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

CONTENTS

Annexes

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):

Emission Free Community Composting Programmatic CDM in Bohol, Philippines
Version 1
1 March 2008

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

The objective of the Emission Free Community Composting Programmatic CDM in Bohol, Philippines (hereafter, the "Project") is to promote segregation if municipal solid waste and composting activities of biodegradable waste in the Province of Bohol as an effective waste management strategy where local safety and sanitation issues can be solved while reducing greenhouse gas emissions.

This Project comprises measures to avoid the production of methane from biomass or other organic matter that would have otherwise been left to decay anaerobically in a solid waste disposal sites. With the project activity, decay is prevented through aerobic treatment by composting and proper soil application of the compost. The project activity does not recover or combust methane, and does not undertake controlled combustion of the waste. Annual emissions of methane from each CPA are expected to be less than 60 kilotons CO_2e annually.

1. General operating and implementing framework of PoA

Bohol Province is an island province in the Philippines located in the Central Visayas region. It is the tenth largest island in the country with a population of approximately 1.14 million[1]. The province is divided into 47 municipalities and one city, or 48 local government units (LGUs).

The 48 LGUs, depending on their regional characteristics and biodegradable waste quantity, are provided with the option of implementing the project independently (Type 1: Small scale), in a group of municipalities (Type 2: Medium scale), or at the entire city level (Type 3: Large scale).

The following figure describes the general operation framework of PoA and its relation to CDM Project activities (CPAs).

[1] Provincial Government of Bohol. Official Website: <http://www.bohol.gov.ph/profile.html>

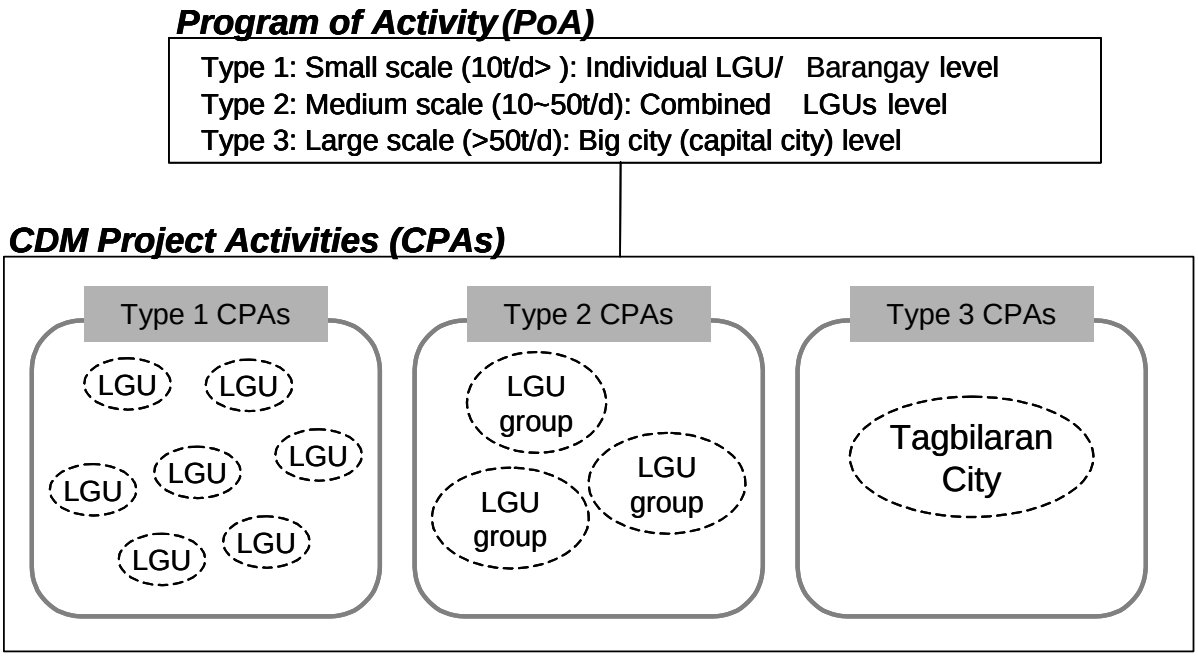

Figure 1. Implementing Framework of the Project

2. Policy/measure or stated goal of the PoA

The Project will be implementing the Republic Act No. 9003 (RA 9003) also known as the Ecological Solid Waste Management Act of 2000. RA 9003 mandates that at least 25% of all solid waste from waste disposal facilities should be diverted to re-use, recycling and composting. However, since its enactment in 2001, very little progress has been made at the local level. There are currently seven[2] composting facilities in Bohol, most of which are small-scale pilot projects focused on market waste treatment.

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

Within RA 9003, the Government of the Philippines highlights composting, along with re-use and recycling, as an effective solid waste treatment approach. However, neither the National Government nor the Provincial Government of Bohol mandates composting of organic waste materials under their law or policy. Therefore, the promotion of composting throughout the Province of Bohol is a voluntary action.

