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

CONTENTS

NOTE:

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

(ii) At the time of requesting registration this form must be accompanied by a CDM-SSC-CPA-DD form that has been specified for the proposed PoA, as well as by one completed CDM-SSC-CPA-DD (using a real case).

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

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

>>
Advanced Electronic Ballast Introduction Program for Non-Residential Building Fluorescent Lamps in Hanoi, Vietnam

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

>> The following information shall be included here:

1. General operating and implementing framework of PoA
2. Policy/measure or stated goal of the PoA
3. Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity.

1. General operating and implementing framework of PoA

The POA is defined as the introducing of 1million advanced electronic ballasts to florescent lamps used in non-residential buildings in Hanoi, Vietnam. The electronic ballast proposed in the POA is developed and produced by Japanese company—CLEATH Co., Ltd. (Cleath). The first CPA targets buildings in Hanoi University.
The crediting period of PoA is 28 years and that of CPAs is 10 years. The PoA coordinator (the coordinating/managing entity) is CLEATH R&D Engineering Vietnam Inc. (CRDEV), a new built company under the PoA; the CPAs implementers are to be owners of corresponding buildings under CPAs. The implementers are as shown, but not limited, in the table 1 below.

Table 1 PoA coordinator and CPA implementers

Name	Role of entities
CRDEV	The PoA coordinator
Hanoi University	CPA implementers
Ministry of Environment, Vietnam	

The CRDEV coordinates and manages the PoA to introduce the electronic ballasts to florescent lamps used in the non-residential buildings in Hanoi using CERs revenues from the PoA. Under the PoA, corresponding building owners implement CPAs through cooperating installation of electronic ballasts to the florescent lamps in the buildings.

2. Policy/measure or stated goal of the PoA

The goal of the PoA increase the energy efficiency of Vietnam's non-residential lighting stock by replacing conventional ballasts used on florescent lamps with the advanced electronic ballasts. And with this practice, the program will abate greenhouse gas emissions (GHG) through saved electricity usage,

significantly reduce national electricity demand and stress on energy infrastructure, and save building owners money on their electricity bills.
Each CPA within the PoA will also include CDM capacity building programme that raising awareness of technology and environment, stimulating behavioural change, encouraging environmental concerns and supporting existing and future government programs.
The contribution of the PoA to sustainable development is significant.

Environmental Sustainability

1) The program supports the objectives of the Vietnam National Target Programme to Respond to Climate Change (July 2008) which calls for:

(1) To expand international cooperation to obtain external supports in response to climate change, take over opportunities to develop towards a low-carbon economy, and joint international community's effort to effectively protect global climatic system.

(2) To develop action plan of all ministries/sectors and localities to respond to climate change; to implement pilot projects to respond to climate change.

Obviously, demand-side energy efficiency improvement is one of the credible ways to stimulate low-carbon economy. This PoA clearly contributes to the achievement of these goals and will produce measurable environmental benefits.

2) The PoA produces real and measurable reductions in GHG emissions:

The PoA will utilize an approved methodology (AMS - II.C. "Demand-side energy efficiency programmes for specific technologies", version 13) to ensure that all measurements of greenhouse gas emission reductions are robust, conservative and verifiable. The program will maintain high standards of monitoring to ensure that any emission reductions claimed are measurable and real.

Economical Sustainability

1) The program utilizes more energy efficient technology (e.g. energy efficient, resource efficient) than common practice:

The World Bank estimates that the power utility, Electricity of Vietnam (EVN), will face a threefold increase in demand over the next 10 years, from 25,700 GWh in 2000 to over 77,400 GWh by 2010, with annual demand growth of 10-13 percent. Generation-level peak power demand is also projected to increase from the 1999 level of 5,700 MW to about 16,000 MW by 2010, requiring an associated capital investment of about US$18 billion.
In order to meet the rising demand, a pilot World Bank project of "Demand-Side Management and Energy Efficiency Program (1998-2010)" was launched by the Government. Its objective is to achieve significant and sustainable reductions in energy consumption and peak power demand in Vietnam.
It is expected that financing requirements for the IDA/GEF DSM/EE assistance program would exceed $100 million by 2010 and would be supported by IDA credits, GEF grants, bilateral donors, GOV, and local commercial financing sources. These investments would support the development of commercially sustainable delivery mechanisms and implementation of viable EE investments.
Preliminary estimates indicate that these targeted interventions would lead to over 770 MW in peak load reduction, 5,000 GWh per year in electricity savings, an estimated 7 million toe in energy savings and about 11 million tons in CO_2 emission reduction by 2010.

The PoA will unquestionably contribute significantly to Vietnam's economic sustainability through the more efficient use of electricity. Energy savings at both building and national levels make important contributions to Vietnam's economic efficiency and sustainability.

Social Sustainability

1) The program helps to improve quality of life by creating opportunities for jobs, job enhancement, etc. In order to implement the PoA, the project coordinator will engage a workforce over the short to medium term, and will maintain a core team involved in project management and monitoring over the longer term. This team of employees will be trained in CDM project requirements, energy efficiency. In addition, the electronic ballast production line will be built in Vietnam that produces a significant number of job opportunities for folks.

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

The coordinating entity will voluntarily provide ballasts to buildings. There are no mandatory requirements in Vietnam stipulating the use of such devices, and the PoA requires building owners to take voluntary action to participate in project activities.

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

>> The following information shall be included here:

1. Coordinating or managing entity of the PoA as the entity which communicates with the Board
2. Project participants being registered in relation to the PoA. Project participants may or may not be involved in one of the CPAs related to the PoA.

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

The CRDEV takes charge coordination and management of the PoA. And it is responsible for communicating with the Board along with the PoA implementation.

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

Name of party involved	Private and/or public entity(ies) Project participants (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Vietnam	Private entity: CRDEV	No
Japan	Private entity: Cleath Co., Ltd.	No

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

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A.4.1. Location of the programme of activities:

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A.4.1.1. Host Party(ies):

>>

Vietnam

A.4.1.2. Physical/ Geographical boundary:

>> Definition of the boundary for the PoA in terms of a geographical area (e.g., municipality, region within a country, country or several countries) within which all small-scale CDM programme activities (SSC-CPAs) included in the PoA will be implemented, taking into consideration the requirement that all applicable national and/or sectoral policies and regulations of each host country within that chosen boundary;

All CPAs associated with the PoA will be implemented within the geographical boundary of Vietnam; the GSP coordinates of Hanoi (location of most CPAs) range from 21° 1' 60N ~ 105° 50' 60E. The boundary is shown in the figure 1 below.

Figure1the Geographical Boundary of the PoA

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

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Each SSC-CPA will involve the introduction and installation of advanced electronic ballast to florescent lamps of non-residential buildings in Hanoi. Under each CPA, the CRDEV is to install electronic ballasts to florescent lamps in the buildings of industrial, commercial and municipal replacement of conventional ballasts on florescent lamps. The building owners are to be implementers of corresponding CPAs. Conventional ballasts collected during the exchange will be destroyed to prevent leakage.

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

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The project will provide advanced electronic ballasts to florescent lamps through replacing conventional ballasts on them.

