cedes its rights to claim and own emission reductions from the project to be included as CPA under the Clean Development Mechanism of the UNFCCC or any voluntary scheme to the managing entity of the present PoA.

A.4.4.2. Monitoring plan:

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Monitoring will be carried out per CPA. For each CPA all parameters included in section E.7.1. will be monitored by the implementing entity of the CPA according to the procedures established in E.7.2.,

mainly measuring the net electricity supplied to the grid and assuring the correct functioning of the measuring equipment by adhering to the calibration frequency as per CDM requirements and/or national standards, whichever is more stringent. This information will be submitted to the managing entity. The managing entity will store the data in an electronic database. Primary data will be stored by the implementing entities.

Verification will occur either separately for each CPA or in groups of CPAs. In any case data shall be verified per
CPA and the verification status of each CPA will be recorded by the managing entity in the database. The managing entity will be in charge of the preparation of the Monitoring Reports and communication with the DOE during verification activities. It will be ensured that no double-counting takes place.

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

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The PoA does not receive public funding.

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

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

>>13/04/2011 as the date when the PoA-DD was published the first time for global stakeholder consultation, in line with 159 b), of EB70, Annex 2 (Clean Development Mechanism Project Standard, version 2.1)

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

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28 years counting from the start of the PoA. The PoA will be renewed every 7 years counting from the date of its registration as per paragraph 163 (a), EB70 annex 2 (Clean development mechanism project standard, version 02.1).

SECTION C. Environmental Analysis

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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 ✔

The individual nature of each hydropower project (host country, geography, capacity, and whether a dam will be constructed or not among others) justifies a separate environmental assessment for each CPA. Environmental analysis will therefore be conducted for each hydropower plant included in a CPA according to the applicable national environmental policies.

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

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The environmental impacts analysis or environmental analysis as required by the host country will be

done at CPA level, in line with the provisions of paragraph 166 of EB70 Annex 2 "Clean development mechanism project standard", version 02.1.

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),:

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The degree of complexity and detail required for each individual CPA may vary depending on installed capacity and local regulations but in all cases includes some form of environmental impact assessment is legally required of all potential CPA activities for the Guacamaya POA.

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 ✔

Local and specific impacts of each hydro project (depending on the location, capacity, and whether a dam is constructed or not among others) justify a local stakeholder consultation at CPA level, also in line with the provisions of paragraph 167 and 168 of EB70 Annex 2 "Clean development mechanism project standard" version 02.1.

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

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Given that the stakeholder consultation requirements for each individual CPA may vary depending on installed capacity and local regulations comments will be invited and compiled at the CPA level.

D.3. Summary of the comments received:

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N/A

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

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N/A

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:

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The approved SSC baseline and monitoring methodology is Type I – Renewable Energy Projects, AMS-I.D., version 17 Grid connected renewable electricity generation.

Tool to calculate the emission factor for an electricity system, version 02.2.1.

The emission factor of each host country included in the Guacamaya PoA will be calculated and fixed ex-

ante at PoA level.

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

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The applicability criteria of AMS I.D. version 17 are the following:	Methodology AMS I.D. version 17 is applicable to an CPA under the proposed PoA because:
The category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass,that supply electricity to a national or regional grid. .	A CPA will consist of one (or more) renewable energy generation unit(s) (hydro) that supplies electricity and displaces electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit (thermal power plants in the local regional grid).
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; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	A CPA falls under option (a) of the mentioned options.
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • 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, 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 definition given in the Project Emission section, is greater than 4 W/m2.	Most CPAs for the Guacamaya POA are run-of-the-river projects and as such have no reservoir. If in any specific case, a hydro power plant with reservoir enters the programme, then the provisions of the power density will be taken into account in the applicability and calculation of possible project emissions.
If the unit added has both renewable and non-renewable components (e.g.. a wind/diesel unit), the eligibility limit of 15MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel the capacity of the entire unit shall not exceed the limit of 15MW.	Each CPA has only renewable components.
Combined heat and power (co-generation) systems are not eligible under this category.	Not applicable, the proposed PoA does not include combined heat and power systems.
In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility,	Not applicable, the CPAs entering the PoA will not include the addition of renewable energy generation units to existing plants.

