PROGRAMME DESIGN DOCUMENT FORM FOR SMALL-SCALE CDM PROGRAMMES OF ACTIVITIES (F-CDM-SSC-PoA-DD) Version 02.0

PROGRAMME OF ACTIVITIES DESIGN DOCUMENT (PoA-DD)

PART I. Programme of activities (PoA)

SECTION A. General description of PoA

A.1. Title of the PoA

>> TATS Solar Lantern Programme of Activities
Version 07
20/12/2012

A.2. Purpose and general description of the PoA

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1. **General operating and implementing framework of PoA**

The Programme of Activities (PoA) will consist of a series of projects (SSC-CPAs) implemented collaboratively between Total Access to Solar (TATS) and TOTAL's affiliates[1] as well as other local institutions (microfinance institutions) and young entrepreneurs networks across Kenya. TATS will act as the Coordinating/Managing Entity (CME) for the PoA, and will provide an open platform for different solar lighting technology suppliers and service providers to participate in the PoA. The CME will work with participating organisations to design and implement a technology and financing solution to encourage the low-cost uptake of high quality solar lanterns for households and/or businesses with a particular focus on the 'Base-of-Pyramid population'[2].

Each CPA will use a mix of distribution mechanisms for which an indicative list is provided in the table below:

Table 1. Distribution mechanisms that will assist in reaching the targeted population[3].

Distribution mechanism	Description	Population target
Total network	All Total service stations and distributors of Total products	All households and small businesses.
Micro-resellers	Sales by entrepreneurs, whether Total employees or independent.	Base-of-Pyramid population
Itinerant sales	Sales through promotional or communication events organised by the affiliate's teams	End users attending such events

[1] A Total affiliate is any subsidiary of TOTAL S.A. Group

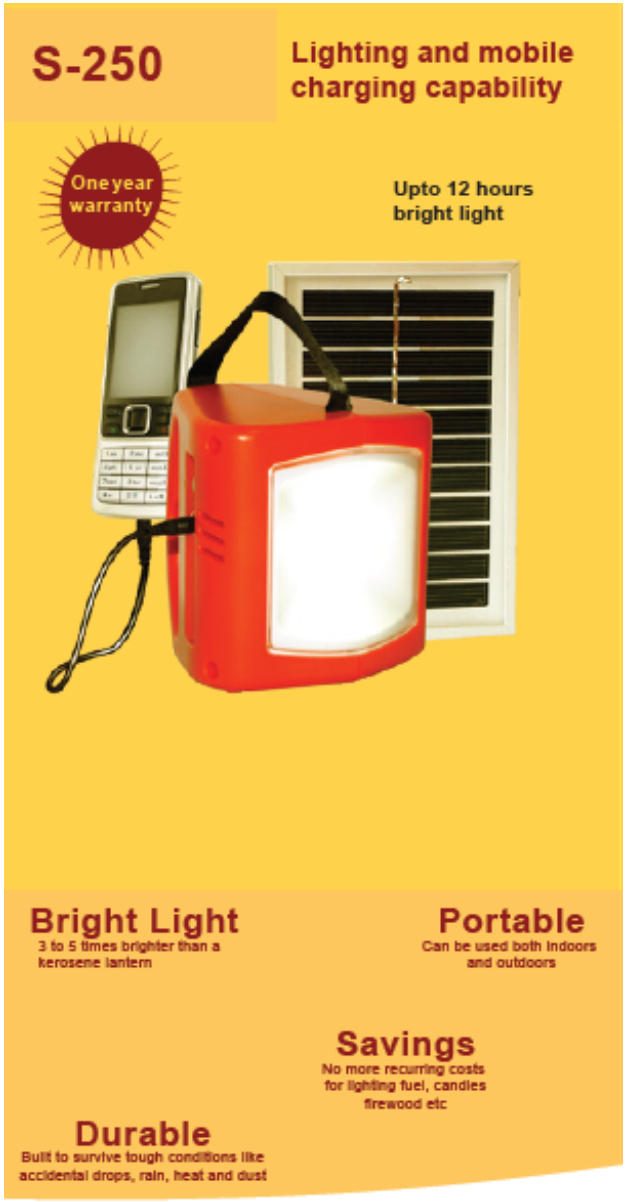
[2] Base of the pyramid (BoP) refers to the nearly four billion people that earn less than US$ 4 per day and live primarily in Asia, Africa and South America. (http://www.bopinc.org/nl/about-us/base-of-the-pyramid)

[3] *For more information please refer to:* TATS *Affiliates Toolkit Chapter 5, page 5.*

Total employees	Sales to Total employees, service station staff or contract staff.	Total employees, service station staff or contract staff
Last mile distribution partners	Sales by NGOs and/or cooperatives	Base-of-Pyramid population

Each of these different distribution mechanisms will use a variety of communication and marketing initiatives to encourage the use of the solar lanterns by the targeted market. These initiatives will include posters, fliers, stickers, information brochures, demonstration booths in petrol stations, etc.

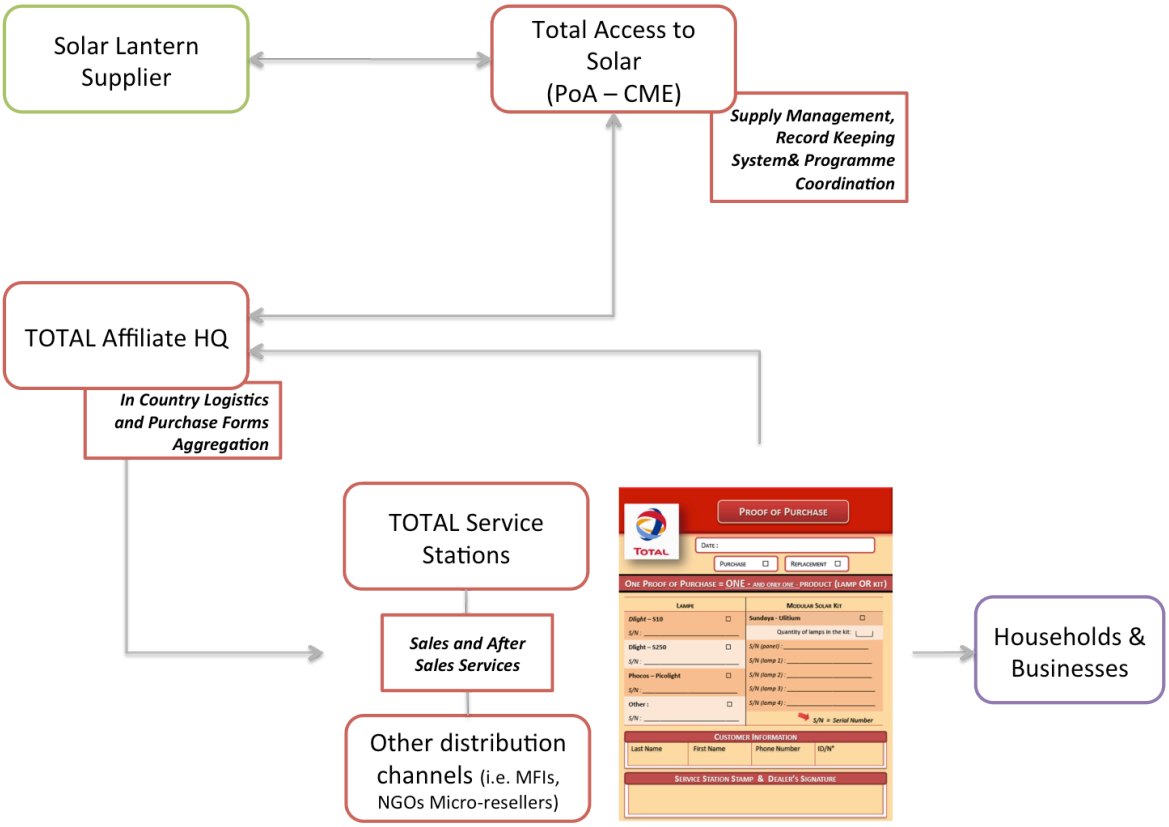
Examples of such initiatives are as follows:



As mentioned before, the PoA will in particular target low income households. It is expected that these end users will demand a high level of information and education in order to decide to purchase a solar lantern given their financial constraints relative to the sale price of the solar lantern (US$10 - $90). This, in conjunction with the fact that the sales of solar lanterns will be continuous over the crediting period (i.e. the programme is not a once-off sale or short term campaign) makes it highly unlikely that hoarding or stockpiling will take place.

A basic structure of the operation of each CPA within the PoA can be found below:

Diagram 1. Basic operation structure of a CPA



The PoA will comprise of activities that replace portable fossil fuel based lamps (e.g. wick-based kerosene lanterns) with battery-charged LED or CFL based lighting systems in residential and/or non-residential applications (e.g. ambient lights, task lights, portable lights). This will contribute to reducing greenhouse gas emissions associated with the use of fossil fuels for lighting and specifically kerosene.

Project Lamps will be charged using a renewable energy system included as part of the Project Lamp (i.e. a photovoltaic system).

The PoA will provide a consolidated source of information, technology, services, and carbon finance for the deployment of solar lanterns in Kenya.

2. Policy/measure or stated goal of the PoA

The PoA has the objective of scaling up the deployment of solar lanterns to targeted end-users across Kenya. This programme will provide technology and financing solutions to end-users to encourage the uptake of solar lanterns to replace current fossil fuel based lamps.

Equally, the PoA contributes to TATS Mission of:

- Providing access to lighting to people without access to reliable and efficient sources of energy
- Contributing to the economic development of local communities

Sustainable Development

The social and economic impact of providing clean, safe lighting has been well documented. The information below only summarizes the main positive socio-economic outcomes[4]:

I. Contribution to national economic development

1) The PoA will contribute significantly to Kenya's national economic development through facilitating a widespread access to sustainable energy services in the form of improved lighting. Improved access to sustainable energy services is a necessity in creating income and employment generating activities[5] furthermore several studies[6] in developing countries show that access to proper lighting has significant positive impacts on productivity broadly and income-generating activities specifically.

Many of the retail businesses in Kenya are small permanent shops and kiosks mostly selling household commodities, foodstuffs, fruits and vegetables. According to a survey by Lighting Africa, only 10% of Kenyan retail businesses are connected to the Kenya National Grid. Lack of light is identified as the main reason why traders do not open their businesses in the evenings. Lighting Africa research in Kenya suggests that businesses would stay open longer if the insecurity and lack of customers were not a factor due to poor illumination[7].

More broadly, there is an established positive correlation between the quality of the lighting in commercial enterprises and retail sales. Research has shown that the move from kerosene to LED based lighting that improves the quality of illumination also boosts sales since customers pay more attention to the display and engages in purchase-oriented behaviours more often[8].

Lighting Africa research[9] in Kenya provides further anecdotal evidence such as:

- A small non-electrified enterprise near Lake Victoria which received solar lighting saw its revenues increase 60% as a result of being able to better illuminate its wares at night
- Vendors of shoes, detergent, and food products at a major Kenyan night market reported upon seeing LED-solar prototypes that they would be able to extend their operating hours by 30 to 50% if this form of lighting became available. They also universally believed that their sales volumes per hour would increase as a result of their wares being more easily seen and more attractive due to better colour rendering by white LED sources compared to kerosene lanterns
- Outdoors shopkeepers reported that with LED lighting they would avoid periods of market closure due to wind or rain (both of which extinguish their flame based lighting sources). They also perceived an additional benefit of being able to more easily and accurately count money and

[4] Solar Lighting for the Base of the Pyramid, Lighting Africa,2010.
[5] MDG's 2006, Need Assessment Report_Energy sector, chap 2 , p3.
[6] Productive Uses of Energy For rural Development, R. Anil Cabraal, Douglas F. Barnes,and Sachin G. Agarwa, Annu. Rev. Environ. Resour. 2005.

[7] Kenya: Qualitative Off-grid Lighting Market Assessment, Lighting Africa,2008

[8] Display & Design Ideas, March 2, 2003
[9] Lighting the Bottom of the Pyramid, Project Executive Summary, GEF Council Submission,2006.

make change for customers.

It is therefore expected that the introduction of high-quality off-grid solar lighting product will support the development of economic activities particularly on small-scale industries in rural areas.

2) Kenyan households and small businesses spend over $1 billion annually on off-grid lighting (excluding solar lighting). Due to population growth and other demographic trends, these values are due to significantly increase within the next few years[10]. Kerosene is the dominant energy source for the off-grid lighting applications of most Kenyan yet kerosene is an expensive oil import for the country .The increased penetration of off-grid solar lighting will free-up a significant portion of the households budget to be re-directed towards others goods and services while also reducing foreign currency problems thus supporting the country economic growth.

3) The implementation of the PoA will generate local employment. The project distribution mechanism relies partly on the establishment of a network of mobile sales, which will be, ran by young social entrepreneurs.

II. Contribution to social development.

Proper lighting is a basic need, the absence of which hinders social and economic development.

Improved lighting provides significant socio-economic, health and environmental benefits. The TATS solar lantern project will help to:

- Promote education by expanding time for studying;
- Improve health and safety by reducing indoor air pollution and fire hazard associated with flammable fuels[11];
- Generate savings on the energy spending;
- Improve lighting output.

III. MDG's goal

The project is helping to contribute to the Millennium Development Goals by reducing poverty and enhancing the quality of life.

MDG 1: Improved lighting reduces poverty and hunger by increasing the productive time that people have to work and by reducing the money spent on effective lighting.

MDG 2: Improved lighting boosts education opportunities by allowing children to study at night and by making it safe for people to attend classes.

MDGs 3–5: Solar lighting reduces lighting-associated dangers, which particularly affect women and children in the household. Safe lighting is also essential for safer births after dark and reduces damage to infants' delicate lungs from smoke particles.

MDG 7: Solar lighting facilitates access to clean energy solutions amongst population that are not connected to the grid and would otherwise rely on polluting source of energy for lighting.

IV. Contribution to the environment.

[10] Lighting the Bottom of the Pyramid, Project Executive Summary, GEF Council Submission,2006.

[11] Characterization of particulate matter size distributions and indoor concentrations from kerosene and diesel lamps, J. Apple, R. Vicente,A. Yarberry, N. Lohse, E. Mills, A. Jacobson, D. Poppendieck, Indoor Air 2010.