The coordinating and managing entity of this Project is the Provincial Government of Bohol. Bohol Province is one of the forerunners in the Philippines and in Southeast Asia to proactively implement environmental management efforts. It was the first local government in Southeast Asia to establish an Environmental Management System (EMS) as well as receive ISO 14001 accreditation. The promotion of composting through this Project is another voluntary effort that Bohol Province intends to undertake as part of their commitment to the environment.

The Project is designed to "co-benefit" both the global environmental aim to reduce greenhouse gas emissions, as well as the local social and economic needs. Promoting the implementation of composting through this Project will contribute to the sustainable development of Bohol by bringing about the following economic, environmental and social benefits:

[2] One of the seven facilities is not in operation.

Economic Benefits

- Investments from Japan to the local economy
- Creation of job opportunities (e.g. in waste sorting and at composting facilities) and potential stabilization of the volatile unemployment rate
- Capacity building of workers to develop viable skills (i.e. composting techniques and machinery operation) and provide information regarding health and safety measures
- Promotion of recycles and reuse of recyclables

Environmental Benefits

- Reduction of greenhouse gas emissions
- Improvement of sanitary conditions by presenting an alternative to dumping waste near households
- Improvement of soil quality due to the utilization of organic fertilizer and the reduction of chemical fertilizers
- Increase of waste collection that is mainly disposed improperly

Social Benefits

- Transfer of know-how on waste management and environmental technologies from Japan
- Provision of alternative livelihoods to those currently working under hazardous conditions such as waste pickers[3] who make their livings by collecting and selling recyclable elements from dumping sites

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

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

   The Provincial Planning and Development Office (PPDO) of the Provincial Government of Bohol

2. Project participants being registered in relation to the PoA

Table 1. Project Participants

Name of Party Involved (*) ((host) indicates a host party)	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)
Government of the Philippines	Provincial Government of Bohol Municipalities of Bohol Province (specific municipalities to be confirmed)	No
Government of Japan	EX Corporation Kajima Corporation	No

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

A.4.1. Location of the programme of activities:

[3] It is estimated that there are more than 200 waste pickers in Bohol Province based on investigation done by Bohol Provincial Government

A.4.1.1. Host Party(ies):

Republic of the Philippines

A.4.1.2. Physical/ Geographical boundary:

Bohol Province is located within the Central Visayas region of the Philippines. It is an island province positioned between latitude 9°30' and 10°15' North and Longitude 123°40' and 124°30' East. With a land area of 4117.3 square kilometers, Bohol is the tenth largest island of the Philippines.

Bohol is subdivided into 27 municipalities and one city and has 1,109 Barangays with a total population of 1,139,130. The capital city of Tagbilaran is the largest and only city in Bohol with a population of approximately 77,700.

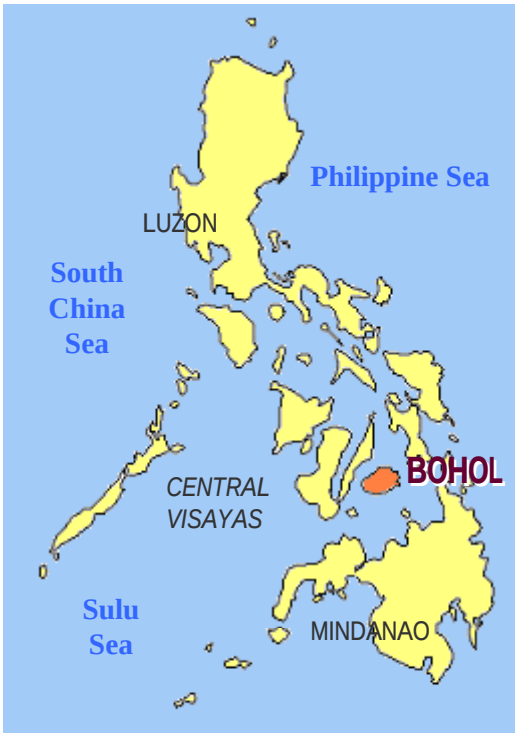

Figure 2. Location of Bohol Province

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

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

Composting is a widely practiced waste treatment method where biodegradable organic matter is fermented, decomposed and stabilized under an aerobic process usually by bacteria. Composting has various benefits such as reducing the waste volume through decomposition of organic matter and water evaporation, as well as producing useful fertilizer and soil amendment through appropriate composting process. The below figure describes the general flow for composting of waste.