the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	
Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category. To qualify as a small- scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW.	A CPA will not retrofit or modify an existing facility for renewable energy generation.
The applicability criteria as per **"**Tool to calculate the emission factor for an electricity system**, version 02.2.1."**	The tool is applicable for the PoA for the following reason:
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).	The project under the presented PoA will substitute electricity from national grids that results in savings of electricity that would have been provided by the grid.
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, the conditions specified in "Annex 2 - 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% of the total capacity of grid power plants in the electricity system; or the total power generation by off-grid power plants (in MWh) should be at least 10% of the total power generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid is primarily due to constraints in generation and not to other aspects such as transmission capacity.	All CPAs included in this PoA will be grid-connected. The chosen steps, which are in line with the applicability criteria, have been included and explained under section E.6.1.
Note that this tool is also referred to in the "Tool to calculate project emissions from electricity Consumption" for the purpose of calculating project and leakage emissions in case where a project activity consumes electricity from the grid or results in increase of consumption of electricity from the grid outside the project boundary.	N/A, as the possible consumption of electricity from the project activities will be directly discounted to calculate the net electricity supplied to the grid.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	Honduras, Costa Rica, Nicaragua are not Annex I countries.
Under this tool, the value applied to the CO2	No biofuels are included in the emission factor

emission factor of biofuels is zero.	calculations of Honduras, Costa Rica, Nicaragua.

E.3. Description of the sources and gases included in the SSC-CPA boundary

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As referred to in Appendix B for small-scale project activities, methodology AMS-I.D version 17, the project boundary for a small-scale hydropower project that provides electricity to a grid encompasses the physical, geographical site of the renewable generation source (see Table E.3.1. below).

The baseline includes the emissions related to the electricity produced by the facilities and power plants to be displaced by the CPA. This involves emissions from displaced fossil fuel use at power plants connected to the host country Power Grid (See Table E.3.1. below).

Table E.3.1 Emission sources and gases included in the project boundary for the purpose of calculating project emissions and baseline emissions.

	Source	Gas	Included?	Justification
Baseline	The Power Grid electricity production from the host country	CO_2	Included	According AMS.I.D, only CO_2 emissions from electricity generation should be accounted for.
		CH_4	Excluded	According to AMS.I.D.
		N_2O	Excluded	According to AMS.I.D.
Project Activity	CPA electricity production	CO_2	Excluded	According to AMS.I.D.
		CH_4	Excluded	According to AMS.I.D.
		N_2O	Excluded	According to AMS.I.D.

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

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Given that the CPAs would not have occurred in the absence of the incentives made available to them from the CDM the baseline scenario would be a continuation of the current grid characteristics. Under that baseline scenario the electricity generated by the CPAs would have been generated by the country's existing energy plants.

The baseline is defined by the methodology AMS I.D. par 10) as: "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."

The grid emission factor is calculated based on the "Tool to calculate the emission factor for an electricity system" (Version 02.1.1), to define the quantity of CO_2, which is emitted by the national grid per generated unit of electricity. The Operating Margin and the Build Margin are calculated to finally define the Combined Margin (EF_{CM}).

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:

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Based on size and location of a CPA under this SSC PoA, one of the following two approaches will be used:

Measures are a broad class of greenhouse gas emission reduction activities possessing common features, for example fuel and feedstock switch, switch of technology with or without change of energy source (including energy efficiency improvement), methane destruction, and methane formation avoidance (EB70, Annex 5, paragraph 6). The CPAs under the PoA falls under "switch of technology with or without change of energy source".

Approach 1: Demonstrating additionality for CPAs up to 5 MW and located in the areas indicated within the special underdeveloped zone of the host country identified by the appropriate national authority.

A CPA will be additional if it is able to demonstrate its additionality in accordance with Annex 26 to EB 68, "Guidelines for demonstrating additionality of microscale project activities", as may be updated from time to time.

Approach 2: Demonstrating additionality for other CPAs

The additionality of each CPA will be demonstrated in accordance with "Guidelines on the Demonstration of Additionality of Small-Scale Project Activities" in its latest version at the time of inclusion of the CPA in the programme, currently version 9.0, EB68, Annex 27 and "Non-binding best practice examples to demonstrate additionality for SSC project activities" approved in Annex 4, EB 35 and "Guidelines for Objective Demonstration and Assessment of Barriers" version 1, Annex 13, EB50. The managing entity will use one or more of the barriers (listed below) in demonstrating the additionality of a given CPA.

The relevant requirements for Approach 1 or 2 will be assessed as part of the applicability criteria of the CPA to enter into the PoA.

- **Investment barrier:** the project activity could not access appropriate capital without consideration of the CDM revenues;
- **Technological barrier:** the project activity could not access appropriate technology without leveraging CDM involvement;
- **Barrier due to prevailing practice:** prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- **Other barriers:** such as institutional barriers or limited information, managerial resources, organizational capacity, capacity to absorb new technologies or investment analysis would be performed in case the project IRR is below a defined benchmark.