Technologically, the conventional ballast is a transformer of iron-core choke coil with higher inductance, i.e., with high heat loss. On the other hand, the electronic ballast used the programme, is a circuit without coil. Therefore, it needs much less energy than the conventional ballast as shown in the Wattage figure below in comparison to others (in many cases, around 40~50% reductions are observed in developing countries). The saving ratio can be larger if florescent lamps with high frequency type would be used.
In terms of physics, lighting efficiency of the ballast is higher because it enhances the velocity of electrons in the fluorescent lamp.
The ballast has many advantageous features than other similar technologies and applicable for most existing fluorescent lamp system in developing countries.
In developing countries, it is rare that the existing fluorescent lamps are with the electronic ballast. The ballast is compactly-designed (240mm, 45mm and 30mm) to replace existing ballast easily. It is not necessary to replace whole system with much lower cost. The technologies to manufacture the ballast are to be transferred easily.
Moreover, high quality lighting Fluorescent lamp with the conventional ballast flickers around 100 times per second (dependent on the AC network connected), while that with the ballast flickers around 10,000 per second which is far beyond human's perception. Therefore it does not cause headaches and eyestrain which may be found in the case of fluorescent tubes powered by conventional electromagnetic ballasts.
The ballast is superior to save the energy consumption especially when applying to fluorescent lamps specific for high frequency. Typical saving rate is around 40~50% in developing countries. The ballast is independent of AC frequency as the current is once converted to DC. It is available for 90~260V range.
The moulded type of the ballast can be used in a demanding condition such as vast temperature range (-20°C ~ 55°C) with humid, dusty and/or salted conditions. The ballast is applicable to most of fluorescent lamp types such as FL, FLR and Hf as well as flexible to change the output setting. It is possible to light one of the paired tubes (by removing one) as the ballast is designed as a parallel circuit. The lifetime of the ballast is around 12~15 years, depending on the situation of installation.

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

>> Here only a description of criteria for enrolling the CPA shall be described, the criteria for demonstrating additionality of CPA shall be described in section E.5

The eligibility criteria for inclusion of CPA in the PoA are as follows:

1) Each SSC-CPA will involve the introduction of advanced electronic ballasts to florescent lamps used in non-residential buildings in Hanoi, Veitnam.
2) Each SSC-CPA must implement the baseline and monitoring methodology: AMS II.C. *"Demand-side energy efficiency programmes for specific technologies", version 13.*
3) No other CPA or CDM project involving the promotion of electronic ballast is already registered and operating in the same, specific physical geographical area.
4) The coordinating entity CRDEV will ensure that all CPAs under its PoA are neither registered as an individual CDM project activity nor included in another registered PoA, and that the CPA is subscribed to the PoA.
5) Each SSC-CPA shall be uniquely identified and defined in an unambiguous manner by providing geographic information, and the exact start date and end date of the crediting period
6) Each SSC-CPA must ensure that leakage, additionality, establishment of the baseline scenario, baseline emissions, eligibility and double counting are unambiguously defined.
7) Each SSC-CPA must be approved by the coordinating entity and DOE prior to its incorporation into the PoA.
8) Each SSC-CPA must satisfy de-bundling rules for PoA.

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

>> The following shall be demonstrated here:

(i) The proposed PoA is a voluntary coordinated action;
(ii) If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA;
(iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced;
(iv) If mandatory a policy/regulation is enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.

The information presented here shall constitute the demonstration of additionality of the PoA as a whole. As the proposed PoA is a voluntary and coordinated action, the assessment and demonstration of additionality for the PoA as a whole will address points of (i) and (ii) depicted above.
And a standard assessment of additionality, in order to comply with the requirements of the Gold Standard, is presented regarding previous announcements, use of Overseas Development Assistance, and proof of technology transfer/knowledge innovation.

Voluntary Coordinated Action
The proposed PoA is a voluntary and coordinated action. There are no mandatory requirements in Vietnam stipulating replacement of conventional ballasts on florescent lamps with energy efficient ballasts. In addition, the PoA requires non-residential buildings to take voluntary action to participate in project activities.

Previous Announcement Check/Consideration of CDM
The proposed PoA was developed as a CDM activity. There are/were no any public or private announcements regarding the project proceeding without use of the CDM. The electronic ballast penetration is attributed to the income from CER and without the PoA, the ballast application will not occur, then the PoA will beget the CDM of ballast promotion.
From early of April 2009, the CLEATH has contacted with related Vietnam government agencies including Vietnam DNA and conducted discussions on the issue of promoting electronic ballasts in Vietnam through a PoA, then preliminary decided targeting non-residential buildings in Hanoi for the PoA. For the PoA, the coordinating entity, CRDEV was established in May 2009 and the CEDEV conducted a project scoping and feasibility assessment of an electronic ballasts promotion PoA in Hanoi, Vietnam between May and July 2009.
In addition, initial engagement with project partners was undertaken and technology development was initiated to meet CDM monitoring requirements.

Additionality Tool
Additionality of the PoA is demonstrated using the criteria outlined in Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities. As per Gold Standard requirements the UNFCCC's "Tool for the demonstration and assessment of additionality", is used as the basis for the determination of additionality.

Step 1.Identification of alternatives to the project activity consistent with current laws and regulation
Sub-Step1a.Define alternatives to the project activity

Three alternatives to the proposed PoA have been identified:

1) The activity could occur without being registered as a PoA through government or private sector support.

In such a scenario the Vietnam government or private sector sponsor would support electronic ballasts production line and pay for their distribution at no low cost to non-residential buildings. There are significant barriers to this alternative scenario. Most importantly, there have been no any same nature projects in government's future programme/plan. In addition, existing budget constraints within Vietnam energy or environment ministries prevents additional happening of such kinds of projects. The Vietnam Government's own climate change planning documents provide the evidence of the planning and financial barriers exist to the government undertaking the kind of technology that proposed by the SSC-PoA. The coordinating entity believes that the clear absence of a stated intention in the most recent National Climate Change Strategy to undertake a promotion of electronic ballasts strongly indicates that such barriers exist.

So far, there have been several programmes and projects related to energy conservation and energy efficiency such as the Ministry of Science, Technology and Environment launched "Master Plan on Energy Conservation and Efficiency" as part of its national planning for the 1995-2000 period. This plan focused on the creation of a legal framework for energy in the commercial and industrial sectors. In addition to the Energy Decree described above, other objectives identified in the plan are the establishment of Energy Saving Centers in all large cities in Vietnam and a National Programme for Energy Saving. Implementation plans for these objectives were drafted, unfortunately funding was made contingent upon the imposition of a national import duty on petroleum. The Ministry of Finance (MoF) has since deemed this mechanism to be illegal, and therefore implementation could not be undertaken. However, two of the recommendations made within the Draft National Programme for Energy Saving were to implement projects designed to "Reduce Energy Consumption of Lighting" and "Promote Energy Conservation within Small and Medium Sized Enterprises".

