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

CONTENTS

Annexes

NOTE:

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

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

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

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

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

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

Installing PV LED lanterns throughout Uganda – XX

Version XX

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

The purpose of this small-scale CDM Programme Activity (hereafter referred to as "CPA") is to introduce photo voltaic light emitting diode lantern (PV LED lantern) systems under a programme, Installing PV LED lanterns throughout Uganda (hereafter referred to as "PoA"), coordinated by Balozi Inc. of Kampala, Uganda (Balozi). This proposed CPA consists of XXX PV LED lantern systems, manufactured by Sanyo Electric Co., Ltd. (SANYO), Japan, which are planned to be introduced in Uganda in (year) by Balozi.

This project is a voluntary initiative coordinated by Balozi Inc., Uganda and Sanyo Electric Co., Ltd., Japan. Balozi was established in 2008 with the aim of promoting the distribution of solar products in Uganda. SANYO developed the PV LED lantern system for the purpose of lighting in un-electrified rural households in Uganda. Balozi, as a counterpart to SANYO, will cooperate with local distributors to introduce the SANYO PV LED lanterns for this project.

The implementer of this CPA is Balozi which is the coordinating entity of the overall PoA as well. Balozi is aiming to install XXX PV LED lantern systems throughout Uganda in (year) under this CPA.

Through this CPA, the energy source for lighting will come from solar energy and displace XXX litres per year of kerosene which would have been consumed as the fuel for kerosene lanterns. Green house gases (GHGs) associated with the combustion of kersone will be reduced as a result. The Project will result in an average annual emission reduction of XXX tCO_2 or XXX tCO_2 over the ten (10) years of the first crediting period of the CPA.

This CPA will contribute to the sustainable development of Uganda in the following ways:

Economic dimension – The average price of kerosene is 2,400~3,000Ush (1.5~1.8USD)[3] per litre and kerosene payments, at 3~5USD per month[4] are a burden to households. The proposed CPA will reduce household consumption of kerosene for lighting and save households the ongoing cost of purchasing kerosene and matches. The amount of money saved from the purchase of kerosene can be spent for education, food and other purposes. The CPA will also enhance income generating activities at households by providing stable and higher quality lighting with PV LED lantern systems.

[3] JICA research report, Utilization and diffusion of renewable energy in un-electrified regions in Africa, Oct 2008

[4] JICA research report, Utilization and diffusion of renewable energy in un-electrified regions in Africa, Oct 2008

Environmental dimension – The CPA reduces fossil fuel consumption and thereby reduces the amount of GHGs produced by fossil fuel combustion. The CPA will also reduce smoke and dust which cause serious indoor air pollution by replacing kerosene lanterns with PV LED lantern systems.

Social dimension – The use of kerosene lanterns in households is identified as a main cause of health concerns such as bronchitis and is a concern for people who have children. The poor quality of light from kerosene lanterns also hampers the ability of children to study. The introduction of PV LED lantern systems will provide a safe and steady supply of lighting and hence increase the quality of life for people in Uganda, with no emissions and a brighter luminescence allowing more productive household use of after dark hours for activities such as study and cooking.

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

The implementer for this CPA is Balozi Inc., Kampala, Uganda

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

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

A.4.1.1. Host Party:

Uganda

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

Each PV LED lantern system to be distributed under the CPA will be uniquely identified. Balozi will keep the following information for all the systems to be installed under the CPA in order to identify the systems and allow the unique identification of the CPA:

- Name and address of the SANYO PV LED lantern owner;
- Distribution date of the SANYO PV LED lantern;
- Details of the distributor of the SANYO PV LED lantern;
- Lot number for the SANYO PV LED lantern.

The geographical boundary of the project is the country border of Uganda.

Figure 1. Map of Uganda[5]

[5] Image courtesy of worldtravels.com

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

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

dd/mm/yyyy

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

10 Years

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

Fixed crediting period

A.4.3.1. Starting date of the crediting period:

Date of registration

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

10 Years

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

Year	Annual estimation of emission reductions in tonnes of CO_2e
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total estimated reductions (tCO_2e)	
Total number of crediting years	**10**

Annual average over the crediting period of estimated reductions (tCO_2e)	

A.4.5. Public funding of the CPA:

This proposed CPA will not receive any public funds resulting from official development assistance from Parties included in Annex I to the Convention.