The distribution of off-grid solar lantern in Kenya will reduce the consumption of fossil fuel based lighting and hence reduce the harmful gases and particulate matter produced during the burning of fossil fuels to produce light.

According to Lighting Africa Qualitative Assessment Report on Kenya, most end users *"are not aware of the negative effects of lighting devices to the environment. It is not a factor that many take into consideration when choosing a lighting product. For the few that are aware of the effects, it is difficult for them to consider this because there are not many affordable lighting products from which to choose in the market. Lack of variety and costs of products forces people to keep using paraffin lamps, even though some are aware that they are not good for the environment"*[12]

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

The PoA is a voluntary action initiated by the CME. There are no laws mandating the replacement of fossil fuel based lighting with battery-charged LED or CFL based lighting systems such as solar lantern in Kenya. All households and businesses participating in SSC-CPAs under the PoA will do so through a voluntary collaboration with the CME.

A.3. CMEs and participants of PoA

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a) Identity of the CME of the proposed PoA, as the entity which communicates with the Board

The CME of the PoA will be Total Access to Solar (TATS)

b) Project Participants to the PoA (project participants may or may not be involved in one of the components project activities (CPAs) related to the PoA.

The Project Participant to the PoA will be Total Access to Solar (TATS)

A.4. Party(ies)

Name of Party involved (host) indicates a host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Kenya	Total Access To Solar (Coordinating Entity)	No

A.5. Physical/ Geographical boundary of the PoA

The PoA will be implemented across all municipalities, regions and provinces within the Republic of Kenya.

[12] Lighting Africa: Kenya Qualitative Off-Grid Lighting Market Assessment Report, October 2008, IFC

Figure 1. Geographical boundary of the PoA – Kenya.

A.6. Technologies/measures

A range of solar off-grid lighting technologies will be provided to individual purchasers participating in the PoA.

The Programme of Activities will facilitate the transfer of industry-leading solar lantern technologies into Kenya. This transfer largely occurs "South-South" (between developing countries), as the products to be used in the PoA are manufactured in other developing countries (i.e. China, India, etc) and distributed to Kenya with the supervision of the CME in order to meet the required technical standards.

Further transfer of knowledge to the host country is also made possible through the education and awareness-raising aspects of the PoA. End-users will receive information at the point of sale regarding the benefits of solar lanterns, as well as how to use the technology effectively.

The project comprises activities that replace portable fossil fuel based lamps (e.g. wick-based kerosene lanterns) with battery-charged LED or CFL based lighting systems in residential and/or non-residential applications (e.g. ambient lights, task lights, portable lights).

Technologies distributed under the PoA will be charged by a renewable energy system (i.e. a PV panel. The PV panel may be integrated into the lamp unit or a separate physical component) and contain a LED or CFL light and a battery pack. The technologies will be resistant to environmental factors such as water

or dust and will be portable in size to provide the end users with maximum flexibility for use at their home, workplace or outdoor environment.

The following Technical Specifications Table (***Table 2***) will be documented for each CPA.

No.	Concept	Definition	Minimum Methodological Requirements
1	**Rated lamp life (in hours)**	Rated average life is the life certified by the manufacturer or responsible vendor as being the time at which the lamps initial light output will decline by no more than 30%	5,000 hours
2	**Lantern charging system**	Charged by a renewable energy system included as part of the Project Lamp (i.e. a photovoltaic system);	Only systems charged by a renewable energy system will be used.
3	**Warranty**	In years	A minimum of one year covering free replacement or repair of any failed lamp, battery and where applicable solar panel.
4	**Light output**	In lumens	20 lumens or luminance of 25 lux over an area ≤ 0.1 m^2 when suspended at a distance of 0.75 meters. The light output over a 2,000 hour lumen maintenance test should not decline by more than 20%
5	**Daily Burn Time (DBT)**	Total number of hours per day that the lighting system must provide light that is bright enough to satisfy the light output requirements. DBT is expressed in hours.	≥ 3.5 hours
6	**Battery Capacity - Autonomous Time**	In Percentage of DBT	Autonomous Time ≥ 150% of the DBT.
7	**Solar Run Time**	Operational time (in hours) in a mode that is bright enough to satisfy the light output requirements from a day of solar charging under standard solar day conditions.	Each month ≥ DBT.
8	**Physical protection against environmental factors**	With regard to physical ingress and water protection, the Project Lamps shall achieve a minimum level of protection, based on the type of lamp, in accordance with IEC 60529, or an equivalent national standard, or the approved norms indicated at the end of this table.	Not applicable but description required
9	**Lamp wattage**	In Watts	Not applicable but description required
10	**Type and rated capacity of the renewable energy**	In Watts	Not applicable but description required

	equipment used for battery-charging		
11	**Type and rated capacity of the batteries**	Type (e.g. NiMH, Lead-Acid, Li-ion) and rated capacity (in Ampere Hours)	Not applicable but description required
12	**Type of charge controller**	Active or Passive	Not applicable but description required

A.7. Public funding of PoA
>> No public funding will be used for the PoA.

SECTION B. Demonstration of additionality and development of eligibility criteria
B.1. Demonstration of additionality for PoA

>>The PoA is a voluntary coordinated action initiated by the CME. All end-users participating in SSC-CPAs under the PoA will do so voluntarily. By using revenues from the sale of CERs, the PoA aims to overcome the barriers to the uptake of solar lanterns in Kenya where fossil fuel based lighting is a common practice given the low level of electrification.

The PoA will use a small-scale methodology, and as such will assess additionality as per the *"Guidelines on the Demonstration of Additionality of Small-Scale Project Activities"* (EB68, Annex 27).

As per these Guidelines, documentation of barriers is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds (e.g. emissions reduction up to 60 k*tCO_2e* per year).

Each and every CPA within the PoA will generate emission reductions for less than 60 ktCO_2e per annum and satisfy the following conditions:

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

- As mentioned in sections A.4.2, the PoA will use the approved methodology *AMS III.AR Substituting fossil fuel based lighting with LED/CFL lighting systems*. Paragraph 18 – Baseline Emissions – provides a default annual baseline emissions factor for the Project Lamps of 0.092 tCO_2e. Although the variables that define this value can be modified or revised, it is clear that 0.092 tCO2e is well below the figure of 3,000 tCO2e per annum threshold provided by the additionality guidelines.

- As described in section A.2, the PoA will distribute solar lanterns to households and small/medium sized enterprises

By meeting these basic conditions, the PoA satisfies the Positive list requirement (c) and is therefore automatically additional.

B.2. Eligibility criteria for inclusion of a CPA in the PoA
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The eligibility criteria for the PoA have been determined using the latest procedure set out by the Executive Board at EB70, Annex 05 – Standard for the demonstration of additionality, development of eligibility criteria and application of multiple methodologies for Programme of Activities (version 02.1).

No.	Eligibility Criteria	Status	Evidence
1	Does the SSC-CPA involve the sale of solar lanterns to replace fossil fuel based lamps to the target population groups and via distribution mechanisms mentioned in Table 1 in section A.2 of the PoA-DD in the countries mentioned in the PoA-DD Section A.5?	**Yes / No**	See Sections A.3, A.5 and A.7 of CPA-DD Service Agreements with Affiliates
2	Does the SSC-CPA comply with the established procedures for avoiding double counting set out in the PoA-DD and CPA-DD (generic)? – Unambiguous identification of solar lanterns participating in the CPA including TATS logo and Serial Number. – Data collection from participating end-users as to assign the rights to claim CERs for the project activity. – Contractual Agreement in place between the CPA implementer, as well as between suppliers and the CME that clearly and unambiguously assign the right of the carbon credits?	**Yes / No**	See Section D.7.2 of CPA-DD; Letter of Authorization from the CME; Warranty Form Template, record keeping system and contractual agreements between CME and Affiliates and/or Project Implementers and between CME and suppliers
3	Does the technology employed in the project activity satisfy the following conditions? – Lantern charged only by a renewable energy system included as part of the project lamp (i.e. photovoltaic system) – A minimum of 5,000 hours average life certified by the manufacturer where the initial light output will decline by no more than 30% – Warranty of a minimum of one year covering free replacement or repair of any failed lamp, battery and where applicable solar panel. – Light output of 20 lumens or luminance of 25 lux over an area >= 0.1 m^2 when suspended at a distance of 0.75 meters – Daily Burn Time equal or greater than 3.5 hours – Autonomous Time shall be equal or greater than 150% of the DBT – Solar Run Time in each month shall be greater than or equal to the DBT – Lamps shall be marked for clear, unique identification	**Yes / No**	See Section A.5 of CPA-DD and relevant manufacturer's or third party certification of specifications where applicable. Warranty terms and conditions for solar lanterns included in contract between CME and Affiliates.
4	Has the start date of the SSC-CPA been confirmed, through the provision of the Supplier Order Forms? Is the SSC-CPA start date after the start date of the registered PoA?	**Yes / No**	See Section A.8.1 of CPA-DD and Supplier order forms

5	Will the SSC-CPA implement the methodological and monitoring requirements of *AMS.III.AR Substituting fossil fuel bases lighting with LED/CFL lighting systems as documented in Section B.2 of Part II of PoA-DD?*	**Yes / No**	See Section D.2 of CPA-DD, Supplier Order Form, Service Agreement with Affiliate and/or Project Implementer, manufacturer's or third party certification of specifications, Letter of Authorization
6.	The SSC-CPA is additional because, it meets the additionality criteria set in section B.1 of the PoA-DD	**Yes / No**	See Section A.3 of CPA-DD Methodology default annual baseline emission factor & Service Agreement with Affiliate
7.	Does the SSC-CPA meet the threshold criteria as per the *"Clean Development Mechanism Project Standard (version.02.1)"* because it generates up to 60 ktCO2e annually by not including more than 652,000 solar lanterns per year in the CPA?	**Yes / No**	See Section A.10 of CPA-DD Emission Reduction Calculation Spreadsheet
8.	Does the SSC-CPA satisfy de-bundling rules for PoA, and is not a de-bundled component of a large-scale CPA or CDM project because each solar lantern included in the CPA is no larger than 1% of the small-scale thresholds (i.e. each solar lantern generates emission reductions for less than 600 tCO_2e annually)?	**Yes / No**	See Section A.12 of CPA-DD and relevant manufacturer's or third party certification of specifications where applicable
9.	Does the CME confirm that any funding from an Annex I party involved in the implementation of the SSC-CPA does not result in a diversion of official development assistance for the purchase of CERs, and is separate from and is not counted towards the financial obligations of those Parties?	**Yes / No**	See Section A.11 of CPA-DD CME Letter of Authorization. In case public funding is used for the purchase of CERs, a letter from Annex I party will confirm that this funding will not results in a diversion of official development assistance.

B.3. Application of methodologies

>>The PoA comprises activities that replace portable fossil fuel based lamps (e.g. wick-based kerosene lanterns) with battery-charged LED or CFL based lighting systems in residential and/or non-residential applications (e.g. ambient lights, task lights, portable lights). See section A.6 for further details.

The methodology chosen for the PoA is *AMS.III.AR. Substituting fossil fuel based lighting with LED/CFL lighting systems – Version 04.*

Each solar lantern sold will receive an individual warranty form. A Warranty form is a document that confirms the agreement between the Total Affiliate and the consumer of the solar lantern that provides an assurance to the consumer that the solar product will be covered against any malfunctioning from a manufacturing defect for the relevant warranty period starting from the date of sale. The warranty is subject to the terms and conditions stated on the warranty form. It includes information relating to the date and place of sale; the length of the warranty period; the type of product bought with serial number of

the lamp; and relevant customer information. The Warranty form also confirms that the end user voluntarily and unconditionally assigns the rights to any carbon credits to the CME.

Note that the Executive Board has approved the methodology for use in a PoA.

SECTION C. Management system

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SSC-CPAs will involve the interaction of several parties for the supply, logistics, distribution and finance of the solar lanterns. In all cases, TATS will consistently perform the roles of central purchase entity, central record keeping system management and Coordinating Management Entity (CME) for CDM purposes.

1. **Central Purchase Entity**. TATS will ensure that all participating solar lanterns meet the minimum quality standards required as per the methodology AMS.III.AR Substituting fossil fuel based lighting with LED/CFL lighting systems (please refer to Table 1 in Section A.4.2.1). Also, TATS will coordinate all the logistics and transportation requirements until distribution partners in each of the countries receive solar lanterns.

2. **Central record keeping system.** TATS will manage the consolidation of information from participating end-users for ex-post monitoring requirements and to ensure that no double counting is taking place within each implemented CPA.

