




**Verification and certification report form for
CDM programme of activities
(version 02.0)**

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

BASIC INFORMATION

Title and UNFCCC reference number of the programme of activities (PoA)	Ethiopia Off-Grid Renewable Energy Program - 10285	
Version number(s) of the PoA-DD(s) to which this report applies	12.0	
Version number of the verification and certification report	3.1	
Completion date of the verification and certification report	20/02/2019	
Monitoring period number and duration of this monitoring period	MP: 1 Duration: 01/08/2016-31/10/2017 (inclusive of both days)	
Number and version number of the monitoring report to which this report applies	Number: 1 Version: 9.0	
Coordinating/managing entity (CME)	Development Bank of Ethiopia	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Federal Democratic Republic of Ethiopia	Yes
Applied methodologies and standardized baselines	AMS-III.AR: Substituting fossil fuel based lighting with LED/CFL lighting systems, version 5 No standardized baselines are applied	
Mandatory sectoral scopes linked to the applied methodologies	AMS-III.AR: 1	
Conditional sectoral scopes linked to the applied methodologies, if applicable	AMS-III.AR: N/A	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	27,600 tCO ₂ e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	38,913 tCO ₂ e	
Name and UNFCCC reference number of	TÜV NORD CERT GmbH	

the DOE	E-0022
Name, position and signature of the approver of the verification and certification report	 Stefan Winter Final Approver

SECTION A. Executive summary

The International Bank for Reconstruction and Development (IBRD) as trustee of the Carbon Initiative for Development (Ci-Dev) has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the programme of Activities:

“Ethiopia Off-Grid Renewable Energy Program”

with regard to the relevant requirements for CDM project activities.

This verification covers the monitoring period from 01/08/2016 – 31/10/2017 (including both days).

The programme of activities was registered with UNFCCC on 01/07/2016 and registration ID 10285 with a renewable crediting period. The first crediting period of the PoA is from 01/07/2016 to 30/06/2023 (including both dates). The PoA duration is from 23/12/2014 to 22/12/2042 (including both days).

The CPA 10285-0001 was included on 01/07/2016 with the first renewable crediting period from 01/08/2016 to 31/07/2023.

The programme of activities supports the implementation of a variety of off-grid renewable energy technologies, including (1) solar lamps/lanterns, (2) solar PV systems, (3) mini-hydroelectricity plants, and (4) solar pumps for irrigation.

The specific component project activity under consideration reduces GHG emissions by disseminating solar lamps charged by a photovoltaic system to households and institutions in the Federal Democratic Republic of Ethiopia.

Details of the project location are given in table A-1 below:

Table A-1: Project Location

No.	Project Location
Host Country	Federal Democratic Republic of Ethiopia
Region:	All Regions
Project location address:	Development Bank of Ethiopia P.O. BOX. 1900 Addis Ababa
Latitude:	9.0300° N
Longitude:	38.7400° E

Basic technical details of the project are summarized in table A-2.

Table - A-2: Technical data of the project activity

#	Lamp Models	Quality Standard	Number Distributed
1.	d.Light S2	Lighting Global	149,091
2.	d.Light S20	Lighting Global	31,519
3.	d.Light S300	Lighting Global	33,637
4.	d.Light D20	Lighting Global	8,520
5.	Greenlight Planet Sun King Eco	Lighting Global	105,665
6.	Greenlight Planet Sun King Mobile	Lighting Global	5,754
7.	Greenlight Planet Sun King Pro 2	Lighting Global	37,129
8.	Greenlight Planet Sun King Solo	Lighting Global	1,894
9.	Omnivoltaic Power Omnivoltaic Beacon MB2-090	Lighting Global	393
10.	Omnivoltaic Power Omnivoltaic Beacon MB2-200	Lighting Global	24,089
11.	Omnivoltaic Power Omnivoltaic Beacon MB2-290	Lighting Global	9,449
12.	Omnivoltaic Power Omnivoltaic Beacon MB2-380	Lighting Global	9,569
13.	Omnivoltaic Power OvPilot X	Lighting Global	906
	Total		417,615

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS.III-AR, version 5.0: "Substituting fossil fuel based lighting with LED/CFL lighting systems".
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of this periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **38,913 tCO₂e**

SECTION B. Verification team, technical reviewer and approver**B.1. Verification team members**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader/ Technical Expert	EI	Lubanga	David	-	x	x	x	x

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer/ Final Approver	IR	Winter	Stefan	TN CERT GmbH
2.	Observer Reviewer	EI	Thanekar	Swapnil	-

SECTION C. Application of materiality in conducting the verification**C.1. Consideration of materiality in planning the verification**

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Materiality Threshold

The verification is based on the materiality threshold identified in table C-1 below:

Table C-1: Applied Materiality Threshold

	Threshold	Related to
<input type="checkbox"/>	0.5 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal equal to or more than 500,000 tonnes of carbon dioxide equivalent per year ¹ ;
<input type="checkbox"/>	1 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;
<input type="checkbox"/>	2 %	Emission reductions or removals for registered large-scale CDM project activities achieving a total emission reduction or removal of 300,000 tonnes of carbon dioxide equivalent per year or less;
<input checked="" type="checkbox"/>	5 %	Emission reductions or removals for registered small-scale CDM project activities other than registered CDM project activities covered under next category below;

¹ A year refers to a period of 12 consecutive months.

	Threshold	Related to
<input type="checkbox"/>	10 %	Emission reductions or removals for the type of registered CDM project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).

Strategic Analysis

At the beginning of the verification the verification team leader has assessed the nature, scale and complexity of the verification tasks by carrying out a strategic analysis of all activities relevant to the project activity. The team leader has collected and reviewed the information relevant to assess that the designated verification team is sufficiently competent to carry out the verification and to ensure that it is able to conduct the necessary risk analysis.

Risk analysis and detailed audit testing planning

For the identification and assessment of potential reporting risks and to determine the necessary detailed audit testing procedures for residual risk areas the following table is used.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Transfer of data by CME staff from POs monthly sales reports to the sales database at the CME Offices	Low	Human error during transfer of data into the sales database	Thorough cross-check required on the transfer of data from monthly sales reports. This is cross-checked by the CDM manager Periodic monitoring at the POs' offices
2.	Transfer of data from Sales database to excel ER spreadsheet	Low	Human error during transfer of data for BE and ER calculations	Through acceptance sampling

On the basis of the risk analysis the verification has been planned. A detailed audit / verification plan has been prepared and submitted to the project participant(s) in due time before the site visit.

C.2. Consideration of materiality in conducting the verification

Based on the verification planning the verification has been carried out. The concept of materiality has been considered. A breakdown of the chosen approaches is included in the following table.

Parameter	Approach*	Errors* detected	Findings reference	Corrected	Remaining verification risk
$N_{i,j}$	ASP	<input checked="" type="checkbox"/>	CL 01 CAR 04	<input checked="" type="checkbox"/>	Not material
$OF_{y,i,j}$	COM	<input checked="" type="checkbox"/>	CL 01 CAR 04 CAR 05	<input checked="" type="checkbox"/>	Not material
Aggregate					Materiality threshold not exceeded

*) incl. omissions and misstatements

+) Verification Approaches:

CDC: Complete data check of data including all data aggregation steps

NDC: Non-complete data check – omissions not material

SPL: Sampling approach (all data available)

ASP: Acceptance Sampling

COM: Data check at higher data aggregation levels and sampling at original data levels

The verification was basically carried out as per the verification plan. However, based on the actual situation on-site and the errors, omissions and misstatements identified during the verification minor deviations from the original plan occurred.

For above mentioned risk mentioned in the table under section C.1, verification team has conducted a thorough cross check and verification as follows:

Analysis and transfer of data from the respective PO sales records to the CME and then to MR and excel ER spreadsheet:

Total sales record presented in ER calculation spreadsheet were assessed and verified at CME office/premise during onsite verification audit. Verification team has assessed the value of $N_{i,j}$ as the sole parameter under monitoring (Number of project lamps distributed to end users of type i with charging method j).

The Verification team based on review and comparison of data available at CME office (total sales record), monthly sales reports from Partner Organizations, and data presented for total sales for which certified emission reductions are claimed under the current monitoring period were assessed for consistency and plausibility.

PP has provided satisfactory responses in the findings raised and accordingly MR and ER sheet were revised. For more detail please refer to section E.2.2, and Appendix 4 of this report.

SECTION D. Means of verification

D.1. Desk/document review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PoA-DD including the monitoring plan^{/PoA-DD/},
- the last revisions of the CPA-DD^{/CPA-DD/}
- the last revision of the CPA validation report^{/VAL/},
- the monitoring report, including the claimed emission reductions for the PoA^{/MR/},
- the emission reduction calculation spreadsheet^{/ER/}.
- the PoA PRC Assessment report^{/PRC/}
- the CPA PRC Assessment report^{/PRC/}

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

D.2. On-site inspection*

Duration of on-site inspection: 02/04/2018 to 04/04/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	<ul style="list-style-type: none"> Checking of sales database Checking of PO monthly reports for the monitoring period Sampling of monthly reports and comparing with the data entered by CME staff into ER spreadsheet Cross-checking import serial numbers with sales serial numbers reported by POs Checking the CME organization structure and carrying out interviews with staff 	CME Offices (DBE)	02/04/2018	David Lubanga
2.	Visiting of project implementing partners (Vera, Dama and Universal)	Offices of VERA, Dama Trade, and Universal Electronics	03/04/2018	
3.	Discussions of onsite findings. Comparing data and discussing ER calculations	CME Offices (DBE)	04/04/2018	

The verification team did not venture out of the capital Addis Ababa due to the state of emergency that was still on at the time of onsite visit². Dealing with the general population would have proved difficult given the on-going crackdown and suspicions in the country. A further reason is that no end-user information is being captured for CPA-0001³. Therefore, it would have been impossible and unnecessary to visit households for interviews. Moreover, there is limited mobile telephone penetration in the country and this would prove difficult to make direct calls.