The Vietnamese Government commissioned a feasibility study on lighting efficiency under the government's Energy Conservation and Efficiency Programme (EC&E). This resulted in the report "Potential for Energy Efficiency Improvement in Lighting in Vietnam (1997)" identifying a potential to save 100 MW (100,000 tons of CO_2/yr) from more efficient use of lighting in Vietnam. This report recommended programs to reduce lighting energy consumption in the transportation, industrial, commercial and the domestic sectors. However, only one of these recommendations received further support (related to Public Lighting) following the private sector funding of a demonstration project in Hai Duong city (1998-2001) proving the feasibility of the overall public lighting project. It is this project that the Vietnamese government is now supporting through the submission of this proposal. The second project recommendation made in the "Draft National Programme for Energy Saving" on promoting energy conservation & efficiency in SMEs, i.e., Vietnam: Promoting Energy Conservation in Small and Medium-Scale Enterprises (PECSME). PECSME is presently being designed using GEF PDF-B funding and implemented by UNDP.

The project team at the Ministry of Science, Technology is currently preparing the project brief for the full-scale project. The full-scale PECSME project will promote energy-efficient technologies and practices in small and medium enterprises (SMEs) in Vietnam with either fewer than 300 employees or with revenues of less than 10 million dong. The project targets enterprises involved with brick making, ceramics, paper and pulp, textiles, and food processing. PECSME and VEEPL will reinforce each other in the area of energy-efficient lighting. Specifically, the lighting standards and labeling activities planned for VEEPL can be directly adapted for use by PECSME, making it easier to identify and market energy efficient lighting products to SMEs.

In addition, in 1997, EVN, with WB assistance, commissioned the "Demand-Side Management Assessment for Vietnam" to determine the potential for demand-side management (DSM) to assist

the power sector to meet the country's future power resource requirements. The DSM Assessment conclusion recommended a two-phased approach for implementing DSM. A US$ 3 million Swedish SIDA grant supported the first phase. Phase I was launched in late 2000 and program outputs and pilots are only now being completed. EVN's DSM Cell, which was established in November 2000, and MoI/ EVN management are now defining appropriate institutional arrangements, financing and funding mechanisms, program models, program screening and planning functions to justify a substantial DSM program.

The Vietnam Demand-Side Management and Energy Efficiency Project (VN-DSM) is a US$ 18.56 million WB/GEF project designed to: (1) Develop and expand demand-side management business program and test new market transformation efforts within the national electric utility, Electricity of Vietnam (EVN); and, (2) Develop sustainable business model and mechanisms to support energy efficiency retrofit investments in commercial and industrial facilities. It represents the second phase of a longer, 12-year (1998-2010) proposed IDA/GEF-supported DSM and energy efficiency program designed to achieve significant and sustainable reductions in energy consumption and peak power demand in Vietnam. The program would, in the course of 3-4 phases, test, develop and scale-up successful and sustainable business models to promote DSM and energy efficiency and promote investments. The first phase of VN-DSM was developed under the ongoing IDA/Swedish SIDA supported DSM program under the IDA-supported Transmission, Distribution and Disaster Reconstruction Project and is now essentially completed. The UNEP promoted Vietnam Energy Efficiency Public Lighting (VEEPL) project is in line with the recommendations on DSM within the Vietnamese lighting sector and is fully complementary with the VN-DSM activities focusing on the domestic sector. VN-DSM and VEEPL focus on different lighting technologies and markets, with the possible exception of linear fluorescent lamps. VEEPL will coordinate with VN-DSM project staff on the use of relevant EE lighting specifications and label and will collaborate with VN-DSM project activities where possible. For example, some Vietnamese communities may be recipients of both a VN-DSM compact fluorescent promotion targeting the domestic sector, and a VEEPL public lighting initiative. In such cases, a joint public education campaign may be able to achieve a greater impact than separate efforts.

As explained above, the programs and projects having implemented so far do not involve electronic ballasts introduction to florescent lamps, but rather stimulating market based business model that help to promote application of energy efficient lighting technologies like CFLs. And the most of these programme and projects ended or approaching their ending. There are further timelines set for future programs of this nature.

2) Individual or collaborative efforts by Vietnam retailers to promote rapid uptake of energy efficient lighting technology by non-residential buildings.

This scenario would entail building owners or government institutions to responding to increased marketing or promotion of efficient lighting alternatives and purchasing electronic ballasts and CFLs. At first, there has been no electronic ballast availability for Vietnam consumers so far and the PoA initially aims to promote this kind technology in Vietnam. As is discussed below in the barrier analysis, the relatively high upfront cost of electronic ballasts together with current un-availability compared to conventional florescent lamps is a major barrier to users' uptake.

3) Continuation of the current situation is also a possible alternative scenario.

The baseline alternatives include either continued use of existing lighting, or autonomous replacement of current lights with new technologies or measures of either the same or greater efficiency. Achieving the same outcome as typical SSC-CPAs would entail large- scale autonomous uptake of electronic ballast by non-residential building owners. As discussed above, autonomous uptake of the electronic ballasts introduced by the PoA is hampered by their barriers of technically availability and comparatively higher

cost, and as such the most likely outcome of a continuation of the current situation would be the provision of light for non-residential buildings mainly through the continuous use of current florescent lamps.

Sub-step 1b Consistency with mandatory laws and regulations
Spontaneous application of energy efficient lathing technology like replacing conventional ballasts on florescent lamps with energy efficient electronic ballasts in non-residential buildings is consistent with Vietnam's laws and regulations. The proposed SSC-CPA is therefore not the only alternative amongst those considered that complies with mandatory regulations.

Step 2.Investment Analysis
Sub-step 2a Determine appropriate analysis method
This SSC-CPA will involve consumers being provided electronic ballasts with free of charge. From the project proponent's perspective there are no financial or economic benefits other than CDM related income, as such a simple cost analysis will be undertaken (Option I).

Step 3 – Barrier Analysis
In accordance with Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities, a barrier analysis will be undertaken. This analysis will unfold some credible barriers that would prevent the implementation of the proposed project activity from being carried out if the project activity was not registered as a CDM activity.
The barriers relevance to promoting energy efficient products, like advanced electronic ballasts include inadequate access to capital, deficiency in local availability, inadequate information and skepticism from and for end-users in all sectors, equipment manufacturers, utilities, and service providers on the potential for energy efficiency improvements and estimated impacts, and commercial and industrial customers as well as service providers face high project development costs and perceived risks. That such barriers existed clearly have prevented application and diffusion of advanced electronic ballasts in Vietnam despite their financial benefits and having been available for several decades.

Access to capital:
As explained in the previous section, limited government support to administration, public, commercial and industrial buildings and lack of self capacity to introduce energy efficient lighting devices are attributed to current pity diffusion rate of energy efficiency lighting devices including advanced electronic ballasts.

Deficiency in locally available energy efficient equipment like advanced electronic ballasts:
Local suppliers/distributers and manufacturers supply equipment in demand and, thus, face little market pressure to improve product efficiencies and qualities. The resulting lack of equipments, in turn, serves to discourage those end-users that are interested in energy efficiency improvements. Those that do seek this equipment find supply lines difficult, face high import duties and restrictions, have difficulty identifying suitable, high quality equipment, etc.