3. **Coordinating Management Entity**. As per the *"Standard for the Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities (V.02.1)"* TATS will develop and implement a management system for CDM purposes that includes the interaction between the following offices:

Diagram 2. TATS Offices and Interaction

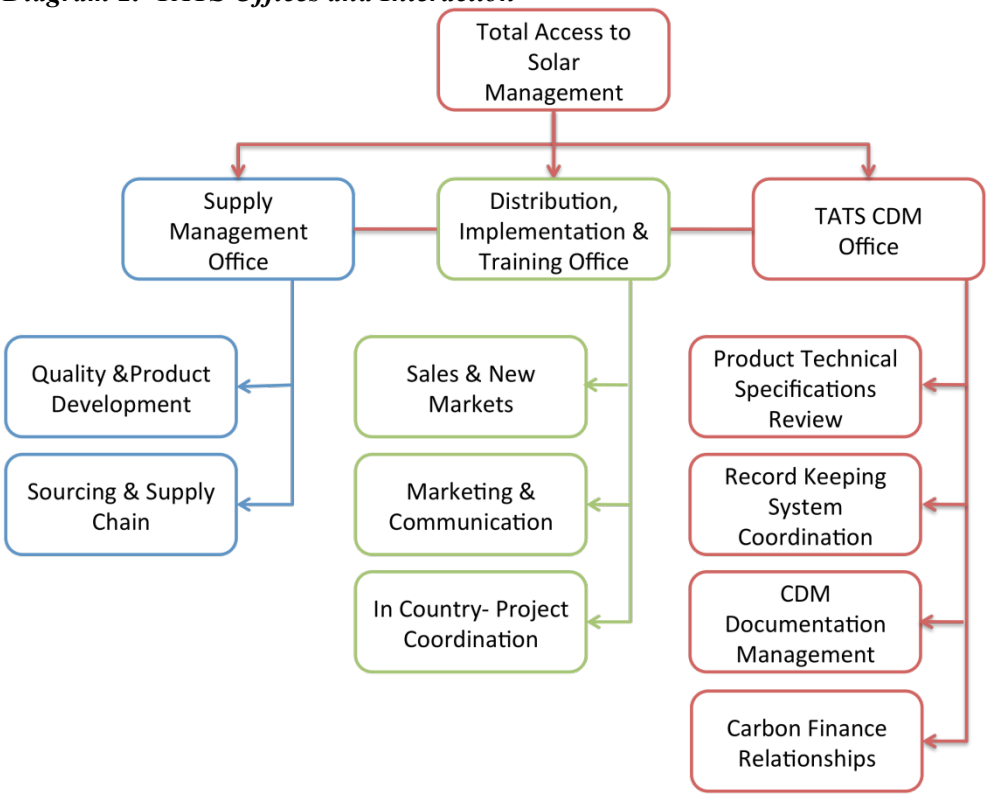


Table 3. Management Systems and responsible offices

Management System Requirement	Responsible Office	Interaction with
1. Clear Definition of Roles and Responsibilities	TATS CDM Office	• Supply Management Office • Distribution, Implementation & Training Office • Total Affiliates
2. Training and capacity development	TATS CDM Office	• Distribution, Implementation & Training Office • Total Affiliates
3. Procedure for technical review of inclusion of CPAs	TATS CDM Office	• Supply Management Office • Distribution, Implementation & Training Office
4. Procedures and systems to avoid double counting	TATS CDM Office	• Supply Management Office • Distribution, Implementation & Training Office • Total Affiliates
5. Record and documentation control process	TATS CDM Office	• Distribution, Implementation & Training Office • Total Affiliates
6. Measures for continuous improvement	TATS CDM Office	• Supply Management Office • Distribution, Implementation & Training Office • Total Affiliates • Up to date with changes in regulations and modifications of UNFCCC related to the PoA and CPAs.

Clear definitions of roles and responsibilities of personnel involved in operation and management of the PoA

The CME has a dedicated CDM office that will oversee the roles described in Section C of this PDD. TATS also has direct management of other key operational areas of the programme such as purchasing of solar lanterns, stock and logistics, sales and after sales services and reporting.

The TATS CDM Office will be responsible for compliance with all the procedures related to CDM activities and preparation of CDM documentation.

Personnel in the CDM Office will fulfil the following competencies:

1) Understanding of the minimal performance and design characteristics required for project lamps as per CDM requirements;
2) Ability to request and interpret information from the record keeping systems and records of sales from the Affiliates and Project Implementers;

3) Understanding and management of critical CDM documentation such as POA-DD and CPA-DD, Letters of Authorisation and emission reduction monitoring calculations
4) Understanding and ensuring CDM standards, procedures and guidelines are followed,
5) Understanding of the elements required for each CPA as described in the Eligibility Criteria and the methodological requirements section of the PoA-DD and CPA-DD.
6) Ability to interact and liaise with the different TATS offices (i.e. Supply, Distribution, Training, etc) to ensure the implementation of CDM requirements in the project cycle

Within the TATS organizational structure, the TATS CDM Office is responsible and accountable for the review of all CDM related processes and documentations following the procedure for technical review of CPA inclusions described below. TATS Management will assess and approve any new inclusions of CPAs into the PoA.

The interaction of the TATS CDM Office with other operational offices within the TATS structure can be seen in the table below (these roles will also apply to the process of CPA inclusions):

Table 4: Operation and Management of the PoA.

Operational process	Management Responsibilities & QA	
	TATS	**Affiliate**
Purchasing	– Selects suppliers and help them design better products by giving a feedback from the field – Audits production sites and certifies product quality – Defines and verifies compliance with contract provisions (lead times, prices, product and service quality) by suppliers, transporters and subsidiaries – Forwards subsidiaries' order forecasts to suppliers – Manages the ordering process and coordinates procurement logistics – Arranges for payment of suppliers	– Manages stocks to prevent shortages – Submits monthly order forecasts to TATS – Places orders with TATS – Plays a key role in obtaining local import documentation – Pays TATS according to the contractually agreed terms
Stock and logistic	– Provides affiliates with: o Storage recommendations based on supplier contracts o Product conformity testing procedures to be applied if circumstances dictate (new products, quality issues etc.).	– Arranges for customs clearance of products – Stores goods at the warehouse in accordance with TATS storage recommendations – Performs conformity tests at TATS' request – Sends TATS monthly stock reports – Coordinates the dispatch of products to the different outlets (service stations, new resellers,, etc.).

Sales	– Makes sales tools available to the affiliates – Supports sales force training – Shares best practices observed at individual affiliates in relation to building up distribution networks and developing sales techniques – Receives the sales reports sent by the affiliates and analyses the figures – Sets sales targets for each distribution channel in consultation with the Steering Committee	– Ensures that the resellers adequately fill in warranty forms. – Every reseller will select one of the following options: ▪ send the copy of the warranty form to the Affiliate HQ or ▪ store the warranty form at the relevant petrol station. In turn, the petrol station will send the serial number of each lamp sold to the Affiliate HQ (i.e. via SMS). The Affiliate HQ will centralise the copy of the warranty forms or collect a database with the serial number of each lamp sold as well as the place of sale (linked to the phone number from the petrol station). – Train the sales force in sales techniques for the lamps thereby encouraging active use of project lamps and ensure compliance with procedures at the different outlets. – Using visual branding display (e.g. branded clothing for service station attendants and micro resellers, and banners for service stations) and other advertising mediums (e.g. press ads) to promote sales of project lamps – Ensures that warranties are honoured and the after-sales service is provided at all outlets – Steers sales in the different distribution channels to achieve sales targets
After Sales Services*	– Monitors defective product rates and ensures being compensated by suppliers – Reimburses affiliates with credit notes for all defective products under warranty – Takes emergency action (e.g. delivering new products by air) in the event of quality problems – Works with affiliates to coordinate the recycling of defective products	– Trains the sales force in after-sales service procedures – Returns defective lamps collected from outlets to a designated central site as quickly as possible – Checks the validity of warranties and performs tests at the retail point with the end-user to confirm that the lamps are, indeed, defective – Reimburses sales intermediaries for all defective lamps replaced under warranty – Stores defective lamps and supporting documentation for at least six months pending recycling – Coordination of sending defective

		products to a recycling partner in consultation with TATS
Record Keeping and Reporting	– Consolidate the entire reporting and record keeping from intermediaries and ensure the information is safe and auditable. – Keep records of all lantern purchase orders from suppliers and compile associated sales data – Keep records of all supplier lamp specifications – Maintain emission reduction monitoring file – Provide assistance and training to Affiliate to conduct sample surveys – Keep records of relevant affiliate and supplier contracts; and Letters of CPA Authorization – Perform calculations for discount factor R	– Submits monthly quantitative reports to TATS including: sales reports by distribution channel and defective product reports – Submits quarterly qualitative reports to TATS – Provides weekly activity updates to TATS – Archive warranty forms at Affiliate HQ collected through Total Network – Keep records to confirm arrival dates of lanterns

* The After Sales Service can be broadly divided into 2 categories:

- Products within warranty terms. All products will have a warranty of minimum one year. TATS will replace any product that is returned to a distributor partner within the first 12 months of the sale.

- Environmentally responsible disposal of solar lanterns. Regardless if the solar lanterns fall within or out the warranty terms, TATS will communicate to customers the possibility and environmental benefits of returning failed solar lamps and its components to TATS Service stations (or other collection points). In addition, TATS will assess the options for offering an incentive (i.e. discount in new products) to customers as part of the disposal program. TATS will store the solar lamps in its local warehouses in order to i) send the failed solar lamps and components back to Europe for proper disposal or recycling or ii) work with an acceptable local partner for the responsible disposal or recycling of solar lanterns and its components.

Records of arrangements for training and capacity development for personnel

All individuals participating in the CME functions and/or CPA inclusion process will undertake appropriate training to understand the structure, functions and requirements of their roles and responsibilities within the CDM process.

The TATS CDM Office will supervise such training and appoint appropriate individuals for each of the requested roles. Each training session will keep records such as a copy of the material presented during the session and lists of attendees, roles and positions.

Furthermore, the CDM Office will review on an ongoing basis the training manuals provided to distribution partners to ensure that key operational elements are properly documented such as filing purchase forms, recording the distribution records and explaining warranty and after-sale services.

When required, the CME will engage specialised carbon consultants to review and support key steps in the PoA management such as CPA inclusions, CPA monitoring and support on verification and issuance processes.

Procedure for technical review of inclusions of CPAS (i.e. review and approval of Eligibility Criteria)

The CME will review the following sections as part of the technical review of inclusions of CPAs:

i. Eligibility Criteria Section
ii. Environmental Impact Assessment Section
iii. Stakeholder Consultation Section
iv. Emission Reduction Calculation Section
v. Description of the Technology to be employed
vi. Record keeping procedures
vii. Legal agreements that assign the rights of the CERs to the CME

Once the Eligibility Criteria (and other sections) has been reviewed and approved by the CME, a Letter of Authorisation will be issued for that CPA confirming that it meets all the requirements set in the Eligibility Criteria and that all acceptable information and documentation has been provided to support its inclusion.

In case that a CPA cannot be included in the PoA the CME will provide a letter explaining the reasons or sections that failed to comply with the CDM requirements as documented in the PoA-DD and Generic CPA-DD.

Table 5. Approval process for inclusion of CPAs.

Responsible	**Task**
CPA implementer and/or Carbon Consultant	Documentation and collation of information required to submit for Letter of Authorisation
TATS CDM Officer	Review of documentation provided to CME requesting Letter of Authorisation
TATS Manager	Final approval and sign off to include CPA in the PoA

Procedure and systems to avoid double counting of emission reductions

The CME will implement a system to avoid double counting of emission reductions to ensure that only one entity is able to claim the carbon credits associated with each project lamp.

Firstly, the CME will ensure that all parties involved in the implementation of a SSC-CPA have agreed to assign CERs to this PoA. This includes CPA implementers, Solar Lantern Suppliers and end-users. This will avoid the situation whereby lantern suppliers or users involved in SSC-CPA

implementation claim the same emission reductions as CERs for another CDM project or PoA. The CME will establish appropriate legal agreements with the SSC-CPA implementers and solar lantern suppliers to ensure that the ownership and assignment of CERs in respect of the PoA is clear, and avoids the possibility of emission reductions being double counted.

In addition, and as per AMS.III.AR requirements every solar lantern sold by TATS will be uniquely identified by its serial number. TATS will have access to hard copies of the sales certificates (i.e. proofs of purchase or warranty cards) of the lanterns that will be sold to end-users. The Terms and Conditions described in the Warranty Forms communicate to the end-user that the carbon credits associated with the solar lantern belong to the CME.

Record and documentation control process for each CPA under the PoA

Each SSC-CPA will follow the record keeping and monitoring requirements stipulated in AMS.III.AR v4 and detailed in Section D.7 of the CPA-DD. In summary, the CME will ensure that for each SSC-CPA appropriate records will be kept documenting the following information:

- CPA Boundary: The geographical location of each SSC-CPA.
- A single centralized electronic file, maintained by CME and containing all Lamp Serial Numbers (or ranges of serial numbers) and Lamp Type
- Every Affiliate headquarters will keep a database with all the serial numbers of solar lanterns sold. In turn, each serial number of solar lanterns is linked with a particular Proof of Purchase/Warranty form being kept either in the Affiliate HQ or in the relevant petrol station. This form contains the following data:
    - Equipment Data: Lamp Reference (which one can infer Lamp Wattage, Battery Type and Charging Method)
    - Sales Data: Date of sale, ID of distribution partner, Purchase or Replacement, Lamp Serial Number, Date of end of warranty period
    - Household Data: Name, phone number (if applicable), address (if applicable).
    - Warranty Terms and Conditions including confirmation that the carbon credits associated with the solar lanterns belong to TATS
- Relevant information and documentation to ensure the avoidance of double counting of emission reductions. This information especially includes supplier contracts that clearly specify the ownership of any emission reductions associated with the purchased lanterns by TATS
    - CDM Related Documentation
    - Letter of Authorization for CPA Inclusion
    - Stakeholder Consultation Reports and Minutes (if applicable)
    - Environmental Impact Assessment when and if required
    - CPA Design Documents

Following this structure, TATS will ensure a vertical integration of quality control for minimum technical requirements of solar lanterns from all suppliers as well as transparent and auditable record keeping systems to ensure the avoidance of double counting and allow for ex-post monitoring surveys or verifications when and if required.

Measures for continuous improvements of the PoA management system

The CME will implement continuous monitoring and improvement processes in order to ensure full compliance with CDM processes and particular elements of the selected CDM methodology. These improvement processes will cover the initial areas of CME Operations described above:

- Central Purchase Entity – quality control on product specifications
- Central Record Keeping procedures – quality control on relevant records and documentation
- Coordinating Management Entity – quality control on CDM processes and requirements

The monitoring of these functions will be documented on annual basis as part of an internal CDM review process and shared with the TATS Management Office.

Continuous improvement from a project operation point of view will be implemented by the CME gathering lessons learned during the distribution process and regularly updating the Affiliate Toolkit and Training materials accordingly. These two elements will deliver a series of non-conformity, corrective and or preventive actions that will be applied to existing CPAs or used as planning for the inclusion and management of future CPAs.

SECTION D. Duration of PoA
D.1. Start date of PoA
>>23 May 2012

As per EB 70 and CDM Glossary of Terms (Version 07), Start Date of a PoA is defined as "*the date on which the coordinating/managing entity officially notifies the secretariat and the DNA of their intention to seek the CDM status or the date of publication of the PoA-DD for global stakeholder consultation in accordance with the relevant CDM rules and requirements.*"

In this case, the CME has selected the date of publication of the PoA-DD for Global Stakeholder Consultation

D.2. Length of the PoA
>>28 Years

SECTION E. Environmental impacts
E.1. Level at which environmental analysis is undertaken
>>Environmental Analysis will be performed at a PoA Level.

Since the PoA will use the same type of technology applied in the same context across all CPAs (i.e. distribution of solar lanterns to households and SMEs with fossil fuel lighting), it is not required that each CPA conducts its own environmental analysis and this is sufficient at the PoA level.