In light of the foregoing, and to carry out an effective onsite audit, the verification team employed the following approach (refer to section D.3 of this report for further information): -

1. Meeting and interviewing the carbon finance team at the CME (DBE) office to understand their roles and responsibilities;
2. Checking the overall management structure;
3. Checking and comparing sales and import data (proforma invoices, commercial invoices, monthly sales reports, sales database, confirmation letters and their contents);
4. Checking data collection, reporting, aggregating and storage procedures;
5. Interviewing relevant personnel in three out of the five approved implementing partner organizations (POs) that import and sell the project lamps through intermediaries (Dama, Vera, and Universal Electronics). The exercise involved visiting the main premises in the capital to inspect their operations, interviewing them on relationship with CME, qualifications, financing structure, sales and distribution modes, records collecting and keeping. The verifier also checked stock samples displayed, sample sales receipts, and cross-checking data sourced from the CME offices against the data held by the POs.

² <https://www.reuters.com/article/us-ethiopia-politics/ethiopia-declares-state-of-emergency-after-pms-resignation-idUSKCN1FZ1C4>
<https://www.hrw.org/news/2018/02/23/ethiopia-new-state-emergency-risks-renewed-abuses>
<http://www.bbc.com/news/world-africa-43091248>

³ Only micro-finance institutions capture user data for loan purposes. Some buyers also get micro-finance loans for bulk purchases and selling to intermediaries

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Belenky	Lucas	Consultant/Ci-Dev/ IM01/	02/04/2018 03/04/2018 04/04/2018	State of emergency ER calculations Monitoring methodology MR issues Product quality Product models	David Lubanga
2.	Agoma	Eyob	Consultant/World Bank/ IM01/	02/04/2018 03/04/2018 04/04/2018	State of emergency Roles and responsibilities Product quality Product models	
3.	Asnake	Elias	DBE/CDM Manager/ IM01/	02/04/2018 03/04/2018 04/04/2018	DBE CDM organizational structure Partnerships Data Capture Information flow Financing QA/QC procedures Product quality Product models	
4.	Mulata	Alemayehu	DBE/Electrical Engineer/ IM02/	02/04/2018 03/04/2018	Product quality Product models	
5.	Teferi	Anene	DBE/Electrical Engineer/ IM02/	02/04/2018 03/04/2018 04/04/2018	Data recording Monthly reports QA procedure	
6.	Kassaye	Behalu	Programme Coordinator/DBE/ IM02/	02/04/2018 03/04/2018	General organization	
8.	Selassie		Export Manager/DBE/ IM02/	02/04/2018 03/04/2018	Financing	David Lubanga
7.	Tafesse	Tihetena	Finance Manager/Vera International/ IM03/	02/04/2018 03/04/2018	Sales data recording Financing Distribution methods Link with DBE and intermediaries	David Lubanga
9.	Faisal		Manager/Universal Electronics/ IM03/	03/04/2018	Sales data recording Financing Distribution methods Link with DBE and intermediaries	
10.	Zuber	Huda	Technical	03/04/2018	Sales data	

			Manager/Solar Development PLc (Dama Trade) /IM03/		recording Financing Distribution methods Link with DBE and intermediaries	
11.	Eshetu	Lishan	Finance Manager & Logistics/Solar Development PLc (Dama Trade) /IM03/	03/04/2018	Sales data recording Financing Distribution methods Link with DBE and intermediaries	

D.4. Sampling approach

<input type="checkbox"/>	No sampling approach has been used by the VT to verify the monitored parameters				
<input checked="" type="checkbox"/>	A sampling approach has been applied by the VT for the following monitored parameter(s):				
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	N_{ij}	SiRS	AS	417,615	22

¹⁾ Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾ Sampling Types:

AS: Acceptance Sampling
 PS: Parameter Sampling
 COM: Full data check at higher data aggregation levels and sampling at original data levels

Verifier's Action

The CME has not applied sampling to determine the monitored parameters for the first monitoring period. In line with §25 of the standard for Sampling and surveys for CDM project activities and programmes of activities, version 07.0, the verifier conducted the verification of sampling results with the following steps:

Take a random sample of the project's sample records;

In order to determine the size of the sample for field/onsite check, the acceptable quality level (AQL), i.e. the proportion discrepancies between the PP sample records and the DOE sample records that are acceptable is determined as 1% and the proportion of discrepancies between the PP sample records and DOE sample records that are unacceptable (UQL) is determined as 20% according to the standard for "Sampling and Surveys for CDM Project Activities and Programme of Activities" version 07.0^{/SS/}. However, there was no own PP sample so AQL is not applicable in this instance.

The maximum errors associated with the determination indicated above should remain at levels indicated below as per the sampling standard "Sampling and Surveys for CDM Project Activities and Programme of Activities" ^{/SS/}:

- (1) A 5% chance that the DOE will wrongly reject the PPs records (producer's risk);
- (2) A 5% chance that the DOE will wrongly accept the PPs records (consumer's risk).

With the DOE AQL of 1%, the UQL of 20%, the producer's risk of 5% and the consumer's risk of 5%, the minimum sample size is determined as 22 and the acceptance number is 1^{/SS/}.

The coordinating/managing entity has not applied a sampling approach, therefore, there is no CME's own sample record. This is due to lack of end user data, A PRC has been approved to apply methodological choice Option 1 (§17), which assumes that all project lamps are in use and credited for only for years (PRC-10285-001).

However, despite application of Option 1 in the methodology, the verification team has applied acceptance sampling to ascertain data reporting, data flow, data quality and management. The sampling effort was conducted purely in the CME office, and then comparing samples in the vendors' (POs') offices. Data from each PO is entered into a sales database in monthly totals from the submitted monthly sales report by CME staff. Afterwards, sample records are checked by the CDM Manager for correctness. Due to the large number of lamps sold, we determined that we will select from the monthly sales data from each PO as transferred to the sales summary (batch totals). In other words, we are simply interrogating the integrity of data reporting, transfer and application.

The verifier decided to pick two random months per year in each PO's data which will constitute our main data points for the population (a monthly total now consists of one member of the population since end user data is not available). Two months from each PO will give us enough samples for our intended purpose, which is checking whether the data transfer and entry is correct. For each month, there were different lamp models sold and their totals. There were a total of 254 entries (summation of sales) for all months reported by all POs up to end of May 2017. However, some POs might have experienced low sales in some of the years. In such a case, we checked more samples in the following year from where enough data was available.

The 254 entries over the eligible monitoring period would now be the population from where a random acceptance sample would be picked. From the 254 data points over the monitoring period based on UQL of 20% and consumer and producer risk of 5%, this works out minimum sample of 22 and acceptance number of 1. However, we selected 24⁴ data points from the lot for acceptance sampling. These data points were then compared with the hard copy monthly sales reports stored at the CME office, which contain serial numbers and totals sold by a PO. Photos for each of the 24 records were taken^{/PTO/}. Only two records were found to be erroneously entered (both under reported). Since we had exceeded the minimum sample of 22, this result was acceptable.

Furthermore, no major discrepancies were noted between the records at the POs office and the copies obtained from the CME records in the office.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General	-	-	-
Compliance of the monitoring report with the monitoring report form	0	1	0
Remaining forward action requests from validation and/or previous verification	0	0	0
CPA(s) considered for verification and covered in this report	0	0	0
Programme of activities	-	-	-
Compliance of the programme implementation with the registered PoA-DD	0	0	0
Implementation and operation of the management system	0	0	0
Post-registration changes	-	-	-
<ul style="list-style-type: none"> Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline 	0	0	0

⁴ The total value for the PO 'Universal', for 2015 was part of the sample data point

• Corrections	0	0	0
• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools	0	0	0
• Changes to the programme design or project design	0	0	0
• Change of coordinating/managing entity	0	0	0
• Changes specific to afforestation and reforestation activities	0	0	0
Component project activities	-	-	-
Compliance of the CPA implementation with the included CPA design document	0	0	0
Post-registration changes	-	-	-
• Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline	0	0	0
• Corrections	0	0	0
• Changes to the start date of the crediting period of component project activities	0	0	0
• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools	0	0	0
• Changes to the programme design of project design	0	0	0
• Changes specific to afforestation and reforestation component project activities	0	0	0
Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline	1	0	0
Compliance of monitoring activities with the registered monitoring plan	-	-	-
• Data and parameters fixed ex ante or at renewal of crediting period	0	1	0
• Data and parameters monitored	0	1	0
• Implementation of sampling plan	0	0	0
Compliance with the calibration frequency requirements for measuring instruments	0	0	0
Assessment of data and calculation of emission reductions or net removals	-	-	-
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	0	2	0
• Calculation of project GHG emissions or actual net GHG removals by sinks	0	0	0
• Calculation of leakage GHG emissions	0	0	0
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	0	0	0
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	0	0	0
• Remarks on difference from estimated value in included CPA	0	0	0
Assessment of reported sustainable development co-benefits	0	0	0
Global stakeholder consultation	0	0	0
Others (Description of the PoA)	0	0	0
Total	1	5	0

SECTION E. Verification findings**E.1. General****E.1.1. Compliance of the monitoring report with the monitoring report form**

Means of verification	<p>A draft monitoring report was submitted to the verification team by the project participants. The DOE has made this report publicly available prior to the start of the verification activities. No comments were received.</p> <p>By means of the UNFCCC website it has been checked whether the latest applicable MR template CDM-PoA-MR-FORM has been used.</p> <p>Further it has been checked whether the latest instructions for filling out the MR template have been followed. Every section has been checked against the respective guidance.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /MRT/ • /unfccc/ 	
Findings	<input checked="" type="checkbox"/>	The latest reporting template CDM-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.
	<input type="checkbox"/>	The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.
	<input checked="" type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR 02
Conclusion	<input type="checkbox"/>	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	<p>The verification team has checked all sections of the MR and confirms by means of comparing the MR that has been used with the standardized MR template.</p> <p>After appropriate corrections were carried out by the project participant it can be confirmed the latest instructions for filling out the MR have been followed.</p>	

E.1.2. Remaining forward action requests from validation and/or previous verifications

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose, FARs might have been raised. Likewise, FARs might have been raised in the course of previous verifications.