Commercial and industrial customers as well as service providers face high project development costs and perceived risks:
Due to the need for energy audits and technical studies to identify potential energy efficiency improvements without the assurances that high return projects exist. Where service providers bear the initial costs of these audits, end-users have been skeptical of the savings estimates developed by auditors with limited track record and technologies/equipment with little or no demonstrated performance under Vietnamese conditions. Comparing potential investments in energy efficiency versus core business costs

(e.g., increased production), consumers view conventional investments as more risk-free than future revenue streams derived from less tangible sources such as energy savings.

Step 4.Common Practice Analysis
Sub-step 4a.Analyse other activities similar to the proposed activity
The UNEP promoted Vietnam Energy Efficiency Public Lighting (VEEPL) project is an activity nearly ending that focus on different lighting technologies and markets, with the possible exception of linear fluorescent lamps. Another demand side management project (VN-DSM) also partly covered compact fluorescent (CFL) promotion to domestic sector.
Despite the occurrence of some CFL programmes, penetration of energy efficient lighting nationally remains relatively low. The dominated lighting devices in non-residential buildings are florescent lamps that are potential targets for advanced electronic ballasts.

Sub-step 4b.Discuss any similar options that are occurring
As discussed above, CFL promoting programs have been conducted by Vietnam government. However, there are some essential distinctions between these activities and those proposed by the SSC-CPA that support the coordinating entity's claim that the proposed activity is additional.

Overseas Development Assistance (ODA) Check
This SSC CPA will not use any ODA funds.
A financing plan for the purposes of demonstrating compliance with this component of the Gold Standard additionality screen is provided Annex 2.

Proof of technology transfer/knowledge innovation:
The project involves the transfer of energy efficient technologies from Japan (developed country) to Vietnam (developing country). In this instance CRDEV will train local employees in the development, implementation and management of energy efficiency projects and in the requirements of CDM. Further transfer of knowledge will also occur through the education and awareness raising aspects of the SSC CPA. Individual buildings will receive information regarding the benefits (financial and environmental) of energy efficiency.

(i) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced;
Not applicable.

(ii) If mandatory a policy/regulation is enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.
Not applicable.

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

A.4.4.1. Operational and management plan:

>> Description of the operational and management arrangements established by the coordinating/managing entity for the implementation of the PoA, including:

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

(iii) The SSC-CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity.
(iv) The provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA;

The PoA will be operated and managed by CRDEV. The CRDEV will coordinate all project participants to the PoA and will collect necessary data and information from each CPA for the purpose of monitoring. The CRDEV also will communicate with DOE and CDM Executive Board.

(i) A record keeping system for each CPA under the PoA.
A well-designed record keeping system will be operated to ensure timely completion of all activities against the agreed schedule and in line with the PoA objectives, in full compliance with all relevant guidelines and regulations from the CDM EB and the Vietnam DNA.
Each SSC-CPA will follow the record keeping and monitoring requirements stipulated in ASM II.C. and detailed in Section E below. In summary, the coordinating entity will ensure that each SSC-CPA will maintain appropriate records documenting the following variables:
- The geographical location of each CPA.
- The name, address and record of specifications of buildings, florescent lamps in the buildings participating in the CPA
- The names, addresses and monitoring/spot check data of each building involved in sample/all and cross check groups.

The coordinating entity will be responsible for the management of records and data associated with each SSC-CPA.

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

Ensuring that SSC-CPAs within the proposed PoA do not overlap geographically will prevent double counting of emission reductions. Prior to registering a new SSC-CPA within the proposed PoA, the coordinating entity will check the CDM project database to establish whether a CDM project activity or CPA of another PoA utilising energy efficient lighting technologies has already been registered in the same geographic area. This search will cover registered project activities, project activities requesting registration, project activities under review and project activities for which either a review or corrections have been requested. The process of checking will be duplicated by the DOE responsible for registering new SSC-CPAs under the proposed PoA.
Given that each SSC-CPA included in the PoA will be identified by geographical location, it is possible to unambiguously identify CPAs or CDM project activities potentially operating in the same area. The geographical boundary of each SSC-CPA is determined by the location of households where ballasts are installed. Each SSC-CPA will limit participation to buildings belonging to Hanoi. In an instance where a CPA of another PoA or CDM project activity is already registered in the same geographic area as a proposed SSC-CPA, the coordinating entity will not proceed with the registration of the SSC-CPA. In the instance where a CPA of another PoA or CDM project activity is requesting registration, is under review or for which review or corrections have been requested, is in the same geographic area as a proposed SSC-CPA, the coordinating entity will wait for these processes to be resolved before proceeding with registration of the new SSC-CPA.

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

In order to avoid registering a SSC-CPA that is in fact a de-bundled component of another CPA or CDM project, the coordinating entity will follow the guidance provided by the Executive Board in Annex 27 of EB 36 Report. The coordinating entity intends to implement multiple CPAs within Hanoi, of the same sectoral scope – 3 Energy Demand. In order to prevent an occurrence of de-bundling, the coordinating entity will implement two approaches:

There has been no nay registered small scale CDM project related to demand side energy efficiency improvement in Vietnam. Moreover, according to paragraph 9 of the "Guidelines on assessment of de-bundling for SSC project activities, version 02:

If each of the independent subsystems/measures (e.g. biogas digester, solar home system)included in the CPA of a PoA is no greater than 1% of the small scale thresholds defined by the methodology applied, than that CPA of PoA is exempted from performing de-bundling check i.e. considered as being not a de-bundled component of a large scale activity.

As annual emission reduction from individual florescent lamp is 0.077MWh that is far less than the threshold of 60GWh /year.

(iv) The provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA;

The coordinating entity is responsible for identifying, developing, registering and managing all SSC-CPAs to be included in the proposed PoA. This will mean that those operating the SSC-CPA will be aware and will have agreed that their activity is subscribed to the proposed PoA. Legal agreements have been put in place with PoA distribution partners clearly stipulating that their activities are subscribed to the SSC-PoA. Households will be made aware that they are participating in a climate change action program aiming to reduce greenhouse gas emissions. It is reasonable that having been made aware of the nature of the program, and by accepting the free ballasts there is implied agreement by the building owners that their activity is subscribed to the relevant SSC-CPA.

A.4.4.2. Monitoring plan:

>> The following information shall be provided here:

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

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

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

The coordinating entity has opted to implement a verification system for the DOE that will individually verify each CPA in order to determine the abatement created by the PoA.

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

The coordinating entity has opted to implement a verification system for the DOE that will individually verify each CPA in order to determine the abatement created by the PoA. The project database managed by the coordinating entity includes the following data-set that can be directly attributable to each CPA within the PoA, thereby allowing unambiguous determination of the emission reductions attributable to each CPA:

1) A list of buildings participating in each CPA including name, address, electricity bill folio number, number and wattage of florescent lamps on which ballasts replaced, date and location of the exchange transaction;
2) Metering data collected from the Project Sample Group households of each CPA relating to the ongoing usage of project during each monitoring period;
3) Data obtained from project cross-check group buildings of each CPA indicating the proportion of project florescent lamps operating during each monitoring period.