E.2. Analysis of the environmental impacts
>>The PoA involves the distribution of solar lanterns to end-users in Kenya. Apart from the generation of battery waste, the project activity will not result in significant environmental impacts.

In the case of Kenya, the *Kenya Environmental Management and Co-ordination Act* (EMCA) - *Act No.8 of 1999* Regulations govern the general disposal of waste in Kenya. The Rules set out various responsibilities of a waste generator. These are set out in Regulations 4, 5 and 6 and include:

- The collection, segregation and disposal of waste in the manner provided for under the Regulations. For example disposal to be done in a designated waste receptacle; waste to be segregated by separating hazardous waste from non-hazardous waste and disposing of such wastes in a facility shall be provided by the relevant local authority.

- Minimizing the waste generated by adopting cleaner production methods, for example by improving the production process, monitoring the product cycle from beginning to end and incorporating environmental concerns in the design and disposal of a product.

Furthermore, in 2010, the National Environment Management Authority in Kenya released the *Guidelines for E-Waste Management* in Kenya. These guidelines have the objective of "providing a framework for the development of regulations and policies with the participation of key stakeholders in the sustainable management of e-waste in Kenya." These Guidelines work in combination with the *Waste Management Act 2006*.

In order to reduce the potential negative impacts of battery waste and comply with the above-mentioned rules TATS will communicate to end-users the possibility and environmental benefits of returning failed solar lamps and its components to TATS Service stations (or other collection points). In addition, TATS is assessing options for offering a financial incentive (e.g. discount on new products) to end-users as part of the disposal program. TATS will store the solar lamps in its local warehouses in order to i) send the failed solar lamps and components back to Europe for proper disposal or recycling or ii) work with an acceptable local partner for the responsible disposal or recycling of solar lanterns and its components. In case that a local partner is used, the affiliate will ensure that the companies involved in transporting, disposal or recycling of the solar lanterns in Kenya have the appropriate licenses. TATS is currently exploring options for the recycling and responsible disposal of solar lanterns.

TATS has contracts in place with specialized transportation companies for all their petroleum, LPG and petrol stations related products. TATS will ensure that all its contractors have the necessary permits and licenses in place with the relevant local authorities for example, the Kenyan Energy Regulatory Commission (ERC).

Furthermore, According to Section 58 (1) of the *Kenya Environmental Management and Co-ordination Act* (EMCA) - *Act No.8 of 1999*, any undertaking specified in the Second Schedule to the Act requires the submission of an Environment Impact Assessment (EIA) prior to the financing, commencing, proceeding with, carrying out, executing or conducting of that undertaking.

Schedule 2 of the Act sets out the following activities that have to undergo environmental impact assessment:

- General activities: an activity out of character with its surrounding; any structure of a scale not in keeping with its surrounding; or major changes in land use.

- Specific activities: projects on urban development, transportation, dams, rivers and water resources, aerial spraying, mining, forestry related activities, agriculture, processing and manufacturing industries, electrical infrastructure (i.e. electricity generation stations; electrical transmission lines; electrical sub-stations; and pumped-storage schemes),management of hydrocarbons, the establishment of natural conservation areas, nuclear reactors, major developments in biotechnology and lastly waste disposal (e.g. sites for solid and hazardous waste disposal).

The project proponent is not carrying out any of the above-mentioned activities and does not therefore require an EIA licence under Kenyan law.

Although TATS will actively work on the responsible management of the potential waste generated by the PoA, there are no legally binding requirements in Kenya for conducting an environmental impact assessment for the distribution and disposal of solar lanterns.

SECTION F. Local stakeholder comments

F.1. Solicitation of comments from local stakeholders

>>Local stakeholder consultation is done at PoA level

A single stakeholder consultation process will be undertaken for each host country involved in the PoA. The results of each process will be documented in the PoA-DD.

In order to comply with the stakeholder engagement requirements set out by UNFCCC, the Coordinating Management Entity will conduct a public consultation, and will compile formal reports.

In the context of the implementation of the PoA in Kenya, the following steps were taken to engage stakeholders:

- A stakeholder consultation sessions was conducted at a public meeting in Nairobi (Lenana Conference Centre, Jacaranda Avenue, Off Gitanga Road, Lavington) on Friday 11th of May 2012.
- The meeting was advertised in national newspaper (Daily Nation on Friday 4th of May 2012), as well as invitations being extended directly to government agencies, NGOs, development organisations and environmental institutions.
- A report summarising all comments received during the meeting, and how these have been incorporated into the project design, was provided to stakeholders following the meeting.
- Comments received during this main stakeholder consultation period were compiled and incorporated where relevant into the final project design.

The public participation meeting consisted of one session held from 10am to 12pm. Approximately 25 people from a range of organisations attended the session. A list of attendees, copies of invitations and advertising materials have been provided to the DOE for validation.

>>In the advert and the personal invitations interested parties who were not able to attend were invited to submit comments and queries by e-mail, telephone or post as follows:

If you are unable to attend the session but wish to receive the information regarding to this project and submit comments or questions please contact:

NAME: NDIGA KITHAE
PHONE: +254 20 2897252
EMAIL: jeremia.kithae@total.co.ke
ADDRESS: P. O. Box 30736, 00100 GPO Nairobi

F.2. Summary of comments received

In each session a presentation was made describing the project followed by a question and answer session in which attendees were invited to make comments and ask questions. The questions and comments made and responses given were as follows:

No.	Questions/Comments	Answers
1	With the calculation of 0.80 tonnes of CO_2 per year, What volume of CO_2 are we looking at in the first year?	In the case that the program sells 55,000 solar lanterns in 2012, 4,400 Certified Emission reductions will be generated (1 CER = 1 tonne of greenhouse gas abatement)

2	Looking at the CDM currently there is a deadline at the end of 2012. Are we registering the POA so that those who haven't bought the products can benefit?	The end of 2012 deadline means that carbon credits (CERs) generated from any CDM project that are registered after December 2012, unless the project is implemented in a Least Developed Country, can not be sold into the European Union Emission Trading Scheme (EU ETS). Currently there are no other markets that buy Certified Emission Reductions although it may be possible in the future to sell those carbon credits to different markets (i.e. Australia).
3	If I buy 5,000 lanterns between now and January 2013, anything that comes after December 2012 wont be registered under the Kyoto protocol? Will they earn carbon credit after?	Carbon credits will still be generated after December 2012 but if the PoA doesn't achieve registration with the United Nations before the end of 2012, those carbon credits cannot be used for compliance in the EU ETS. If the PoA is successfully registered before the end of 2012, solar lanterns that are sold after December 2012 will still qualify to generate carbon credits eligible to be sold in the EU ETS.
4	What is the price range of carbon credit?	Currently (May 2012), the price of a CER in the secondary market ranges from 3.50 to 5 Euros.
5	How many lanterns would you have to sell to reduce one tonne of carbon?	As per the approved UN methodology used by the PoA (AMS.III.AR Substituting fossil fuel based lighting with LED/CFL lighting Systems), each solar lantern reduces 0.08 tonnes of CO2e per year. This means that in order to reduce 1 tonne of carbon each year 13 solar lanterns will have to be sold.
6	Does the UN methodology take into account of the manufacturing of the lanterns into the carbon calculation?	No, the approved UN methodology is not a life cycle assessment methodology. It considers only the greenhouse gas abatement from the use of the solar lanterns displacing kerosene for lighting.
7	In the presentation earlier, you said you used 3 suppliers? What criteria did you put in place to select those suppliers?	There are 3 criteria: 1) the products of this supplier should integrate in the existing range of products proposed in TATS offer; 2) the products should meet the minimum technical requirement as per UN methodology; 3) the quality/price ratio should be the best possible, since TATS aims to sell the best products (with after-sales services) at the best price.
8	I presume a problem of lanterns is their maintenance? Where can we get access to maintenance service?	Quality of the lantern is highly considered by Total. Warranties are provided through out the entire network of services stations country-wide. If there is genuine defect on the lantern, then the customer can come to the petrol station to change it for free. In addition, quality checks are made by a third party directly out of the factory on each container.
9	From experience, we used to do lanterns 2-3 years ago, its fine to have warranty but is there a person we can contact?	If there is genuine defect on the lantern, then the customer may come to station to change it for free.

10	A local community forest association has applied through nearest Total Homa bay station with Eco Challenge. The same CFA plans to build its own guesthouse. The CDM approach is good, is there possibility the two components, of Solar be combined with Eco challenge approach?	TATS cannot comment on the Eco Challenge approach or its feasibility for CDM.
11	In the past, a complaint on CDM mechanism was that the net effect is a loss. I see you try to return benefit to users, What has changed to make a net benefit? Are you absorbing the costs?	By being able to generate carbon credits, the project will provide resources to make the technology accessible to the households and support costs associated with communication, distribution and logistics. Overall the households benefit from the carbon credits by having access to the solar lanterns through a comprehensive distribution network that is partially financed by the generation of carbon credits. Costs associated with the procurement and sale of solar lanterns are significant and these are not 100% covered by the generation of carbon credits. Particularly in the past few months, carbon prices have decreased considerably although there are some expectations that they may rise in the future.
12	Is the tracking of lamps out there? What point do you consider the lamp is able to earn carbon credits? Is it at distributor level? How do we know it is in use and able to earn credits?	The United Nations methodology used by the project is the results of several stakeholders and working groups with experience in the deployment of energy efficiency and renewable energy products such as solar lanterns. This methodology provides conservative values to calculate the emission reductions associated with the common use of solar lanterns by households and communities. Furthermore, the TATS Solar lantern program will use a purpose-built data management system to ensure the sales of the solar lanterns reaches the targeted household and keep a transparent record of sales across Kenya.
13	What about those lanterns bought by other association/ agencies?	Only solar lanterns that follow the technical specifications, data capture and unique identification characteristics of the TATS Solar Lantern project will be able to generate carbon credits associated with this project.

14	You say, 7 out of 10 lanterns, only 7 are being used for to replace kerosene. How do we monitor this?	Lighting Africa states, "About 7 in every 10 households say their households are poorly lit and introduction of more lights would be the ultimate solution." In that sense, TATS did not state that out of every 10 lanterns sold only 7 replaced kerosene. As per the UNFCCC methodology the programme is not required to monitor the volume of kerosene replaced by the solar lanterns used by households. The selected methodology uses conservative values for the calculation of emission reductions (i.e. hours of use of each solar lantern, volume of kerosene consume on daily basis, etc). The UNFCCC and the working groups that have approved the methodology consider its values conservative enough that no monitoring of the actual kerosene consumption is required. Furthermore, the TATS Solar lantern project has developed a data management system that will support the monitoring of solar lantern sales under the project ensuring that the solar lanterns are successfully reaching the target market. Additional information on baseline kerosene fuel consumption in Kenya can be found at www.lightingafrica.org
15	How do you intend to get to the market?	TATS will sell the CERs to TGPL (Total Gas & Power Limited, an affiliate of Total S.A.), and TGPL will use them 1st in substitution to quotas and will sell the remaining volume on the European market.
16	Have you registered officially with the United Nations?	The TATS Solar Lantern project is aiming to request registration to the United Nations before the end of 2012.
17	Who is verifying your project?	The TATS Solar Lantern project will be validated by an approved United Nations Auditor third party or Designated Operational Entity (DOE)
18	Considering TATS is distributing D.light and d.light is using other channels – are those other lanterns going to be included in carbon credits?	Only solar lanterns distributed under the TATS Solar Lantern project and following the project design, technical specifications and quality control procedures will be able to generate carbon credits within this project. Other retailers using D.light solar lanterns will have to either register their own CDM projects or get in contact with TATS to understand the implementation requirements of the TATS Solar Lantern Project.

19	Carbon trading. How are you operating if you are not registered with UN?	Currently no carbon credits have been issued by the pilot projects that TATS is currently running in Kenya. The intention of the pilot projects is to test the technology, the distribution and the communication model. TATS is currently absorbing all the costs associated with these pilot projects and is because this that carbon credits are an important component of this projects in the future.
20	Technologies change, since d.light is there, what are the ways for better lanterns to come up like 5 years down the line when there will be different lanterns.	TATS will maintain ongoing relationships with suppliers to ensure that the most adequate solar lanterns are part of the project.
21	What effect does it have, in terms of price to end of year?	All the benefits of the project, as well as carbon finance revenues, will be reinvested in order to sell future solar lamps at lower prices.
22	On the Emission factor, are we comparing with kerosene /diesel?	The approved United Nations methodology (AMS.III.AR) uses calculations for kerosene as the main fuel for lighting and baseline research such as Lighting Africa research suggests kerosene is the main fuel for lighting for the targeted households.
23	The UN will ask you what you have piloted in Total Service Station. Have you piloted this presentation to any of the Total Service Stations?	Currently TATS is running a series of pilot projects in Kenya to test the market, products as well as distribution and communication models. The information and experience gathered from these pilot projects is very valuable for the design and operation of the PoA.

F.3. Report on consideration of comments received

>>The section below provides an overview of how stakeholder feedback will be incorporated into the design of the programme. The sessions provided some valuable insights and ideas into operational elements of the PoA, which will be used by the CME to assist with the design and implementation of the PoA.

Consideration to Question 8 and 9.

A key comment from stakeholder is the correct application of the warranty on the solar lanterns. TATS will ensure that this element properly discussed during the training sessions and in the training manual provided to the petrol stations and other distribution partners. The warranty terms and conditions will be made clear to customers purchasing the solar lanterns. Defective solar lanterns can be returned to any of the Total Kenya petrol stations within the warranty period in order to be replaced by new solar lanterns.

Consideration to Question 12.

In order to provide certainty on the correct distribution to solar lanterns, TATS has developed a record keeping system to serve as a quality assurance tool and ensure that solar lanterns are reaching targeted end-users. The record keeping system provides arrival dates to the affiliate central warehouse including the serial numbers of the lanterns received. Furthermore, the record keeping system will work in parallel with the In-country logistics to ensure that the stock and deployment of solar lanterns is consistent with the reports from distribution partners.

Consideration to Question 20.

Stakeholders commented on the need to keep TATS engage with solar lanterns suppliers in order to ensure that the most efficient and up to date technologies are available under the project. TATS will maintain a close relationship with solar lanterns suppliers to analyse different technologies and options that meet and exceed (when possible) the technical requirements for the solar lanterns as documented in the AMS.III.AR methodology.