When barrier analysis (Approach 2) is used, the additionality will be analyzed in reference to all relevant EB rulings and guidelines, included but not limited to:

- 3/CMP.1, Annex, paragraph 43
- 3/CMP.1, Annex, paragraph 37(d)
- EB 26, paragraph 90
- 7/CMP.1, paragraph 25,
- EB 26, at [37] and

- EB 28, paragraph 19.

The barrier(s) most likely to be faced by projects involved in the Guacamaya PoA without the assistance of CDM are as follows:

Investment barrier - Access-to-finance:
The CDM becomes key to overcoming access-to-finance barriers for CPAs through two main ways:

- it facilitates access to so-called "green funds" that invest in renewable energy projects with preferential terms and, most importantly,
- it provides an international standard, which demonstrates a commitment to quality and sustainability that reduces the perceived risk of the Project.

In either case, the CDM is increasingly becoming an important differentiator for CPAs facing Access-to-finance issues.

Technological Barrier:
Privately financed, built and operated small-scale hydro plants face barriers in obtaining technologies for the project activities. In case it applies, supporting documents will be shown to support the importance of the CDM to overcome the barrier.

Barrier due to prevailing practice:
Privately financed, built and operated small-scale hydro plants are not common practice in Honduras, Nicaragua or Costa Rica. These countries are all facing some form of energy crisis, which is most-commonly being addressed with "emergency" fossil-fuel power plants, thus discouraging small-scale renewable development. CPAs are also often forced to evaluate and employ uncommon solutions due to the remote areas where many are constructed.

Other barriers:
Other barriers may include one of a variety of issues a CPA may be forced to face and overcome, including but not limited to, institutional barriers. Issues regarding unclear processes, political reluctance to modernize the regulatory framework to incentivize renewable energy and prolonged, unreliable timeframes to complete permits and licenses are amongst the key institutional barriers which deter developers from undertaking small-scale energy projects; those developers who do undertake them are faced with financial institutions who are reluctant to fund their projects because the institutional barriers generate large, or at least hard-to-quantify risks. If necessary, an investment analysis will be presented to demonstrate that the project IRR is below a defined benchmark and therefore not financially attractive.

The barrier selection for the formulation of the CPA-DD will be carried out by the CME in consultation with each Project Owner. This decision will be based on the specific characteristics of the project, the evidence available and relevant best practices and guidelines.

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

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The criteria for assessing the additionality of any CPA shall include the following:

For Approach 1: Demonstrating additionality for CPAs up to 5 MW and located in the areas indicated within the special underdeveloped zone of the host country by the relevant authority. The CPA shall demonstrate compliance with the applicability conditions listed in the "Guidelines for demonstrating

additionality of microscale project activities" under Annex 26 of EB 68, article 2, point (a), which may be periodically updated:

> (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 (SUZ) of the host country.

(i) SUZ is a region in the host country (zone, municipality or any other designated official administrative unit) identified by the Government in official notifications for development assistance including for planning, management, and investment satisfying any one of the following conditions using most recent available data:
- The proportion of population with income less than USD 2 per day (PPP) in the region is greater than 50%;
- The GNI per capita in the country is less than USD 3000 and the population of the region is among the poorest 20% in the poverty ranking of the host country as per the applicable national policies and procedures;

(ii) In cases where, based on the recommendation of the designated national authority of the host country, the SUZ in the host country has been approved by Executive Board (hereinafter referred to as the Board) of the clean development mechanism (CDM), the list of such SUZ shall be maintained on the UNFCCC website (e.g. at <http://cdm.unfccc.int/DNA/submissions/index.html>). In the case of these SUZ listed on the CDM website there is no need for the project proponents to provide proofs as indicated in paragraph 2 (a) above.

For Approach 2: Criteria in relation to demonstrating additionality for other CPAs.

Access-to-finance barrier: the project activity could not access appropriate capital without consideration of the CDM revenues. This will be shown by:

- By providing a letter by a bank stating that income from carbon finance was an important factor for the ultimate decision of the bank to finance the CPA, or by demonstrating that the carbon credits were crucial to obtain equity financing.
- Investment barrier: by following the latest version of the "Guidelines on the assessment of investment analysis".

Technological Barrier: The project cannot access to necessary technology without the development of the CDM. This will be shown:

- By providing official documentation from the technology provider, demonstrating the importance of CDM to obtain the hydro technology.

Prevailing practice barriers: the project activity differs from the business as usual scenario. This will be shown:

- By providing evidence of issues faced by the project which would not have been faced by a similar project which would have produced higher emissions.

Other barriers: The CPA may prove "Other Barriers" by employing one or more of the following:

- By providing explanation to show that due to other barriers such as institutional barriers or limited information, managerial resources, organizational capacity, financial resource, or capacity to absorb new technologies, emissions would have been higher if the CPA were not implemented.