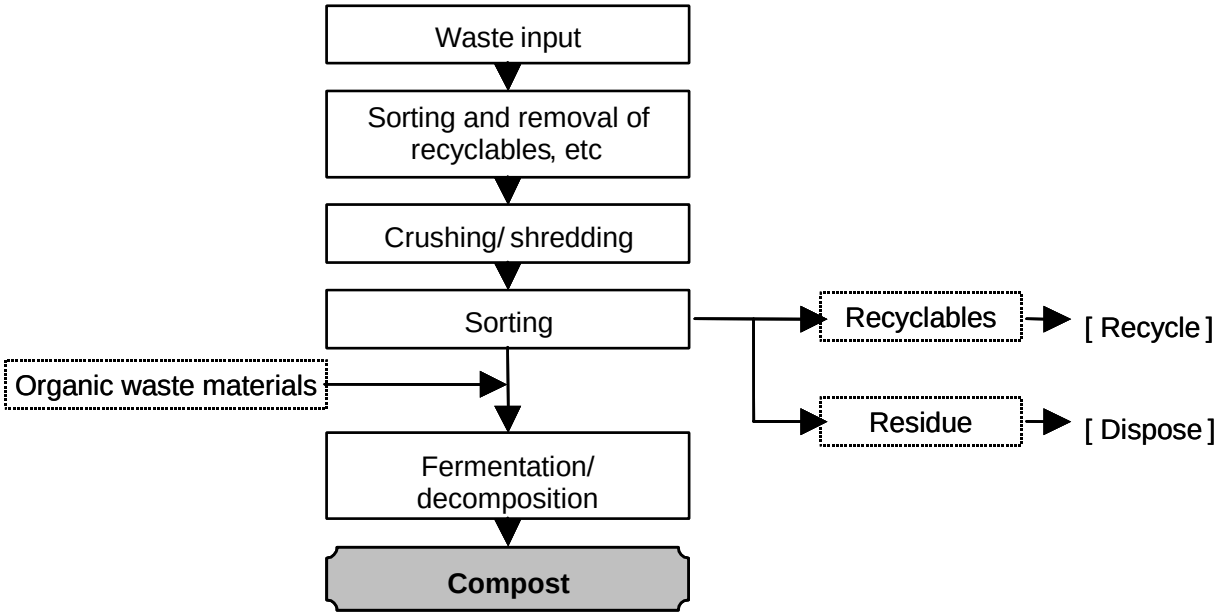

Figure 3. Flow of waste composting (mixed waste)

Appropriate composting techniques vary depending on the volume of the organic waste material. In Bohol Province, waste generation and collection volume in most municipalities, except for the capital city of Tagbilaran, ranges between few tons to few dozen tons per day. In these cases, a large-scale composting facility with mechanized sorting and shredding equipment is not cost effective. Instead, for such small to middle-scale composting projects, it is more effective and sustainable to implement sorting, fermentation and decomposition techniques that are mainly based on manual labor and allow partial implementation of machineries for specific processes (i.e. sorting, crushing, shredding, fermentation, etc.). For the purpose of better accommodating the unique regional composting needs, the Project will make available the following three composting models with different technology options.

Type 1: Small-Scale Model

Type 1 is a small-scale composting project operated by individual LGUs with an average daily solid waste generation less than 10 tons/day. Biodegradable materials are sorted at the household level, then collected on regular basis by the municipal government. Once organic waste materials are brought to the composting facility, they are shredded, either manually or mechanically, then left for fermentation with regular turning to accelerate the process.

The following technology options are available for the small-scale composting model.

(1) Rotating Barrel Composter

The Rotating Barrel Composter speeds up the composting process by the frequent turning of the compost material. The equipment cost is relatively high compared to other options. Turning (rotation) of the machine can be done either manually or mechanically. The process of turning creates air circulation within the machine by moving the fin located inside, which consequently accelerates the decomposition process through increased aeration.

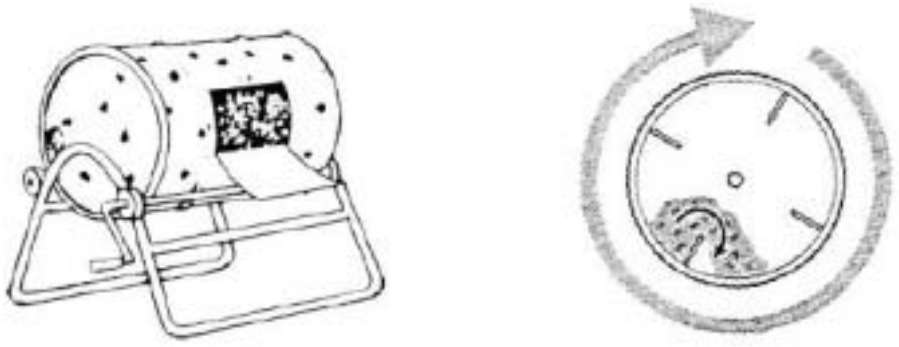

Figure 4. Rotating Barrel Composter (cross section image to the right)

(2) Bin/Container Type Composting Unit

Increasing air circulation of the compost by utilizing bin or container type composting units, as shown below, accelerates the fermentation and decomposition processes. Installing several of these units and transferring compost materials depending on their fermentation stage will enhance the compost maturation process and allow large volumes of organic waste materials to be composted at the same time.