The coordinating entity will produce a monitoring report for the DOE to verify corresponding to the preceding monitoring period of each CPA. This report will unambiguously set-out the data relating to the emission reductions generated by that specific CPA during the monitoring period.
PoA record keeping procedures will prevent double counting across CPAs. The data-set corresponding to each CPA will be mutually exclusive of the data-set of another CPA under the PoA.
Project sample group and project cross-check buildings for each CPA will be unambiguously identified and assigned to a CPA, and their data will be used for the calculation of emission reductions for that CPA only. Similarly, the list of buildings that participate in the exchange of ballasts for each CPA cannot contain any duplicate entries. This duplication rule applies within each CPA (ie a building cannot participate more than once during each CPA), and between CPAs (ie. buildings cannot participate in more than one CPA).
Verification of each CPA will occur at the end of each monitoring period. The project database will record the start and end dates of each monitoring period, and record the emission reductions attributable to each monitoring period. Appropriate record keeping procedures will be implemented to ensure that each monitoring period data set can be transparently attributed to its corresponding CPA, preventing any occurrences of double counting. An audit of the project database will be able to determine the current status of each CPA – the duration of previous monitoring periods, the buildings and sample groups delivering monitoring data, and current verification activities.

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

>>
No public fund involved in the PoA.

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

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

>>
xx/06/2011

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

>>

28 years

SECTION C. Environmental Analysis

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

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

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

>>

EIA report

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

>>

SECTION D. Stakeholders' comments

>>

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

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

Note: If local stakeholder comments are invited at the PoA level, include information on how comments by local stakeholders were invited, a summary of the comments received and how due account was taken of any comments received, as applicable.

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

>>

Not applicable. Local stakeholder consultation is done at CPA level.

D.3. Summary of the comments received:

>>

Not applicable. Local stakeholder consultation is done at CPA level.

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

>>

Not applicable. Local stakeholder consultation is done at CPA level.

SECTION E. Application of a baseline and monitoring methodology

This section shall demonstrate the application of the baseline and monitoring methodology to a typical SSC-CPA. The information defines the PoA specific elements that shall be included in preparing the PoA specific form used to define and include a SSC-CPA in this PoA (PoA specific CDM-SSC-CPA-DD).

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

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NOTE: The approved SSC baseline and monitoring methodology should be approved for use in a PoA by the Board.

The approved small-scale baseline and monitoring methodology: AMS-II.C. Demand-side energy efficiency programmes for specific technologies (version 13) are used for this project.

The project will also utilize the "Tool for the demonstration and assessment of additionality" and AMS-I.D.

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

AMS-II.C. covers activities that encourage the adoption of energy-efficient equipment, lamps, ballasts, refrigerators, motors, fans, air conditioners, appliances, etc. at many sites. These technologies replace existing equipment. The aggregate energy savings by a single project may not exceed the equivalent of 60 GWh per year for electrical end use energy efficiency technologies.
The methodology is applicable to SSC-CPAs because these projects concern the distribution and installation of electronic ballasts to florescent lamps in non-residential buildings, creating demand-side energy savings and reductions in greenhouse gas emissions. The technology to be deployed by SSC-CPAs is listed in the methodology.
Leakage associated with SSC-CPAs will not be considered as there is no equipment transferred from another activity.

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

The spatial extent of the project boundary is defined by the geographical location of buildings in which electronic ballasts installed to florescent lamps in the SSC-CPA, and the electricity grid to which these buildings are connected. In the table 2 below, all sources of the baseline and the project activity of each CPA are listed.

Table 2 Emission Sources Concerned or Unconcerned in the project boundary

	Source	Gas	Included?	Justification / Explanation
Baseline emissions	Power plants servicing the electricity grid	CO_2	Yes	Major emission source
		CH_4	No	Not significant. Excluded for simplification and conservativeness
		N_2O	No	Not significant. Excluded for simplification and conservativeness
e m	Power plants	CO_2	Yes	Major emission source of project emissions

	servicing the electricity grid	CH_4	No	Not significant. Excluded for simplification and conservativeness
		N_2O	No	Not significant. Excluded for simplification and conservativeness

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

>>

The small scale methodologies applied to each CPA define the indicative baseline scenario as;

1. Utilization of current florescent light bulbs, or
2. Autonomous replacement of current lights with new appliances (lights) of the same or greater efficiency.
3. Autonomous replacement of ballasts on current lights with new ballasts of the same or greater efficiency.

As previously discussed relating to additionality, above and below, the use of energy efficient appliances in Vietnam is low.
Florescent lamps represent the overwhelming majority of lighting used by non-residential households covered by the PoA. The baseline scenario identified for the PoA is the ongoing use of florescent lamps by participating buildings with no autonomous replacement of ballasts. Usually, replacement of ballasts on the florescent lamps does not happen except ballasts are broken or out of order.
The justification of this baseline scenario is provided below and argues that electronic ballast replacement is not going to happen in non-residential buildings. The intention of the PoA is to target non-residential buildings to take up the offer of free ballasts.

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

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

In addition to a standard assessment of additionality, in order to comply with the requirements of the Gold Standard, a typical SSC-CPA will provide further information regarding previous announcements, use of Overseas Development Assistance, and proof of technology transfer/knowledge innovation. A typical SSC-CPA will provide the following assessment of additionality:

Previous Announcement Check/Consideration of CDM
The proposed SSC-CPA was developed as a CDM activity. There have been no any public or private announcements regarding to the project proceeding without use of the CDM.

Additionality Tool
Additionality of the PoA is demonstrated using the criteria outlined in Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities. As per Gold Standard

requirements the UNFCCC's "Tool for the demonstration and assessment of additionality", is used to demonstrate the additionality of the project.

Step 1.Identification of alternatives to the project activity consistent with current laws and regulation

Sub-Step 1a.Define alternatives to the project activity

Three alternatives to a typical CPA have been identified:

1) The activity could occur without being registered as a CPA through government or private sector support.

In such a scenario the Vietnam government or private sector sponsor would support electronic ballasts production line and pay for their distribution at no low cost to non-residential buildings. There are significant barriers to this alternative scenario. Most importantly, there have been no any same nature projects in government's future programme/plan. In addition, existing budget constraints within Vietnam energy or environment ministries prevents additional happening of such kinds of projects. The Vietnam Government's own climate change planning documents provide the evidence of the planning and financial barriers exist to the government undertaking the kind of technology that proposed by a CPA. The coordinating entity believes that the clear absence of a stated intention in the most recent National Climate Change Strategy to undertake a promotion of electronic ballasts strongly indicates that such barriers exist.

2) Individual or collaborative efforts by Vietnam retailers to promote rapid uptake of energy efficient lighting technology by non-residential buildings.

This scenario would entail building owners or government institutions to responding to increased marketing or promotion of efficient lighting alternatives and purchasing electronic ballasts and CFLs. At first, there has been no electronic ballast availability for Vietnam consumers so far and a CPA initially aims to promote this kind technology in Vietnam. As is discussed below in the barrier analysis, the relatively high upfront cost of electronic ballasts together with current un-availability compared to conventional florescent lamps is a major barrier to users' uptake.

3) Continuation of the current situation is also a possible alternative scenario.

