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

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NOTE:

(i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.

(ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)[1,2] that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

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

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

SECTION A. General description of small scale CDM programme activity (CPA)

Note: This template SSC-CPA-DD contains text sections in black and text sections in blue font. The black text sections are common to all SSC-CPAs and cannot be changed or edited by SSC-CPA implementers in preparing SSC-CPA-DDs. The blue text sections are to be edited/completed by SSC-CPA implementers in preparing SSC-CPA-DDs.

A.1. Title of the small-scale CPA:

Green Light for Africa– SSC-CPA *<insert number provided by CME> - <insert CPA implementer ><insert country(ies) name(s) where SSC-CPA will be implemented>*

Version 1.0	*<DD MMM YYYY>*
…	…

A.2. Description of the small-scale CPA:

This SSC-CPA is developed under the Green Light for Africa SSC-POA. The Green Light for Africa Programme of Activities involves the replacement of incandescent lamps (ICLs) with self-ballasted compact fluorescent lamps (CFLs) amongst residential users in Kenya, and Zimbabwe.

Goal of the SSC-CPA

The goal of this SSC-CPA is to replace (approximately) *<insert forecast number or number range of ICLs to be exchanged>*ICLswith high quality CFLs across *<specify geographic locations>* in a manner compliant with the Green Light for Africa SSC-PoA.

Confirmation the SSC-CPA is a voluntary action and the Implementer is aware and agreed that their activity is subscribed to the Green Light for Africa SSC-PoA.

The implementer for this SSC-CPA is undertaking this activity voluntarily.

The implementer of this SCC-CPA is aware of and has agreed that their activity is being subscribed to the Green Light for Africa SSC-PoA. The CPA implementer has signed a contractual agreement to that effect with the SSC- PoA CME.

Approved SSC baseline and monitoring methodology to be applied

As per the Green Light for Africa SSC-PoA, AMS II.J/Version 4, Sectoral Scope 03, EB54, will be applied in this SSC-CPA. The Emission Factor (*EF*) is calculated in accordance with provisions under AMS-I.D/ Version 17, Sectoral Scope 01, EB 61, and the *"Tool to calculate the emission factor of an electricity system"*, Version 02.2.1, EB 63, Report Annex 19.

Technology to be employed

This SSC-CPA will replace ICLs in residential applications with self–ballasted CFLs.

CFLs used in this SSC-CPA have the following attributes and/or specifications:

- Have an integrated ballast as a non-removable part;
- Are new equipment and not transferred from another activity;

- *<IF TECHNICAL SPECIFICATIONS OF CFLs TO BE USED IN THE SSC-CPA ARE KNOWN specify here wattage and lumen output and detail the relevant national or international standard applicable.>*

  *<IF TECHNICAL SPECIFICATIONS OF CFLs TO BE USED IN THE SSC-CPA ARE NOT KNOWN THEN INSERT THE FOLLOWING STATEMENT>*All CFLs used will meet light output requirements in accordance with the relevant national or international standards or values detailed in Table 1A AMS II.J/Version 4. Evidence of compliance with this requirement will be provided to the verifying DOE at the first verification.
- *<IF TECHNICAL SPECIFICATIONS OF CFLs TO BE USED IN THE SSC-CPA ARE KNOWN specify here the ex ante rated average life and detail the relevant national or international standard applicable>*

  *<IF TECHNICAL SPECIFICATIONS OF CFLS TO BE USED IN THE SSC-CPA ARE NOT KNOWN THEN INSERT THE FOLLOWING STATEMENT>*All CFLs used will have a known ex ante rated average life determined in accordance with IEC 60969 or an equivalent national standard. Evidence of compliance with this requirement will be provided to the verifying DOE at the first verification.
- Be marked, in addition to the standard lamp specifications, for clear unique identification for the project as follows. *<describe here the unique identification to be used>*

CFL distribution method

CFLs will be distributed by the following method(s):*<select method and/or methods from the options below to be used for distribution of CFLs and provide a brief description>*

i. Directly installing the CFLs in households. *<Insert detailed description here>*

ii. Selling CFLs at the equivalent cost of an ICL. *<Insert detailed description here>*

iii. Free exchange of working ICLs for CFLs at designated distribution points with a maximum number of 6 CFLs per household to be distributed. *<Insert detailed description here>*

Actions to encourage installation of CFls in high use locations

<Describe here actions that will be undertaken to encourage replacement CFls to be installed in locations in residences where utilisation hours are relatively high.>

System to avoid double counting

<Describe here in detail how the following issues regarding double counting will be managed;

- *Ensure CFL suppliers (manufacturer or wholesalers) and project households voluntarily agree to relinquish any rights over the CERs generated from the project CFLs to the SSC-CPA Implementer.*
- *Check to ensure the recipients of the CFLs (who are unambiguously identified) have not already participated in the Green Light for Africa Programme of Activities and received the maximum number of bulbs.>*

ICL destruction methods

<Describe here the destruction processes to be used for the exchanged ICLs and how third party verification procedures will be undertaken>.

Leakage associated with this SSC-CPA is thus avoided through the destruction/scrapping of the replaced ICLs as described above.

Record Keeping System

<Describe here the record keeping system that will be used and maintained that will document the following variables:

- *The physical geographic location of each measure (each CFL) installed.*
- *Number of pieces of equipment distributed.*
- *Nameplate/ rated power rating of CFLs supplied.*
- *Date of supply.*
- *The number and nameplate/ rated power (Watts) of the replaced devices.*
- *Unambiguous identification of the recipient of the equipment.*
- *Verification of destruction of ICLs.*

The description must also detail data control procedures to ensure integrity and accuracy of the data.>

Chronology of Events

A chronology of key events for this SSC-CPA under this PoA is provided in Table 1 below. *<fill out all dates & evidence for each event. Write "N/A" if does not apply to CPA. Write "Estimated" with date if event has not yet occurred >*

Table 1 Chronology of Events

Item	Event	Date	Evidence
1	Prior Consideration submitted to UNFCCC	*DD MMM YYYY*	*< provide document name & page no. / URL >*
2	Start of Pilot program	*DD MMM YYYY*	*< provide document name & page no. / URL >*
3	Contract signed with CME	*DD MMM YYYY*	*< provide document name & page no. / URL >*
4	CFL Specifications issued	*DD MMM YYYY*	*< provide document name & page no. / URL >*
5	CFL Tender issued	*DD MMM YYYY*	*< provide document name & page no. / URL >*
6	CFL Purchase order issued	*DD MMM YYYY*	*< provide document name & page no. / URL >*
7	Start of Distribution / retrofit	*DD MMM YYYY*	*< provide document name & page no. / URL >*

A.3. Entity/individual responsible for the small-scale CPA:

The entity/individual responsible for this SSC-CPA (hence forth referred to as the CPA implementer) is *<insert full company/individual name.>*. Contact details for the CPA implementer are detailed in Annex 1.

A.4. Technical description of the small-scale CPA:

A.4.1. Identification of the small-scale CPA:

A.4.1.1. Host Party:

<Insert host party name relevant to SSC-CPA >

A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):

The SSC-CPA is located*<Describe geographic location of SSC-CPA>*.