In the course of this verification the latest version of the PoA-DD/^{PoA-DD/} and the latest CPA-DD and their respective validation reports have been checked in order to identify any remaining forward action requests. For the current monitoring period the following applies:

(i) Open issues from validation:

<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the latest version of the validation report.
<input type="checkbox"/>	All open issues from the validation have been appropriately addressed in the context of previous verifications.
<input type="checkbox"/>	All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the validation have not yet been appropriately addressed (for details please refer to appendix 4):
	N/A

(ii) Open issues from previous verifications:

<input checked="" type="checkbox"/>	N/A – as this is the first monitoring period for this CDM project activity.
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<input type="checkbox"/>	There were no open issues which have been addressed in the previous verification report
<input type="checkbox"/>	All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the previous verification have not yet been appropriately addressed (for details please refer to appendix 4):
	N/A

E.1.3. CPAs considered for verification and covered in this report

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
10285-0001	Y	01/07/2016	12.0	Y
10285-0002	N	30/11/2017	12.0	N
10285-0003	N	01/02/2018	12.0	N

E.2. Programme of activities

E.2.1. Compliance of the programme implementation with the registered programme design document

Means of verification	<p>By means of an in-depth review of the registered and approved revised PDDs in its latest form as downloaded from the UNFCCC project page site and the checks carried out during the on-site visit an assessment has been carried out whether the project has been implemented and operated in line with the latest approved version of the PoA-DD.</p> <p>The verification team has checked the information in the monitoring report and compared against the registered PoA-DD.</p> <p>During the onsite inspection, the verification team has checked the project location, implementation, technology applied, project equipment, and monitoring system and compared against the information in the registered PoA-DD.</p> <p>Interviews with operational personnel have been carried out, generation records, equipment / instrument specifications were checked in this context.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PoA-DD/ • /MR/ • /IM01/ • /IM02/ • /unfccc/ 	
Findings	<input checked="" type="checkbox"/>	The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.
	<input type="checkbox"/>	The following deviations from the registered project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): N/A
	<input type="checkbox"/>	In this context the following CARs, CLs have been raised:
		<i>In case of phased implementation:</i>
	<input checked="" type="checkbox"/>	N/A

	<input type="checkbox"/>	The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD.
	<input type="checkbox"/>	The description in section B.1 of the MR differs in content or the level of detail from the latest version of the PDD. However, the description in the MR is correct and reflects the situation during the site inspection.
	<input type="checkbox"/>	The project description in the PDD/MR is not deemed sufficient. The detailed implementation timeline is as follows: N/A
Conclusion	<input checked="" type="checkbox"/>	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		During the verification an onsite visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring procedures, the project has been implemented and operated as described in the latest PoA-DD and CPA-DD version.

E.2.2. Implementation and operation of the management system

Means of verification	<p>By means of an in-depth review of the registered and revised PoA-DD in its latest form, and the checks carried out during the on-site visit an assessment has been carried out whether the project has been implemented and operated in line with the latest approved version of the PoA-DD and whether all physical features of the project are in place.</p> <p>The verification team has checked the information in the monitoring report and compared against the registered PDD.</p> <p>During the onsite inspection, the verification team has checked the project location, implementation, technology applied, project equipment, monitoring system and compared against the information in the registered PoA-DD and CPA-DD.</p> <p>Interviews with relevant personnel have been carried out. Please refer to the below Assessments which are in line with the site-visit interviews.</p> <p>Implementation/Management</p> <p>The CME (DBE) is a public finance institution focused on development project funding from government, bilateral and multilateral organizations. It was founded in 1909.</p> <p>The CME relies on private enterprises to sell and distribute project lamps across the country. The importers could re-sell to end-users through retailers, unions or micro-finance institutions. The Verification Team has verified the provisions "Operational and Management Structure" as stated under Section D of the MR.</p> <p>Qualification of a Partner Organization (solar products importers): -</p> <p>The importers are procured via media announcements and must have the following qualifications</p> <ol style="list-style-type: none"> 1. Lighting Africa Approved Certificate 2. Adequate capacity (technical qualifications) 3. Must have operated for at least 2 years 4. Minimum equity contribution 5. Insurance 6. Business license from the Ministry of Trade 7. Business plan (for new entrants) <p>Procedure for loan qualification and disbursement for solar lamp importers</p> <p>A partner organization approved by the Ministry of Water, Irrigation and Electricity, and the CME will have to complete the following to be granted a loan.</p>
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	<ol style="list-style-type: none"> 1. Prepare a proforma invoice addressed to the appropriate manufacturer and get technical approval from the Ministry of Water, Irrigation and Electricity. 2. Sends the CME (DBE) the proforma invoice 3. CME opens a line of Credit (LC) 4. Signing of internal agreement with CME for the loan 5. The product arrives at customs and customs prepares a commercial invoice which includes all details. The commercial invoice must correspond with the proforma invoice, and this is cross-checked by the CME 6. The manufacturer sends the DBE the confirmation letter showing date, name, product type and all serial numbers in the shipment. The confirmation letter contains a statement that the manufacturer is not claiming carbon credits from the sale 7. The loan is disbursed directly to the manufacturer by the International Banking Directorate (a department of DBE) 8. The PO acquires the payment confirmation from the CME which is part of the documentation required to release the shipment from customs 9. Loan repayment starts after 6 months grace period, and is dependent on individual PO agreement with DBE. All loans must be for clean and energy efficient products <p>Responsibilities of the PO</p> <ol style="list-style-type: none"> 1. The PO will sell the project lamps and retain all sales receipts 2. The PO will prepare monthly reports on sales with a cover letter, which include product total sales, product models, serial numbers, dates, and retailer (distributors). The reports are prepared in hard copy as well as data is entered into excel worksheets and transmitted to the CME 3. Loan repayment for POs is maximum of 2 years. Grace period for micro-finance institutions is 1 year and repayment a maximum of 6 years. From the onsite findings, only the PO Vera uses micro-finance institutions as one of their three channels of distribution <p>QA/QC Procedures</p> <ol style="list-style-type: none"> 1. The provided data is cross-checked by carbon finance staff at the CME office and entered into a database 2. The entries are cross-checked randomly by the CDM manager 3. Data is backed-up in hard copies and with the bank servers 4. Loans are paid directly to manufacturers. Therefore, there is no incentive to manipulate sales data 5. Monitoring and evaluation team from CME makes periodic and random inspections of warehouses, and sales information at the vendor premises for cross-checking with information furnished to the CME <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PoA-DD/ • /CPA-DD/ • /MR/ • /IM01/ • /IM02/ • /unfccc/ 								
Findings	<table border="1"> <tr> <td data-bbox="456 1731 528 1809"><input checked="" type="checkbox"/></td> <td data-bbox="528 1731 1457 1809">The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.</td> </tr> <tr> <td data-bbox="456 1809 528 1944"><input type="checkbox"/></td> <td data-bbox="528 1809 1457 1944">The following deviations from the registered project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): N/A</td> </tr> <tr> <td data-bbox="456 1944 528 2011"><input type="checkbox"/></td> <td data-bbox="528 1944 1457 2011">In this context the following CARs, CLs have been raised:</td> </tr> <tr> <td colspan="2" data-bbox="456 2011 1457 2040"><i>In case of phased implementation:</i></td> </tr> </table>	<input checked="" type="checkbox"/>	The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.	<input type="checkbox"/>	The following deviations from the registered project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): N/A	<input type="checkbox"/>	In this context the following CARs, CLs have been raised:	<i>In case of phased implementation:</i>	
<input checked="" type="checkbox"/>	The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.								
<input type="checkbox"/>	The following deviations from the registered project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): N/A								
<input type="checkbox"/>	In this context the following CARs, CLs have been raised:								
<i>In case of phased implementation:</i>									

	<input checked="" type="checkbox"/>	N/A
	<input type="checkbox"/>	The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD.
	<input type="checkbox"/>	The description in section B.1 of the MR differs in content or the level of detail from the latest version of the PDD. However, the description in the MR is correct and reflects the situation during the site inspection.
	<input type="checkbox"/>	The project description in the PDD/MR is not deemed sufficient. The detailed implementation timeline is as follows: N/A
Conclusion	<input checked="" type="checkbox"/>	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	During the verification an onsite visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring procedures, the PoA has been implemented and operated as described in the latest CPA-DD version 11 and PoA-DD, version 12	

E.2.3. Post-registration changes

E.2.3.1. Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been submitted to the UNFCCC prior to the current monitoring period.		
<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)
		Appr. date	
		Ref. No.	
	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)
		Appr. date	
		Ref. No.	
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		
	1	Issue:	
	2	Issue:	
<input type="checkbox"/>	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.2.3.2. Corrections

It has been checked whether any corrections to CPA information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input type="checkbox"/>	During the verification of the current MP no need for corrections has been identified.	
<input checked="" type="checkbox"/>	The following corrections have been applied:	
	1.	Issue: The PoA-DD template has been updated from version 4.0 to latest version 08.1 in line with §227 of the CDM project standard for programmes of Activities. Editorial changes and referencing have been updated accordingly.
	2.	Issue: The time period covered by a generic Type 1 CPA specified as 2 years has been removed from the PoA-DD as it is not necessary.
	It is confirmed that the updated / corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.	
<input checked="" type="checkbox"/>	A related post registration change has been submitted prior to the issuance request. The approval has been received on 02/10/2018 (effective date of approval 01/10/2018) via approval number PRC-10285-001.	
<input type="checkbox"/>	A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.	

E.2.3.3. Inclusion of a monitoring plan

<input type="checkbox"/>	N/A - as this monitoring plan was part of the registered PDD
<input type="checkbox"/>	In line with PS § 182 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 182 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.
<input checked="" type="checkbox"/>	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on 02/10/2018 (effective date of approval 01/10/2018) via approval number PRC-10285-001.

E.2.3.4. Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr.date	
		Ref. No.	