The baseline alternatives include either continued use of existing lighting, or autonomous replacement of current lights with new technologies or measures of either the same or greater efficiency. Achieving the same outcome as typical SSC-CPAs would entail large- scale autonomous uptake of electronic ballast by non-residential building owners. As discussed above, autonomous uptake of the electronic ballasts introduced by the CPA is hampered by their barriers of technically availability and comparatively higher cost, and as such the most likely outcome of a continuation of the current situation would be the provision of light for non-residential buildings mainly through the continuous use of current florescent lamps.

Sub-step 1b Consistency with mandatory laws and regulations

Spontaneous application of energy efficient lathing technology like replacing conventional ballasts on florescent lamps with energy efficient electronic ballasts in non-residential buildings is consistent with Vietnam's laws and regulations. The proposed SSC-CPA is therefore not the only alternative amongst those considered that complies with mandatory regulations.

Step 2.Investment Analysis

Sub-step 2a Determine appropriate analysis method

A typical CPA will involve consumers being provided electronic ballasts with free of charge. From the project proponent's perspective there are no financial or economic benefits other than CDM related income, as such a simple cost analysis will be undertaken (Option I).

Step 3 – Barrier Analysis

In accordance with Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities, a barrier analysis will be undertaken. This analysis will unfold some credible barriers that would prevent the implementation of the proposed project activity from being carried out if the project activity was not registered as a CDM activity.
The barriers relevance to promoting energy efficient products, like advanced electronic ballasts include inadequate access to capital, deficiency in local availability, inadequate information and skepticism from and for end-users in all sectors, equipment manufacturers, utilities, and service providers on the potential for energy efficiency improvements and estimated impacts, and commercial and industrial customers as well as service providers face high project development costs and perceived risks. That such barriers existed clearly have prevented application and diffusion of advanced electronic ballasts in Vietnam despite their financial benefits and having been available for several decades.

Access to capital:
As explained in the previous section, limited government support to administration, public, commercial and industrial buildings and lack of self capacity to introduce energy efficient lighting devices are attributed to current pity diffusion rate of energy efficiency lighting devices including advanced electronic ballasts.

Deficiency in locally available energy efficient equipment like advanced electronic ballasts:
Local suppliers/distributers and manufacturers supply equipment in demand and, thus, face little market pressure to improve product efficiencies and qualities. The resulting lack of equipments, in turn, serves to discourage those end-users that are interested in energy efficiency improvements. Those that do seek this equipment find supply lines difficult, face high import duties and restrictions, have difficulty identifying suitable, high quality equipment, etc.

Commercial and industrial customers as well as service providers face high project development costs and perceived risks:
Due to the need for energy audits and technical studies to identify potential energy efficiency improvements without the assurances that high return projects exist. Where service providers bear the initial costs of these audits, end-users have been skeptical of the savings estimates developed by auditors with limited track record and technologies/equipment with little or no demonstrated performance under Vietnamese conditions. Comparing potential investments in energy efficiency versus core business costs (e.g., increased production), consumers view conventional investments as more risk-free than future revenue streams derived from less tangible sources such as energy savings.

Step 4.Common Practice Analysis
Sub-step 4a.Analyze other activities similar to the proposed activity
The UNEP promoted Vietnam Energy Efficiency Public Lighting, the (VEEPL) project is an activity nearly ending that focus on different lighting technologies and markets, with the possible exception of linear fluorescent lamps. Another demand side management project (VN-DSM) also partly covered compact fluorescent (CFL) promotion to domestic sector.
Despite the occurrence of some CFL programmes, penetration of energy efficient lighting nationally remains relatively low. The dominated lighting devices in non-residential buildings are florescent lamps that are potential targets for advanced electronic ballasts.

Sub-step 4b.Discuss any similar options that are occurring
As discussed above, CFL promoting programs have been conducted by Vietnam government.
However, there are some essential distinctions between these activities and those proposed by a CPA that support the coordinating entity’s claim that the proposed activity is additional.

Overseas Development Assistance (ODA) Check
This SSC CPA will not use any ODA funds.

Proof of technology transfer/knowledge innovation
The project involves the transfer of energy efficient technologies from Japan (developed country) to Vietnam (developing country). In this instance CRDEV will train local employees in the development, implementation and management of energy efficiency projects and in the requirements of CDM. Further transfer of knowledge will also occur through the education and awareness raising aspects of the SSC CPA. Individual buildings will receive information regarding the benefits (financial and environmental) of energy efficiency.

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

The key criteria for assessing additionality of a CPA are included in the registered PoA. The criteria shall be based on additionality assessment undertaken in E.5.1 above. The project participants shall justify the choice of criteria based on analysis in above section.
It shall be demonstrated how these criteria would be applied to assess the additionality of a typical CPA at the time of inclusion.
Key additionality criteria:

1) Confirm that having no public or private announcements made regarding the CPA proceeding without use of the CDM (Gold Standard requirement).
2) Define credible possible alternative scenarios relating to the distribution of the energy efficient lamps, ballasts relevant to the CPA.
3) Ensure that the proposed CPA is not the only alternative amongst those considered that is in compliance with mandatory regulations.
4) Complete a simple cost analysis to demonstrate that without CDM revenue the CPA is not a financially attractive option.
5) Conduct a barrier analysis to demonstrate that the project activity faces significant barriers that are overcome through the CDM.
6) Describe essential differences between the CPA and similar activities that are occurring.
7) Demonstrate that ODA is not directly used to finance the CPA (Gold Standard requirement).
8) Describe the technology transfer or knowledge innovation involved in the CPA (Gold Standard requirement).

Each CPA-DD will include a discussion of additionality addressing each of these key criteria.

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

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

>>

Under the AMS-III.C. a typical CPA shall meet the requirements under paragraphs 6 given as below:
If the energy displaced is electricity, the emission baseline is determined using one of the two following options:

Option 1: The product of the baseline energy consumption of equipment/appliances and the emission factor for the electricity displaced

Option 2: The specific energy consumption of the system in the baseline times the output in project year y times the emission factor for the electricity displaced. This option can only be used where comparable conditions for the output in the baseline and project can be established. For example in the specific case of water pumping system comparable conditions can be established by one of the options below:

(i) Show that average baseline water flow rate (discharge) is within +/- 10% of the flow rate during the project;

(ii) Choose the nameplate head and discharge specifications of the baseline pump and corresponding power/energy consumption (weighted average values can be used when pumps are operated in parallel) for a conservative estimate of EER.

For monitoring, paragraph 13, 14 are applied

If the devices installed have constant current (ampere) characteristics, monitoring shall consist of monitoring either the "power" and "operating hours" or the "energy use" of the devices installed using an appropriate method. Appropriate methods include:

(a) Recording the "power" of the device installed (e.g., lamp or refrigerator) using nameplate data or bench tests of a sample of the units installed and metering a sample of the units installed for their operating hours using run time meters;

OR

(b) Metering the "energy use" of an appropriate sample of the devices installed.

In either case, monitoring shall include annual checks of a sample of non-metered systems to ensure that they are still operating.