The SSC-CPA project boundary is the physical location of each CFL installed. Information identifying this boundary will be recorded in the record keeping system associated with this SSC-CPA and in the PoA CMEs project database.

A.4.2. Duration of the small-scale CPA:

A.4.2.1. Starting date of the small-scale CPA:

dd/mm/yyyy*<insert earliest date when either first procurement contract is signed or CFL installation/distribution starts>*

A.4.2.2. Expected operational lifetime of the small-scale CPA:

The expected operational lifetime of the SSC-CPA: <insert operational life in years here>.

*<IF RATED LIFE OF THE CFLs IS KNOWN the operational lifetime = distribution timeframe plus rated hours /(3.5*365). Eg.10,000 hour CFLs have a rated lifetime 7.83 years (1 year distribution plus 10,000/3.5*365 – rounding up to an operational life of 9 years.>*

<IF RATED LIFE OF THE CFLs IS NOT KNOWN at time of writing the CPA-DD then insert the following sentence "will be implementation timeframe plus the rated life of the distributed bulbs calculated using ex ante rated average life and the default 3.5 hours use per 24 hours."

A.4.3. Choice of the crediting period and related information:

Fixed Crediting period: 10 years

A.4.3.1. Starting date of the crediting period:

dd/mm/yyyy<insert the start date of the crediting period here. The start date is the date when CFL installation/distribution starts.

A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:

10 years.

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

Estimated emission reductions over the crediting period are detailed in Table 2. Detailed workings to determine these forecasts are included in Table 13 in Annex 5.

Table 2: Estimated emission reductions over the crediting period

Year	Estimated Emission Reduction (t/CO_2e)
1	<insert figure>
2	<insert figure>
3	<insert figure>
4	<insert figure>
5	<insert figure>
6	<insert figure>
7	<insert figure>
8	<insert figure>
9	<insert figure>
10	<insert figure>
Total	**<insert figure>**
Annual Average	**<insert figure>**

<CPA implementers are to use Table 13 in Annex 5 to calculate emission reductions for Table 2.>

A.4.5. Public funding of the CPA:

<Choose from ONE of the options below>.

There is no public funding from Annex 1 Parties for this project.

OR

Public funding is accessed for this project, however (as detailed in Annex 2), affirmation is provided from the CPA implementer that this funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligation of those parties. *<if this option is selected Annex 2 must detail affirmation as described in the paragraph.>*

A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component

As per Section A.4.4.1 (iii) of the Green Light for Africa SSC-PoA, the maximum wattage of ICL that will be replaced under this SSC-CPA is 200W. This ensures that that the maximum annual energy saving

potential from an independent subsystem is less than 1% of the small-scale threshold and consequently the SSC-CPA is exempt from performing a de-bundling check.

A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:

This SSC-CPA is neither registered as an individual CDM project activity or is part of another Registered PoA.

SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which small-scale CPA is added:

>>
Title: Green Light for Africa
Version: *<insert version number provided by CME>*
Date: *<insert date provided by CME>*

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

As justification of why this SSC-CPA is eligible to be included in the Green Light for Africa SSC-PoA, the SSC-CPA implementer confirms compliance with the eligibility criteria to enrol a CPA under the PoA (as stated under section A.4.2.2 of the PoA), as shown in Table 3 below:

Table 3: Compliance with Eligibility Criteria

	Eligibility criteria	**SSC CPA Conformance**
1.	The geographic boundary of the SSC CPA, including anytime induced boundary, is unambiguously identified and consistent with the geographic boundary set in the PoA.	Yes. The geographical boundary of *<please enter name of SSC CPA>* is the *<please enter host country>*
2.	The CPA operator must demonstrate that double counting does not occur with the particular SSC CPA.	
2.a	CFLs utilized by the SSC CPA will marked for unique identification for the project.	Yes. CFLs under this CPA will be permanently marked for clear unique identification.
2.b	The SSC CPA that has not been registered (either as a CDM project activity or as a CPA of another PoA).	Yes. Prior to including CPA, the CME has checked the CDM project database to confirm the project has not been registered as a single CDM project.*<please describe additional evidence e.g. Letter from CPA implementer, contract with CME, etc>*
3.	Each SSC CPA will involve the distribution of Compact Fluorescent lamps (CFLs) to replace Incandescent lamps (ICLs). CFLs distributed under each SSC CPA will be compliant with all specifications under EB 54 Version 04 of AMSII.J.	
3.a	The total lumen output of the CFL should be equal to or more than that of the ICL being replaced; lumen output of ICL & CFL shall be determined in accordance with relevant national or international standard/s. Values in Table 1 may be used as an alternative option to such standards. If a lamp wattage is not in Table 1, linearly interpreted value shall be used to determine the minimum	Yes. *<please provide a brief demonstration of light output for CFLs and ICLs>* The lumen output of ICL and CFL will be measured according to *<please insert*

	light output requirements	*method or relevant national or international standard>*
3.b	The average life or the rated average life of the CFLs shall be known ex ante. IEC 60969 (Self Ballasted Lamps For General Lighting Services - Performance Requirements) or an equivalent national standard shall be used to determine the average life. The project design document shall cite the standard used. If the average life value is not available ex ante, it shall be made available for verification before or at the same time that the results of the second ex post monitoring survey, as required per paragraph 18 (b) of the methodology, are available for verification. The laboratory conducting and certifying the tests to determine CFL average life shall comply with the requirements of a relevant national or international standard, e.g., ISO/IEC 17025.	Yes. The average rated average life of the CFLS to be installed by this CPA is shall be *<please insert the average life or the rated average life of the CFLs>* hours. IEC 60969 *"Self-ballasted lamps for general lighting services – performance requirements"* shall be used to determine the average life, *<please provide evidence>*.
4.	The start date of the SSC-CPA will not be prior to 25/10/2011 i.e. the date on which the SSC-PoA-DD was for the first time published for global stakeholder consultation. For CPAs applying for inclusion in the PoA, this may be the date when the first procurement contract is signed or the date when the CFL installation starts.CPA implementers must present official documentation describing above activities to serve as evidence.	Yes. The start date of this SSC-CPA is *<please insert start date, rationale and evidence>*
5.	Each proposed SSC-CPA follows EB 54 Version 04 of AMSII.J *"Demand-side activities for efficient lighting technologies"*	Yes. The CPA meets all the applicability criteria of version 04 of AMSII.J as stipulated in the section E.2 of the PoA DD. This is demonstrated in table 4 below.
6.	The SSC CPA implementer will undertake local stakeholder consultation and environmental analysis[3].	Yes. *<please provide brief description of the CME condition regarding local stakeholder consultation and environmental analysis>*
7.	Where Public Funding is accessed, SSC CPA implementer will provide affirmation in the SSC-CPA DD that this funding does not result in a diversion of official development assistance.	Yes. No public funding will be accessed by the CPA implementer.*<please describe source of funding>*.
8.	CFL distribution, exchange and destruction	
8.a	Each proposed SSC-CPAs will involve the distribution of	Yes.*<please provide brief*

[3]CPA specific local stakeholder consultation and environmental analysis will not be required for CPA that is; 1. Located in a country where the former has been conducted; 2. EIA license has been issued by the relevant institution to confirm that an environmental analysis has been conducted.