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

According to the "Guidelines on assessment of de-bundling for SSC project activities", Version 02, Section II, "Guidance for determining the occurrence of de-bundling under a programme of activities (PoA)", Paragraph 9, as each independent subsystems/measures included in a CPA of the PoA is no greater than 1% of the small scale threshold defined by the methodology applied, then the CPA is exempted from performing a de-bundling check and is not considered a de-bundled component of a large scale activity.

Each of the SANYO PV LED lantern systems included in this proposed CPA of the PoA account for 1 W which is less than 1% of the 15 MW threshold of AMS-I.A., therefore this proposed CPA of the PoA is exempt from performing a de-bundling check and is not considered a de-bundled component of a large scale activity.

A.4.7. Confirmation that the small-scale CPA is neither registered as an individual CDM project activity nor is part of another Registered PoA:

This proposed CPA is neither registered as or part of an individual CDM project activity, nor is it part of any other Registered PoA.

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

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

Installing PV LED lanterns throughout Uganda

Version 01
dd/mm/yyyy

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

This proposed CPA meets eligibility criteria for inclusion of the CPA described in Section A.4.2.2 of the CDM-SSC-PoA-DD:

- The CPA will distribute new PV LED lanterns in households with no grid electricity connection.

- The CPA is located in Uganda.
- The coordinating entity of the CPA will be Balozi.
- The manufacturer of the PV LED lantern distributed under the CPA will be SANYO.
- The CPA consists of a group of SANYO PV LED lanterns to be distributed within a certain year during the crediting period of the PoA.
- The SANYO PV LED lanterns under a CPA are to be purchased from distributors who are cooperating with the Balozi under the contracts.
-The CPA will implement the baseline and monitoring methodology AMS-I.A. "Electricity generation by user". The version of the baseline and monitoring methodology may change according to the most recent guidance provided by the CDM Executive Board.

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

According to the "Draft guidelines for the demonstration of additionality for CDM Programme of Activities" submitted to EB51, Paragraph 10, if each of the independent subsystems/measures included in the CPA of a PoA is no greater than 1% of the small-scale thresholds defined by the methodology applied, then that CPA of the PoA is exempted from performing additionality demonstration. Additionality demonstration is therefore not a part of the eligibility criteria for CPA inclusion in a specific PoA.

Each of the SWH systems included in the CPA of a PoA account for approximately 1 W which is less than 1% of the 15MW threshold of AMS-I.A., Version 13 therefore a CPA of the PoA is exempt from performing an additionality demonstration.

(The draft guidelines are still under consideration by EB. This section will be modified depending on the decision on the guidelines.)

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

The project boundary is the physical, geographic location of each PV LED lantern installed under this CPA. The gas reduced through this CPA is carbon dioxide. The CPA will reduce fossil-fuel consumption by providing renewable energy via installation of the PV LED lanterns. The reduced fossil fuel demand thereby reduces the amount of CO_2 produced by fossil fuel combustion in Uganda.

	Source	Gas	Included?	Justification/Explanation
Baseline	Fossil fuel consumption	CO_2	Included	Baseline lighting consumes kerosene as the fuel source.
		CH_4	Excluded	There is no CH_4 emission.
		N_2O	Excluded	There is no N_2O emission.
Project	PV lighting	CO_2	Excluded	There is no CO_2 emission.
		CH_4	Excluded	There is no CH_4 emission.
		N_2O	Excluded	There is no N_2O emission.