<input checked="" type="checkbox"/>	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA	
<input type="checkbox"/>	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.	
	1	Issue:
	2	Issue:
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:	
	1	Issue:
	2	Issue:

E.2.3.5. Changes to the programme design or project design

It has been checked whether any changes to the CPA design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period	
<input checked="" type="checkbox"/>	The following CoPD have been approved or are under approval by the UNFCCC	
	1	<p>Title</p> <p>According to the registered PoA-DD, CPAs Type 1 will apply option 2 for project lamps, as per §18 of the applied methodology. That is, project lamps are assumed to operate for up to seven years after distribution to end-users, and thus emission reductions can be claimed for up to seven years per project lamp.</p> <p>The PoA-DD has been updated to allow CPAs Type 1 to choose either Option 1 or Option 2 as per §18 of the methodology.</p> <p>The relevant eligibility criteria have also been updated to accommodate Option 1 as a methodological option.</p> <p>Status <input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved</p> <p>Appr. date 01/10/2018</p> <p>Ref. No. PRC-10285-001</p>
	2	<p>Title</p> <p>Status <input type="checkbox"/> under approval; <input type="checkbox"/> approved</p> <p>Appr. date</p> <p>Ref. No.</p>
<input type="checkbox"/>	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA	
<input type="checkbox"/>	An approval of the following CoPD is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.	
	1	Issue:
	2	Issue:
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:	
	1	Issue:
	2	Issue:

E.2.3.6. Change of coordination/managing entity

<input checked="" type="checkbox"/>	N/A. The programme of activities is not changing the coordination/managing entity
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E.2.3.7. Changes specific to afforestation and reforestation activities

<input checked="" type="checkbox"/>	N/A. The programme of activities is not an afforestation and reforestation project activities
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E.3. Component project activities**E.3.1. Compliance of the CPA implementation with the included CPA design document**

Means of verification	<p>By means of an in-depth review of the registered and revised CPA-DD in its latest form, and the checks carried out during the on-site visit an assessment has been carried out whether the project has been implemented and operated in line with the latest approved version of the CPA-DD.</p> <p>The verification team has checked the information in the monitoring report and compared against the registered CPA-DD.</p> <p>During the onsite inspection, the verification team has checked the project location, implementation, technology applied, monitoring system, and compared against the information in the registered CPA-DD.</p> <p>Interviews with the relevant personnel have been carried out.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /CPA-DD/ • /MR/ • /AMS/ • /IM01/ • /IM02/ • /unfccc/ 	
Findings	<input checked="" type="checkbox"/>	The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.
	<input type="checkbox"/>	The following deviations from the registered project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): N/A
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs have been raised: CL 01
	<i>In case of phased implementation:</i>	
	<input checked="" type="checkbox"/>	N/A
	<input type="checkbox"/>	The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD.
	<input type="checkbox"/>	The description in section B.1 of the MR differs in content or the level of detail from the latest version of the PDD. However, the description in the MR is correct and reflects the situation during the site inspection.
Conclusion	<input type="checkbox"/>	The project description in the PDD/MR is not deemed sufficient. The detailed implementation timeline is as follows: N/A
	<input type="checkbox"/>	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
<p>During the verification an onsite visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, the project has been implemented and operated as described in the latest CPA-DD version 11.</p> <p>However, due to inability to capture reliable end-user data, a PRC/^{PRC}/ has been proposed to apply Option 1 of the methodology in the determination of lamp life. All sold lamps will be assumed to operate at 100% usage, will have a 2 year lifetime and</p>		

will not be credited beyond that.

E.3.2. Post-registration changes**E.3.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been submitted to the UNFCCC prior to the current monitoring period.		
<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)
		Appr. date	
		Ref. No.	
	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)
		Appr. date	
		Ref. No.	
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		
	1	Issue:	
	2	Issue:	
<input type="checkbox"/>	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.3.2.2. Corrections

It has been checked whether any corrections to CPA information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input type="checkbox"/>	During the verification of the current MP no need for corrections has been identified.		
<input checked="" type="checkbox"/>	The following corrections have been applied:		
	1.	Issue:	The CPA-DD template has also been updated from version 4.0 to latest version 8.1 in line with §227 of the CDM project standard for programmes of Activities. Editorial changes and referencing have been updated accordingly. It can be confirmed that the information transferred to the latest version of is materially the same as that in the registered PoA-DD.
	2.	Issue:	The project lamp models under the CPA have been updated to reflect the actual lamp models distributed under the CPA
	3.	Issue:	The CPA has been revised to use methodological choice of Option 1 (§17) instead of

		Option 2 under paragraph 18 of the applied methodology AMS-III.AR Version 5.0
4.	Issue:	The relevant eligibility criteria for the CPA have been revised to reflect use of Option 1 under paragraph 17 or Option 2 under 18 of the AMS-III.AR Version 5.0 and as per the approved changes in the generic CPA-DD Type 1. Specifically, eligibility criterion 2, double counting, and eligibility criterion 12, methodology applicability/technology, have been revised. Also, appendix 6 of the CPA-DD has been updated to capture the proposed changes.
<p>It is confirmed that the updated / corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.</p> <p><input checked="" type="checkbox"/> A related post registration change has been submitted prior to the issuance request. The approval has been received on 04/02/2019 via approval number PRC-10285-002.</p> <p><input type="checkbox"/> A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.</p>		

E.3.2.3. Changes to the start date of the crediting period of component project activities

<input type="checkbox"/>	N/A - as this is not the first verification within the crediting period
<input checked="" type="checkbox"/>	The PPs do not intend to change the start date of the crediting period.
<input type="checkbox"/>	As the change in the start date was below the related time period as indicated in PS § 277 and § 278 no prior approval was required but only a notification. This notification has been submitted by the PP without involvement of the DOE. The change and new start date has been checked from the related UNFCCC project webpage.
<input type="checkbox"/>	The PPs intend to change the start date of the crediting period. As the intended change in start date beyond the related time period as indicated in PS § 279 prior approval by the Board is required. For detailed assessment of the change please refer to related PRC validation report. As per assessment in this report the DOE confirms that the change to the start date of the crediting period are in line with the related requirements of the VVS and PS.
<input type="checkbox"/>	The approval to change the start date of the crediting period has been received on DD/MM/YYYY via approval number PRC-10285-00X

E.3.2.4. Inclusion of a monitoring plan

<input type="checkbox"/>	N/A - as this monitoring plan was part of the registered PDD
<input checked="" type="checkbox"/>	In line with PS § 116 the PP has forwarded a monitoring plan to the DOE for validation. Generally, no prior approval is required for the inclusion of the monitoring plan, however, the approval has been received on 04/02/2019 via approval number PRC-10285-002.
<input type="checkbox"/>	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval. The approval has been received on DD/MM/YYYY via approval number PRC-10285-00X.

E.3.2.5. Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline, or other applied standards or tools

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No PCfrMP, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period
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<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr. date	
		Ref. No.	
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following PCfrMP, PCfMM or PCfSB is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
<input type="checkbox"/>	The following PCfrMP, PCfMM or PCfSB for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.3.2.6. Changes to the programme design or project design

It has been checked whether any changes to the CPA design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
<input type="checkbox"/>	The following CoPD have been approved or are under approval by the UNFCCC		
	1	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr. date	
		Ref. No.	
	2	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved
		Appr. date	
		Ref. No.	
<input checked="" type="checkbox"/>	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
<input type="checkbox"/>	An approval of the following CoPD is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		
	1	Issue:	
	2	Issue:	
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.3.2.7. Changes specific to afforestation and reforestation component project activities

<input checked="" type="checkbox"/>	N/A. The project activity is not an afforestation and reforestation project activities
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E.3.3. Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline

E.3.4. Compliance of monitoring activities with the registered monitoring plan

Means of verification	By means of comparison of the MR with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and the verification team has checked whether the monitoring plan is in compliance with the monitoring requirements of the applied methodology. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /CPA-DD/ • /AMS/ • /unfccc/ 			
Findings	<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)		
	<input type="checkbox"/>	The breakdown of MP accordance of the referenced tools is as follows:		
		1	Title (of the tool)	
			Version	
			MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)
		2	Title (of the tool)	
			Version	
	MP compliance		<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A	
	<input type="checkbox"/>	The breakdown of MP accordance of the applicable SB is as follows:		
			Title (of the SB)	
		Version		
		MP compliance		
<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:			
	CL 01			
Conclusion	<input type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	<input checked="" type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.		
	The applied methodology has been complied with in all aspects. Due to absence of appropriate monitoring infrastructure that can capture end user data, the CPA will apply Option 1 as per paragraph 17 of the applied methodology. No standardised baseline is applied.			

E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	The verification team has checked the ex-ante parameters and data stated in Section E.1 of MR and compared with section B.4.2 of the registered CPA-DD whether all parameters fixed ex-ante for the crediting period have been applied correctly.
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	The following list of ex-ante fixed parameters have been applied:				
	Nbr.	Parameter abbreviation	Description	Value	Unit
	1.	DV	Lamp Emission Factor	0.092	tCO ₂ per project lamp
	2.	FUR	Fuel Use Rate	0.03	L/hour
	3.	O	Utilization Rate	3.5	Hours/day
	4.	EF	Fuel Emissions Factor	2.4	kgCO ₂ /liter
	5.	n	Number of fuel-based lamps replaced per project lamp	1	-
	6.	GF,y	Grid Factor in year y	1.0	-
	7.	LF	Leakage Factor	1.0	-
	8.	NTG	Net-to-gross adjustment factor	1.0	-
9.	DBy	Dynamic Baseline Factor in Year y	1.0	-	
The following sources of information have been used in this context:					
<ul style="list-style-type: none"> • /MR/ • /AMS/ • /CPA-DD/ • /ER/ • /PoA-DD/ • /PS/ • /VVS/ • /unfccc/ 					
Findings	<input checked="" type="checkbox"/>	The MR and the ER calculation have considered the parameters fixed ex-ante for the crediting period correctly, no deviations have been observed.			
	<input type="checkbox"/>	The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: N/A			
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: N/A			
Conclusion	<input checked="" type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.			
	<input type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.			
	The data and parameters listed in the section E.1 of MR was cross checked with the applied methodology, revised CPA-DD, ER and are consistent.				