	CFLs targeting grid connected residential households.	*description of the CPA implementer regarding confirmation that the CPA will target only grid connected residential households>*
8.b	Further, the CPA will ensure that replaced ICLs are exchanged and destroyed	Yes. *<please provide brief description of the CPA implementer regarding confirmation that replaced ICLs are exchanged and destroyed>*
8.c	CPA implementers will undertake at least one of the following actions described in paragraph 7 of version 7 of AMSII.J	Yes. *<please provide brief description of the CPA implementer regarding confirmation that CFLs will be directly installed>*. This is one of the actions described in paragraph 7 of version 7 of AMSII.J
8.d	CPA implementers will define actions to be taken to encourage CFLs being installed in locations within the residences where the utilization hours are relatively high, for example common areas. For CFLs not directly installed these actions can include educating the CFL recipients of the best uses for CFLs.	Yes. *<please provide brief description of the CPA implementer regarding installation of CFLs in locations with high utilisation hours (may include education on best uses for CFLs)>*
9.	The CPA shall follow the guidelines in the latest version of the *Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities* and *Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities*	Yes. *<please provide brief description of the CPA implementer regarding confirmation that the sampling plan is consistent with the latest version of the"Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities"* and *"Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities"*
10.	The aggregate electricity savings by a single project activity may not exceed the equivalent of 60 GWh per year. Each CPA will demonstrate through Emission reduction calculations that single project activity doesn't exceed the equivalent 60 GWh per year.	Yes. The CPA will result in annual energy saving of *<please insert the GWh savings of the CPAs>* which doesn't exceed the equivalent 60 GWh per year.
11.	The SSC CPA is not a debundled component of a large-scale project activity in accordance with the latest	Yes. *<please provide brief description of the CPA*

	approved version of the *Guidelines on assessment of debundling for SSC project activities.*	*implementer on how the debundling check has been carried out in line with the latest approved version of the"Guidelines on assessment of debundling for SSC project activities">*
12.	The CME approves the participation of the CPA in the PoA.	Yes. *<please provide brief description of the CPA implementer regarding confirmation that the CME has signed an agreement with the CPA implementer to confirm participation of the CPA in the PoA>*

Table 4: Demonstration of applicability of EB 54, Version 04 of AMSII.J

No.	AMSII.J technology/measure	SSC CPA Conformance
1	SSC-CPA comprise activities that lead to efficient use of electricity through the adoption of self-ballasted compact fluorescent lamps (CFLs) to replace incandescent lamps (ICLs) in residential applications. The CFLs adopted to replace existing equipment will be new equipment and not transferred from another activity.	✓ CFLs will replace ICLs ✓ Residential households only ✓ CFLs are new ✓ CFLs not transferred from another activity
2	The total lumen output of the CFLs used will be equal to or more than that of the ICL being replaced; lumen output of ICL & CFL shall be determined in accordance with relevant national or international standard/s or values in Table 1 of the methodology.	✓ CFL lumens >= ICL lumens ✓ ICL & CFL lumens are determined *<enter method or national/international standard used>*.
3	The aggregate electricity savings by a single project activity will not exceed the equivalent of 60 GWh per year.	✓ Annual energy saving of *<please insert annual energy savings>*GWh.
4	The rated average life of the CFLs shall be known ex ante. IEC 60969 or an equivalent national standard shall be used to determine the average life. The project design document shall cite the standard used. If the average life value is not available ex ante, it shall be made available for verification before or at the same time that the results of the second ex post monitoring survey are available for verification. The laboratory conducting and certifying the tests to determine CFL average life shall comply with the requirements of a relevant national or	✓ Rated life of CFLs is stated, or else will be available when 2nd ex-post monitoring survey is available for verification ✓ Rated life is determined using IEC 60969 or equivalent ✓ Standard used is cited ✓ Lab undertaking average life

	international standard.	tests complies with relevant standards (please see section B.2 above)
5	CFLs utilised under the project activity will, in addition to the standard lamp specifications, be marked for clear unique identification for the project.	✓ CFLs are marked for clear unique project identification (please section A.2 above)
6	The SSC-CPA design document explains the proposed method of distribution of efficient lighting equipment and how ICL collection and destruction will be conducted and documented. The Project design document shall also explain how the proposed procedures eliminate double counting of Emission Reductions.	✓ CFL distribution method is explained ✓ ICL collection & destruction method is documented ✓ How proposed procedures eliminate double counting is explained (please see section A.2 above)
7	The project activity will ensure that replaced ICLs are exchanged and destroyed and will undertake at least one of the following actions: • Directly installing the CFLs; • Charging at least a minimal price[4] for efficient lighting equipment; • Restricting the number of lamps per household distributed through the project activity to six.	✓ ICLs are to be collected in exchange for CFLs ✓ ICLs are to be destroyed ✓ 1 of the following actions is to be undertaken for CFLs: o Direct installation o Charging minimal price o Restricting each household to 6 (please see section A.2 above)
8	Whether the CFLs are directly installed or not directly installed, the project design document will define actions to be taken to encourage CFLs being installed in locations within the residences where the utilisation hours are relatively high. For CFLs not directly installed these actions may include educating the CFL recipients of the best uses for CFLs.	✓ Actions are defined to encourage CFLs being installed in locations with high utilisation hours (may include education on best uses for CFLs) (please see section A.2 above)

[4]For example cost equivalent of an incandescent lamp being replaced.

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

The proposed CPA isautomatically additional according to paragraph 2 (c) of Annex 27 EB 68, *"Guidelines on the demonstration of additionality of small-scale project activities"*, Version 09.0 which stipulates the positive list of technologies and project types that do not need documentation of barrier analysis as follows:

"Project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises (SMEs) and where the size1 of each unit is no larger than 5% of the small-scale CDM thresholds"

Justification

Under the methodology to be applied (AMS II.J/Version 4) the small-scale threshold is 60 GWh per year. 5% of this threshold is 3 GWh.

The CFL wattage equivalent to a 200W ICL is 40 W[5]. Hence the maximum annual energy saving potential from an independent subsystem taking 3.5[6] hours usage per day is:

3.5*365*(200 – 40) = 0.0002 GWh

As demonstrated in the above calculation the 0.0002 GWh per CFL (independent subsystem) is much less than the requirement hence the SCC-CPA complies with EB 68, Annex 27, Version 09.0 guidelines.

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

The SSC-CPa is located*<Describe geographic location of SSC-CPA>*.

The SSC-CPA project boundary is the physical location of each CFL installed. Information identifying this boundary will be recorded in the record keeping system associated with this SSC-CPA and in the PoA CMEs project database.

The CFLs installed are energy efficient in comparison to the ICLs replaced and therefore their installation reduces the need for electricity.

The electricity supplied by the grid in *<insert country name(s) where SSC-CPA is to be implemented>*is, in part, fossil fuel based. Therefore, in-directly GHG emissions from the grid-connected power plants are reduced. Table 5 below describes gases to be included in the SSC-CPA boundary.