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

>>

1. Determination of Grid Emissions Factor

The "Tool to calculate the emission factor for an electricity system" (version 1) has been used to determine the CO_2 emission factor for the displacement of electricity generated by power plants in the relevant electricity system, by calculating the "operating margin" (OM) and "build margin" (BM) as well as the "combined margin" (CM). This tool has been used as the project activity results in savings of electricity that would have been provided by the grid.

There is an existing grid emission factor for Vietnam that calculated as per "tool of grid emission factor calculation" and applied data up to 2008. The result of that is shown in the table 3 below.

Table 3 Vietnam Grid Emission Factor

$EF_{grid,OM,y}$ (tCO_2/MWh)	$EF_{grid,BM,y}$ (tCO_2/MWh)	$EF_{grid,CM,y}$ (tCO_2/MWh)
0.6135	0.5468	**0.5801**

This value could be adjusted with the available latest data.

2. Baseline Emissions

Because the energy displaced is electricity, the emission baseline is determined as the product of the baseline energy consumption of equipment/appliances and the emission factor for the electricity displaced.
(a) Electricity consumption of fluorescent lamps with conventional ballasts

$$E_{BL,y} = \sum_i \left(n_{PJ,i} * p_i * o_i\right)/\left(1 - l_y\right) \quad (1)$$

Where:

$E_{BL,y}$: Electricity consumption in the baseline in year y (kWh)
Σi : Sum over the group of i devices (e.g., 40W incandescent bulb, 5hp motor) replaced, for which the project energy efficient equipment is operating during the year, implemented as part of the project activity.

$n_{PJ,}$: Number of fluorescent lamp of the group of i baseline devices (e.g. 40Wfluorescent lamp) with which electronic ballast will be attached and is operating during the year
p_i : Recording power of fluorescent lamps targeted through entire number survey; (power of the fluorescent lamp of the group of i baseline devices (e.g. 40W fluorescent lamp) with which electronic ballasts will be attached
o_i : Metering operating hours of fluorescent lamps targeted with appropriate meters; (Average annual operating hours of the fluorescent lamp of the group of i baseline devices with which electronic ballast will be attached)
l_y *or 0.1* : Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g., theft/pilferage). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. Reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) shall be established and documented by the project participant. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable.

(b) Baseline emission

$$BE_y = E_{BL,y} * EF_{CO2,ELEC} \quad (2)$$

Where:

$E_{BL,y}$: Electricity consumption in the baseline in year y (kWh)
BE_y : Baseline emissions in year y (tCO_2-e)
$EF_{CO2,ELEC}$: CO_2 emission factor for grid electricity (tCO_2-e/MWh)

3. Project emissions

The project emission consists of CO_2 emissions from electricity consumption of fluorescent lamp with electronic ballasts.

(a) Electricity consumption of fluorescent lamps with electronic ballasts

$$E_{PJ,y} = \sum_i \left(n_{PJ,i} * p_{PJ,i} * o_{PJ,i}\right) / \left(1 - l_y\right) \quad (3)$$

Where:

$E_{PJ,y}$: Electricity consumption in the project in year y (kWh)

Σi : Sum over the group of "i" devices (e.g., 40W incandescent bulb, 5hp motor) replaced, for which the project energy efficient equipment is operating during the year, implemented as part of the project activity)

$n_{PJ,I}$: Number of fluorescent lamp of the group of "i" baseline devices (e.g. 40W fluorescent lamp) with which electronic ballasts will be attached and is operating during the year).

$p_{PJ,i}*o_i$: Sample survey on fluorescent lamps with electronic ballasts though metering with appropriate devices (Average annual electricity consumptions of the fluorescent lamp of the group of "i" baseline devices with which electronic ballasts will be attached)

l_y : Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g., theft/pilferage). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. Reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) shall be established and documented by the project participant. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable).

(b) Project emission

$$PE_y = E_{PJ,y} * EF_{CO2,ELEC} \quad (4)$$

PE_y : Project emissions in year y (tCO_2-e)

$E_{PJ,y}$: Electricity consumption in the project in year y (kWh)

$EF_{CO2,ELEC}$: CO_2 emission factor for grid electricity (tCO_2-e/MWh)

4. Leakages

The electronic ballasts used the CPA are not transferred from another activity; therefore, there is no need to consider leakages.

$Leakage_y = 0$;

5. Emission reductions

$ER_y = (BE_y - PE_y) - 0$;

Where:

ER_y : Emission reductions in year y (tCO_2-e)

BEy : Baseline emission in year y (tCO_2-e)

PEy : Project emission in year y (tCO_2-e)

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

Data / Parameter:	n_i
Data unit:	unit
Description:	Number of fluorescent lamp of the group of "i" baseline devices (e.g. 40W fluorescent lamp) with which electronic ballasts will be installed
Source of data used:	Ex-ante on-site sample or entire number survey
Value applied:	See details in Annex of each CPA-DD
Justification of the choice of data or description of measurement methods and procedures actually applied :	The survey must be implemented before the CPA start and ballast installation.
Any comment:	-

Data / Parameter:	p_i
Data unit:	W (watt)
Description:	Power of the fluorescent lamp of the group of "i" baseline devices (e.g. 40W fluorescent lamp) with which electronic ballasts will be installed
Source of data used:	Ex-ante on-site sample or entire number survey
Value applied:	See details in Annex of each CPA-DD
Justification of the choice of data or description of measurement methods and procedures actually applied :	The survey must be implemented before the CPA start and ballasts installation.
Any comment:	-

Data / Parameter:	o_i
Data unit:	hours
Description:	Average annual operating hours of the fluorescent lamp of the group of "i" baseline devices with which electronic ballasts will be attached
Source of data used:	Ex-ante on-site sample or entire number survey
Value applied:	See details in Annex of each CPA-DD
Justification of the choice of data or description of measurement methods and procedures actually applied :	The survey must be implemented before the CPA start an electronic ballasts installation.
Any comment:	-

Data / Parameter:	l_y
Data unit:	-
Description:	Average annual technical grid losses (transmission and distribution) during year *y*
Source of data used:	This value can be determined from recent data published either by a national utility or an official governmental body if available otherwise IPCC default value can be used
Value applied:	0.1
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	-In case of no country specific data, default value of 0.1

Data / Parameter:	$EF_{CO2,ELEC}$
Data unit:	tCO_2e /MWh
Description:	CO_2 emission factor for grid electricity
Source of data used:	Latest emission factors for regional power grids in Vietnam
Value applied:	0.581
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	-

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

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

Data / Parameter:	$n_{PJ,i}$
Data unit:	unit
Description:	Number of fluorescent lamp of the group of "i" baseline devices (e.g. 40W fluorescent lamp) with which electronic ballasts will be installed and operated during the year.
Source of data to be used:	On site monitoring
Value of data applied for the purpose of calculating expected emission reductions in	

section B.5	
Description of measurement methods and procedures to be applied:	Before starting of the CPA, the number of target fluorescent lamps are recorded though number plate and along with the CPA, corresponding number of galaxies will be installed to the fluorescent lamps in the buildings by checking against the number plate. The implementer should report the number to the program coordinator.
QA/QC procedures to be applied:	The implementer and program coordinator will establish a database covering all related information including number plate, location and date of installation and operation record. The database should be archived electronically.
Any comment:	-

Data / Parameter:	$p_{PJ,i}$*o_i
Data unit:	kWh
Description:	Annual electricity consumptions of the fluorescent lamp of the group of "i" in project devices with
Source of data to be used:	On site monitoring (sample or entire number)
Value of data applied for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	Metering electricity consumption on lamps with electronic ballasts in buildings with appropriated devices installed lamps through sample survey with 90% confidence level or entire number survey.
QA/QC procedures to be applied:	The project implementer checks the metering devices and records the data on fluorescent lamps with electronic ballasts. In the case of sample survey, sample of non-metered systems are checked also in order to ensure the whole system are on operation.
Any comment:	-

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

>>

1. Monitoring framework

The monitoring plan will be implemented according to a quality assurance and quality control based on the recommendations of "IPCC Good Practice Guidance and Uncertainty Management in National Green House Gas Inventories, Chapter 8: Quality Assurance and Quality Control."