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:

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In accordance with the methodology AMS I.D. v17 the following approach is used to calculate the uniform baseline for all CPAs:

"... the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO2e/kWh) calculated in a transparent and conservative manner as:

12. (a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin
(BM) according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system."

In line with the requirements of AMD I.D v17, the 'Tool to calculate the emission factor for an electricity system' (version 02.1.1) has been used as described below.

The data used to calculate the emission factors has been referenced in Annex 3.

The following equation is used to calculate baseline emissions from electricity generation for a typical CPA:

$BE_{y,power} = EG_y X\ EF_{grid,CM,y}$

Where:
$BE_{y,power}$ = Baseline emissions from electricity generation in year y (tCO_2/year)
EG_y= Electricity delivered by the project in the year y (MWh/year)
$EF_{grid,CM,y}$ = Combined margin emissions factor (tCO_2/MWh)

This section explains the CO_2 emission factor $(EF_{grid,CM,y})$ for the displacement of electricity generated by power plants in an electricity system, by calculating the "operating margin" (OM) and "build margin" (BM) as well as the "combined margin" (CM).

$EF_{grid,CM,y}$ refers to Combined margin CO_2 emission factor for grid connected power generation in year y;
$EF_{grid,BM,y}$ refers to Build margin CO_2 emission factor for grid connected power generation in year y;
$EF_{grid,OM,y}$ refers to Operating margin CO_2 emission factor for grid connected power generation in year y.

The emission factors are determined according to the procedures prescribed in the "**Tool to calculate the**

emission factor for an electricity system" (version 02.2.1) as following six steps:

STEP 1. Identify the relevant electricity systems;
STEP 2. Choose whether to include off-grid power plants in the project electricity system (optional);
STEP 3. Select a method to determine the operating margin (OM);
STEP 4. Calculate the operating margin emission factor according to the selected method;
STEP 5. Calculate the build margin (BM) emission factor;
STEP 6. Calculate the combined margin (CM) emissions factor.

Step 1. Identify the relevant electricity systems

The CPAs will supply electricity to the national grid.

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

Off-Grid power plants are not included in the emission factor calculations

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

The "**Tool to calculate the emission factor for an electricity system**" (version 02.2.1.) – referred to further as the "Tool" – allows four methods to calculate the operating margin emission factor $EF_{grid,OM,y}$. Of these four, the 'Simple OM' can be used only if low-cost/must-run resources constitute less than 50% of total grid generation on average over the last 5 years. This condition is fulfilled in Honduras in Nicaragua.

For Costa Rica:
The method used to calculate the operating margin emission factor ($EF_{grid,OM,y}$) was the Simple Adjusted OM (b). The data vintage used was the ex ante option, where a 3 year generation weighted average based on the most recent data available, without the requirement to monitor and recalculate the emissions factor during the crediting period.

Power plants registered, as CDM projects should be included in the sample group to calculate the OM, if the criteria related to the power source allow for their inclusion.

The simple OM method applies for the countries Nicaragua and Honduras, as the low-cost-must-run generation is below 50% of the total generation for the 5 years before start of validation, for which data is available.

Considering the electricity generation mix of each host country, the method to calculate the OM will be defined.

Given that the *ex-ante* option was chosen no monitoring and recalculation of the emission factor is required during the crediting period.

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

This PoA adopts the (a) Simple OM for Honduras and Nicaragua. The simple OM emission factor is calculated as the generation weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost / must-run power plants / units. It may be calculated:

- Based on the net electricity generation and a CO_2 emission factor of each power unit (**Option A**), or
- Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system (**Option B**).

Option A is the preferred option to calculate the operating margin emission factor for all countries in the boundary. The conditions to use option B are not met.
Option A was selected to be used in this PoA document

The $EF_{OM\ simple,2006\text{-}8}$ (in tCO_2/MWh) have been calculated to be 0.6449 tCO2/MWh for Honduras

The $EF_{OM\ simple,2007\text{-}9}$ (in tCO_2/MWh) have been calculated to be 0.7467 tCO2/MWh for Nicaragua

The formula to be used for the calculation of the simple OM emission factor $EF_{OM\ simple,y}$ under Option A is:

$$EF_{grid,OMsimple,y} \quad \frac{\sum_m EG_{m,y} * EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,OMsimple,y}$	Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$	Net quantity of electricity generated and delivered to the grid by power unit "m" in year "y" (MWh)
$EF_{EL,m,y}$	CO_2 emission factor of power unit "m" in year "y" (tCO_2/MWh)
m	All power units serving the grid in year "y", except low-cost/must-run power units
y	The relevant year as per the data vintage chosen in Step 3