E.3.4.2. Data and parameters monitored

Means of verification	During the verification all monitoring parameters listed in Section E.2 of MR were compared with section B.5.1 of the CPA-DD have been verified with regard to the:				
	<ul style="list-style-type: none"> (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) the accuracy, and applied QA/QC measures. 				
	Nbr.	Parameter	Description	Value	Unit

		abbreviation			
	1.	N_{ij}	Number of project lamps distributed to end users of type i with charging method j	417,615	-
	2.	$OF_{y,i,j}$	The percentage of project lamps distributed to end users that are operating and in service in year y , for each lamp type i and charging method j	100	%
Findings	CAR 04 & CAR 05				
Conclusion	<input type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.			
	<input checked="" type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.			
	<p>The revised MP under the CPA-DD is aligned with PoA-DD. During the verification all relevant monitoring parameters (as listed in chapter B.5.1 of the revised CPA-DD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.</p> <p>After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.</p>				

E.3.4.3. Implementation of sampling plan

Means of verification	<p>The verification team has been checked whether the PPs have applied a sampling approach to determine the monitored values.</p> <p>Further it has been checked whether the PPs have correctly applied the implemented sampling plan including</p> <ul style="list-style-type: none"> (i) description of the implemented sampling design (ii) collected data (iii) analysis of collected data (iv) demonstration on whether the required confidence/precision has been met. <p>The following sources of information have been used in this context.</p> <ul style="list-style-type: none"> • /MR/ • /ER/ • /PoA-DD/ 															
Findings	<input checked="" type="checkbox"/>	The PPs have not applied sampling approaches for the parameters monitored.														
	<input type="checkbox"/>	<p>The PPs have applied sampling approaches for the following parameters monitored.</p> <table border="1"> <tbody> <tr> <td>1</td> <td>Parameter:</td> <td></td> </tr> <tr> <td></td> <td>Name:</td> <td></td> </tr> <tr> <td></td> <td>Description on how the sampling efforts and survey comply with the validated sampling plan:</td> <td></td> </tr> <tr> <td>2</td> <td>Parameter:</td> <td></td> </tr> </tbody> </table>			1	Parameter:			Name:			Description on how the sampling efforts and survey comply with the validated sampling plan:		2	Parameter:	
1	Parameter:															
	Name:															
	Description on how the sampling efforts and survey comply with the validated sampling plan:															
2	Parameter:															

		Name:	
		Description on how the sampling efforts and survey comply with the validated sampling plan:	
Conclusion	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:	
	<input checked="" type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	
	<input type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
	No sampling was applied to determine the monitored parameters.		

E.3.4.4. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	<p>During the verification, it was established that no specific calibration requirements are necessary for the project solar lamps. The solar amps only need to meet the required quality standards and warranty requirements</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /ER/ • /PoA-DD/ • /CPA-DD/ • /IM01/ 		
Findings	<input type="checkbox"/>	Inconsistencies of the calibration information with calibration reports.	
	<input type="checkbox"/>	<p>Based on the assessment and information as per appendix 5 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration.</p> <p>From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions.</p> <p>For details please refer to appendix 6</p>	
	<input type="checkbox"/>	The metering diagram reflects the actual situation and is in line with the registered PDD and with the requirements of the applied methodology	
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:	
Conclusion	<input checked="" type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	
	<input type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
	Calibration for the solar lamps is not required		

E.3.5. Assessment of data and calculation of emission reductions or net removals

E.3.5.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	<p>During the verification the calculation of baseline GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> • <i>Transparency:</i> It has been checked whether the calculation of baseline
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emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.

- *Parameter consistency:* It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.
- *Correctness:* It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology.
- *Completeness:* It has been checked whether all calculations are complete and without omissions.

The equation applied for the determination of baseline GHG emissions is consistent with the revised generic CPA-DD and methodology:

The number of project lamps in operation during the monitoring period is 417,615.

As the monitoring period covers more than 365 days and lamps are sold continuously throughout the monitoring period, the number of lamps-days was determined from the number of project lamps distributed, N_{ij} . The number of lamp-days is then divided by 365 to represent lamp-years.

In line with Option 1 of the applied methodology, project lamps are deemed to be sold to end-users 120 days from the start of the following month, after distribution to intermediaries. From this time, lamps will not be credited beyond 2 years. The total lamp days for all operational lamps during the CPA were then added together and divided by 365 to determine the operational lamp-years during the monitoring period. Lamps whose operational life exceeded 2 years were removed from the CPA.

From calculations and accounting for the 120 days before start of use, total Lamp days have been calculated to be 154,383,526.

Therefore, lamp years = 154,383,526 lamp-days / 365 days/year = 422,969 lamp-years

Baseline emissions for the monitoring period were calculated as follows:

$$ER_y = \sum_{i,j} N_{ij} * BE_{y,i} * OF_{y,i,j}$$

Where:

ER_y Emission reductions in year y (tCO₂e)

N_{ij} Number of project lamps distributed to end users of type i with charging method j

$OF_{y,i,j}$ Percentage of project lamps distributed to end users that are operating and in service in year y , for each lamp type i and charging method j . Assumed to be equal to 100% for years 1 and 2

$$BE_y = DV * GF_y * DB_y$$

Where

BE_y Baseline emissions per project lamp in year y (t CO₂e)

GF Grid Factor in year y , Equal to 1.0 since charging option defined in paragraph 3(a) is used

DB_y Dynamic Baseline Factor (change in baseline fuel, fuel use rate, and/or utilization during crediting period) in year y , Option 1: default of 1.0 in the absence of relevant information

Project emissions are zero, following paragraph 23 of AMS-III.AR Version 5: "There are no project emissions ($PE_y = 0$) if the project lamp charging mechanism utilized is as defined in: (a) Paragraph 3(a)."

And:

$$DV = FUR * O * U * EF / 1000 * LF * n * NTG$$

	$= 0.03 \text{ L/hr} * 3.5 \text{ hr/day} * 365 \text{ day/yr} * 2.4 \text{ kgCO}_2/\text{L} / 1000 * 1 * 1 * 1$ $= 0.092 \text{ tCO}_2$ $BE_y = DV * GF_y * DB_y$ $= 0.092 \text{ tCO}_2 * 1.0 * 1.0$ $= 0.092 \text{ tCO}_2$ <p>The operational fraction $OF_{y,i,j}$ is assumed to be 100% for all lamps for the first three years of operation. All lamps under the activity are either vintage 1 or 2. The amount of time lamps are operational during the monitoring period is expressed in lamp-years is 422,969.</p> $ER_y = \sum_{i,j} N_{i,j} * BE_{y,i} * OF_{y,i,j}$ $= 422,969 * 0.092 \text{ tCO}_2 * 100\%$ $= 38,913 \text{ tCO}_2\text{e}$ <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /ER/ • /CPA-DD/ • /PoA-DD/ 						
Findings	<table border="1"> <tr> <td data-bbox="448 969 528 1332"><input type="checkbox"/></td><td data-bbox="528 969 1471 1332"> <p>The calculation of the baseline emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information has been identified.</p> </td></tr> <tr> <td data-bbox="448 1332 528 1406"><input type="checkbox"/></td><td data-bbox="528 1332 1471 1406"> <p>The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.</p> </td></tr> <tr> <td data-bbox="448 1406 528 1480"><input checked="" type="checkbox"/></td><td data-bbox="528 1406 1471 1480"> <p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR 05</p> </td></tr> </table>	<input type="checkbox"/>	<p>The calculation of the baseline emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information has been identified.</p>	<input type="checkbox"/>	<p>The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.</p>	<input checked="" type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR 05</p>
<input type="checkbox"/>	<p>The calculation of the baseline emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.</p> <p>No errors, miscalculations, omissions, misstatements or incomplete information has been identified.</p>						
<input type="checkbox"/>	<p>The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.</p>						
<input checked="" type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>CAR 05</p>						
Conclusion	<table border="1"> <tr> <td data-bbox="448 1480 528 1554"><input type="checkbox"/></td><td data-bbox="528 1480 1471 1554"> <p>No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</p> </td></tr> <tr> <td data-bbox="448 1554 528 1653"><input checked="" type="checkbox"/></td><td data-bbox="528 1554 1471 1653"> <p>The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</p> </td></tr> </table> <ol style="list-style-type: none"> 1. The information provided in the monitoring report has been cross-checked with other sources such sales receipts, sales database, confirmation letters by manufacturers. The values from the protocols were applied for the baseline emissions calculation in accordance to the revised PoA-DD and CPA-DD. 2. The calculations of baseline GHG emissions have been carried out in accordance with the equations and methods described in the registered monitoring plan and applied methodology and section B.4.1 of CPA-DD. 3. The default factors for all project lamps applied in the ex-ante emission reductions are still valid for the 1st crediting period. 4. Any assumptions used in emission or removal calculations have been justified. 5. It can be confirmed that the baseline calculation is overall correct. 	<input type="checkbox"/>	<p>No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</p>	<input checked="" type="checkbox"/>	<p>The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</p>		
<input type="checkbox"/>	<p>No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</p>						
<input checked="" type="checkbox"/>	<p>The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</p>						

E.3.5.3. Calculation of leakage GHG emissions

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	The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /CPA-DD/ • /AMS/ 	
Findings	<input checked="" type="checkbox"/>	No leakage emissions were to be considered (LE = 0).
	<input type="checkbox"/>	The calculation of the leakage emissions was found to be fully compliant with the above stated principles (see 8.1 and 8.2). The calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in leakage emissions calculations have been justified. Where applicable, appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
Conclusion	<input checked="" type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	No leakage has to be considered according to the registered PDD since the technology used in this project is neither transferred to nor transferred from another activity.	

E.3.5.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	<p>The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately</p> <ul style="list-style-type: none"> - Total baseline emissions, - Total project emissions, - Total leakage, - Total emission reductions. <p>It has been assessed whether the values are correct or need to be revised as a consequence of issues identified above</p> <p>Section F.4 of MR demonstrate the summary of GHG emission reductions for the monitoring period and calculated according to the applied methodology AMS-III.AR version 5.0 as follows:</p> $ER_y = BE_y - PE_y - L_y$ $= 38,913 \text{ tCO}_2\text{e} - 0 - 0$ $= 38,913 \text{ tCO}_2\text{e}$	
Findings	<input checked="" type="checkbox"/>	Section F.4 of the MR includes in a summary table of the emission reductions calculation.
	<input checked="" type="checkbox"/>	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.
	<input type="checkbox"/>	The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.
	<input checked="" type="checkbox"/>	During the verification, issues with impact on the ER calculation have been identified.