SECTION G. Approval and authorization

>>Letter of Approval from the Kenyan Designated National Authority (DNA) has been provided.

PART II. Generic component project activity (CPA)

SECTION A. General description of a generic CPA

A.1. Purpose and general description of generic CPAs

>>

The CPA's will include activities that replace portable fossil fuel based lamps (e.g. wick-based kerosene lanterns) with battery-charged LED or CFL based lighting products charged by renewable energy system included as part of the Project Lamp in residential and/or non-residential applications (e.g. ambient lights, task lights, portable lights).

It is expected that CPAs will be defined on the basis of geographical boundaries (i.e. countries, provinces, municipalities) as well as by date of sale (i.e. month/year of sale). CPAs in different geographical boundaries and started at different points in time may contain different types of lanterns. The types of lamps will be specified for each CPA. Following this combination, the CME will be able to identify solar lanterns belonging to specific CPAs in order to calculate the relevant emission reductions during each monitoring period.

The distribution of off-grid solar lantern will reduce the consumption of fossil fuel based lighting and hence reduce the harmful gases and particulate matter produced during the burning of fossil fuels to produce light.

For a more detailed description of the profile of each CPA please read the eligibility criteria stipulated in Section B.2 of the PoA-DD.

SSC-CPAs will involve the interaction of several parties for the supply, logistics, distribution and finance of the solar lanterns. In all cases, TATS will consistently perform the role of central purchase entity, central database management and Coordinating Management Entity (CME) for CDM purposes.

1. **Central Purchase Entity**. TATS will ensure that all participating solar lanterns meet the minimum quality standards required as per the methodology AMS.III.AR Substituting fossil fuel based lighting with LED/CFL lighting systems (please refer to Table 1 in Section A.6). Also, TATS will coordinate all the logistics and transportation requirements until distribution partners in each of the countries receive solar lanterns.

2. **Central Database Management**. TATS will manage the consolidation of information from participating end-users for ex-post monitoring requirements and to ensure that no double counting is taking place within each implemented CPA.

3. **Coordinating Management Entity**. TATS will develop and implement a management system for CDM purposes including the following:

    - Clear definitions of roles and responsibilities of personnel involved in the process of inclusion of CPAs
    - Records of arrangements for training and capacity development for personnel
    - Procedure for technical review of inclusions of CPAS (i.e. review and approval of Eligibility Criteria)
    - Procedure and systems to avoid double counting of emission reductions
    - Record and documentation control process for each CPA under the PoA
    - Measures for continuous improvements of the PoA management system

Following this structure, TATS will ensure a vertical integration of quality control for minimum technical requirements of solar lanterns with selected suppliers as well as transparent and auditable record keeping systems to ensure the avoidance of double counting and allow for ex-post monitoring surveys or verifications when and if required.

Each CPA will use a mix of distribution mechanisms for which an indicative list[13] is provided in the table below:

Table6. Distribution mechanisms that will assist in reaching the targeted population[14].

Distribution mechanism	Description	Population target
Total network	All Total service stations and distributors of Total products	All households and small businesses.
Micro-resellers	Sales by entrepreneurs, whether Total employees or independent.	Base-of-Pyramid population
Itinerant sales	Sales through promotional or communication events organised by the affiliate's teams	End users attending such events
Total employees	Sales to Total employees, service station staff or contract staff.	Total employees, service station staff or contract staff
Last mile distribution partners	Sales by NGOs and/or cooperatives	Base-of-Pyramid population

The table below summarises the range of operational activities of the PoA required to implement and manage each SSC-CPA. The coordinating management entity has divided these operations into five broad categories and has defined the management responsibilities for each as detailed in the table below.

Diagram 3. Basic operation structure of a CPA

[13] Other distribution mechanisms may be established for particular CPAs

[14] *For more information please refer to:* TATS *Affiliates Toolkit Chapter 5, page 5.*

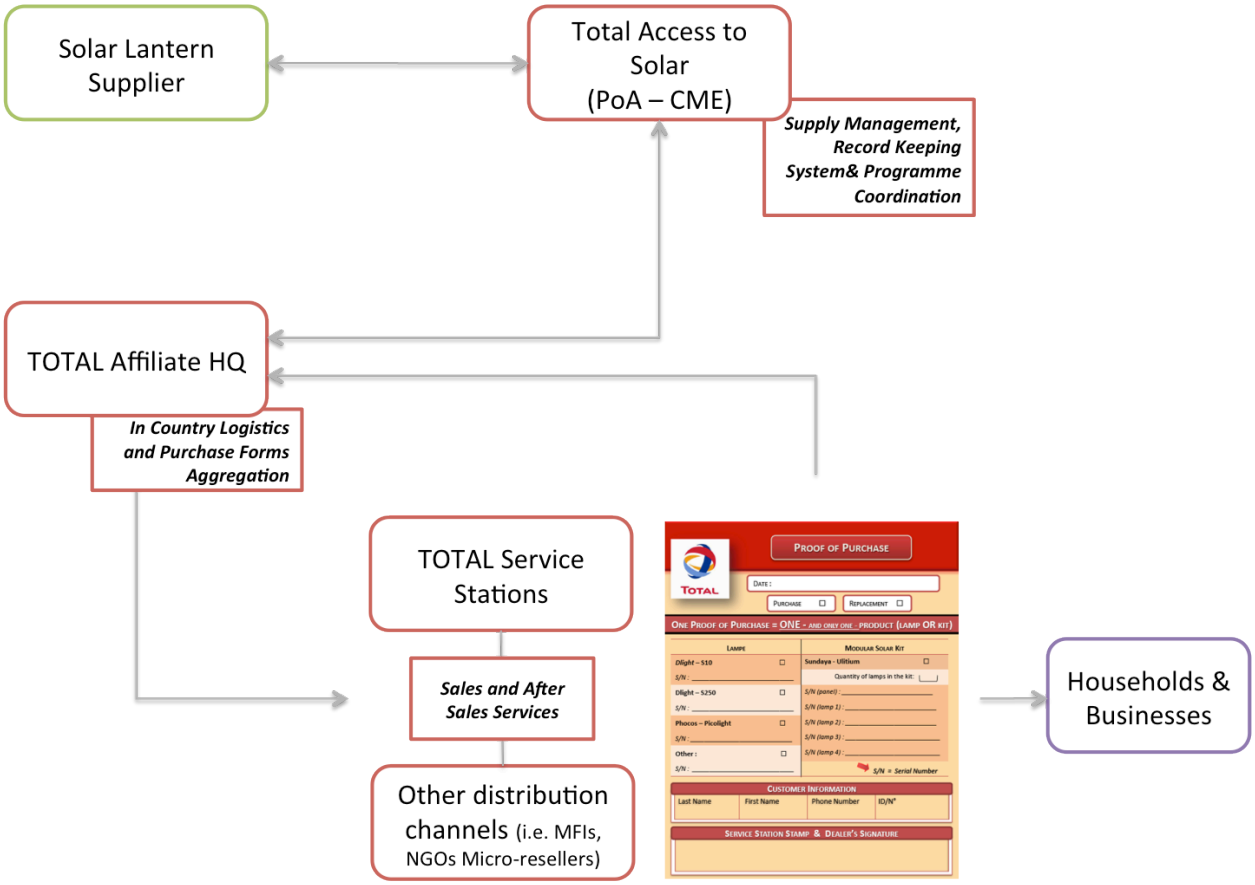


Table 7: Operation and Management of the PoA.

Operational process	Management Responsibilities & QA	
	TATS	**Affiliate**
Purchasing	– Selects suppliers and help them design better products by giving a feedback from the field – Audits production sites and certifies product quality – Defines and verifies compliance with contract provisions (lead times, prices, product and service quality) by suppliers, transporters and subsidiaries – Forwards subsidiaries' order forecasts to suppliers – Manages the ordering process and coordinates procurement logistics – Arranges for payment of suppliers	– Manages stocks to prevent shortages – Submits monthly order forecasts to TATS – Places orders with TATS – Plays a key role in obtaining local import documentation – Pays TATS according to the contractually agreed terms

Stock and logistic	– Provides affiliates with: o Storage recommendations based on supplier contracts o Product conformity testing procedures to be applied if circumstances dictate (new products, quality issues etc.).	– Arranges for customs clearance of products – Stores goods at the warehouse in accordance with TATS storage recommendations – Performs conformity tests at TATS' request – Sends TATS monthly stock reports – Coordinates the dispatch of products to the different outlets (service stations, new resellers).
Sales	– Makes sales tools available to the affiliates – Supports sales force training – Shares best practices observed at individual affiliates in relation to building up distribution networks and developing sales techniques – Receives the sales reports sent by the affiliates and analyses the figures – Sets sales targets for each distribution channel in consultation with the Steering Committee	– Ensures that the resellers adequately fill warranty forms. – Every reseller will select one of the following options: ▪ send the copy of the warranty form to the Affiliate HQ or ▪ store the warranty form at the relevant petrol station. In turn, the petrol station will send the serial number of each lamp sold to the Affiliate HQ (i.e. via SMS). The Affiliate HQ will centralise the copy of the warranty forms or collect a database with the serial number of each lamp sold as well as the place of sale (linked to the phone number from the petrol station). – Train the sales force in sales techniques for the lamps thereby encouraging active use of project lamps and ensure compliance with procedures at the different outlets. Using visual branding display (e.g. branded clothing for service station attendants and micro resellers, and banners for service stations) and other advertising mediums (e.g. press ads) to promote sales of project lamps – Ensures that warranties are honoured and the after-sales service is provided at all outlets – Steers sales in the different distribution channels to achieve sales targets
After Sales Services*	– Monitors defective product rates and ensures being compensated by suppliers – Reimburses affiliates with credit	– Trains the sales force in after-sales service procedures – Returns defective lamps collected from outlets to a designated central

	notes for all defective products under warranty – Takes emergency action (e.g. delivering new products by air) in the event of quality problems – Works with affiliates to coordinate the recycling of defective products	site as quickly as possible – Checks the validity of warranties and performs tests at the retail point with the end-user to confirm that the lamps are, indeed, defective – Reimburses sales intermediaries for all defective lamps replaced under warranty – Stores defective lamps and supporting documentation for at least six months pending recycling – Coordination of sending defective products to a recycling partner in consultation with TATS
Reporting	– Consolidate the entire reporting and record keeping from intermediaries and ensure the information is safe and auditable.	– Submits monthly quantitative reports to TATS including: sales reports by distribution channel and defective product reports – Submits quarterly qualitative reports to TATS – Provides weekly activity updates to TATS

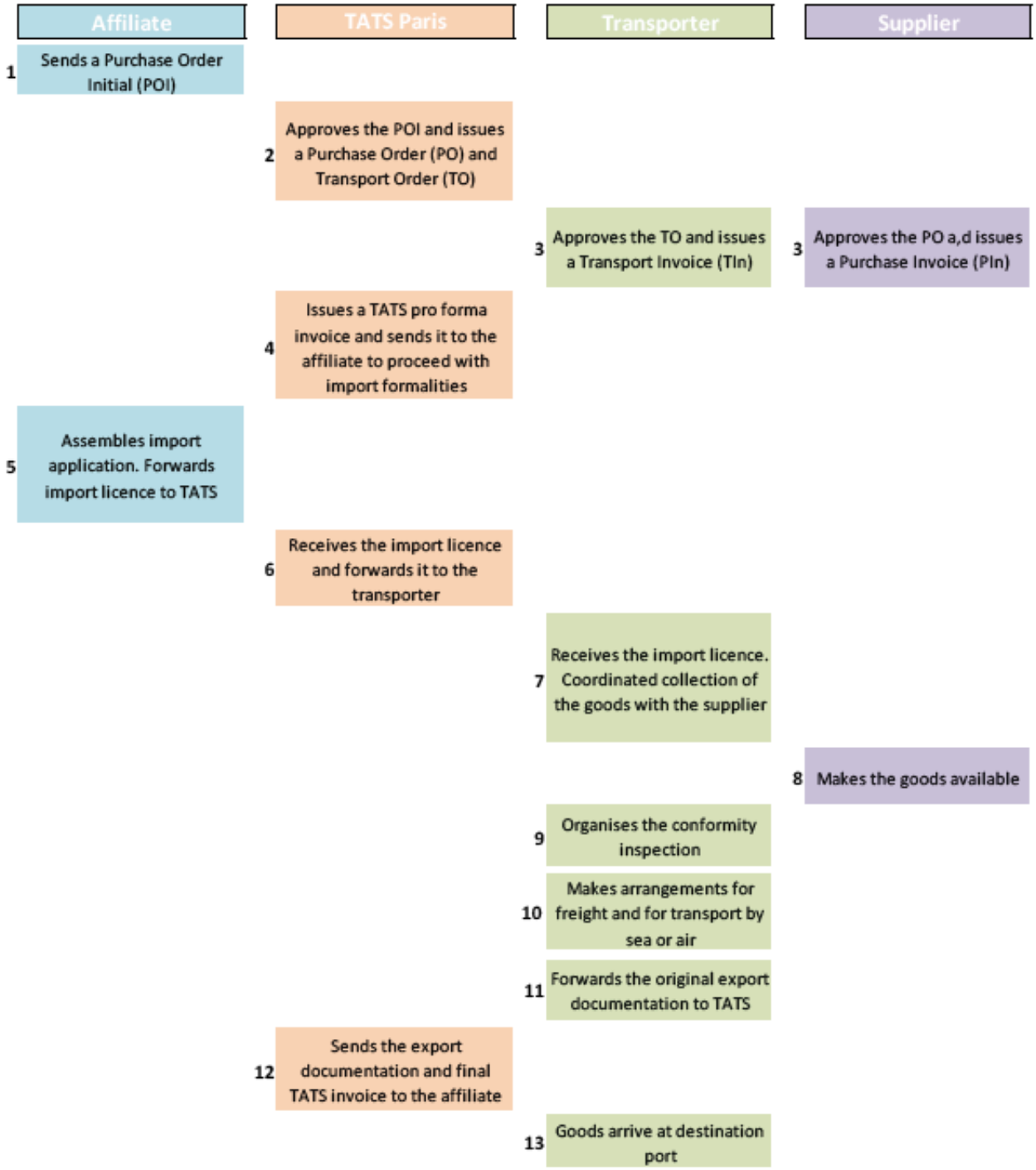
* The After Sales Service can be broadly divided into 3 categories:

- Products within warranty terms. All products will have a warranty of minimum one year. TATS will replace any product that is returned to a distributor partner within the first 12 months of the sale.