Table 5:Gases to be included in the SSC-CPA boundary

	Source	Gas	Included?	Justification
Baseline	Power plants	CO_2	Yes	Main emission source

[5]PoA 3223 : CFL lighting scheme – "Bachat Lamp Yojana", CDM-SSC-PoA-DD version 09 (2009), page 18 (6th paragraph)

[6]Default operating hours value from AMS II.J/Version 4

	servicing the grid	CH_4	No	Emission source small – excluded for simplification
		N_20	No	Emission source small – excluded for simplification
ProjectActivity	Power plants servicing the grid	CO_2	Yes	Main emission source
		CH_4	No	Emission source small – excluded for simplification
		N_20	No	Emission source small – excluded for simplification

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

The following parameters will be available at validation.

Data / Parameter:	NES_y
Data unit:	kWh
Description:	Net electricity saved in Year *y*
Source of data used:	Result of calculation using equation (1) in approved methodology (AMS II.J./Version 4)
Value applied:	*<Insert value of NES from Table 13 Annex 5>.*
Justification of the choice of data or description of measurement methods and procedures applied	Compliant with the approved methodology to be applied (AMS II.J./Version 4).
Any comment:	

Year	NES
1	*<Insert value of NES_1>*
2	*<Insert value of NES_2>*
3	*<Insert value of NES_3>*
4	*<Insert value of NES_4>*
5	*<Insert value of NES_5>*
6	*<Insert value of NES_6>*
7	*<Insert value of NES_7>*
8	*<Insert value of NES_8>*
9	*<Insert value of NES_9>*
10	*<Insert value of NES_{10}>*

Data / Parameter:	$Q_{PJ,i}$
Data unit:	Number
Description:	Number of CFLs distributed under the project activity
Source of data used:	*Ex ante* forecast from CPA implementer *Ex post* from SSC-CPA record keeping system
Value applied:	*<insert forecast value>*
Justification of the choice of data or description of measurement methods and procedures applied	SSC-CPA Implementer has planned the project and forecast the number of CFLs to be distributed. *Ex post* the actual number of CFLs distributed will be recorded in the SSC-CPA record keeping system (which is approved by the PoA CME).
Any comment:	This value shall be equal to or less than the documented number of all baseline ICLs destroyed.

Data / Parameter:	$LFR_{i,y}$
Data unit:	Number (fraction)
Description:	% of lamps that have failed during a year
Source of data used:	*Ex ante* calculated using equation 3, paragraph 14 of the approved methodology (AMS.II.J/Version 4) *Ex post* source of data will be the *ex post* monitoring survey
Value applied:	*<Insert value of LFR from table 13 Annex 5>.*

Year	LFR
<20XX>	*<Insert value of LFR_1>*
<20XX>	*<Insert value of LFR_2>*
<20XX>	*<Insert value of LFR_3>*
<20XX>	*<Insert value of LFR_4>*
<20XX>	*<Insert value of LFR_5>*
<20XX>	*<Insert value of LFR_6>*
<20XX>	*<Insert value of LFR_7>*
<20XX>	*<Insert value of LFR_8>*
<20XX>	*<Insert value of LFR_9>*
<20XX>	*<Insert value of LFR_{10}>*

Justification of the choice of data or description of measurement methods and procedures actually applied :	Choice of data is as specified in paragraph 14 of the approved applied methodology to be applied (AMS II.J/Version 4).
Any comment:	As per paragraph 18 of the approved methodology to be applied (AMS II.J/Version 4):

	If the *ex post* monitoring surveys indicate that the failure rate is equal to or less than the $LFR_{i,y}$ value for subsequent years $LFR_{i,y}$shall continue to be determined using Equation (3). If the *ex post* monitoring surveys indicate that the failure rate is greater than the value indicated using equation (3) a new value for L_i shall be determined using equation (3) and new values of $LFR_{i,y}$ shall be used beginning from the first calculation year after completion of the *ex post* survey.

Data / Parameter:	ES_i
Data unit:	kWh
Description:	Estimated annual electricity savings for equipment type *i*, for the relevant technology
Source of data used:	Result of calculation using equation (2) in approved methodology (AMS II.J./Version 4)
Value applied:	*<Insert value of ES from table 13 Annex 5 >.* Year / ES 1 / *<Insert value of ES_1>* 2 / *<Insert value of ES_2>* 3 / *<Insert value of ES_3>* 4 / *<Insert value of ES_4>* 5 / *<Insert value of ES_5>* 6 / *<Insert value of ES_6>* 7 / *<Insert value of ES_7>* 8 / *<Insert value of ES_8>* 9 / *<Insert value of ES_9>* 10 / *<Insert value of ES_{10}>*
Justification of the choice of data or description of measurement methods and procedures actually applied :	Compliant with the approved methodology to be applied (AMS II.J./Version 4).
Any comment:	

Data / Parameter:	$P_{i,BL}$
Data unit:	Watts
Description:	Rated power of the baseline ICLs
Source of data used:	*Ex ante* forecast from CPA implementer *Ex post* from SSC-CPA record keeping system
Value applied:	*<insert forecast value>*

Justification of the choice of data or description of measurement methods and procedures actually applied :	SSC-CPA Implementer has planned the project and forecast the wattage of ICLs to be replaced. *Ex post* the actual wattage of ICLs replaced will be recorded in the SSC- CPA record keeping system (which is approved by the PoA CME).
Any comment:	

Data / Parameter:	$P_{i,PJ}$
Data unit:	Watts
Description:	Rated power of the project CFLs
Source of data used:	*Ex ante* forecast from CPA implementer *Ex post* from SSC-CPA record keeping system
Value applied:	*<insert forecast value>*
Justification of the choice of data or description of measurement methods and procedures applied	SSC-CPA Implementer has planned the project and forecast the wattage of CFLs to be distributed. *Ex post* the actual wattage of CLFs distributed will be recorded in the SSC-CPA record keeping system (which is approved by the PoA CME).
Any comment:	

Data / Parameter:	O_i
Data unit:	Hours
Description:	Average daily operating hours of the lighting devices replaced
Source of data used:	Methodology default value
Value applied:	3.5 hours per 24 hours period
Justification of the choice of data or description of measurement methods and procedures actually applied :	Option 1 selected to use the default value as per paragraph 11 (ii) of the applied methodology AMS-II.J/Version 4.
Any comment:	

Data / Parameter:	TD_y
Data unit:	Number (fraction)
Description:	Average annual technical grid losses (transmission and distribution)for the grid serving the locations where the CFLs are installed

Source of data used:	*<site source of data - should be recent data published either by a national utility or an official governmental body for the host country. A default value of 10% shall be used if no recent data are available or the data cannot be regarded as accurate and reliable.>*
Value applied:	*<insert forecast value>*
Justification of the choice of data or description of measurement methods and procedures actually applied :	Stipulated by the applied methodology *<Reliability of the data used (e.g., appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) must be established and documented by the CPA Implementer>.*
Any comment:	

Data / Parameter:	*NTG*
Data unit:	Number (fraction)
Description:	Net-to-gross adjustment factor
Source of data used:	Methodology default value
Value applied:	0.95
Justification of the choice of data or description of measurement methods and procedures actually applied :	Stipulated by the applied methodology
Any comment:	