	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 05
Conclusion	<input type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The summary table in the MR has been filled correctly and the values are in line with the related emissions reduction spreadsheet after corrections.	

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
10285-0001	38,913	0	0	0	38,913	38,913
Total	38,913	0	0	0	38,913	38,913

E.3.5.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

Means of verification	<p>The verification team has checked if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.</p> <p>Section F.5 of the MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD.</p> <p>For this monitoring period from 01/08/2016 to 31/10/2017 (both days included) the project achieved 38,913 tCO₂e of GHG emission reductions.</p> <p>The estimated ex-ante GHG emission reductions in the registered CPA-DD for this monitoring period are 27,600 tCO₂e.</p> <p>Therefore, the actual emission reduction was 41%⁵ higher than the estimated ex-ante emission reductions in the registered PDD</p> <p>It has further checked which of the below listed cases is applicable for the calculated ER of the current monitoring period.</p>	
Findings	<input type="checkbox"/>	Case 1: The ex-ante estimated value was found to be proportionally higher than the ex-post determined value. No further action is deemed required.
	<input type="checkbox"/>	Case 2: The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	<input checked="" type="checkbox"/>	Case 3: The ex-ante estimated value was found to be proportionally lower than the ex-post determined value.
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 01
Conclusion	<input type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The ex-ante estimated value was found to be proportionally lower than the ex-post determined value. Appropriate explanation and justification is now added into the	

⁵ (38,913-27,600)/27,600 * 100

	revised MR and justification is accepted by Verification Team as it can be confirmed that the higher GHG results in due to higher amount of distributed solar lamps than expected. In addition, please also check closure of CAR 01
--	---

Title and UNFCCC reference number of the CPA	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the CPAs during this monitoring period
CPA-10285-0001	27,600 tCO ₂ e	38,913 tCO ₂ e
Total	27,600 tCO ₂ e	38,913 tCO ₂ e

E.3.5.6. Remarks on difference from estimated value in included CPA

Means of verification	<p>On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered PDD the verification team has checked whether (in case 3) an appropriate explanation is included in the MR.</p> <p>For this monitoring period, the actual emission reductions were found higher than the estimated emission reductions in the registered PDD.</p>	
Findings	<input type="checkbox"/>	No further justification or explanation is deemed required as actual emissions of this MP do not exceed significantly the ex-ante calculated emission reductions (applicable for case 1 and 2).
	<input checked="" type="checkbox"/>	For case 3: The PP has provided a related justification in the MR. The reasons for the increase are as follows: More Solar Lamps were sold compared to ex-ante estimates
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 01
Conclusion	<input type="checkbox"/>	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs / CLs / FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The ex-post ERs are higher than ex-ante estimation. Please refer to closure of CAR 01.	

E.3.6. Assessment of reported sustainable development co-benefits

Means of verification	<input checked="" type="checkbox"/>	N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.
	<input type="checkbox"/>	<p>The project participants have monitored the sustainable development co-benefits of the registered CDM project activity, and requested the DOE to verify them.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /CPA-DD/ • /unfccc/ • /IM01/
Findings	<input checked="" type="checkbox"/>	N/A – as the CME has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.
	<input type="checkbox"/>	<p>Therefore, the DOE has assessed and confirms that:</p> <p>(a) The monitoring has been carried out in accordance with the document for monitoring sustainable development co-benefits, if such document was developed and published on the UNFCCC CDM website in accordance with the “CDM project standard for project activities”;</p> <p>(b) The reported monitoring results correspond to the sustainable development co-benefits of the project activity as observed by the DOE.</p>
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:

Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	<input checked="" type="checkbox"/>	N/A – as the PP has not monitored the sustainable development co-benefits of the registered CDM project activity or not requested the DOE to verify them.

E.3.7. Global stakeholder consultation

Means of verification	<p>In accordance with the PCP the DOE has submitted the initial version of the monitoring report provided by the PP for this monitoring period to be published on the UNFCCC webpage.</p> <p>The monitoring report has been published for the period 04/01/2018 to 18/01/2018.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /unfccc/ 										
Findings	<input checked="" type="checkbox"/>	No comments have been received on the published monitoring report for this monitoring period.									
	<input type="checkbox"/>	Comments have been received and the DOE has concluded that comments are related to issues outside the CDM rules and requirements. Please refer to the list provided under Conclusion of this Section below for related information.									
	<input type="checkbox"/>	<p>Comments have been received.</p> <p>The DOE has</p> <ul style="list-style-type: none"> - requested further information from the submitters of the comments - informed the project participants of the comments received, and requested their feedback within a specified timeframe, - considered the input received and has assessed whether such comments are relevant to the CDM project activity, - acknowledged receipt of all submitted comments on the MR of the proposed CDM project activity, - assessed whether the comments are related to the CDM rules and requirements (if so related findings have been raised as per below), - used all possible means to determine the authenticity of the name and contact details of the individual or organization on whose behalf the comments have been submitted, - contacted the secretariat to make them publicly available (if only addressed to the DOE), - determined whether authentic and relevant comments in the global stakeholder consultation were taken into due account in the PDD of the proposed CDM project activity. 									
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised, i.e. as the DOE concludes that the comments are related to the CDM rules and requirements:									
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.									
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.									
	<p>As the DOE has concluded that comments are related to issues outside the CDM rules and requirements the comments and information gathered are listed as follows:</p> <table border="1" data-bbox="448 2040 1444 2069"> <thead> <tr> <th>Nbr.</th> <th>Original comment</th> <th>Feedback by the PP</th> <th>Statement by</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				Nbr.	Original comment	Feedback by the PP	Statement by			
Nbr.	Original comment	Feedback by the PP	Statement by								

		received		DOE
	1			
	2			

SECTION F. Internal quality control

Before the submission of the final verification report a technical review of the whole verification procedure was carried out. The technical reviewers are competent GHG auditors being appointed for the scope this project falls under. The technical reviewers are not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may have been confirmed or revised. Furthermore, reporting improvements might have been achieved.

After the successful technical review, an overall (esp. procedural) assessment of the complete verification has been carried out by a senior assessor located in the accredited premises of TÜV NORD CERT GmbH.

After this step the submission for requesting for issuance is conducted.

SECTION G. Verification opinion

The World Bank has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the PoA: “**Ethiopia Off-Grid Renewable Energy Program**”, with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions through the dissemination of solar lamps to households and institutions throughout Ethiopia. This verification covers the period from 01/08/2016 to 31/10/2017 (including both days).

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS-III.AR ver. 5.0.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The CPA-0001 has generated GHG emission reductions.

As the result of this periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **38,913 tCO₂e**

SECTION H. Certification statement

As a duly accredited DOE, TÜV NORD CERT confirms that the PoA

“Ethiopia Off-Grid Renewable Energy Program”

registered under

UNFCCC-No.: **10285**

has achieved emission reductions in accordance with all applicable requirements for registered CDM project activities during the current monitoring period

MP-No.: 1.0

from: 01/08/2016

to: 31/10/2017

(including both days) as follows:

Emission reductions: **38,913 tCO₂e**

Kigali, 20/02/2019



Lubanga, David

TÜV NORD JI/CDM CP


Verification Team Leader

Appendix 1. Abbreviations

Abbreviations	Full texts
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
CER	Certified Emission Reduction
CO ₂	Carbon dioxide
CO ₂ eq	Carbon dioxide equivalent
CL	Clarification Request
DBE	Development Bank of Ethiopia
DOE	Designated Operating Entity
DVerR	Draft Verification Report
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IM	Interview Memo
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
PO	Partner Organization
PoA	Programme of Activities
PoA-DD	Programme of Activities Design Document
PDD	Project Design Document
PP	Project Participant
PRC	Post Registration Changes
PS	CDM project standard for project activities
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change

VVS	Validation and Verification Standard
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Appendix 2. Competence of team members and technical reviewers



Statement of Competence
Appointment and authorization according to the procedures of the TUV NORD JRCM Certification Program


Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2020-07-27
VCS	Senior Assessor (Validation, Verification)	2020-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
4.1	Cement and lime production
4.2	Paper
5.2	Caprolactam, nitric and adipic acid
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
13.1	Solid waste and wastewater
13.2	Manure

163 – Rev. 5, Date: 2017-07-20



Statement of Competence
Appointment and authorization according to the procedures of the TUV NORD JRCM Certification Program


Mr. Swapnil Thanekar

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2020-02-02
VCS	Lead Assessor	2020-02-02

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

047 – Rev.4, Date: 2017-07-04



Statement of Competence
Appointment and authorization according to the procedures of the TUV NORD JRCM Certification Program

Mr. David Lubanga

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2021-10-20
VCS / ISO 14064-2	Senior Assessor / Technical Reviewer	2021-10-20

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy demand
13.2	Manure

251 – Rev. 7, Date: 2016-10-19

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1.	UNFCCC	/AMS/	AMS-III.AR: Substituting fossil fuel based lighting with LED/CFL lighting systems, version 5	https://cdm.unfccc.int/methodologies/SSCMethologies/approved	Other
2.	CME	/CPA-DD/	Revised Specific CPA-DD CPA-0001: - version 6.0, dated 22/10/2017 - version 7.0, dated 11/04/2018 - version 8.0, dated 18/04/2018 - version 9.0, dated 22/04/2018 - version 10.0, dated 28/04/2018 - version 11.0, dated 19/06/2018		CME
3.	CME	/PoA-DD/	Revised PoA DD - Version 7.0, dated 22/10/2017 - Version 8.0, dated 11/04/2018 - Version 9.0, dated 18/04/2018 - Version 10.0, dated 22/04/2018 - Version 11.0, dated 28/04/2018 - Version 12.0, dated 19/06/2018		CME
4.		/ER/	Emission Reduction Calculation for Monitoring Report		CME