- Environmentally responsible disposal of solar lanterns. Regardless if the solar lanterns fall within or out the warranty terms, TATS will communicate to customers the possibility and environmental benefits of returning failed solar lamps and its components to TATS Service stations (or other collection points). In addition, TATS will assess the options for offering an incentive (i.e. discount in new products) to customers as part of the disposal program. TATS will store the solar lamps in its local warehouses in order to i) send the failed solar lamps and components back to Europe for proper disposal or recycling or ii) work with an acceptable local partner for the responsible disposal or recycling of solar lanterns and its components.

These tasks can be summarised in the diagrams below:

Purchasing process:



Stock and logistic process:

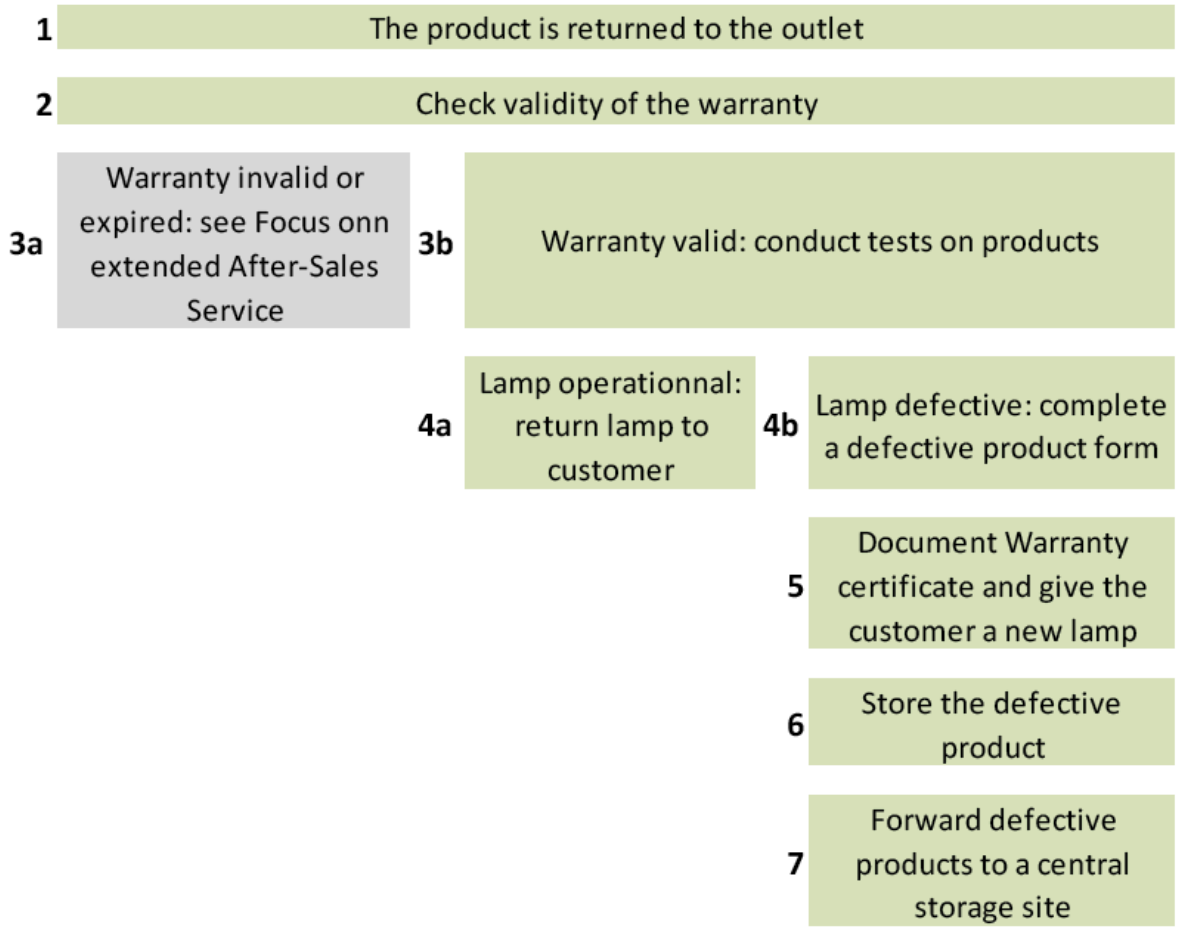
	Transporter		Affiliate
1	Products arrive at destination customs		
		2	Clears products through destination customs
		3	Transports the products to the warehouse
		4	Performs quality tests on the products at the warehouse (optional)
		5	FIFO stock control
		6	Sends products to the different sales outlets

For details of the process from the warehouse to the affiliate's customers, see chapter 5. Sales

Sales process:

TATS Paris	Affiliate	Sales outlets	
	1 Dispatches products to the different outlets		
		2 Receives and stores the lamps	
		3 Presents the products and the selling points to the customers	
		4 Demonstrates the product to customers before the sale	
		5a Product suitable for sale	5b Identifies defective product
		6a Generates the Warranty Certificate and records the sale	6b Sets aside and documents defective products (see Aftersales Service Chapter)
		7 Reports the sales figures to the affiliate	
	8 Forwards the sales figures at the affiliate level to TATS		
9 Receives and analyses the sales report			

After Sales Services process:



The following Solar Lamps Technical Specifications Table (***Table 2***) will be documented for each CPA.

No.	Concept	Definition	Minimum Methodological Requirements
1	**Rated lamp life (in hours)**	Rated average life is the life certified by the manufacturer or responsible vendor as being the time at which the lamps initial light output will decline by no more than 30%	5,000 hours
2	**Lantern charging system**	Charged by a renewable energy system included as part of the Project Lamp (i.e. a photovoltaic system);	Only systems charged by a renewable energy system will be used.
3	**Warranty**	In years	A minimum of one year covering free replacement or repair of any failed lamp, battery and where applicable solar panel.
4	**Light output**	In lumens	20 lumens or luminance of 25 lux over an area ≤ 0.1 m^2 when suspended at a distance of 0.75 meters. The

			light output over a 2,000 hour lumen maintenance test should not decline by more than 20%
5	**Daily Burn Time (DBT)**	Total number of hours per day that the lighting system must provide light that is bright enough to satisfy the light output requirements. DBT is expressed in hours.	≥ 3.5 hours
6	**Battery Capacity - Autonomous Time**	In Percentage of DBT	Autonomous Time ≥ 150% of the DBT.
7	**Solar Run Time**	Operational time (in hours) in a mode that is bright enough to satisfy the light output requirements from a day of solar charging under standard solar day conditions.	Each month ≥ DBT.
8	**Physical protection against environmental factors**	With regard to physical ingress and water protection, the Project Lamps shall achieve a minimum level of protection, based on the type of lamp, in accordance with IEC 60529, or an equivalent national standard, or the approved norms indicated at the end of this table.	Not applicable but description required
9	**Lamp wattage**	In Watts	Not applicable but description required
10	**Type and rated capacity of the renewable energy equipment used for battery-charging**	In Watts	Not applicable but description required
11	**Type and rated capacity of the batteries**	Type (e.g. NiMH, Lead-Acid, Li-ion) and rated capacity (in Ampere Hours)	Not applicable but description required
12	**Type of charge controller**	Active or Passive	Not applicable but description required

SECTION B. Application of a baseline and monitoring methodology

B.1. Reference of the approved baseline and monitoring methodology(ies) selected

>>AMS.*III.AR. Substituting fossil fuel based lighting with LED/CFL lighting systems – Version 04.*

Note that the Executive Board has approved the methodology for use in a PoA.

In addition, the PoA will utilise the following Tools and Guides:

- *Guidelines For Demonstrating Additionality Of Small-scale Project Activities (Version 09.0)*
- *"Standard for the Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities (V.02.1)"*

B.2. Application of methodology(ies)

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III.AR. Version 04 requirements	Qualification / Justification	Evidence
This category comprises activities that replace portable fossil fuel based lamps (e.g. wick-based kerosene lanterns) with battery-charged LED or CFL based lighting systems in residential and/or non-residential applications (e.g. ambient lights, task lights, portable lights).	Section A.3 and A.5 of each CPA-DD contains a description of the activities to be implemented as well as a description of the technology to be used to replace portable fossil fuel based lamps.	Service Agreements with Affiliates and/or Project Implementers will confirm the activities and technologies to be used in the CPA.
This methodology is applicable only to Project Lamps whose batteries are charged using one of the following options: (a) Charged by a renewable energy system included as part of the Project Lamp (e.g. a photovoltaic system or mechanical system such as a hand crank charger);	The project developer will demonstrate that all Project Lamps shall use renewable energy systems (i.e. photovoltaic systems) for recharging batteries. Project lamps will not use hand crank chargers. This will be documented in section A.5 of each CPA-DD as per the Technical specification table, which contains the characteristic of the products used including all minimum requirements and other specifications described in the chosen methodology.	Manufacturer's specifications and if needed, third party certifications, will confirm the technical specifications of the systems to be sold under the CPA.
At a minimum Project Lamps shall be certified by their manufacturer to have a rated average life of at least: a) 5,000 hours for Option 1 b) 10,000 hours for Option 2, Rated average life is the life certified by the manufacturer or responsible vendor as being the time at which the lamp's initial light output will decline by no more than 30%.	As stated in Section A.5 of each CPA-DD the CPA will contain project lamps that have a rated average life of at least 5000hrs (option 1). This will be documented in section A.5 of each CPA-DD as per the Technical specification table, which contains the characteristic of the products used including all minimum requirements and other specifications described in the chosen methodology.	Manufacturer and third party certifications, will confirm the technical specifications of the systems to be sold under the CPA.

Project lamps shall meet or exceed the following minimum performance characteristics, which should be proven by third-party test results: (a) Light Output - luminous flux of 20 lumens or illuminance of 25 lux over an area ≥0.1 m2 when suspended at a distance of 0.75 meters or self-supported. The light output over a 2,000 hour lumen maintenance test should not decline by more than 20% for Option 1 (paragraph 16) or 15% for Option 2 (paragraph 17); (b) Run Time and Battery Capacity - Daily Burn Time (DBT) shall meet the following requirements: (i) DBT shall be equal to or greater than 3.5 hours; (ii) For charging Option 3(a) the autonomous time of the project lamps shall meet the following requirements: a. For Option 1, paragraph16, the autonomous time shall be equal to or greater than 150% than the DBT of the project lamps; b. For Option 2, paragraph 17, the autonomous time shall be equal to or greater than 150% of the DBT of the project lamps; (iii) For charging Options 3(b) and 3(c) the autonomous time of the project lamps shall meet the following requirements: a. For Option 1, paragraph 16, the autonomous time shall be equal to or greater than 200% of the DBT of the project lamps; b. For Option 2, paragraph 18 17, the autonomous time shall be equal to or greater than 200% of the DBT of the project lamps; (iv) For charging with solar PV under Option 3(a) the Solar Run Time for the project lamp in each month of the year (as determined per paragraph 9(g)) shall be greater than or equal to the DBT; (v) For charging Option per 3(b) or 3(c), the project lamp shall be fully charged after eight hours of charging.	The project will only use Option 1 for the Lamp effective useful life. The minimum performance characteristics will be documented in section A.5 of each CPA-DD as per the Technical specification table, which contains the characteristic of the products used including all minimum requirements and other specifications described in the chosen methodology.	Manufacturer and third party certifications, will confirm the technical specifications of the systems to be sold under the CPA.

Project Lamps shall have a warranty of a minimum of one year. At a minimum, the warranty shall cover free replacement or repair of any failed lamps, batteries and where applicable solar panels. The warranty shall be provided to end users of the project lamps. In a situation where the project lamps are distributed through intermediaries, the one year warranty shall commence from the time that the project lamps are distributed to end-users.	All Project Lamps shall be sold with a one year warranty for full repair or full replacement of failed lamps from the time of distribution to end users.	Warranty cards/proofs of purchase forms, will confirm the warranty period and terms and conditions of warranty. This information can be confirmed in the contract between the CME and the Affiliate.
The project design document shall explain the proposed distribution method of the project lamps. It shall also explain how the proposed project activity will: Ensure that the replaced baseline lamps are those that directly consume fossil fuel. This can be done through documentation of the common practice of fuel usage for lighting in the project region (e.g. based on representative sample surveys, official data or peer-reviewed literature that demonstrates that fossil fuel is a commonly used fuel for lighting;.	The baseline is demonstrated at a PoA level. As required by the methodology, the CME has used a third party published study based on a representative sample survey of the geographical region where the PoA will be implemented (i.e. Kenya) Section B.4 in Section II of the PoA-DD contains a description of the baseline scenario. This is supported by references to documentation that demonstrate that fossil fuel is a commonly used fuel for lighting. . Section A.2 of the PoA-DD contains explanations of the distribution methods and targeted market. Section A.3 of each CPA-DD will list the sales channels used by that specific CPA.	Representative sample surveys (i.e. Lighting Africa survey) that confirms baseline.. Lighting Africa Quantitative Assessment Report published by The World Bank and IFC conducted a survey to 1,000 households across representative regions of Kenya.
Encourage the consumers, targeted by the project activity, to use the project lamps and discourage hoarding	Section A.3 each CPA-DD contains a description of the activities to be implemented as well as examples of the communication mechanisms used to encourage consumers to use the project lamps.	Marketing and communication tools to be used during the CPA implementation.
Eliminate potential double counting of emission reductions that could occur, for example, if more than one entity (e.g. lamp manufacturers, suppliers of solar and/or battery equipment, etc.) claims credit for emission reductions for the Project Lamps. At a minimum, Project Lamps shall be marked as CDM Project Lamps.	As per Section A.6 and Section C of the PoA-DD the CME will implement the following systems to avoid double counting: – Unambiguous identification of solar lanterns participating in the CPA including TATS logo and Serial Number. – Data collection from participating end-users as to assign the rights to claim CERs for the project activity. – Contractual Agreement in place between the CPA implementer, suppliers and the CME that clearly and unambiguously assign the right of the carbon credits?	Letter of Authorization from the CME, record keeping system and contractual agreements with suppliers and project implementers. Solar lanterns branding artwork

Ensure compliance with prevailing regulations pertaining to the use and disposal of batteries.	A detailed description of the prevailing regulations and CME waste management strategy can be found in Section E.2 of Part I of the PoA-DD, Section A.1 of Part II of PoA-DD and section A.3 of the CPA-DD.	CME Letter of Authorization will confirm that the proposed CPA ensures compliance with prevailing regulations pertaining to the use and disposal of batteries. Research and communication with local authorities with regards to this will be undertaken as part of granting the Letter of Authorization.
The project design document shall include the minimum requirements for the design specifications of Project Lamps	This will be documented in section A.5 of each CPA-DD as per the Technical specification table, which contains the characteristic of the products used including all minimum requirements and other specifications described in the chosen methodology.	Manufacturers information and if needed, third party certifications, will confirm the technical specifications of the systems to be sold under the CPA.
Measures are limited to those that result in emissions reductions of less than or equal to 60 kt CO2 equivalent annually.	All SSC-CPAs will meet the threshold criteria for small-scale project activities and therefore generate emission reductions of no more than 60 ktCO2e annually as documented in section A.10 of each CPA-DD. This will be achieved by ensuring that the number of sold solar lanterns will be no more than 652,000 per CPA in any given year as per the "Guidelines on the Demonstration of Additionality of Small-scale Project Activities Version 09.0". .	Emission Reduction Calculation spreadsheet

B.3. Sources and GHGs

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The project boundary includes the is the physical, geographical location of each Project Lamps as well as the physical, geographical site of the renewable energy system;

The source and gas included in the SSC-CPA boundary is carbon dioxide from fossil fuel-based lamps.