The CPA implementers will, based on the operation and monitoring manual prepared by the program coordinator, undertake the monitoring of CPA operations and report to the program coordinator. The CPA implementers have responsibility to manage and operate the CPA. The monitoring framework is given in the figure below.

2. The Function of the CPA implementers

The following table shows the function of CPA implementers.

	The CPA implementers

Monitoring management	- Implement CPAs - Manage monitoring of CPAs
Data collection	- Implement x-ante and ex-post data collection of CPAs - Ensure data quality and regulate data collection procedures
Data storage and management	- Develop electronic file for collected data - Implement data management of CPAs. - Store and maintain records.
Reporting	- Report electronic data to the program coordinator.
CDM training and capacity building	- Implement training for staffs involving monitoring
Quality assurance and verification	- Undertake regular inspection/maintenance of the florescent lamps with electronic ballasts

3. Monitored data

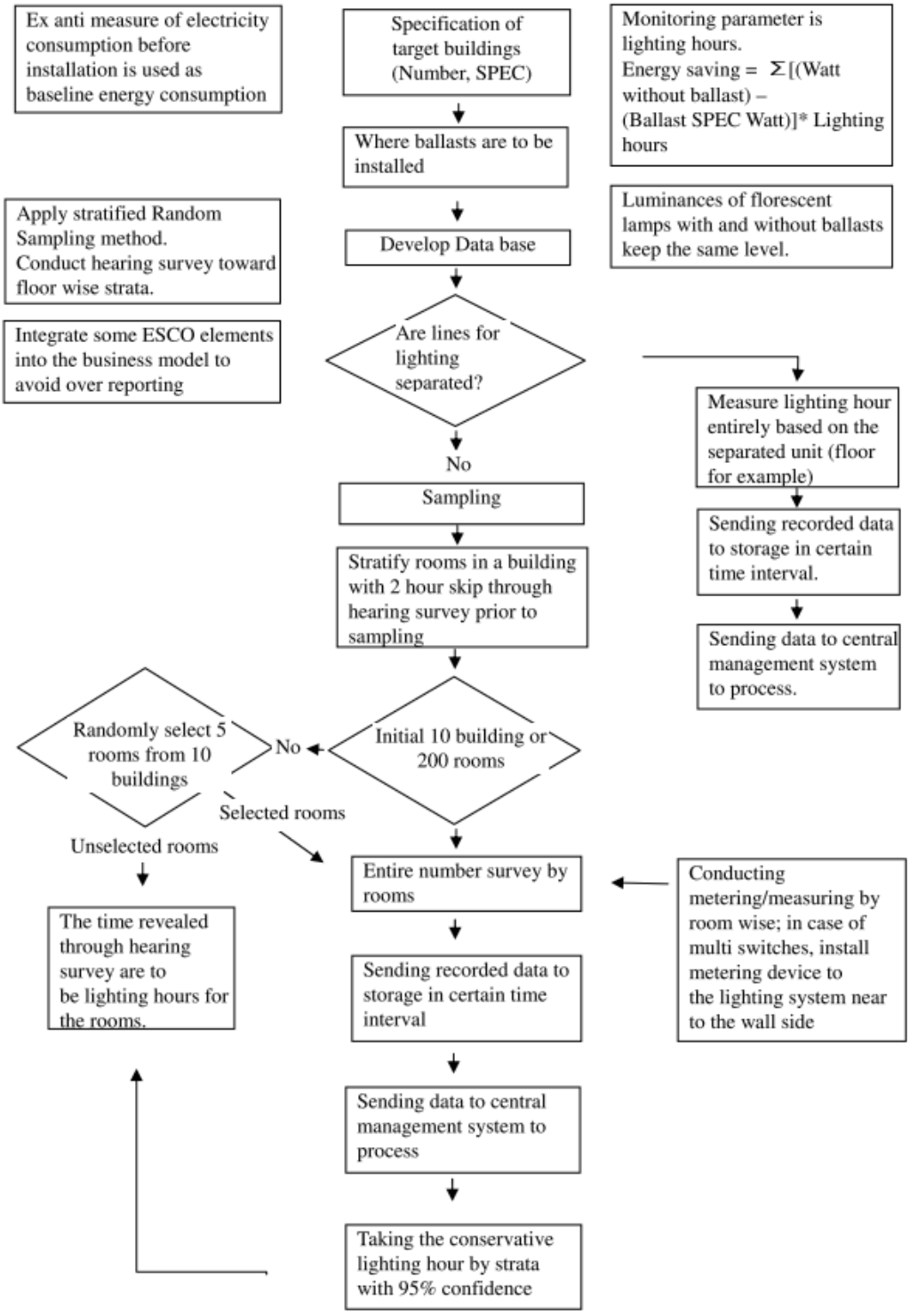
The data should be monitored are described in section E.7.1.

4. Data collection

The operators will be responsible for the daily readings of the meters and its registration in a log book. They will be also responsible for any defects occurring with the measurement device and for checking inconsistencies in the data and for the calibration/maintenance of measuring devices.
The log book format will be detailed in the final QA/QC monitoring procedure made available during the initial verification.
The data collection will be conducted based on either entire number or sample survey.

5. Data management

Each CPA implementer shall collect data described in section E.7.1 and archive these electronically using the common template developed by the program coordinator. Data will be archived as soon as the entire/sample household survey finished. The electronic files will be stored in hard disks as well as a hard copy printout. The electronic files and the hard copy shall be sent to the program coordinator.
Calibration will occur at intervals determined on the basis of instrument manufacturers' recommendations, stability, purpose, usage and history of repeatability. Recalibration should be performed whenever an event occurs that places the accuracy of the instrument in doubt.



Monitoring Framework

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

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Date of completion of the application of the methodology: 26/02/2010

Dr. Naoki Matsuo
E-mail: n_matsuo@climate-experts.info

Dr. Wutikuer Hujiaxi, PEAR Carbon Offset Initiative, Ltd.
E-mail: w_hujiaxi@pear-carbon-offset.org

Mr. Sasaki Kazuo PEAR Carbon Offset Initiative, Ltd.
E-mail: k_sasaki@pear-carbon-offset.org

Annex 1

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

Organization:	
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no public fund used in the project.

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION

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