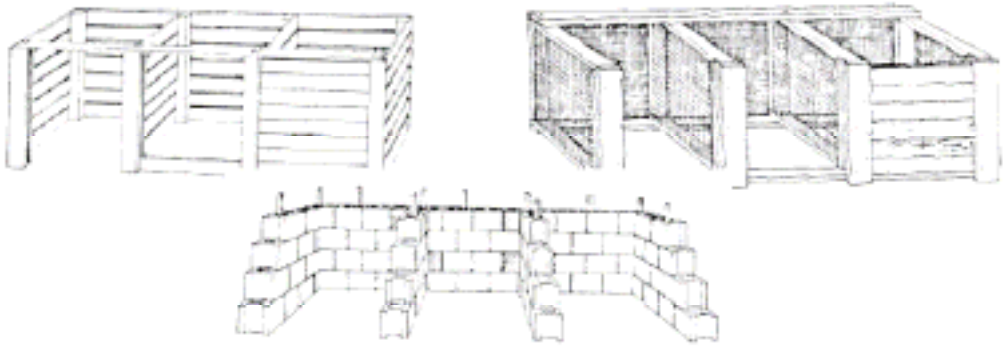

Figure 5. Examples of Combined Compost Bins/Containers for Staged Composting

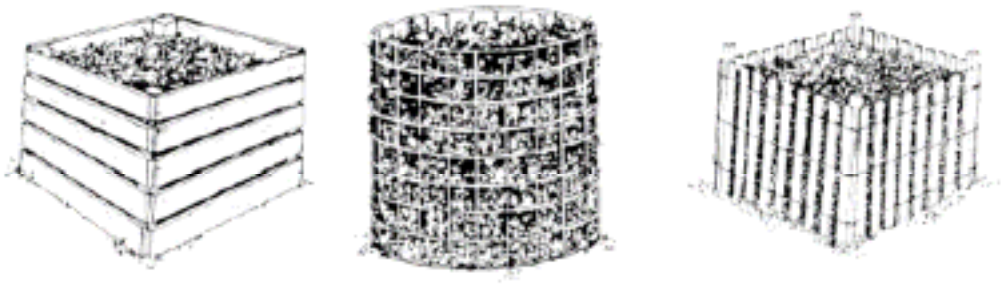

Figure 6. Examples of Single-Type Composting Unit

(3) Vermicompost

Vermicompost is a commonly used composting technology that utilizes earthworms to decompose organic waste materials. Five to eleven times more nitrogen, phosphorous and potassium of earthworms' initial consumption are estimated to be returned to the soil as discharge, creating nutritious, high quality fertilizers. However, compost temperature must be closely monitored and controlled since red worms and

drandling worms are most active between 50～70° F. Therefore, installing a device, such as shown below, that increases air circulation and allows temperature and water control is highly effective.

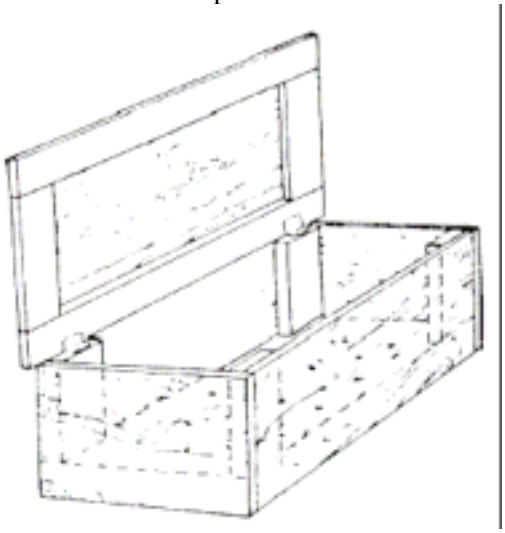

Figure 7. An Example of a Vermicompost

Type 2: Medium-Scale Model

Type 2 is a medium-scale composting project operated by a group of LGUs with total solid waste generation of 10 to 50 tons/day. For medium-scale composting, all or partial mechanization is recommended to increase the speed and efficiency of the composting process.

The windrow process is an effective method to speed up the composting process of medium-scale projects with implementation examples in Asia. The below figure describes the general composting flow of the windrow process.