For Costa Rica the PoA adopts (b) the Simple Adjusted OM:
The power plants/units are separated in low-cost/must-run power sources (k) and other power sources (j). This is calculated based on data on fuel consumption and net electricity generation of each power plant unit (Option A).

$$EF_{grid,OM-adj,y} = (1-\lambda_y)\frac{\sum_{i,j} FC_{i,j,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{\sum_j EG_{j,y}} + \lambda_y \times \frac{\sum_{i,k} FC_{i,k,y} \times NCV_{i,y} \times EF_{CO2,k,y}}{\sum_k EG_{k,y}}$$

It is assumed that all the low-cost/must-run plants produce zero net emissions.

$$\frac{\sum_{i,k} FC_{i,k,y} \times NCV_{i,y} \times EF_{CO2,k,y}}{\sum_k EG_{k,y}} = 0$$

Where:
$EF_{grid,OM\text{-}adj,y}$ = Simple adjusted operating margin CO_2 emission factor in year y (tCO_2/MWh);
$FC_{i,y}$ = Amount of fossil fuel type *i* consumed by power plant in year *y*;
$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit);

$EF_{CO2,i,y}$ = CO_2 emission factor of fossil fuel type *i* in year y (tCO_2/GJ);
EG_y = Net electricity generated and delivered to the grid by power plant in year y (MWh);
k = low-cost/must-run power sources;
j = other power sources;
i = all fossil fuel types combusted in power plant in year y;
y = either the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex ante option) and λ_y is defined as follows:
λ_y (%)= Number of hours low-cost/must-run sources are on the margin in year y hours per year

The Lambda values for each year is referenced in Annex 3.

Net electricity imports must be considered low-cost / must-run plants.

The $EF_{grid,OM\text{-}adj,\ 2005,2006,2007}$ = 0.4537 tCO_2/MWh.(Costa Rica).

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

The tool allows for two options with respect to the vintage of data; ex ante or ex post. **The ex ante option has been selected for all countries in the boundary.** The ex ante result can be used for the full first crediting period and implies that the emission factor does not have to be monitored during this period.

To calculate the build margin (BM), the tool allows the use of either the five most recently built power units – not retrofits - or the most recent capacity additions that comprise 20% of the system generation. Preference should be given to the set of power plants that comprises the larger annual generation.

The calculation model, as developed, includes the calculation of the BM on the basis of the 20% option, but if the five most recently built power units exceed the 20%, that option will be used. CDM projects are to be excluded from the sample group. [1]

The BM calculation for the countries included in the boundary, demonstrates that in all countries the most recent capacity addition to reach 20% applies. The generation of the newest five power units does not reach 20% of the total generation in any case.

The calculation of the BM emission factor is to be based only on the most recent year for which data are available. The procedure and formulas are similar to the ones for the OM emission factor.

The formula to be used for the calculation of the BM is:

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

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/ MWh)

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

[1] The tool describes specific situations in which CDM projects should be included in the sample group for the BM, related to the dispatching authority to the electricity system. This information is to be provided by the host country.

$EF_{EL,m,y}$: = CO_2 emission factor of power unit m in year y (tCO_2/MWh)

m : = Power units included in the build margin

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

Honduras: $EF_{grid,BM,}$ = 0.5997 tCO_2/MWh
Costa Rica: $EF_{grid,BM,}$ = 0.0612 tCO_2/MWh
Nicaragua: $EF_{grid,BM,}$ = 0.5537 tCO_2/MWh

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

The combined margin EF_{CM} will be the simple average of the EF_{OM} and the EF_{BM}
The tool has indicated that the default weights for OM and BM for all projects other than wind and solar will be equal for the first crediting period. The tool does allow for alternative weights to be proposed for specific circumstances, but for the concerned project the suggested default values will be applied.
In formula:

$$EF_{grid,CM,y} \quad W_{OM} * EF_{grid,OM,y} \quad W_{BM} * EF_{grid,BM,y}$$

Where:

$EF_{grid,CM,y}$ = Combined Margin emission factor in a year y (tCO_2/ MWh)
Honduras= 0.6223 tCO_2/MWh
Nicaragua= 0.6502 tCO_2/MWh
Costa Rica= 0.2575 tCO_2/MWh

$EF_{grid,OM,y}$ = Operating Margin CO_2 emission factor in year y (tCO_2/MWh)
The $EF_{OM\ simple,2006\text{-}8}$ =0.6449 tCO_2/MWh (Honduras)
The $EF_{OM\ simple,2007\text{-}9}$ =0.7467 tCO_2/MWh (Nicaragua)
The $EF_{grid,OM\text{-}adj,\ 2005,2006,2007}$ = 0.4537 tCO_2/MWh (Costa Rica)