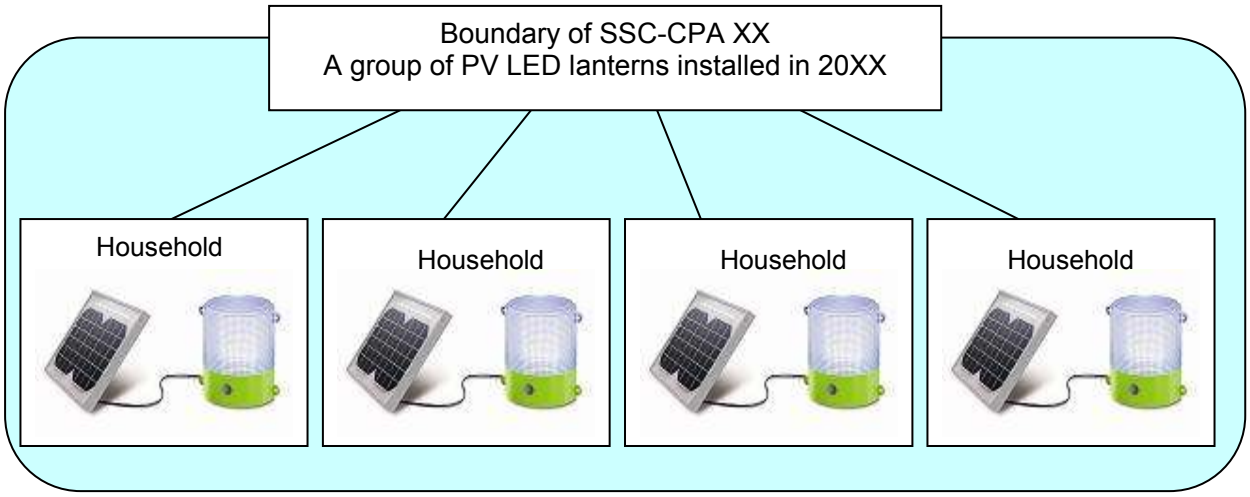

Figure 2. The CPA boundary

B.5. Emission reductions:

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

Data / Parameter:	$EF_{CO2,,j}$
Data unit:	tCO_2/ GJ
Description:	CO_2 emission factor for kerosene
Source of data used:	2006 IPCC guidelines for National Greenhouse Gas Inventories
Value applied:	0.0719
Justification of the choice of data or description of measurement methods and procedures actually applied :	IPCC default value
Any comment:	---

Data / Parameter:	NCV_i
Data unit:	GJ / kg
Description:	Net calorific value of kerosene
Source of data used:	2006 IPCC guidelines for National Greenhouse Gas Inventories
Value applied:	0.0438
Justification of the choice of data or description of measurement methods and procedures actually applied :	IPCC default value
Any comment:	---

Data / Parameter:	$FC_{i,y}$
Data unit:	Litre / yr
Description:	Amount of fuel consumption of kerosene
Source of data used:	Ministry of Energy and Mineral Development
Value applied:	30.0
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value is the kerosene consumption for one kerosene lantern for one year based on the density of kerosene and historical data for the consumption of kerosene (by volume).
Any comment:	---

Data / Parameter:	d_i
Data unit:	kg / L
Description:	Density of kerosene
Source of data used:	SImetric.co.uk
Value applied:	0.81715
Justification of the choice of data or description of measurement methods and procedures actually applied :	Density of kerosene at 60F. http://www.simetric.co.uk/si_liquids.htm
Any comment:	---

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

Baseline Emissions

The baseline scenario for the CPA is the continued use of kerosene lanterns by households. The baseline scenario is identified in accordance with the instructions provided in paragraphs 7 (c) and 9 of the approved small-scale baseline and monitoring methodology, AMS-I.A, "Electricity generation by the user", Version 13 using Option 3: a trend-adjusted projection of historical fuel consumption in situations where an existing technology is replaced, times the CO_2 emission factor for the fuel displaced. The baseline is calculated according to the following equation given by the methodology:

$$BE_y = \sum_{i=1}^{N_{PV}} BE_{i,y} = \sum_{i=1}^{N_{PV}} \sum_{j} FC_{i,j,y} \times d_j \times NCV_j \times EF_{CO2,j} \quad (1)$$

Where:

Parameter	Value	Unit	Description
BE_y		(tCO_2 / yr)	Emissions in the baseline in year *y*
$BE_{i,y}$	0.077	(tCO_2/yr)	Emissions in the baseline per system *i* in year *y*
$FC_{i,j,y}$	30.0	(Litre/ yr)	Amount of fuel consumption of fuel type *j* (kerosene) per system *i* in year *y*
d_j	0.81715	(kg/Litre)	Density of kerosene
NCV_j	0.0438	(GJ / kg)	Net calorific value of kerosene
$EF_{CO2,j}$	0.0719	(tCO_2/ GJ)	CO_2 emission factor for kerosene
N_{PV}		(units)	Number of PV LED lanterns in operation during the year
j	-	-	Fuel type used for combustion (kerosene)

Baseline emissions per lantern are calculated as:

$$BE_y = \sum_{i=1}^{N_{PV}} BE_{i,y} = \sum_{i=1}^{N_{PV}} \sum_{j} FC_{i,j,y} \times d_j \times NCV_j \times EF_{CO2,j}$$

$$= N_{PV} \times 30 \times 0.81715 \times 0.0438 \times 0.0719$$
$$= N_{PV} \times 0.077$$

Project emissions

Inherently, as the energy is sourced from a renewable resource, there are no project emissions from a CPA. There are no emissions derived from fossil fuel consumption or electricity consumption by the project activity.

Leakage

The CPAs included in this PoA involve the replacement of equipment. The equipment will be scrapped and as such the leakage from the use of the replaced equipment in another activity is neglected.