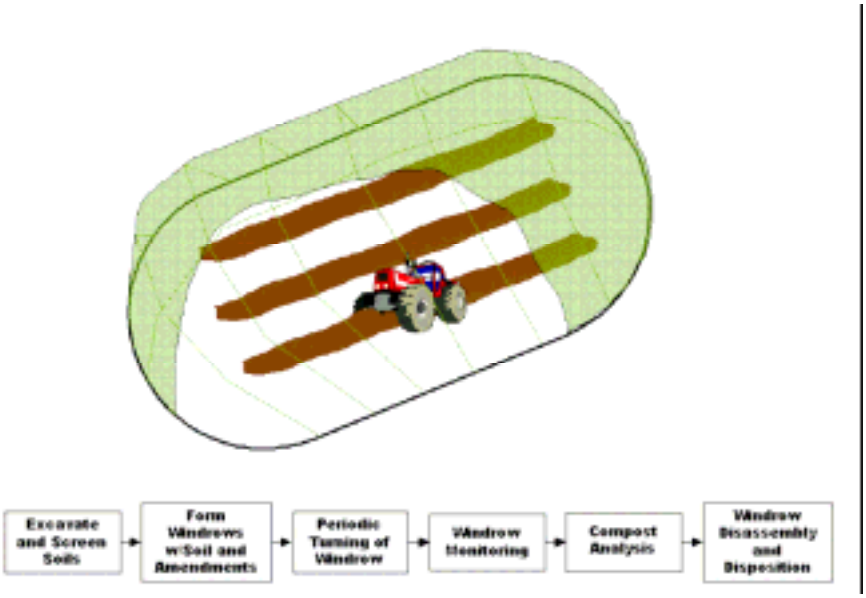

Figure 8. Composting Flow of Windrow Process

A practical technology option for this process is the windrow turner, a machine that turns the organic waste to ensure an even mixture, to provide aeration and to control temperature and moisture. Depending on the volume of organic waste, it is possible to implement the process manually, however in a medium-scale composting project, the benefits of utilizing the windrow turner are high, such as assuring the production of a high quality compost as well as increasing the composting speed.

Figure 9. Image of The Windrow Turner

Type 3:Large-Scale Model

Type 3 is a large-scale composting project that is operated by a group of LGUs or an entire city with a total solid waste generation of more than 50 tons/day. For this Project in Bohol, only the capital city of Tagbilaran will fall under this category according to its emission volume. Since large-scale composting projects generally require a lot of space and time, technologies to minimize the space required for the composting site and methods to increase the efficiency and speed of the composting processes, including manual processes, are highly demanded.

Mechanical Bio-Treatment (MBT) is a comprehensive system that combines diverse technologies required for a large-scale composting project. Through a mechanical process, organic waste materials are sorted from inorganic recyclables such as metal, glass and plastic. While the organic materials are biologically treated, the inorganic recyclables are collected.

Figure 10 illustrates the general flow of the MBT process. Flow A describes the processes involved in the composting of waste sorted at generation. Flow B describes the processes involved in the composting of mixed waste where sorting takes place at the composting facility.

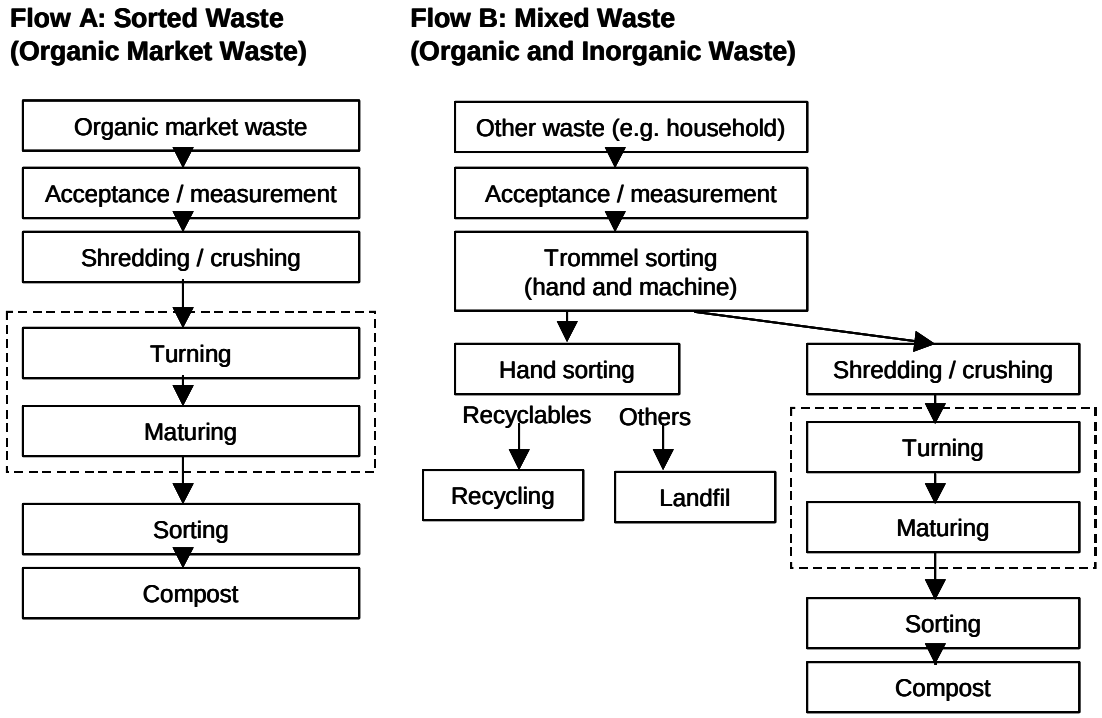

Figure 10. MBT Flow

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

The Project defines the following criteria for inclusion of project activity as a CPA under the PoA.