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y (tCO_2/MWh)
Honduras: $EF_{grid,BM,}$ = 0.5997 tCO_2/MWh
Nicaragua: $EF_{grid,BM,}$ = 0.5537 tCO_2/MWh
Costa Rica: $EF_{grid,BM,}$ = 0.0612 tCO_2/MWh

w_{OM} = Weighting of operating margin emission factor (%)
w_{BM} = Weighting of build margin emission factor (%)
And both values for the weights are the default ones as suggested;
W_{OM}= 0.5 and W_{BM}= 0.5

Project Emissions:
Project Emissions are not accounted for as per the applicable methodology, as no emissions from reservoirs are expected for the programme. In case a project with reservoir is included, the existence or not from project emissions will be demonstrated at CPA level. Following calculation method will be followed:

(a) If the power density of the single or multiple reservoirs (PD) is greater than 4 W/m^2 and less than or equal to 10 W/m^2

$$PE_{HP,y} = \frac{EF_{Res} * TEG_y}{1000}$$

Where:
$PE_{HP,y}$ = Project emissions from water reservoirs (tCO2e/yr)
EF_{Res} = Default emission factor for emissions from reservoirs of hydro power plants in year y (kgCO2e/MWh)
TEG_y = Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (MWh)

(b) If the power density of the project activity (PD) is greater than 10 W/m^2

$PE_{HP,y} = 0$
The power density of the project activity (PD) is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}}$$

Where:

PD = Power density of the project activity (W/m^2)
CapPJ = Installed capacity of the hydro power plant after the implementation of the project activity (W)
CapBL = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero
APJ = Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2)
ABL= Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2). For new reservoirs, this value is zero

In case fossil fuels are consumed, these will be discounted from the emission reductions.

Leakage:
No leakage is accounted, as no technology will be transferred from other activities.

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

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The Baseline Emissions are calculated as follows:

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

Where:

BE_y Baseline Emissions in year y (t CO_2)

$EG_{BL,y}$ Quantity of net electricity supplied to the grid as a result of the implementation of

the CDM project activity in year *y* (MWh)

$EF_{CO2,grid,y}$ CO_2 emission factor of the grid in year *y* (t CO_2/MWh) – Fixed, *ex-ante*

The emission reductions are calculated:

$ER_y \quad BE_y \quad PE_y \quad LE_y$

Where:

ER_y Emission reductions in year *y* (t CO_2/y)

BE_y Baseline Emissions in year *y* (t CO_2/y)

PE_y Project emissions in year *y* (t CO_2/y)

LE_y Leakage emissions in year *y* (t CO_2/y)

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

(Copy this table for each data and parameter)

Data / Parameter:	**$EF_{grid,CM,y}$**
Data unit:	tCO2/MWh
Description:	Emission factor of the grid where the hydropower is exporting the electricity to.
Source of data used:	Data officially approved by the Host country DNA. The grid emission factor was calculated using the most recent available information at the start of the validation (20/10/2011). For Honduras, data up to 2008. For Costa Rica, data up to 2009. Nicaragua, data up to 2010 was used to calculate the grid emission factor from the electricity system.
Value applied:	The EF of the national grid is used, so the same value is valid for all CPAs in the programme **$EF_{grid,CM,y}$** Honduras= 0.6223 tCO_2/MWh **$EF_{grid,CM,y}$** Nicaragua= 0.6502 tCO_2/MWh **$EF_{grid,CM,y}$** Costa Rica= 0.2575 tCO_2/MWh
Justification of the choice of data or description of measurement methods and procedures actually applied :	The values are calculated as per: Tool to calculate the emission factor for an electricity system, version 02.2.1.
Any comment:	The CME will calculate with the most recent value available at the time of validation.

Data / Parameter:	$EF_{grid,OM,y}$
Data unit:	tCO_2/MWh
Description:	Operating margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system".
Source of data used:	The grid emission factor was calculated using the most recent available information at the start of the validation (20/10/2011). For Honduras, data up to 2008. For Costa Rica, data up to 2009. Nicaragua, data up to 2010 was used to calculate the grid emission factor from the electricity system.
Value applied:	The $EF_{OM\ simple,2006-8}$ =0.6449 tCO_2/MWh (Honduras) The $EF_{OM\ simple,2007-9}$ =0.7467 tCO_2/MWh (Nicaragua The $EF_{grid,OM-adj,\ 2005,2006,2007}$ = 0.4537 tCO_2/MWh (Costa Rica)
Justification of the choice of data or description of measurement methods and procedures actually applied :	As per the requirements of the "Tool to calculate the emission factor for an electricity system (version 02.2.1.)"
Any comment:	All relevant data and parameters are taken from official sources.