Data / Parameter:	*y*
Data unit:	Number
Description:	Counter for year
Source of data used:	To be determined from data from CME project database
Value applied:	Year number from CME project database
Justification of the choice of data or description of measurement methods and procedures actually applied :	The CME will maintain a project database. The system must maintain appropriate records documenting, amongst other variables: – Start date of SSC-CPA – Year counter
Any comment:	

Data / Parameter:	X_i
Data unit:	Hours
Description:	Number of operating hours per year of equipment
Source of data used:	Number days per year multiplied by default average daily operating hours (3.5 hours per 24 hours)
Value applied:	1,277.50
Justification of the choice of data or description of measurement methods and procedures actually applied :	Stipulated by the applied methodology
Any comment:	

Data / Parameter:	R_i
Data unit:	Number
Description:	% of lamps of type operating at the end of rated average life
Source of data used:	Methodology default value
Value applied:	Default value of 50
Justification of the choice of data or description of measurement methods and procedures actually applied :	Stipulated by the applied methodology
Any comment:	

Data / Parameter:	L_i
Data unit:	Hours
Description:	Rated Average Life for CFLs
Source of data used:	*<Insert here source of evidence of rated average life from CFL manufacturer/supplier demonstrating compliance with IEC 60969 and/or laboratory test results for CFL average life compliant with relevant national or international standard>*
Value applied:	*<Insert Rated Average Life as per provided by CFL manufacturer/supplier>.*
Justification of the choice of data or description of measurement methods	Stipulated by the applied methodology

and procedures actually applied :	
Any comment:	

Data / Parameter:	ER_y
Data unit:	tCO_2e
Description:	Emission reductions in year *y*
Source of data used:	Result of calculation using equation (4) in approved methodology (AMS II.J./Version 4)
Value applied:	*<Insert value of ER from table 13 Annex 5 >.*
Justification of the choice of data or description of measurement methods and procedures actually applied :	Compliant with the approved methodology to be applied (AMS II.J./Version 4).
Any comment:	

Year	ES
1	*<Insert value of ER_1>*
2	*<Insert value of ER_2>*
3	*<Insert value of ER_3>*
4	*<Insert value of ER_4>*
5	*<Insert value of ER_5>*
6	*<Insert value of ER_6>*
7	*<Insert value of ER_7>*
8	*<Insert value of ER_8>*
9	*<Insert value of ER_9>*
10	*<Insert value of ER_{10}>*

Data / Parameter:	$EF_{CO2,ELEC,y}$
Data unit:	tCO_2/MWh
Description:	Emission Factor for displacement of electricity in the grid serving the households that participate in the SSC-CPA calculated in accordance with the latest version of AMS-I.D
Source of data used:	*<Insert here source of data for calculation of EF - calculations shall be based on data from an official source (where available) and made publicly available>.*
Value applied:	*<Insert value calculated>.*
Justification of the choice of data or	Stipulated in accordance with the provisions in the latest version of AMS-I.D.

description of measurement methods and procedures	Refer Annex 2 'Calculation of Baseline Electricity Emissions from Grid"
Any comment:	Detailed workings are provided in Annex 2.

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

As per the Green Light for Africa PoA, and according to the methodology to be applied (AMS.II.J/Version 4), *ex ante* calculations are done as per the following steps, with Option 1 selected to use the default value for 'daily operating hours' as per paragraph 11 (ii) of methodology AMS-II.J/Version 4:

(i) Estimate the nameplate/rated power (Watts) of the baseline ICLs to be replaced;

(ii) Operating hours of project (and baseline) lamps is determined by using default value of 3.5 hours per 24 hrs period;

(iii) Calculate the annual gross electricity savings by comparing the nameplate/rated power rating of the CFL with that of the baseline ICL and multiplying by annual hours of operation and the estimated number of CFLs that are part of the project;

(iv) Calculate the annual net electricity saving (NES), for each year of the assumed crediting period, by correcting the gross electricity savings for leakage, a net-to-gross adjustment (NTG) factor, transmission & distribution losses, and Lamp Failure Rate.

The electricity saved by the project activity in year *y* is calculated as indicated in equations (1) and (2) below:

$$NES_y = \sum_{i=1}^{n} Q_{PJ,i} \times (1 - LFR_{i,y}) \times ES_i \times \frac{1}{(1 - TD_y)} \times NTG \qquad \textbf{(1)}$$

Where:

$$ES_i = (P_{i,BL} - P_{i,PJ}) \times O_i \times 365/1000 \qquad \textbf{(2)}$$

Where:

NES_y	Net electricity saved in year *y* (kWh)
$Q_{PJ,i}$	*<Insert number of CFLs to be distributed under the CPA>*
$LFR_{i,y}$	Lamp Failure Rate for equipment type *i*in year *y* (fraction) from equation (3)
ES_i	Estimated annual electricity savings from equation (2)
TD_y	*<Insert TD losses>*
NTG	0.95
$P_{i,\,BL}$	*<Insert forecast rated power of ICLs to be replaced>*(Watts)
$P_{i,\,PJ}$	*<Insert forecast rated power of CPA CFLs>*(Watts)
O_i	3.5 hours per 24 hour period

The Lamp Failure Rate ($LFR_{i,y}$) is the % of lamps that have failed during a year.The average life or the rated average life is used to calculate the Lamp Failure Rate as follows:

$$\text{If } y * X_i < L_i, LFR_{i,y} = y * X_i * (100 - R_i)/(100 \times L_i) \quad \textbf{(3)}$$

$$\text{If } y * X_i > or = L_i, LFR_{i,y} = 1$$

Where:

$LFR_{i,y}$	Lamp Failure Rate for equipment type *i* in year *y* (fraction)
L_i	*<Insert Rated Average Life CFLs>*(hours)
R_i	.50
X_i	1,227.50
y	Counter for year

Emissions reduction is net electricity savings (*NES*) times an Emission Factor (*EF*) calculated in accordance with provisions under AMS-I.D.

$$ER_y = NES_y \times EF_{CO2,ELEC,y} \quad \textbf{(4)}$$

Where:

$EF_{CO2,ELEC,y}$	*<Insert Emission Factor in year y>* (tCO_2/MWh)
ER_y	Emission Reductions in year *y* (tCO_2e)

Table 6 below details *ex ante* calculations of LFR, ES, NES and ER values based on equations 1-4 above.

Table 6: Estimated emission reductions over the crediting period(detailed workings in Annex 5)

YEAR	*LFR*	*ES (kW h)*	*NES (kW h)*	*ER (tCO_2/MW h)*
1	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
2	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
3	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
4	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
5	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
6	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
7	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
8	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
9	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
10	*<insert figure>*	*<insert figure>*	*<insert figure>*	*<insert figure>*
Total:			***<insert figure>***	***<insert figure>***

<CPA implementers are to use "Green Light for Africa SSC-CPA ex ante ER calculations.xls" to calculate value for Table 6.>

Ex post monitoring surveys

The first *ex post* monitoring survey will be carried out within the first year after installation of all efficient lighting and will provide a value for the number of CFLs operating under the project activity. The results of this survey will be used to determine the quantity of CFLs ($Q_{PJ,i}$) installed/operating under the project activity and determine the *ex post*Lamp Failure Rate ($LFR_{i,y}$) for use in *ex post* Emission Reduction calculations.