- A composting project to newly construct, or expand current, composting facility in order to treat organic waste materials that are otherwise treated through anaerobic fermentation in land fills
- Located within Bohol Province
- Achieves emission reductions of less than or equal to 60 kilotons CO_2e/year per CPA
- Implements at least one of the technology options introduced in A.4.2.1
- Monitors and collects appropriate data on the parameters listed in A.4.4.2

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 proposed PoA is a voluntary coordinated action as explained in A.2 (section 3).

In 2001, the Philippines Government issued RA9003 requiring all final disposal sites to be converted into sanitary landfills in five years (by 2006), and mandating LGUs to reduce their waste and divert at least 25% of all solid waste from waste disposal facilities through re-use, recycling and composting activities, as well as other resource recovery activities. However, due to lack of funds, only 3.7%[4] of municipalities in the Philippines have installed Material Recovery Facilities (MRF) for waste recycling.

[4] Information provided by the National Solid Waste Management Commission. In September 2006, 1,550 of the 41,943 Barangays in the country are covered by Material Recovery Facilities (MRFs).

In Bohol Province, waste are still treated mainly through open dumping, and currently there are only seven[5] composting facilities, most of which are small-scale facilities focused on the treatment of market waste. The lack of economic incentives due to the low market value of the compost can be identified as one of the major obstacles inhibiting the further establishment of composting projects. In addition, RA 9003 lists composting as one of the effective recycling methods, however its implementation is not legally binding. Therefore it is unlikely that further efforts to promote composting projects will take place in the absence of the PoA.

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

A.4.4.1. Operational and management plan:

The following operational and management arrangements will be implemented by the coordinating/managing entity for the implementation of the PoA:

(i) A record keeping system for each CPA under PoA

Regular monitoring and recording of specific parameters are carried out by individual CPAs. Data will be recorded digitally. However for small-scale CPAs, analogue data will be gathered and passed onto the Bohol Provincial Government where they will convert the data into digital format. The Bohol Provincial Government is responsible for collecting, storing and analyzing data from all CPAs where they will closely monitor the progress of each CPAs as well as provide assistance if necessary.

The below figure describes the general layout of the record keeping system.

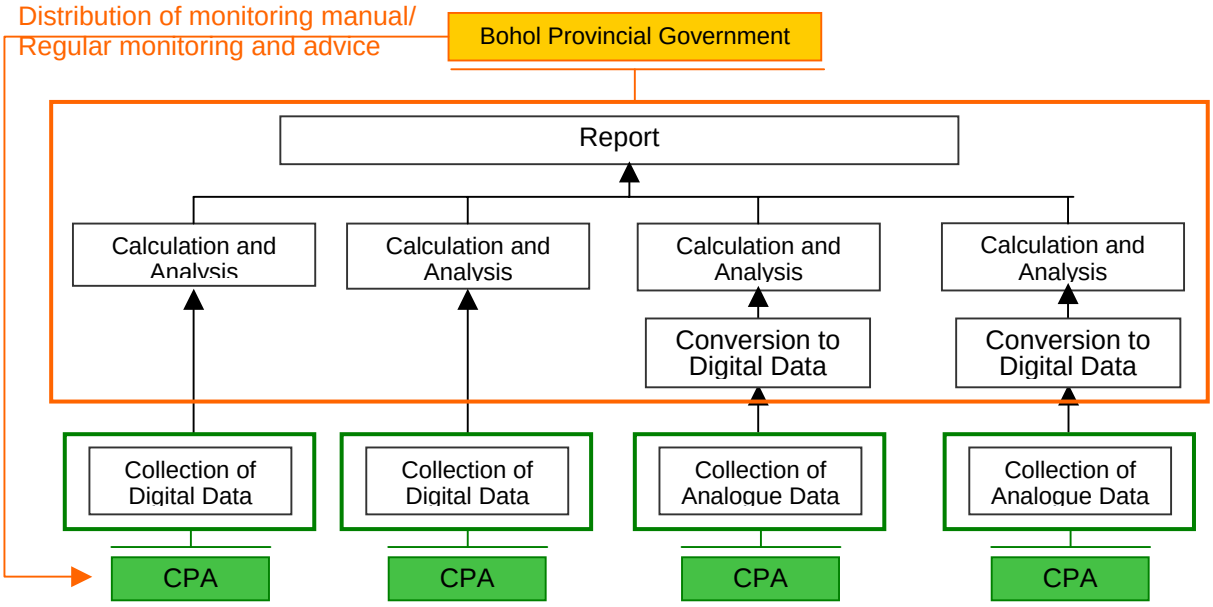

Figure11. Layout of Record Keeping System

[5] One of the seven facilities is not in operation.