However, following the second clause of paragraph 22, independent monitoring of the scrapping of replaced equipment will be implemented. A check will be performed to determine that the number of PV LED lanterns distributed by the project corresponds to the number of scrapped kerosene lanterns. The kerosene lanterns will be stored until such correspondence has been checked. The kerosene lanterns will then be scrapped and the scrapping will be documented and independently verified.

Emission Reduction

Emission reductions are calculated as the difference between the energy baseline and the sum of the project emissions (PE_y) and leakage (LE_y).

$$ER_y = BE_y - (PE_y + LE_y) \quad (2)$$

Where:

Parameter	Value	Unit	Description
ER_y		(tCO_2/yr)	Emissions reductions in year *y*
PE_y	0	(tCO_2/yr)	Project emissions in year *y*
LE_y	0	(tCO_2/yr)	Leakage in year *y*

The emission reductions are calculated as follows by applying the calculation results of baseline emissions.

$$\begin{aligned} ER_y &= BE_y - (PE_y + LE_y) \\ &= \sum_{i=1}^{N_{PV}} BE_{i,y} - (0+0) \\ &= N_{PV} \times 0.077 \end{aligned}$$

Year	*PV LED lanterns Distributed*	*Total PV LED lanterns Distributed (cumulative)*	ER_y
1			
2			
3			
4			
5			
6			
7			
8			
9			

10			
	[units]	**[units]**	**(tCO_2 /yr)**

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

Year	Estimation of project activity emissions (tCO_2)	Estimation of baseline emissions (tCO_2)	Estimation of leakage (tCO2)	Estimation of overall emission reductions (tCO_2)
1	0		0	
2	0		0	
3	0		0	
4	0		0	
5	0		0	
6	0		0	
7	0		0	
8	0		0	
9	0		0	
10	0		0	
Total (tCO_2e)	**0**		**0**	
Annual Average (tCO_2e)	**0**		**0**	

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

B.6.1. Description of the monitoring plan:

According to the monitoring methodology, AMS-I.A., "Electricity generation by the user", Version 13 monitoring shall consists of:

(a) An annual check of all systems or a sample thereof to ensure that they are still operating (other evidence of continuing operation, such as on-going rental/lease payments could be a substitute) or
(b) Metering the electricity generated by all systems in a sample thereof.

Because a large number of PV LED lanterns to be installed under this CPA, an annual check of all systems is not feasible and therefore samples will be monitored to ensure that they are still operating.

Also, the monitoring of scrapping of kerosene lanterns needs to be implemented according to paragraph 22 of AMS-I.A in order to neglect the leakage from the use of the replaced equipment in another activity.

The monitoring procedure for this CPA is explained below:

1) Develop a database for the CPA

Balozi will establish a database for the CPA. The database include following information:

- Title of this CPA defined by the year of a PV LED installed
- For each PV LED lantern:
  - Name and address of the SANYO PV LED lantern owner.
  - Distribution date of the SANYO PV LED lantern.
  - Lot number of the SANYO PV LED lantern.
  - Details of the distributor of the SANYO PV LED lantern.
  - Number of kerosene lanterns handed over in exchange for the SANYO PV LED lantern from its owner.
  - Date of return if the distributed SANYO PV LED lantern has any problem.
- Date and number of kerosene lanterns collected and scrapped.

2) Select sampling systems

Sampling method is defined following "General guidelines for sampling and surveys for small-scale CDM project activities". Multi-Stage Sampling will be applied as a sampling method of this CPA considering that the population is very large, geographically dispersed, and relatively homogeneous. Following steps are undertaken to select sample systems:

Step I. Define sub-units

For each monitoring period, all districts where PV LED lanterns will be distributed are listed.

Step II. Select samples of sub-units

Sample districts will be selected randomly from the list described in step I. (The number of sub-units (districts) selected will be determined depending on the number of PV LED lanterns distributed per district.

Step III. Select sample systems from sample sub-units

Sample systems will be selected randomly from sample districts selected in step II. The number of sample systems to be selected will be determined depending on the number of PV LED lanterns distributed in total and per district.)

Survey sample size shall be determined to have at least 90% confidence level with 10% margin of error.

（Detail sampling methodology will be decided depending on the distribution plan.）

3) Conduct Survey

Ex-post monitoring survey will be carried out annually among sample systems. In the survey, partner distributors will visit the owners of sample systems and assess whether the PV LED lanterns are in operation or not.