			<ul style="list-style-type: none"> Version 01 In line with version 07 of MR Version 02 In line with version 08 of MR Version 03 In line with version 09 of MR 		
5.		/VVS/	CDM validation and verification standard for programmes of Activity, version 2.0	https://cdm.unfccc.int/Reference/Standards/index.html	Other
6.		/PS/	CDM project standard for programmes of Activities, version 2.0	https://cdm.unfccc.int/Reference/Standards/index.html	Other
7.	DOE	/VAL/	<p>PoA Validation report titled 'Ethiopia Off-Grid Renewable Energy Program', version 3.0, dated 13/06/2016</p> <p>CPA Validation report titled 'DBE Off-grid renewable energy solar lamps CPA 1', version 3.0, dated 13/06/2016</p>		Other
8.	DOE	/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		DOE
9.	IPCC	/IPCC/	<ol style="list-style-type: none"> 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book 	www.ipcc-nggip.iges.or.jp	Other
10.	UNFCCC	/KP/	Kyoto Protocol (1997)	http://unfccc.int/kyoto_protocol/items/2830.php	Other
11.	UNFCCC	/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)	http://cdm.unfccc.int/Reference/COPMOP/index.html	Other
12.	UNFCCC	/MRT/	Monitoring Report Form (CDM-MR-FORM), Version 02.0	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	Other
13.	CME	/MR/	<ul style="list-style-type: none"> Monitoring Report titled 'Ethiopia Off-Grid Renewable Energy Program', version 1.0, dated 09/12/2017 Monitoring Report titled 'Ethiopia Off-Grid Renewable Energy Program', version 2.0, dated 05/02/2018 Monitoring Report titled 'Ethiopia Off-Grid Renewable Energy Program', version 3.0, dated 11/04/2018 Monitoring Report titled 'Ethiopia Off-Grid Renewable Energy Program', version 4.0, dated 05/05/2018 Monitoring Report titled 'Ethiopia Off-Grid Renewable Energy Program', version 5.0, dated 16/05/2018 Monitoring Report titled 'Ethiopia Off-Grid Renewable Energy Program', version 6.0, dated 08/10/2018 Monitoring Report titled 'Ethiopia 		CME

			Off-Grid Renewable Energy Program', version 7.0, dated 19/01/2019 - Monitoring Report titled 'Ethiopia Off-Grid Renewable Energy Program', version 8.0, dated 11/02/2019 - Monitoring Report titled 'Ethiopia Off-Grid Renewable Energy Program', version 9.0, dated 18/02/2019		
14.	CME	/PRC/	- PRC PoA Assessment Report (Approved) - PRC CPA Assessment Report (submitted along with Request for issuance)	-	DOE
15.	UNFCCC	/SS/	Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities, version 07.0	https://cdm.unfccc.int/Reference/Standards/index.html	Other
16.	DOE	/PTO/	Photos of sample records (Sales records) taken at the CME office		Other
17.	DOE	/VAL/	CPA Validation report version 3.0, dated 13/06/2016		Other
18.	CME	/TRG/	02 day training on the CDM, CPA inclusion, monitoring, verification, and issuance conducted by Ci-Dev and Climate Focus.		CME
19.	CME	/DB/	Consolidated Sales database		CME
Websites					
20.	UNFCCC	/unfccc/	UNFCCC	http://cdm.unfccc.int	Other
21.	IPCC	/ipcc/	IPCC publications	www.ipcc-nggip.iges.or.jp	Other
22.	MEFCC	/dnaHP/	DNA of Ethiopia (Ministry of Environment, Forest and Climate Change, Ethiopia - MEFCC)	http://mefcc.gov.et/	Other
23.	DBE	/dbe/	Development Bank of Ethiopia	http://www.dbe.com.et/homenew/	Other

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

Table 3. Remaining FARs from validation and/or previous verification

FAR ID	xx	Section no.	Date: DD/MM/YYYY
Description of FAR			
CME response			Date: DD/MM/YYYY
Documentation provided by the CME			
DOE assessment			Date: DD/MM/YYYY

Table 4. CLs from this verification

CL ID	01	Section no.	Date: 07/04/2018
Description of CAR			

MR version 1.0, Section C.1:

The following has been observed during the onsite visit

1. All the Partner Organizations visited import the product in bulk and sell to dealers or distribute to their own distributors (intermediaries) for sale regionally and sub-regionally across the country. The POs have their main offices in the capital Addis Ababa
2. Capturing end-user data is not only being done, but logistically impractical without a suitable application. Therefore, the monthly sales reports from POs to the CME only capture total sales and serial numbers
3. Only microfinance institutions are able to capture end user information as they lend money directly to individuals for lamp purchases. Bulk buyers with micro-finance institutions may also be re-sellers. Moreover, not all solar lamp buyers use loans from a micro-finance institution to purchase of a solar lamp. Therefore, information from micro-finance institutions may be incomplete

From the the above, please clarify the following:

1. How option II is still applicable under this CPA and monitoring period in the absence of end-user information
2. The assumptions and calculations assuming that lamps sold in the previous month begin usage in the following month onwards

Project participant response (1st round)		Date:	11/04/2018
<p>a) The monitoring report has been revised to use Option 1. Therefore, under paragraph 29 of the methodology only the sales volumes, sales dates, and model types (capacity etc.) need to be recorded.</p> <p>b) Post revision to Option 1, footnote 10 of paragraph 29a) provides guidance that a time period of 120 days can be assumed between the sale to intermediaries and the date of operation.</p>			
Documentation provided by project participant (1st round)			
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): C.1, F.1	New version No.: 3.0
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:		
DOE assessment (1st round)		Date:	26/04/2018
<p>MR version 2.0, Section C.1:</p> <ol style="list-style-type: none"> 1. The CME has proposed post registration changes to apply option 1 as per §17 of the applied methodology. The PRC is being submitted along with verification documents for the first monitoring period 2. Since the CPA does not involve direct distribution of project lamps to end-users, but instead involve distribution of project lamps through intermediaries, the CME has applied the default value of 120 days, as the average number of days between the date on which project lamps are delivered to intermediaries and the date on which the project lamps are distributed to end-users as prescribed in §29 a) of the methodology. The lamp sales are a continuous process therefore determining the total days of lamp operation during the monitoring period is calculated as 120 days from the beginning of the following month based on the monthly sales reports from partner organizations. <p>Please clarify the following</p> <ol style="list-style-type: none"> a) How 2015 values for Universal delivered at the year-end are being treated. It is assumed that they were sold in December. Please indicate how option 1 will be applied on lamp life. b) Not clear how the 120 days have been discounted. Only one month appears to have been discounted 			
Project participant response (2nd round)		Date:	02/05/2018
<p>2.</p> <ol style="list-style-type: none"> a) Text has been added on the operational life of lamps from Universal sold in 2015 b) Text has been added in section F.1 in the first paragraph explaining the rationale. 			
Documentation provided by project participant (1st round)			
<input checked="" type="checkbox"/>	Changes in MR	Section(s): C.1, F.1	New version No.: 4.0
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:
<input type="checkbox"/>	Other:		
DOE assessment (2nd round)		Date:	05/05/2018

MR version 4.0, Section C.1:	
2.	
a) Lamps sold by partner organization Universal to intermediaries were only reported as 'annual sales' at the end of 2015. Therefore, start of all lamps operational life is conservatively assumed to be 120 days after 01/01/2016. The ER estimations achieved reflect this approach b) The calculations have assumed 120 days after the start of 2016. This is assessed as a conservative approach and reflected in the calculations	
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Table 5. CARs from this verification

CAR ID	01	Section no.	Title Page	Date:	29/01/2018
Description of CAR					
MR version 1.0, Title Page:					
1. The achieved emission reductions over the monitoring period do not comply with the maximum value indicated EC 18 in the CPA-DD					
2. The indicated ex-ante emission reductions over the course of this monitoring period are also incorrect					
Project participant response (1st round)					Date:
1. EC 18 has been revised to allow for the amount of ERs generated					
2. Ex-ante estimate for the time period has been updated.					
Documentation provided by project participant (1st round)					
<input checked="" type="checkbox"/>	Changes in the PDD	Section(s): E.3		New version No.: 7.0	
<input checked="" type="checkbox"/>	Changes in MR	Section(s): Title Page		New version No.: 2.0	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/>	Other:				
DOE assessment (1st round)					Date:
MR version 2.0, Title Page:					
1. The eligibility criterion 18 has been revised as part of the PRC to allow for emission reductions of more than 22,080 tCO ₂ e, but not exceeding 60,000 tCO ₂ e per annum. The CPA still complies with the applied SSC methodology					
2. Ex-ante emission reductions have been revised to, consistent with the registered and updated CPA-DD					
Conclusion Tick the appropriate checkbox		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

CAR ID	02	Section no.	A.1.1	Date:	29/01/2018
Description of CAR					
MR version 1.0, Section A.1.1:					
Section is not completed as per guidelines of the latest CDM-PoA-MR-FORM template version 2.0					
Project participant response (1st round)					Date:
Section has been completed as per guidelines					
Documentation provided by project participant (1st round)					
<input type="checkbox"/>	Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s): A.1.1		New version No.: 2.0	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/>	Other:				
DOE assessment (1st round)					Date:
MR version 2.0, Section A.1.1:					
Tools and guidelines have been added as applied by the CPAs					
Conclusion Tick the appropriate checkbox		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

CAR ID	03	Section no.	C.1	Date:	29/01/2018
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Description of CAR			
MR version 1.0, Section C.1:			
<ol style="list-style-type: none"> 1. The PP shall clarify or correct the Solar Run Times (all 4.1 hours) for all project lamps 2. d.Light D20: the relative luminous flux after 2,000 hours is not correct 3. d.Light D20: the autonomous time and DBT is incorrect and inconsistent with the technical information provided. 4. d.Light S2: The DBT is not correct 			
Project participant response (1 st round)			Date: 06/02/2018
Technical parameters have been corrected for lamp technologies			
Documentation provided by project participant (1 st round)			
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/> Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/> Other:			
DOE assessment (1 st round)			Date: 09/02/2018
MR version 2.0, Section C.1:			
<ol style="list-style-type: none"> 1. The Solar run times have been corrected in line with the respective product specifications 2. d.Light D20: the relative luminous flux after 2,000 hours is now corrected to 101% in line with the product specification sheet 3. d.Light D20: the autonomous time and DBT have been corrected. 4. d.Light S2: The DBT is now corrected 			
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