Subsequent *ex post* monitoring surveys will be carried out once every 3 years (at a minimum) to determine the *ex post*Lamp Failure Rate ($LFR_{i,y}$) for use in *ex post* Emission Reduction calculations.

Changes to Lamp Failure Rate

The Net Electricity Savings shall be modified for changes to the Lamp Failure Rate as may be indicated by *ex post* monitoring survey results. The modifications shall be made using the following methods:

- If Rated Average Life values were used initially for calculating LFR_y, per equation (3), as soon as Average Life values are available they shall be used for calculation of subsequent year $LFR_{i,y}$ values.
- If the ex post monitoring surveys indicate that the failure rate is equal to or less than the $LFR_{i,y}$ value indicated using equation (3) with *ex ante* or prior year, ex post monitoring values, for subsequent

years $LFR_{i,y}$ shall continue to be determined using Equation (3) and the established Average Life values for Li.

- However, for subsequent years, L_i values in $LFR_{i,y}$ equation (3) shall be adjusted if the *ex post* monitoring surveys indicate that the failure rate ($LFR_{i,y}$) is greater than the value indicated using equation (3) with Average Life or prior year, ex post monitoring values. In this situation, a new value for L_i shall be determined using equation (3) and new values of $LFR_{i,y}$ shall be used beginning from the first calculation year after completion of the *ex post* survey.

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

Table 7: Ex-ante Estimation of Emission Reductions

Year	Estimation of project activity emissions (tonnes of CO_2 e)	Estimation of baseline emissions (tonnes of CO_2 e)	Estimation of leakage (tonnes of CO_2 e)	Estimation of overall emission reductions (tonnes of CO_2 e)
Year 1	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 2	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 3	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 4	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 5	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 6	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 7	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 8	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 9	*N/A*	*N/A*	*N/A*	*<insert figure>*
Year 10	*N/A*	*N/A*	*N/A*	*<insert figure>*
Total (tonnes of CO_2 e)	***<insert figure>***	***<insert figure>***	***<insert figure>***	***<insert figure>***

<CPA implementers are to use "Green Light for Africa SSC-CPA ex ante ER calculations.xls" to insert values in the above table>.

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

B.6.1. Description of the monitoring plan:

As described in Green Light for Africa SSC-PoA, and in Paragraph 19 of the applied approved methodology (AMS II.J/Version 4), monitoring includes (i) recording of lamp distribution data, and (ii) *ex post* monitoring surveys, these including:

(i) During SSC-CPA implementation, the following data is to be recorded:

- Number of pieces of equipment distributed under the project activity, identified by the type of equipment and the date of supply;
- The number and power of the replaced devices;
- Data to unambiguously identify the recipient of the equipment distributed under the project activity;

(ii) The Emission Reductions are calculated *ex ante*and adjusted *ex post*following the monitoring surveys.

This section describes the monitoring plan for this SSC- CPA and also the management arrangements under the PoA for implementation of the monitoring plan.

In relation to point (i) – *<insert here a detailed description of SSC-CPA record keeping system, the data it will capture, how it will be operationalised and the quality assurance processes to ensure data quality and integrity. As per the Green Light for Africa PoA, each SSC-CPA implementer will use and maintain a record keeping system to capture and document the required data. This record keeping system must be approved by the PoA and maintain appropriate records documenting the following variables inter-alia:*

- *The physical geographic location of each measure (each CFL) installed.*
- *Number of pieces of equipment distributed.*
- *Nameplate/ rated power rating of CFLs supplied.*
- *Date of supply.*
- *The number and nameplate/ rated power (Watts) of the replaced devices.*
- *Unambiguous identification of the recipient of the equipment.*
- *Verification of destruction of ICLs.*

Information from the SSC-CPA record keeping system will be consolidated and stored in the CME project database.

In relation to point (ii) – it is the responsibility of the CME to undertake periodic *ex post* monitoring surveys. These surveys will be undertaken in accordance with the survey design detailed in Annex 4.

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

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

According to*<insert host country law/regulations>*, the project activity *<insert is/is not condition >*required to carry out an environmental impact assessment.

<insert reference to the relevant sections of host Party laws/regulations>

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

The PoA involves the distribution and installation of CFLs for residential lighting.

The World Bank[7] identifies three main environmental issues associated with CFLs: embodied energy; mercury content; and waste and recycling. Findings from this report are summarised below:

- Embodied energy is defined as the energy that was used in the work to make any product, bring it to market, and dispose of it. It takes approximately five times more energy to produce one CFL compared to one ICL. However, because CFL lamps last on average between 6 and 15 times longer than ILs, the amount of energy needed for the production of one CFL is comparable to the production of between 6 and 15 ICLs. Therefore the impacts of energy savings from the CFL clearly outweigh the environmental impact of its production and its end of life. Therefore using CFLs in place of ICLs reduces the overall energy use and the environmental impact of lighting. More than 97 percent of energy consumed during the lifecycle of a lamp is in the use phase and, because CFLs are up to 80 percent more efficient than an average inefficient incandescent lamp, the savings are very large.
- Mercury is an important component of CFLs. It should be noted, however, that mercury is present in CFLs in a very small amount. Studies conducted by the European Commission have pointed out that, even in the worst possible case that a CFL goes to a landfill, it will have saved during its lifetime more mercury emissions from electricity production in coal power plants than is contained in the CFL itself, so the overall mercury pollution balance is positive. No mercury is emitted from lamps when in use, which is why they are safe, both in regard to human health and the environment.
- Disposal of mercury can be an environmental issue. Collection of CFLs and recycling of the mercury can address this issue. The lamp recycling process produces the following material streams: glass, ferrous and nonferrous metals, and fluorescent powders that contain mercury. Although most of these materials can be reused, almost all of them have practically no material value to the recycler. To stimulate more efficient use of the recovered material, it is essential government and/or environmental authorities to stimulate the recycling industry. Improvements in lamp design are aimed at further reducing or altogether eliminating environmentally sensitive substances, minimizing the variety of materials used, and improving the ease of disassembly.

In response to these environmental impacts the CME will ensure that SSC-CPA Implementers:

- Inform project participants (e.g householders, distribution channel outlets) of the safe handling procedures for CFLs and ICLs in line with manufacturer and/or country guidelines;
- Where possible recycle (rather than destroy) ICLs replaced;

Communicate and implement country regulations or guidelines related to the disposal of CFLs.

[7]The World Bank, Large –Scale Residential Energy Efficiency Programs Based on CFLs, (2009), page 74 (1st paragraph)

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

At the time of PoA submission *<insert Host Country of SSC-CPA><choose one: did / did not>* require an environmental impact statement for a typical CPA.

SECTION D. Stakeholders' comments

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

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

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

A public participation meeting was organised on *<DD MMM YYYY>* at *<meeting location>*. The public participation meeting was advertised in the *<newspaper name>* on *<DD MMM YYYY>*.