The data will be collected and sent to The Data Manager (TBD) of Balozi. The Data Manager will record all the data collected in the database.

4) Monitoring of scrapping of kerosene lanterns

Balozi will verify whether the number of distributed PV LED lanterns is less than or equal to the number of kerosene lanterns collected and scrapped at the beginning of each monitoring interval.
The scrapping of kerosene lanterns should be documented and independently verified.

5) Prepare the Monitoring Report
Balozi is responsible for preparing the Monitoring Report with the support of SANYO.

Data and parameters to be monitored by this CPA are as followings:

Data / Parameter:	N_{PV}
Data unit:	[units]
Description:	Number of PV LED lanterns in operation during the year *y*
Source of data to be used:	Database developed by Balozi Inc.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Ex-ante number of PV LED lanterns to be distributed

Year	*PV LED lanterns Distributed in year, y*	*Total PV LED lanterns Distributed*
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
	[units]	[units]

Description of measurement methods and procedures to be applied:	Directly determined in the course of distributing the PV LED lanterns included in a CPA. Registered distributors will collect and record the number of lanterns distributed under a CPA.
QA/QC procedures to be applied:	Balozi Inc. will cross-check against its internal records of the number of PV LED lanterns purchased from SANYO under the program and the number of kerosene lanterns replaced.
Any comment:	---

Data / Parameter:	N_{KL}
Data unit:	[units]
Description:	Number of kerosene lanterns scrapped
Source of data used:	Balozi Inc.

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:	Directly determined in the course of distributing the PV LED lanterns included in a CPA. Registered distributors will collect and record the number of kerosene lanterns collected in exchange for PV LED lanterns installed under a CPA.
QA/QC procedures to be applied:	Balozi will cross-check against its internal records of the number of PV LED lanterns purchased from SANYO under the program and the number of kerosene lanterns collected.
Any comment:	The scrapping of collected kerosene lanterns should be documented and independently verified.

SECTION C. Environmental analysis

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

☑ Please tick if this information is provided at the PoA level. In this case, sections C.2. and C.4. need not be completed in this form.

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

N/A

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

N/A

SECTION D. Stakeholders' comments

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

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

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

N/A

D.3. Summary of the comments received:

N/A

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

N/A

Annex 1

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

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

Organization:	Sanyo Electric Co., Ltd.
Street/P.O.Box:	5-5
Building:	Keihan-Hondori 2 Chome
City:	Moriguchi
State/Region:	Osaka
Postfix/ZIP:	570-8677
Country:	Japan
Telephone:	06-6994-7359
FAX:	
E-Mail:	
URL:	http://sanyo.com
Represented by:	
Title:	
Salutation:	
Last Name:	Kakuchi
Middle Name:	
First Name:	Hiroyuki

Department:	Clean Energy Solutions Department
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	Hiroyuki.Kakuchi@sanyo.com

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The CPA will not receive any public funds that would be result of official development assistance from Parties included in Annex I to the Convention.

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION

Other monitoring information is found in Section B.6.1. The sampling procedure and monitoring structure are shown as follows:

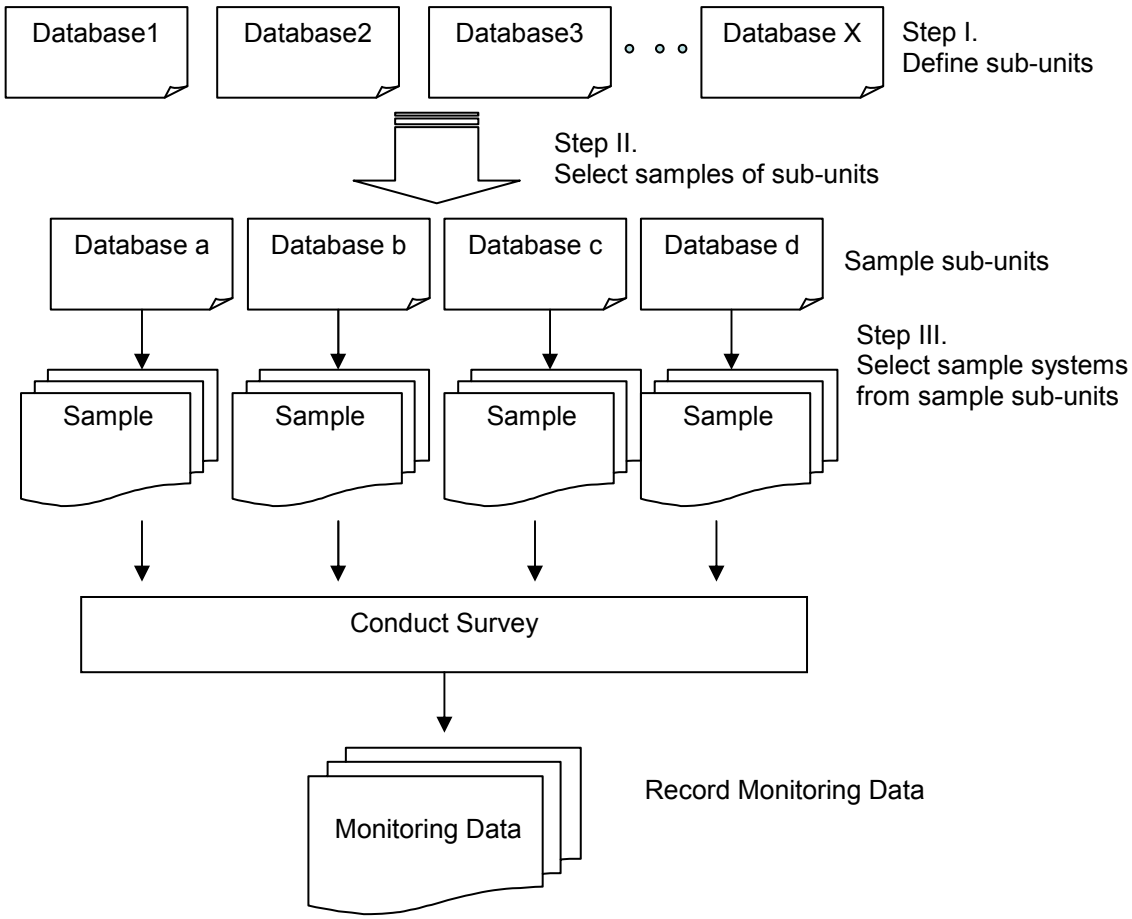

Figure 3. Sampling Procedure

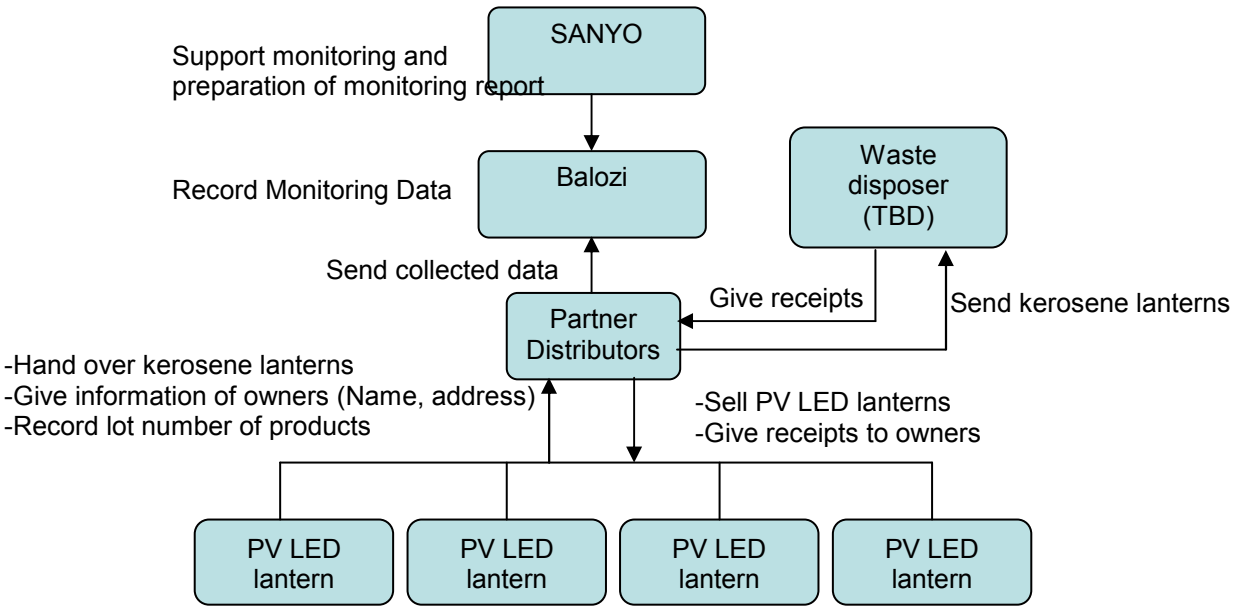

Figure 4. Monitoring Structure