(ii) A system/procedure to avoid double counting

An identification system is implemented where numbers will be assigned to individual CPAs based on their geographic information. These CPA identification numbers are managed by the Bohol Provincial Government who will closely monitor individual CPAs to prevent double counting.

(iii) Verification that SSC-CPA is not a debunlded component of another CPA

Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities defines that a registered SSC-CPA shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

- With the same project participants;
- In the same project category and technology/measure;
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

If the CPA is managed by project participants that are only taking part in one CPA, it can be inferred that the CPA does not have the same project participants with any another CPAs (first criteria), thus verifying that the CPA is not a debulded component of another CPA.

If the CPA is managed by project participants that are taking part in more than one CPAs, the CPA will verify within their CDM-SSC-CPA-DD that one or more of the above criteria for debundling are not met.

Finally, if the CPA meets all four of the criteria for debunlding, it will indicate within their CDM-SSC-CPA-DD that the small-scale project activity "both reduces anthropogenic emissions by sources and directly emits less than 60 kilotons of carbon dioxide equivalent annually," as stated in paragraph 6 (c) of the decision 17/CP.7. This is in concurrence with Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities, which states that, "if a proposed small-scale project activity is deemed to be a debundled component, but the total size of such an activity combined with the previous registered small-scale CDM project activity does not exceed the limits for small-scale CDM project activities as set in paragraph 6 (c) of the decision 17/CP.7, the project activity can qualify to use simplified modalities and procedures for small-scale CDM project activities."

(iv) Assurance that CPA operations/operators are being subscribed to the PoA

A stakeholder meeting was held where representatives from municipalities in Bohol who may be in charge of the CPA operations were invited and explained the objectives of the Project, as further described in Section D. After the meeting, municipality representatives who agreed to the PoA have submitted a Letter of Intent (LOI) that confirms their intent of participation.

A.4.4.2. Monitoring plan:

The following parameters are monitored to verify the amount of reductions of anthropogenic emissions of greenhouse gases due to CPAs under the PoA.

Table 2. Monitored Parameters

No	Monitoring Item	Unit	Monitoring Method	Monitoring Frequency	Monitoring Body	Applicable Conditions
Parameters for Type 1 (Small Scale) PoAs						
1	Volume of carry-in waste	m^3/year	To be measured visually	Daily	CPA	
2	Density of carry-in waste	tons/m^3	To be measured by equipment	Quarterly	BPG	
Parameters for Type 2 (Middle Scale) and Type 3 (Large Scale) PoAs						
3	Weight of carry-in waste	tons/year	To be measured by scale	Daily	CPA	
Common Parameters for Type 1~3 PoA						
4	Composition of waste	-	To be measured by equipment	Quarterly	BPG	
5	Average load of trucks (waste transport)	m^3/truck	To be measured visually	Annually	BPG	
6	Increment of transport distance	km/ truck	To be calculated based on collection plan	Annually	BPG	
7	Average load of truck (compost transport)	m^3/truck	To be calculated based on carry-in record	Annually	CPA	Compost is not delivered in bags
8	Density of compost	tons/m^3	To be measured by equipment	Quarterly	BPG	Compost is not delivered in bags
9	Weight per compost bag	kg/bag	To be measured by equipment	Annually	BPG	Compost is delivered in bags
10	Average load (number of bags) of truck	bag/truck	To be calculated based on carry-in record	Annually	BPG	Compost is delivered in bags
11	Average distance of compost delivery	km/ truck	To be calculated based on delivery list	Annually	CPA	
12	Electricity consumption	kWh/year	To be measured by meter	Daily	CPA	
13	Operation record of compost facility	-	To be recorded	Daily	CPA	
14	Degree of aerobic of composting process	-	To be measured by equipment	Quarterly	BPG	
15	Record of compost sales/delivery destination	-	Delivery list to be recorded	Daily	CPA	
16	General treatment method of solid waste in other cities		Interview investigation	Annually	BPG	

*BHG: Bohol Provincial Government

The overview of the data recording system is described in A.4.4.1. The managing entity, in this case the Bohol Provincial Government, will closely manage the collected data regarding the above parameters. In addition, the managing entity will assist the monitoring process at the CPA level by distributing monitoring manuals and necessary forms for data recording to CPAs, as well as making regular site visits to provide any necessary assistance and advice to the CPAs and solve any issues.

Bohol Provincial Government will manage all the data in digital format, which will assure transparency through enabling easy access to the status of CPAs at anytime, as well as preventing double counting.