In addition to the advert in the *<insert newspaper name>*, personal invitations were sent to the representatives of the the local stakeholders such as national government, departments, non-government organisations, carbon consultants, private businesses, electricity utility,

<XX> people attended the meeting. Attendees were asked to leave their contact details and the attendees provided their contact details to the CME. A list of attendees, copies of invitations and advertising materials have been provided to the DOE for validation.

D.3. Summary of the comments received:

In the advert and the personal invitations interested parties who were not able to attend were invited to submit comments and queries by e-mail or telephone.

A presentation was made describing the project followed by a question and answer session in which attendees were invited to make comments and ask questions. The questions and comments made and responses given are provided in Table 8 below.

Table 8: Stakeholder Consultation Questions and Answers

No	Questions/Comments	Answers
1.	*<insert questions asked by Stakeholder here>*	*<insert answers provided by SSC-CPA implementer here. Add rows as needed>*

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

< Choose from ONE of the options below:

There were no comments that could not be resolved on the spot and required follow-up action.

OR

Record any follow-up action taken on any of the comments received above.>

Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA

Organization:	*<insert organisation name>*
Street/P.O.Box:	*<insert address>*
Building:	*<insert address>*
City:	*<insert address>*
State/Region:	*<insert address>*
Postfix/ZIP:	*<insert address>*
Country:	*<insert address>*
Telephone:	*<insert contact details>*
FAX:	*<insert contact details>*
E-Mail:	*<insert contact details>*
URL:	*<insert contact details>*
Represented by:	*<insert contact details>*
Title:	*<insert title>*
Salutation:	*<insert salutation>*
Last Name:	*<insert name>*
Middle Name:	*<insert name>*
First Name:	*<insert name>*
Department:	*<insert department>*
Mobile:	*<insert contact details>*
Direct FAX:	*<insert contact details>*
Direct tel:	*<insert contact details>*
Personal E-Mail:	*<insert contact details>*

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

<Choose from ONE of the options below>.

There is no public funding from Annex 1 Parties for this project.

OR

Public funding is accessed for this project however, affirmation is provided from the CPA implementer in this Annex that this funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligation of those parties. *<if this option is selected detail of affirmation as described in the paragraph must be inserted here.>*

Annex 3

BASELINE INFORMATION

Calculation of Baseline Electricity Emissions from Grid

As per paragraph 12, AMS I.D./Version 17, the grid emission factor can be calculated in a transparent and conservative manner as follows:

(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'*.

OR

(b) The weighted average emissions (in t CO_2/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

Calculations shall be based on data from an official source (where available)[8] and made publicly available.

As per the *'Tool to calculate the Emission Factor for an electricity system'* (Version 02.1.1) the following six steps will be used to calculate the CM:

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;

---

[8]Plant Emission Factors used for the calculation of Emission Factors should be obtained in the following priority:

1. *Acquired directly* from the dispatch center or power producers, if available; or
2. *Calculated*, if data on fuel type, fuel Emission Factor, fuel input and power output can be obtained for each plant;
   If confidential data available from the relevant host Party authority are used, the calculation carried out by the project participants shall be verified by the DOE and the CDM-PDD may only show the resultant carbon Emission Factor and the corresponding list of plants;
3. *Calculated*, as above, but using estimates such as: default IPCC values from the 2006 IPCC Guidelines for National GHG Inventories for net calorific values and carbon Emission Factors for fuels instead of plant-specific values technology provider's name plate power plant efficiency or the anticipated energy efficiency documented in official sources (instead of calculating it from fuel consumption and power output). This is likely to be a conservative estimate, because under actual operating conditions plants usually have lower efficiencies and higher emissions than name plate performance would imply; conservative estimates of power plant efficiencies, based on expert judgments on the basis of the plant's technology, size and commissioning date; or
4. *Calculated*, for the simple OM and the average OM, using aggregated generation and fuel consumption data, in cases where more disaggregated data is not available.

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

<Complete steps 1-6 in accordance with 'Tool to calculate the Emission Factor for an electricity system' (Version 02.1.1). Justification and necessary evidence to support decisions must be documented>.

STEP 1. Identify the relevant electricity systems.

<Define the project electricity system as per the tool. Provide justification and necessary evidence to support system definition>.

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

<Decide on option I or Option II to calculate OM and BM. >.

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

<Select a method to determine the OM, providing justification and evidence for selection.>

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

<Calculate the OM.>

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

<Calculate BM emission factor.>

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

<Calculate CM emission factor.>

Annex 4

MONITORING INFORMATION

As per the Green Light for Africa SSC-PoA and as described in Paragraph 19 of the applied approved methodology (AMS II.J/Version 4) monitoring includes (i) recording of lamp distribution data, and (ii) *ex post* monitoring surveys, these including:

(i) During SSC-CPA implementation, the following data is to be recorded:

- Number of pieces of equipment distributed under the project activity, identified by the type of equipment and the date of supply;
- The number and power of the replaced devices;
- Data to unambiguously identify the recipient of the equipment distributed under the project activity;

(ii) The Emission Reductions are calculated ex ante and adjusted ex post following the monitoring surveys.

SSC-CPA implementation record keeping system

<insert here a detailed description of SSC-CPA record keeping system, the data it will capture, how it will be operationalised and the quality assurance processes to ensure data quality and integrity. As per the Green Light for Africa PoA, each SSC-CPA implementer will use and maintain a record keeping system to capture and document the required data. This record keeping system must be approved by the PoA and maintain appropriate records documenting the following variables inter-alia:

- *The physical geographic location of each measure (each CFL) installed.*
- *Number of pieces of equipment distributed.*
- *Nameplate/ rated power rating of CFLs supplied.*
- *Date of supply.*
- *The number and nameplate/ rated power (Watts) of the replaced devices.*
- *Unambiguous identification of the recipient of the equipment.*
- *Verification of destruction of ICLs.*

Information from the SSC-CPA record keeping system will be consolidated and stored in the CME project database.

Ex post monitoring survey

Annex 4 of the Green Light for Africa SSC-PoA details the survey principles that shall be followed for the *ex post* monitoring survey related to determining number of CFLs placed in service and operating under the project activity, these being:

- The sampling size is determined by minimum 90% confidence interval and the 10% maximum error margin; the size of the sample shall be no less than 100;

- Sampling must be statistically robust and relevant i.e., the survey has a random distribution and is representative of target population (size, location);
- The method to select respondents for interviews is random;
- The survey is conducted by site visits;
- Only persons over age 12 are interviewed;
- The project document must contain the design details of the survey.

The PoA CME is responsible for undertaking the ex post monitoring survey.

The sampling plan for this CPA described below has been developed using Version 03, EB 69 Annex 4, *"Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities"*.

(a) <u>Sampling Design:</u>

(i) Objectives and Reliability Requirements:

The sampling objective is to obtain a statistically robust estimate of key variables used in calculation of Emission Reductions, specifically, the Lamp Failure Rate ($LFR_{i,y}$).