Data / Parameter:	$EF_{grid,BM,y}$
Data unit:	tCO_2/MWh
Description:	Build margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system"
Source of data used:	The grid emission factor was calculated using the most recent available information at the start of the validation (20/10/2011).
Value applied:	Honduras: $EF_{grid,BM,}$ = 0.5997 tCO_2/MWh Costa Rica: $EF_{grid,BM,}$ = 0.0612 tCO_2/MWh Nicaragua: $EF_{grid,BM,}$ = 0.5537 tCO_2/MWh
Justification of the choice of data or description of measurement methods and procedures actually applied :	Emissions (tCO_2) (last year available) / Generation (MWh) (last year available) according to the "Tool to calculate the emission factor for an electricity system (version 02.2.1.)"
Any comment:	All relevant data and parameters are taken from official sources.

Data / Parameter:	$NCV_{i,y}$
Data unit:	TJ/Gg
Description:	Net calorific value (energy content) per mass unit of fuel *i* in year *y*

Source of data used:	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories
Value applied:	Fuel Oil: 39.8 TJ/Gg Diesel: 41.4 TJ/Gg Coal: 21.6
Justification of the choice of data or description of measurement methods and procedures actually applied :	No other data is publicly available. IPCC guidelines have been used in a conservative manner.
Any comment:	Notice that the original fuel consumption data provided by the facilities is expressed in gallons. These are converted to mass units (by means of a coefficient *Di*)

Data / Parameter:	$EF_{CO2,i,y}$
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor of fossil fuel *i* in year *y*.
Source of data used:	IPCC default values at the lower limit if the uncertainty at a 95% confidence interval as provided in Table 2.2 of Chapter 2.3.2.1. of Vol.2 (Energy) of the 2006 IPCC Guidelines on for National Greenhouse Gas Inventories
Value applied:	Fuel Oil: 75.5 tCO_2/TJ Diesel: 72.6 tCO_2/TJ Coal: 94.6 tCO_2/TJ
Justification of the choice of data or description of measurement methods and procedures actually applied :	No other data is publicly available. IPCC guidelines have been used in a conservative manner.
Any comment:	

Data / Parameter:	$FC_{i,m,y,}$
Data unit:	Mass or volume unit
Description:	Amount of fossil fuel type i consumed by power plant/unit m, k or n (or in the project electricity system in case of FCi,y) in year y
Source of data used:	Utility or government records or official publications
Value applied:	Latest information available at the start of validation and provided by official sources.

Justification of the choice of data or description of measurement methods and procedures actually applied :	OM: For each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation. BM: For the first crediting period, either once ex ante or annually ex post, following the guidance included in Step 5. For the second and third crediting period, only once ex ante at the start of the second crediting period.
Any comment:	

Data / Parameter:	$EG_{m,y}$
Data unit:	MWh
Description:	Net electricity generated and delivered to the grid by power plant/unit *m* in year *y*.
Source of data used:	Utility or government records or official publications
Value applied:	Latest information available at the start of validation and provided by official sources.
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data is obtained from official sources
Any comment:	

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

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

(Copy this table for each data and parameter)

Data / Parameter:	**EGy**
Data unit:	MWh/y
Description:	Quantity of net electricity supplied to the grid in year y.
Source of data to be used:	Measured by electricity meter(s) to be specified in each CPA
Value of data applied for the purpose of calculating expected emission reductions in section B.5	The net electricity production will be measured continuously and recorded monthly. The net electricity will be calculated by subtracting the electricity exported with the electricity imported by the CPA. A high level of accuracy of the measurements will be achieved due to the use of high-precision equipment calibrated and tested according to recognized standards, as stated in E.7.2.
Description of measurement methods and procedures to be applied:	In this section the project participants shall provide description of equipment used for measurement, if applicable, and its accuracy class.
QA/QC procedures to	Device calibration will be carried out periodically in accordance with

be applied:	manufacturer specifications where available. The calibration frequency will comply with applicable national regulations and requirements and will not exceed 3 years, as per CDM standards.
Any comment:	The meter readings will be cross-checked with available internal and/or external information such as electricity invoices.