CAR ID	04	Section no.	E.2	Date:	29/01/2018
Description of CAR					
MR version 1.0, Section E.2:					
Parameter $N_{i,j}$.					
<ol style="list-style-type: none"> 1. Please note that the units of this parameter are not consistent with the applied methodology 2. The description of the parameter is also not in accordance with the methodology 					
Parameter $OF_{y,i,j}$.					
<ol style="list-style-type: none"> 1. Not clear how this parameter will be sourced from the methodology default values. Source of data not as prescribed by the methodology 					
Project participant response (1 st round)					Date: 06/02/2018
Parameters have been updated as per CPA and PoA-DD revisions					
Documentation provided by project participant (1 st round)					
<input type="checkbox"/> Changes in the PDD	Section(s):	New version No.:			
<input checked="" type="checkbox"/> Changes in MR	Section(s): E.2	New version No.: 2.0			
<input type="checkbox"/> Changes in XLS	Worksheet(s):	New version No.:			
<input type="checkbox"/> Other:					
DOE assessment (1 st round)					Date: DD/MM/2018
MR version 1.0, Section E.2:					
Parameter $N_{i,j}$.					
<ol style="list-style-type: none"> 1. Parameter units of this parameter have been corrected as per the applied methodology 2. The description of the parameter is also not in accordance with the methodology 					
Parameter $OF_{y,i,j}$.					
<ol style="list-style-type: none"> 1. Source of data has been corrected to ex-post monitoring surveys, as prescribed by the methodology 					
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

CAR ID	05	Section no.	F.1/ER Sheet	Date:	24/01/2018
Description of CAR					

MR version 1.0, Section F.1/ER Sheet:			
<ol style="list-style-type: none"> 1. It is not clear how the date between the sale to distributors and actual sale to consumer has been estimated. Moreover, the MR indicates that 417,374 lamps were sold during the monitoring period. How the 486,225 Ny value of operational lamps was arrived at and the equation applied are to be clarified. 2. In the Excel sheet, Tab 'Emission Reduction Calculation', Cell D37, the 0.092 tCO₂ value is not described as per the methodology, but BE_y per lamp calculated in line with default values in the methodology (CPA-DD Equation 5) 3. Tab 'Universal': The 2015 monthly sales for Universal PO not indicated. Only total 4. Some of the values from respective tabs, e.g, for Dama 2015 do not much what is applied in the ER tab 5. 2014 & Jan 2015 sales appear to be excluded. A clarification is requested 			
Project participant response (1st round)			Date: 06/02/2018
<ol style="list-style-type: none"> 1. Explanation on the calculation of Ny has been added in the excel sheet 2. Description updated to reflect methodology 3. Explanation of Universal sales has been added to section E.2 of the monitoring report 4. Dama 2015 values have been corrected 5. Explanation added for Jan 2015 in section F.1 of monitoring report. Data for 2014 has been removed. 			
Documentation provided by project participant (1st round)			
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): F.1	New version No.: 2.0
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.: 2.0
<input checked="" type="checkbox"/>	Other: SD		
DOE assessment (1st round)			Date: 09/02/2018
MR version 2.0, Section F.1/ER Sheet:			
<ol style="list-style-type: none"> 1. The Ny and lamp-years are two different parameters and values. Explanation of calculation of lamp years shall be clearly explained as a separate parameter in section F.1 of the MR 2. The 0.092 tCO₂e value is appropriately described as baseline emissions BE_y per project lamp in line with the applied methodology 3. OK as included 4. Dama 2015 values have been corrected 5. The first solar lamp was sold on 21/01/2015^{SD} which is defined as the CPA start date. However, the calculation of solar lamp years can only considered from 01/08/2016 in line with the start of CPA crediting period. The formula applied to determine the number of lamp years during this monitoring period of 486,008 is deemed to be correct. 			
Project participant response (2nd round)			Date: 11/04/2018
<ol style="list-style-type: none"> 1. Calculation method of parameter N_{i,j} has been added to section F.1 of the MR to clearly show how the determination of lamp-years is made during the monitoring period. 			
Documentation provided by project participant (2nd round)			
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:
<input checked="" type="checkbox"/>	Changes in MR	Section(s): F.1	New version No.: 3.0
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.: 3.0
<input checked="" type="checkbox"/>	Other:		
DOE assessment (2nd round)			Date: 26/04/2018
MR version 3.0, Section F.1/ER Sheet:			
<ol style="list-style-type: none"> 1. The parameter N_{i,j} is now defined separately and applied in the calculation of project lamp-years. The calculation of emission reduction over a period of a year can then be computed using the default factors. 			
Conclusion Tick the appropriate checkbox		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

Table 6. FARs from this verification

FAR ID	xx	Section No.	Date: DD/MM/YYYY
Description of FAR			
CME response			Date: DD/MM/YYYY

Documentation provided by the CME	
DOE assessment	Date: DD/MM/YYYY

Appendix 5. Monitored Parameters

Table A-5: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A. $N_{i,j}$		Number of project lamps distributed to end users of type i with charging method j		
a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/IM01/ /PoA-DD/ /CPA-DD/ /MR/ /DB/ IM02/ /PRC/ /PTO/	<p><i>Description:</i></p> <p>The number of lamps sold are recorded and tracked through partner organizations (sales agents). The vendors sell directly to users as well as through intermediaries in bulk sales who in turn sell them in their regions across the country. Therefore, capturing end-user data is not practical. The vendors compile a monthly reports with a list of batch sales as well as retail sales that is sent to the CME latest the middle of the following month. The monthly reports include actual product serial numbers and are checked at the CME office for consistency with import information.</p> <p><i>Verifier's action:</i></p> <p>The verification team pulled a random sample of hard copy invoices and monthly reports from each vendor stored at the CME offices and compared the same with sales totals entered into the consolidated sales database and subsequently used in emission reduction calculations. Furthermore, the team selected four of the five vendors to pay a visit and compared sales reports with details obtained from the CME office. Interviews were also conducted at the CME office and at their respective vendors' offices. Only three PO offices were able to be visited.</p> <p><i>Conclusion:</i></p> <p>The way of recording all lamps from the import data, vendors and the information relayed to the CME is in line with the applicable monitoring plan.</p>	CAR 04 CAR 03 CAR 04	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check	/DB/ /PTO/ /MR/	<p><i>Description:</i></p> <p>The number of lamps sold is ensured by a proper information</p>	OK	OK

CDM-PoA-VCR-FORM

<p><i>whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/IM01/ /IM02/</p>	<p>flow and management system installed by the CME. Records are kept from importation data, to sales and cross-checked by CME representatives on a regular basis. Trained CDM staff at the producer's office cross-check the information once more against the monthly reports and query and correct any discrepancies found. The POs do not get a new line of credit until they can demonstrate sales of all imported solar lamps and their serial numbers.</p> <p><i>Verifier's action:</i></p> <p>The verifier cross-checked random sample documents at the CME and compared with details entered in the database. Furthermore, more samples were taken for comparison at the Vendors' offices for correctness and consistency. Furthermore, onsite interviews were conducted.</p> <p><i>Conclusion:</i></p> <p>No significant discrepancies were noted</p>		
<p>c) Correctness (VVS, §§ 389-393)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /DB/ /WC/ /XLS/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The value given in the draft MR was found to be consistent with the annual totals as well as the total number of lamps sold under the CPAs in the ER calculation spread sheet.</p> <p><i>Verifier's action:</i></p> <p>The verification team compared the totals in the databases with information given in the MR</p> <p><i>Conclusion:</i></p> <p>After corrections, the reported values are deemed as correct. Please refer CAR 04 & CAR 05.</p>	<p>CAR 04 CAR 05</p>	<p>OK</p>
<p>Checklist Item (incl. guidance for the verification team)</p>	<p>Reference</p>	<p>Verification Team Comments (Means and results of assessment)</p>	<p>Draft Concl.</p>	<p>Final Concl.</p>
<p>B. $OF_{y,i,j}$</p>		<p>The percentage of project lamps distributed to end users that are operating and in service in year y, for each lamp</p>		

CDM-PoA-VCR-FORM

		type i and charging method j		
a) Measurement / Determination method (VVS, §§ 389-393) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/IM01/ /PoA-DD/ /CPA-DD/ /PRC/ /XLS/	<i>Description:</i> The CPA applies Option 1 under paragraph 17 of the methodology. The value is equal to 100% for year 1 and 2. After 2 years of operation lamps are not credited. <i>Verifier's action:</i> The verification team checked the applied methodology and the ER calculations. <i>Conclusion:</i> The option 1 selected, alternative to recording end user information and is allowed by the applied methodology	CL-04 GAR 04	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.	/CAL/	<i>Description:</i> No need for QA/QC procedures as the 100% functional use for solar lamps is prescribed by §17 of the CDM methodology <i>Verifier's action:</i> The verification team checked the applied methodology and the ER calculations. <i>Conclusion:</i> The parameter measurement is consistent with the revised CPA-DD and applied methodology	OK	OK
c) Correctness (VVS, §§ 389-393) Determine whether the value given in the monitoring report is correct or determined in a conservative manner. In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and	/MR/ /AMS/ /XLS/ /PRC/ /CPA-DD/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value of 100% applied is prescribed the methodology and will assume that lamps will last up to two years only. Therefore, emission reductions are claimed for only 2 years <i>Verifier's action:</i> The methodology and calculations were checked	OK	OK

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descriptions of the CARs raised.		<i>Conclusion:</i>		
		The application of the 100% value factor is correct		

Appendix 6. Calibration dates and validity of installed monitoring equipment

Table A-6: Periodic Verification Checklist – Calibration details

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<input type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
-	-	-	-	-	-	-	-	<input type="checkbox"/> No <input type="checkbox"/> Yes	From: To:

- - - - -

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
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