The objective is to determine parameter LFRi,y for the monitoring period with a 90/10 confidence/precision. The sampling is conducted at the CPA-level. This means that each CPA under the PoA will be sampled individually in order to obtain the lamp failure rate. The data to be collected will consist of identifying and recording the number of CFLs, marked with clear unique identification as part of the Green Light for Africa Programme of Activities, that are installed and operating in households participating in the SSC-CPA. Only CFLs with original markings will be counted.

(ii) Target population

The target population is those households that have participated in the SSC-CPA(s).

(iii) Sampling Method

A "Simple Random Sample" will be taken from the sampling frame (households that have participated in the SSC-CPA). The random sample will be undertaken by the outsourced third party expert provider of market research services (refer implementation section) using an industry best practice approach. The approach to sampling will be transparently documented in their report.

(iv) Sample Size

As per the applied methodology, the desired precision is a minimum 90% confidence interval and the 10% maximum error margin.

To determine the sample size (n), the approximate equation on paragraph 54, EB 69 Annex 5, *"Guidelines for Sampling for CDM Project Activities and Programme of Activities"* is applied as below:

Where:

n = Sample size
p = Expected proportion
1.645 = Required 90% confidence
0.1 = 10% relative precision

As per paragraph 11 (a) of the '*Standard for sampling and surveys for CDM project activities and programme of activities*' Version 3, the project proponent may usethe larger of the two proportions in the sample size calculation. Therefore in year 1 where a Lamp Failure Rate of *<insert value>*has been used, a proportion of *<insert value>*may be applied to the sample size equation.

Therefore the sample size will be given by:

Please note that as per paragraph 20 of AMS-II.J Version 4, a minimum sample size of 100 is required to determine the number of CFLs placed in service and operating under the project activity. As the calculated sample size is less than 100,as per paragraph 20 of AMS-II.J Version 4, a minimum sample size of 100 will be surveyed for the first monitoring period. Therefore:

Surveys will be conducted through site visits to a random sample of households that have participated in the SSC-CPA(s). Only persons over age 12 will be interviewed as part of the survey. The first survey will be conducted within the first year after installation of project CFLs. The project activity has chosen option 1 of paragraph 17 (b) of the applied methodology i.e.subsequent surveys will be carried out a minimum of once every 3 years. As such the first survey will be conducted in Year 1 and the subsequent surveys will take place in Years 4, Years 7 and Year 10(depending on the length of the crediting period). Subsequent surveys may be undertaken more frequently than once every 3 years.

Table 9: Sample size for ex-post monitoring surveys:

Year	1	*<insertyear>*	*<insert year>*	*<insert year>*
Lamp Failure Rate, LFR (%)	*<insert value>*	*<insert value>*	*<insert value>*	*<insert value>*
Proportion of Operational Lamps (%)	*<insert value>*	*<insert value>*	*<insert value>*	*<insert value>*
Calculated sample size, n (households)	*<insert value>*	*<insert value>*	*<insert value>*	*<insert value>*

Required sample size, n (households)	*<insert value>*	*<insert value>*	*<insert value>*	*<insert value>*

(v) Sampling frame

A sampling frame is a list of all members of a population used as a basis for sampling. The sampling frame to be used here is all households that have participated in the SSC-CPA(s).

(b) <u>Data</u>

(i) Field measurements

The variables to be measured under each CPA are as follows:

- Lamp Failure Rate ($LFR_{i,y}$) for CFLs distributed under the CPA

The first survey will be conducted within the first year after installation ofproject CFLs. Subsequent surveys will be carried out a minimum of once every 3 years. As such the first survey will be conducted in Year 1 and the subsequent surveys will take place in Years 4, Years 7 and Year 10(depending on the length of the crediting period). Subsequent surveys may be undertaken more frequently than once every 3 years.

(ii) Quality Assurance/Quality Control

The data collection will be undertaken by an expert third party service provider (e.g. market research company). In contracting an expert third party service provider, the CME will conduct a“Request for Tender” process that will specify and assess providers experience, capacity and skills in designing and delivering similar surveys.

The CME will select and establish a contract with the preferred expert third party service provider. In broad terms they will be required to:

- Randomly select households from CME Project Database related to the SSC-CPA to be surveyed
- Visit identified households and assess:
  - Number of CFLs installed
  - Type of CFL installed (if more than one type of CFL was distributed under the SSC-CPA)
  - If installed CFLs carry the clear unique identification of the Green Light for Africa Programme of Activities
  - If installed CFLs carrying unique identification operating
- Provide robust and transparent collection and collation of data
- Provide written report(s)

(iii) Analysis

Lamp Failure Rate (LFRi,y)data will be collected, and will be used to calculate emission reductions for

relevant monitoring period (s). The first survey will be conducted within the first year after installation of project CFLs. Subsequent surveys will be carried out a minimum of once every 3 years. As such the first survey will be conducted in Year 1 and the subsequent surveys will take place in Years 4, Years 7 and Year 10

(iv) Implementation:

The first survey will be conducted within the first year after installation of project CFLs. Subsequent surveys will be carried out a minimum of once every 3 years. As such the first survey will be conducted in Year 1 and the subsequent surveys will take place in Years 4, Years 7 and Year 10(depending on the length of the crediting period). Subsequent surveys may be undertaken more frequently than once every 3 years. The CME will outsource the Lamp Failure Rate survey to an experienced and qualified third party firm.

Annex 5

ESTIMATION OF EMISSION REDUCTIONS

Table 10 Green Light for Africa ex ante Calculation of Emission Reductions

VARIABLE	YEAR										
	1	2	3	4	5	6	7	8	9	10	TOTAL
LFR	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
ES (kW h)	-	-	-	-	-	-	-	-	-	-	**0**
NES (kW h)	-	-	-	-	-	-	-	-	-	-	**0**
ER (tCO2/MW h)	-	-	-	-	-	-	-	-	-	-	**0**

INPUTS				
ENTER DATA IN HIGHLIGHTED BLUE CELLS ONLY				
Energy Savings	***Unit***	***Input***	***Instruction***	**Information source**
Average Baseline wattage (w)	Watts (W)	0	*Enter forecast average baseline wattage of ICLs*	*Enter source of information*
Project wattage (w)	Watts (W)	0	*Enter forecast average wattage of CFLs*	*Enter source of information*
Avg daily op hrs (hrs)	Hours	3.5	Default value of 3.5 hours used	AMS II.J/Version 4
Avg operating hours per year	Hours	1277.5	Default value of 3.5 hours* 365 days	AMS II.J/Version 4
Lamp Failure Rate				
Rated avg life (hrs)	Hours	0	*Enter rated average life of CFLs (in hours)*	*Enter source of information*
Net Energy Savings				
No. bulbs	Number	0	*Enter number of CFLs in SSC-CPA*	*Enter source of information*
T&D losses	Percentage	0.00%	*Enter Transmission & Distrbution losses of network which supplies CFLs in the SSC-CPA*	*Enter source of information*
NTG	Number	0.95	Default value of 0.95 used	AMS II.J/Version 4
Emission Reduction				
Emission factor	tCO2/MW h	0	*Enter Grid emmission factor*	*Enter source of information*

Aggregate energy savings test	**PASS**	Aggregate energy savings are below SSC threshold