Data / Parameter:	Cap_{PJ} (for CPAs with reservoir)
Data unit:	W
Description:	Installed capacity of the hydro power plant after the implementation of the project activity
Source of data to be used:	Project Site
Value of data applied for the purpose of calculating expected emission reductions in section B.5	N/A
Description of measurement methods and procedures to be applied:	Determine the installed capacity based on recognized standards or project documents.
QA/QC procedures to be applied:	Yearly monitoring.
Any comment:	

Data / Parameter:	A_{PJ} (for CPAs with reservoir)
Data unit:	m^2
Description:	Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full
Source of data to be used:	Project site.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	N/A
Description of measurement methods and procedures to be applied:	Measured from topographical surveys, maps, satellite pictures, etc
QA/QC procedures to be applied:	Yearly monitoring.
Any comment:	

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

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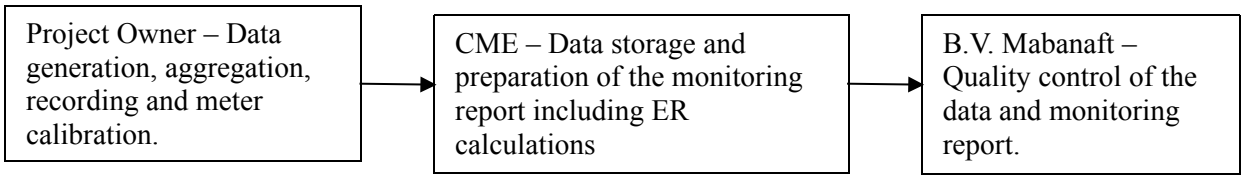
The monitoring methodology applied is the one recommended in AMS-I.D. "Renewable electricity generation for the grid" (Version 17) in "Appendix B of the simplified modalities and procedures for small-scale CDM project activities: Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity".

Monitoring shall consist of metering the electricity generated by the renewable technology. A line diagram will be included in each CPA-DD to describe the roles and responsibilities of personnel, emergency procedures and organizational structure. The CME has prepared an operational manual to be followed during verification activities.

1. Management Structure and Responsibilities

Overall responsibility for daily monitoring and reporting lies with the project owner. The manager of the proposed project is responsible for the review of the monthly reported results/data and for checking the calibration certificates. The data will be sent to the CME for storage and preparation of the monitoring report, the quality control and approval will be done by B.V. Mabanaft.

Organizational Chart:



Data Collection: The electricity supplied to the grid by the project activity will be measured by calibrated electricity meters. The parameter will be monitored at the project site and crosschecked with the invoices of electricity sold. Data will be monitored continuously, measured hourly and recorded monthly as required by the applicable methodology.

Data Recording: All data collected will be recorded monthly into an electronic spreadsheet.

Data Calibration: All measurements should be conducted with calibrated measurement equipment (electricity meters shall have at least a class of 0.5 or higher). The calibration and testing regime is defined by local authorities in accordance with a reference document, but will be performed at least every 3 years. The equipment used to monitor the electricity will be described by the project owner and evidence provided to the CME.

Data Report: Data recorded (control value) and the invoices (main value) will be consolidated on a monthly basis and will be subject to quality control. If there are discrepancies in the data, the source of the variation will be identified, whatever is the main measured value or the control value. The data will be compiled monthly in a report and will be verified by the Project Developer's Head Office.

Data Archives: The data recording, the data report and the invoices will be archived, together with this monitoring plan. All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period.

2. Data Quality Control

An internal procedure to ensure the correctness of data will be employed. Data and reports will be

checked internally to ensure correctness of data. In case of mistakes, corrective actions will be applied to avoid future similar mistakes.

3. Training and Monitoring Personnel
All people that participate in the monitoring process will be suitably qualified and trained in the operation and maintenance of the plant. They will also receive instructions for the use of the monitoring plan.

4. Emission factor calculation
The combined margin emission factor will be fixed for the first crediting period, using ex-ante data for OM and BM as described in section B.6.3. The Emission Factor will be updated for every crediting period of the PoA.

5. Verification and Monitoring Results
The monitoring report will be prepared by the managing entity. It shall contain the data report, the emission factor calculation and the results of the emissions reductions of the project for a certain period.

6. Leakage monitoring:
No energy generating equipment is transferred from another activity to this project and there is no existing equipment to be transferred to another activity. The project activity involves electricity generation from hydro sources. The employed hydro energy generator can only convert hydro energy into electrical energy and cannot use any other input fuel for electricity generation. Thus monitoring leakage from the project activity is not required.

Furthermore, all CPAs will be verified, therefore no sampling applies for the programme.

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)

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Date of completing the baseline study and monitoring methodology: 07/02/2011
The baseline and monitoring sections have been prepared by Anaconda Carbon S.A (www.anacondacarbon.com)
Company name: Anaconda Carbon S.A.

E-mail: info@anacondacarbon.com

The entity is a project participant of the PoA.

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

THE CPAS INCLUDED UNDER THE PROGRAMME DO NOT RECEIVE PUBLIC FUNDING.

Annex 3

BASELINE INFORMATION

Baseline calculations are provided in separate sheets.

Annex 4

MONITORING INFORMATION

Monitoring information is included under chapter B.7.2.

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