	Source	**Gas**	**Included?**	**Justification**
Baseline	Fossil fuel based lamps used by participants end-users	CO_2	Yes	Burning of kerosene for lighting purposes
		CH_4	No	Not included as per AMS.III.AR.
		N_2O	No	Not included as per AMS.III.AR.
Project Activity	There are no project emissions if the Project Lamp charging mechanism utilized is Charged by a	CO_2	No	Not included as per AMS.III.AR.
		CH_4	No	Not included as per AMS.III.AR.
		N_2O	No	Not included as per AMS.III.AR.

	renewable energy system included as part of the Project Lamp.			

B.4. Description of baseline scenario

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Description of the identified baseline scenario

The baseline and monitoring methodology AMS III.AR ver.4 *Substituting Fossil Fuel Based Lighting with LED Lighting System* define the baseline scenario as the use of lamps that directly consume fossil fuel.

According to the Lighting Africa Report, 90% of the population in Kenya is not connected to the electricity grid[15]. This high lack of access to electricity combined with the unreliable service[16] provided to those who do have access to electricity are the main reason why the vast majority of Kenyan households use kerosene as the main source of lighting. The Lighting Africa research survey estimates that 83% of households use kerosene[17] as the main source of lighting, which only confirms the findings made by previous studies that nearly 90% of the population use kerosene as a lighting source[18].

Therefore, as per Footnote 7 of the Methodology "*based on the demonstration that fossil fuel is the predominant practice for lighting as per paragraph 6(a), it is assumed all baseline emissions are from the consumption of fossil fuel burning for lighting*".

B.5. Demonstration of eligibility for a generic CPA

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The eligibility criteria for the PoA have been determined using the latest procedure set out by the Executive Board at EB70, Annex 5 – *Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (version 02.1).*

No.	Eligibility Criteria	Status	Evidence
1	Does the SSC-CPA involve the sale of solar lanterns to replace fossil fuel based lamps to the target population groups and via distribution mechanisms mentioned in Table 1 in section A.2 of the PoA-DD in the countries mentioned in the PoA-DD Section A.5?	**Yes / No**	See Sections A.3, A.5 and A.7 of CPA-DD Service Agreements with Affiliates

[15] Lighting Africa (2008) Market *Assessment Results. Quantitative Assessment-Kenya, page 33*

[16] Lighting Africa (2008) Market *Assessment Results. Quantitative Assessment-Kenya, page 34 and 37*

[17] Lighting Africa (2008) Market *Assessment Results. Quantitative Assessment-Kenya, page 53*

[18] Characterization of particulate matter size distributions and indoor concentrations from kerosene and diesel lamps, J. Apple, R. Vicente,A. Yarberry, N. Lohse, E. Mills, A. Jacobson, D. Poppendieck, Indoor Air 2010, page 1 / Knowledge network on sustainable household energy in Southern and Eastern Africa (Sparknet), *Scenario Analysis Kenya*, Lydia Muchiri, Daniel Theuri and Patrick Balla, page 3/ Kamfor, Ltd. (2002) Study on *Kenya's Energy Demand, Supply and Policy Strategy for Households, Small-ScaleIndustries and Service Establishments*, Nairobi, Kenya, Ministry of Energy.

2	Does the SSC-CPA comply with the established procedures for avoiding double counting set out in the PoA-DD and CPA-DD (generic)? – Unambiguous identification of solar lanterns participating in the CPA including TATS logo and Serial Number. – Data collection from participating end-users as to assign the rights to claim CERs for the project activity. – Contractual Agreement in place between the CPA implementer, as well as between suppliers and the CME that clearly and unambiguously assign the right of the carbon credits?	**Yes / No**	See Section D.7.2 of CPA-DD; Letter of Authorization from the CME; Warranty Form Template, record keeping system and contractual agreements between CME and Affiliates and/or Project Implementers and between CME and suppliers
3	Does the technology employed in the project activity satisfy the following conditions? – Lantern charged only by a renewable energy system included as part of the project lamp (i.e. photovoltaic system) – A minimum of 5,000 hours average life certified by the manufacturer where the initial light output will decline by no more than 30% – Warranty of a minimum of one year covering free replacement or repair of any failed lamp, battery and where applicable solar panel. – Light output of 20 lumens or luminance of 25 lux over an area >= 0.1 m^2 when suspended at a distance of 0.75 meters – Daily Burn Time equal or greater than 3.5 hours – Autonomous Time shall be equal or greater than 150% of the DBT – Solar Run Time in each month shall be greater than or equal to the DBT – Lamps shall be marked for clear, unique identification	**Yes / No**	See Section A.5 of CPA-DD and relevant manufacturer's or third party certification of specifications where applicable. Warranty terms and conditions for solar lanterns included in contract between CME and Affiliates.
4	Has the start date of the SSC-CPA been confirmed, through the provision of the Supplier Order Forms? Is the SSC-CPA start date after the start date of the registered PoA?	**Yes / No**	See Section A.8.1 of CPA-DD and Supplier order forms
5	Will the SSC-CPA implement the methodological and monitoring requirements of *AMS.III.AR Substituting fossil fuel bases lighting with LED/CFL lighting systems as documented in Section B.2 of Part II of PoA-DD?*	**Yes / No**	See Section D.2 of CPA-DD, Supplier Order Form, Service Agreement with Affiliate and/or Project Implementer, manufacturer's or third party certification of specifications, Letter of Authorization
6.	The SSC-CPA is additional because, it meets the additionality criteria set in section B.1 of the PoA-DD	**Yes / No**	See Section A.3 of CPA-DD Methodology default annual baseline emission factor & Service Agreement with Affiliate

7.	Does the SSC-CPA meet the threshold criteria as per the *"Clean Development Mechanism Project Standard (version.02.1)"* because it generates up to 60 ktCO2e annually by not including more than 652,000 solar lanterns per year in the CPA?	**Yes / No**	See Section A.10 of CPA-DD Emission Reduction Calculation Spreadsheet
8.	Does the SSC-CPA satisfy de-bundling rules for PoA, and is not a de-bundled component of a large-scale CPA or CDM project because each solar lantern included in the CPA is no larger than 1% of the small-scale thresholds (i.e. each solar lantern generates emission reductions for less than 600 tCO_2e annually)?	**Yes / No**	See Section A.12 of CPA-DD and relevant manufacturer's or third party certification of specifications where applicable
9.	Does the CME confirm that any funding from an Annex I party involved in the implementation of the SSC-CPA does not result in a diversion of official development assistance for the purchase of CERs, and is separate from and is not counted towards the financial obligations of those Parties?	**Yes / No**	See Section A.11 of CPA-DD CME Letter of Authorization. In case public funding is used for the purchase of CERs, a letter from Annex I party will confirm that this funding will not results in a diversion of official development assistance.

B.6. Estimation of emission reductions of a generic CPA

B.6.1. Explanation of methodological choices

>>>> The following are the methodological choices provided for in AMS-III.AR v.04 that will be applied in relation to each of the SSC-CPAs to be developed under this PoA.

Baseline emissions

The default annual Project Lamp emissions factor of 0.092 tCO2e provided by the methodology will be used. However, if adequate research/monitoring and documentation is provided by the project proponent (e.g. strategic surveys and research conducted by national or local organizations, initiatives by international organizations or non-governmental organizations or the project proponent to collect reliable and comprehensive data) alternative values for baseline calculation may be used and the PoA-DD will be modified accordingly.

The parameters used to calculate the annual Project Lamp emissions factor are as follows:

- Fuel use rate (0.03 liters/hour)
- Utilization rate (3.5 hours/day)
- Annual utilization (365 days/year)
- Fuel emissions factor (2.4 kgCO2/liter)
- Leakage factor (1.0)
- Number of fuel-based lamps replaced per Project Lamp (1.0)
- Net-to-gross adjustment factor (1.0)

Project emissions

In accordance with paragraph 21a of the Methodology, no project emissions will be calculated as the Project Lamp charging mechanism utilized is charged by a renewable energy system included as part of the Project Lamp.

Ex-Post Monitoring

The CME has selected Option 1 according to which project lamps are assumed to operate for two years after project lamp distribution to end-users. Therefore, emission reductions can only be claimed for two years.

The emission reduction achieved by the SSC-CPA project activity is determined using AMS III.AR v.04 " *Substituting fossil fuel based lighting with LED/CFL lighting systems*". The sequence of calculations are reproduced as follows:

Baseline emissions

Baseline emissions are calculated as per the following equation:

$$BE_y = DV \times GF_y \times DB_y \quad \textbf{(1)}$$

Where:

DV Lamp Emission Factor (default is 0.092 tCO2e per Project Lamp)

GF_y Grid Factor in year *y (*default is 1.0 as the Project Lamp charging mechanism utilized is charged by a renewable energy system included as part of the Project Lamp).

DB_y Dynamic Baseline Factor in year *y.*
Option 1: default of 1.0 in the absence of relevant information;

The Lamp Emission Factor (DV) is calculated as per the following equation:

$$DV = FUR * O * U * EF / 1000 * LF * n * NTG \quad \textbf{(2)}$$

FUR Fuel use rate (0.03 liters/hour)

O Utilization rate (3.5 hours/day)

U Annual utilization (365 days/year)

EF Fuel emissions factor (2.4 kgCO2/liter)

LF Leakage factor (1.0)

n Number of fuel-based lamps replaced per Project Lamp (1.0)

NTG Net-to-gross adjustment factor (1.0)

Project emissions

As per AMS.III.R methodology, there are no project emissions (PEy = 0) if the Project Lamp charging mechanism utilized is a renewable energy system included as part of the Project Lamp (e.g. a photovoltaic system).

Emissions reduction

Annual emission reductions are calculated as per the following equation:

$$ER_y = \sum_{i,j} N_{i,j} \times \left(BE_{y,i} - PE_{y,i,j}\right) \times \left(OF_{y,i,j}\right) \quad \textbf{(3)}$$

Where:

ER_y Emission reductions in year *y* (tCO2e)

$N_{i,j}$ Number of eligible 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*. As per Monitoring Option 1, assumed to be equal to 100% for years 1 and 2

B.6.2. Data and parameters that are to be reported ex-ante

(Copy this table for each data and parameter.)

Data / Parameter	**FUR**
Unit	Liters/hour
Description	Fuel use rate
Source of data	Default value as per AMS.III.AR (Version 04)
Value(s) applied	0.03
Choice of data or Measurement methods and procedures	Default value as per AMS.III.AR (Version 04) or alternative values when an adequate research/monitoring and documentation is available (e.g. strategic surveys and research conducted by national or local organizations, initiatives by international organizations or non governmental organizations or reliable and comprehensive data collected by CME).
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	O
Unit	Hours/day
Description	Utilization rate
Source of data	Default value as per AMS.III.AR (Version 04)
Value(s) applied	3.5
Choice of data or Measurement methods and procedures	Default value as per AMS.III.AR (Version 04) or alternative values when an adequate research/monitoring and documentation is available (e.g. strategic surveys and research conducted by national or local organizations, initiatives by international organizations or non governmental organizations or reliable and comprehensive data collected by CME).
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	U
Unit	Days/year
Description	Annual utilization
Source of data	Default value as per AMS.III.AR (Version 04).
Value(s) applied	365
Choice of data or Measurement methods and procedures	Default value as per AMS.III.AR (Version 04).
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	EF
Unit	$kgCO_2$/liter
Description	Fuel emissions factor
Source of data	Default value as per AMS.III.AR (Version 04).
Value(s) applied	2.4
Choice of data or Measurement methods and procedures	Default value as per AMS.III.AR (Version 04).
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	LF
Unit	Value
Description	Leakage factor
Source of data	Default value as per AMS.III.AR (Version 04).
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Default value as per AMS.III.AR (Version 04).
Purpose of data	Calculation of Baseline Emissions
Additional comment	-

Data / Parameter	NTG
Unit	Value
Description	Net-to-gross adjustment factor
Source of data	Default value as per AMS.III.AR (Version 04).
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Default value as per AMS.III.AR (Version 04).
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	DV
Unit	tCO_2e per Project Lamp
Description	Lamp Emission Factor
Source of data	Calculated as per equation (2) of AMS.III.AR (Version 04)
Value(s) applied	0.092
Choice of data or Measurement methods and procedures	As per equation (2) of AMS.III.AR (Version04)
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	GFy
Unit	Value
Description	Grid Factor in year *y*
Source of data	Default value as per AMS.III.AR (Version 04).
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	Default value as per AMS.III.AR (Version 04) when solar lanterns are *"charged by a renewable energy system included as part of the Project Lamp (e.g. a photovoltaic system)"*
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	DBy
Unit	Value
Description	Dynamic Baseline Factor in year *y*
Source of data	Default value as per AMS.III.AR (Version 04).
Value(s) applied	1.0
Choice of data or Measurement methods and procedures	As per AMS.III.AR (Version 04). ○ *Option 1: default of 1.0 in the absence of relevant information;*
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	$OF_{y,i,j}$
Unit	Percentage
Description	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.
Source of data	Default value as per AMS.III.AR (Version 04).
Value(s) applied	100%
Choice of data or Measurement methods and procedures	As per AMS.III.AR (Version 04) Montioring Option 1 Project lamps are assumed to operate for two years after distribution to end users. Therefore, under this option, emission reductions may only be claimed for two years. The percentage of project lamps that are operating and in service can be assumed to equal 100% in year 1 and 2,
Purpose of data	Calculation of emissions reductions
Additional comment	-

B.6.3. Ex-ante calculations of emission reductions

>>

Baseline emissions

Baseline emissions are calculated as per the following equation:

$$BE_y = DV \times GF_y \times DB_y$$

(1)

Where:

DV	Lamp Emission Factor (default is 0.092 tCO2e per Project Lamp)
GF_y	Grid Factor in year *y (*default is 1.0 as the Project Lamp charging mechanism utilized is charged by a renewable energy system included as part of the Project Lamp).
DB_y	Dynamic Baseline Factor in year *y*. Option 1: default of 1.0 in the absence of relevant information;

The Lamp Emission Factor (DV) is calculated as per the following equation:

$$DV = FUR * O * U * EF / 1000 * LF * n * NTG \quad \textbf{(2)}$$

FUR	Fuel use rate (0.03 liters/hour)
O	Utilization rate (3.5 hours/day)
U	Annual utilization (365 days/year)
EF	Fuel emissions factor (2.4 kgCO2/liter)
LF	Leakage factor (1.0)
n	Number of fuel-based lamps replaced per Project Lamp (1.0)
NTG	Net-to-gross adjustment factor (1.0)

Project emissions

As per AMS.III.R methodology, there are no project emissions (PEy = 0) if the Project Lamp charging mechanism utilized is a renewable energy system included as part of the Project Lamp (e.g. a photovoltaic system).

Emissions reduction

Annual emission reductions are calculated as per the following equation:

$$ER_y = \sum_{i,j} N_{i,j} \times \left(BE_{y,i} - PE_{y,i,j}\right) \times \left(OF_{y,i,j}\right) \quad \textbf{(3)}$$

Where:

ER_y	Emission reductions in year *y* (tCO2e)
$N_{i,j}$	Number of eligible 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*

As per the Monitoring Option (Option 1) selected by the CME for the PoA, emission reductions will be claimed for 2 years for the number of eligible project lamps (Ni,j).
Y

As an example, in a CPA that distributes 100,000 solar lanterns for one year,and uses Monitoring Option 1, the emission reductions associated with this activity can be calculated as follows:

$N_{i,j}$	100,000
ER_1	100,000 x (0.092 – 0) x (100%) = 9,200
ER_2	100,000 x (0.092 – 0) x (100%) = 9,200
ER_{Total}	18,400

In case that more solar lanterns are sold in the second year, emission reductions from new sales will be reflected for that and the subsequent year as can be seen in the table below:

Ni,j Year 1	100,000
Ni,j Year 2	50,000
ER_1	100,000 x (0.092 – 0) x (100%) = 9,200
ER_2	(100,000 + 50,000) x (0.092 – 0) x (100%) = 13,800
ER_2	50,000 x (0.092 – 0) x (100%) = 4,600
ER_{Total}	27,600

B.7. Application of the monitoring methodology and description of the monitoring plan
B.7.1. Data and parameters to be monitored by each generic CPA
(Copy this table for each data and parameter)

Data / Parameter	N,i,j
Unit	Number
Description	Number of Project Lamps distributed to end users of type i with charging method j
Source of data	Record Keeping System.
Value(s) applied	To be recorded by each SSC-CPA as part of its record keeping system
Measurement methods and procedures	The total number of eligible lamps will be calculated based on distribution records of lanterns available through the record keeping system for each SSC-CPA.. This information will be monitored by the CME. The CME will use a default value of 120 days to estimate the date on which those solar lanterns will be distributed to end-users. For more information please read Section B.7.2 in Section II of the PoA-DD.
Monitoring frequency	At the end of each monitoring period
QA/QC procedures	The data should be documented and verifiable by the CME and DOE Each distribution partner involved in the project will be trained to comply with the record keeping system procedures to ensure accurate record keeping.
Purpose of data	Calculation of emission reductions
Additional comments	All data will be stored in the project record keeping system for at least two years after the crediting period or the last issuance of CERs for this programme, whichever occurs later.

B.7.2. Description of the monitoring plan for a generic CPA

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The CME has chosen to develop the monitoring plan in accordance with Option 1 as provided by AMS.III.AR for the totality of CPAs involved in this PoA.

Option 1: Project Lamps are assumed to operate for two years after project lamp distribution to end-users. Therefore, emission reductions can only be claimed for two years and the following data are to be recorded:

a) Number of Project Lamps distributed to end users under the project activity identified by the type of Project Lamps (lamp wattage, battery type, charging method, the date of distribution).

As per footnote 9, paragraph 27 of AMS.III.AR (V4), "in the case of project activities that do not involve direct distribution of project lamps to end-users, but instead involve distribution of project lamps through intermediaries, 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 from the intermediaries to end-users can be determined using either survey methods or by using a default value of 120 days."

As mentioned in section A.1, the CPAs will use a range of distribution channels to reach the target market. The in-country Total Affiliate will act as the local project coordinator and the central warehouse as the intermediary coordinating and supplying solar lanterns to the different distribution channels.

Given that the project will use intermediaries for the distribution of solar lamps, the CME has decided to choose the default value of 120 days as allowed by the methodology.

Pilot projects ran by the project proponent in previous months to test the proposed distribution and communication channels have confirmed that the frequency of orders in which the central warehouse receives solar lanterns from the supplier is broadly aligned with the 120 days default value offered by the methodology. This indicates that this figure is adequate to estimate date of sales as suggested by AMS.III.AR (V4).

Furthermore it is more efficient to use the central warehouse for the purpose of accurately calculating the date of sale (via the 120-days default factor) of each solar lantern. Tracking the date of delivery of lamps (by means of serial numbers) to re-sellers such as young entrepreneurs or individual petrol stations is an administrative, time and cost intensive exercise.

The record keeping procedures will include the following steps:

1) Details of the arrival of containers of solar lanterns to the Total Affiliate central warehouse in the country including:
    a. Date of arrival
    b. Number of containers
    c. Serial number of solar lanterns in each of the containers
    d. Type of project lamps – wattage, battery type and charging method

2) Once the containers have arrived in the Central Warehouse, the CME will use a default value of 120 days to estimate the date on which those solar lanterns will be distributed to end-users. Although the Project proponent will use the default figure of 120 days provided by the AMS.III.AR, the project proponent wishes to confirm that this figure is in line with the frequency at which Affiliates place orders for new solar lanterns. This indicates that 120 days from the time the solar lanterns arrive to the Affiliate Central Warehouse and are sold to end users is an adequate value to estimate the date of sales.

By following the procedure described above, the CME will be able to identify the date of distribution of the Project Lamps as requested in paragraph 26 and 27(a) of the AMS.III.AR methodology.

This procedure will enable the CME to calculate the number of Project Lamps distributed to end users under the project activity based on a conservative estimate of arrival records to the affiliate central warehouse.

All lanterns identified faulty at the central distribution point or in the distribution channels will be deducted from the total number of Project Lamps distributed. TATS already monitors the replacement volumes and the corresponding serial numbers, since the agreements with its suppliers allow a financial compensation based on this monitoring.

In addition to the arrival records provided by the central warehouse, the Affiliate's headquarters will have access to copies of the proof of purchase of solar lanterns provided to the end users as part of the warranty period. Samples of such proof of purchase can be available to the DOE at the time of verification.

The Proof of Purchase (Warranty form) contains the following data:

- Equipment Data: Lamp Reference (which one can infer Lamp Wattage, Battery Type and Charging Method)
- Sales Data: Date of sale, ID of distribution partner, Purchase or Replacement, Lamp Serial Number, Date of end of warranty period
- Household Data: Name, phone number (if applicable), address (if applicable).

- Warranty Terms and Conditions including confirmation that the carbon credits associated with the solar lanterns belong to TATS

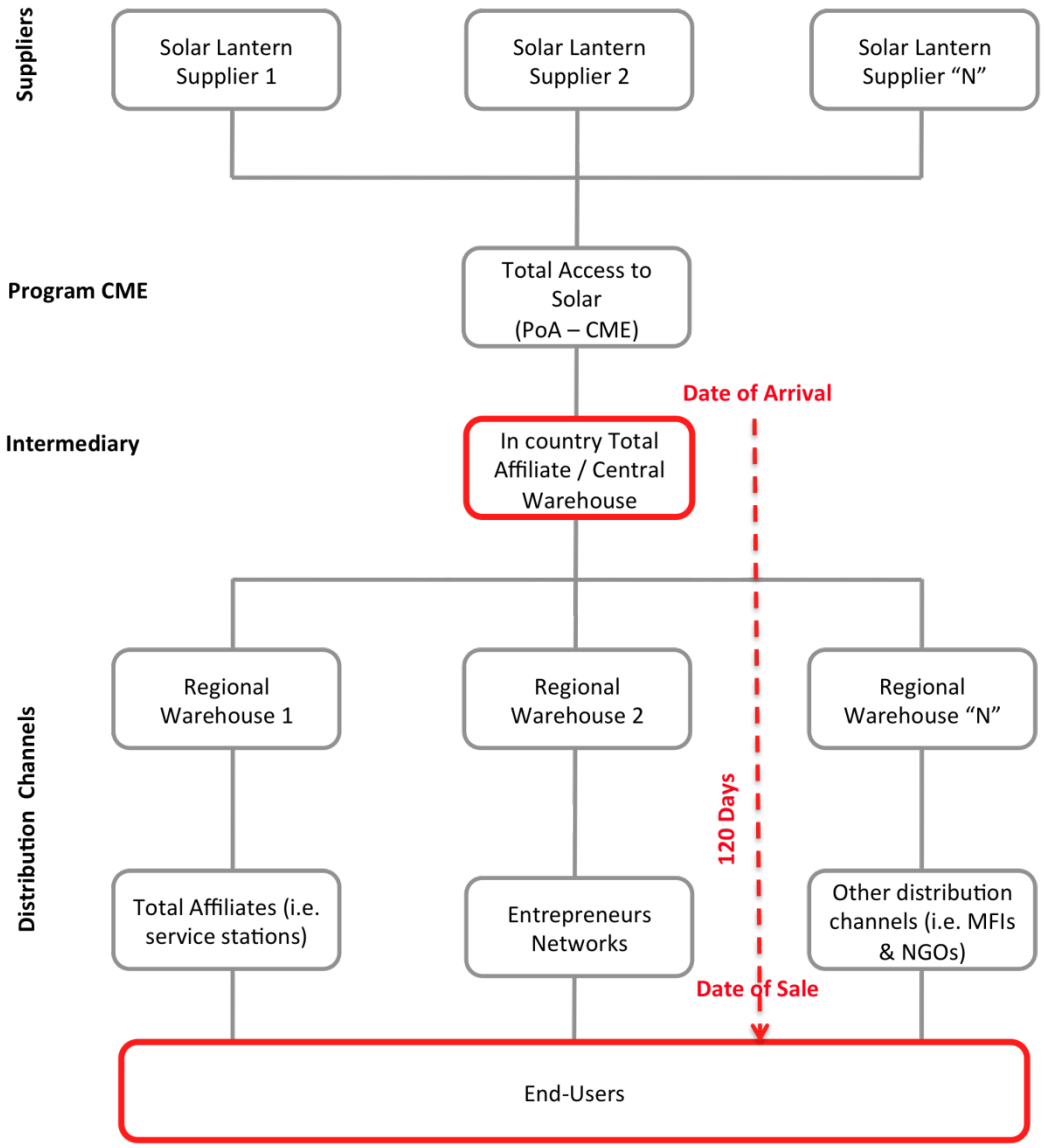
This warranty form ensures that the right to the CERs is assigned to TATS by including the following line within the form:

"The client voluntary, unconditionally and irrevocably cede without cost or charge to TATS any rights whatsoever to any carbon credits which may arise through this solar lantern programme."

This is mentioned to the end user together with the other set of Warranty Terms and Conditions specified within the warranty form.

The steps previously described can be exemplified in the diagram below:

Diagram 4. Estimation of the date of sale of solar lanterns



PoA record keeping procedures will prevent double counting across SSC-CPAs by being able to clearly and uniquely identify the serial numbers and arrival records of solar lanterns to the affiliate central warehouse by using the 120-day default factor, to end-users. Serial numbers will be allocated to individual CPAs and crosschecked to avoid duplication.

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Appendix 1: Contact information on entity/individual responsible for the PoA

Organization	Total Access to Solar
Street/P.O. Box	2 place Jean Millier
Building	Tour Coupole 23E38
City	Paris
State/Region	Paris
Postcode	92078
Country	France
Telephone	+33 (0)1 47 44 51 97
Fax	+33 (0)1 47 44 53 24
E-mail	mathieu.eveillard@total.com
Website	www.total.com
Contact person	Mathieu Eveillard
Title	
Salutation	Mr.
Last name	Eveillard
Middle name	
First name	Mathieu
Department	
Mobile	+33 (0)6 10 78 49 55
Direct fax	+33 (0)1 47 44 53 24
Direct tel.	+33 (0)1 47 44 51 97
Personal e-mail	mathieu.eveillard@total.com

Appendix 2: Affirmation regarding public funding

No public funding has been used for the Programme of Activities

Appendix 3: Application of methodology(ies)

Application of methodologies has been described in section B.2

Appendix 4: Further background information on ex ante calculation of emission reductions

Ex ante calculation of emission reductions has been described in section B.6.3

Appendix 5: Further background information on the monitoring plan

Monitoring Plan has been described in section B.7.2

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History of the document

Version	Date	Nature of revision(s)
02.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the programme design document form for small-scale CDM programmes of activities" (EB 66, Annex 13).
01	EB33, Annex43 27 July 2007	Initial adoption.
Decision Class: Regulatory **Document Type:** Form **Business Function:** Registration		