The more detailed information on the monitoring item will be described in Section E.

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

Public funding from each municipality is involved in this PoA and related CPAs. However, this PoA does not include any diversion of ODA funds.

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

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

1st of January 2009

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

28 years

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:

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

In the Philippines, requirements for environmental analysis, or the Environmental Impact Statement (EIS), are stated within the Department Administrative Order (DAO) 2003-30. DAO 2003-30 states that, "organic fertilizer (composting) facilities with an annual production capacity exceeding 15 MT/day (or 5,475 MT annual capacity)" and "located in environmentally critical areas (ECA)" are required to complete and submit an Initial Environmental Examination (IEE) report. Any other composting facilities are required to complete and submit an environmental managements plan (EMP).
Therefore, to fulfil the environmental analysis requirement of the Philippines, all CPAs will complete and submit either an IEE or EMP, depending on their location and compost production volume.

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

Composting significantly lowers the environmental impacts of existing waste treatment by avoiding methane emission through aerobic decomposition of organic waste.

Furthermore, the environmental impacts of the composting projects are considered potential and limited to the small area allocated for the composting facility. All organic waste materials composted in the Project are collected within Bohol Province, and the compost produced is also used locally. Therefore, the

environmental impacts from the Project will be limited to within the province. Furthermore, Bohol is an islands province. Therefore, no transboundary impacts are expected from the Project.

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),:

As indicated in C.1., environmental legislation in the Philippines requires an EIS for composting sites with a waste treatment volume of more the 15 tons/day and located within an ECA. For PoAs that meet these criteria, the Project will undergo and submit an IEE at the CPA level. For all other projects, the CPAs will complete and submit and EMP.

SECTION D. Stakeholders' comments

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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 ☒

Public consultation was held for the purpose of explaining the objectives, process, implications and benefits for sustainable development of the PoA to relevant stakeholders. Representatives from the National Environmental Agency (DENR), Bohol Provincial Government, municipalities, research institutions, universities and environmental NGOs were invited to the consultation where they were given the opportunity to discuss and provide comments to the proposed Project. Stakeholders were also notified in the invitation letters that they were encouraged to clarify any doubts regarding the Project at the consultation forum.

The Project intends to gather public comments and opinions from the local citizens, who are the ones that are most directly affected by the Project. Therefore, separate public consultations for local citizens will be held at the CPA level in order to provide information regarding the Project and collect of comments from local communities of each CPA.

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

A public consultation (seminar) at the PoA level was held at the Bohol Plaza Hotel in Bohol Province from the 20th through the 21st of February 2008 for the purpose of gathering comments from stakeholders.

(i) Participants
A total of 149 participants attended the seminar. The breakdown of participants from each sector is shown below.

- Local Government Units (LGUs)[6]: 100
- NGO, academic institutions, industries: 15
- Secretariat and Bohol Provincial Government: 27
- Japanese participants: 8

[6] Invitations were sent out to all 48 municipalities in Bohol Province where the Mayor and two staff members were invited from each municipality

(ii) Agenda
The following presentations and site visits were included in the agenda.

- Presentation of the objective and rationale of the seminar
- Introduction of attendees
- Presentation on the development status of CDM projects in the Philippines
- Presentation on Japan's initiatives to promote programmatic CDM
- Presentation on Bohol's development path
- Explanation of the Ecological Solid Waste Management Act (RA 9003)
- Discussion on the programmatic CDM project proposal
- Presentations by three existing community composing projects
- Visit to an existing compost facility in Duero, Bohol Province
- Screening of the film, "Ang Paglalakbay" (Promotion Video of Recycling in The Philippines)
- Meeting among municipal waste treatment representatives

Comments and feedbacks were gathered after the presentations and site visit. Efforts were made to provide all attendees with the opportunity to present their opinions and/or concerns and ask questions regarding the Project.

Comments from local citizens will be collected at a later date through similar public consultation seminars held at the CPA level.

D.3. Summary of the comments received:

Participants were generally supportive of the PoA viewing the implementation of the Project as a positive opportunity for Bohol to reduce its waste by converting it to resource, as well as receive technology transfer from Japan. Moreover, no direct objections to the implementation of the Project were expressed during or after the seminar.

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

All clarifications requested by local attending stakeholders were addressed during the discussion after the presentations.

SECTION E. Application of a baseline and monitoring methodology

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

SSC AMS-III.F. "Avoidance of methane production from biomass decay through composting, (Version 5)" was applied to the baseline and monitoring methodologies in the PoA. SSC AMS-III.G. "Landfill Methane Recovery (Version 5)" and Methodological Tool in Annex 10 of the EB 35 meeting Report: "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site for the estimation of baseline emission of organic matter undergoing anaerobic decay at the solid waste dump site (Version 2)" were also applied as references for SSC AMS-III.F.

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

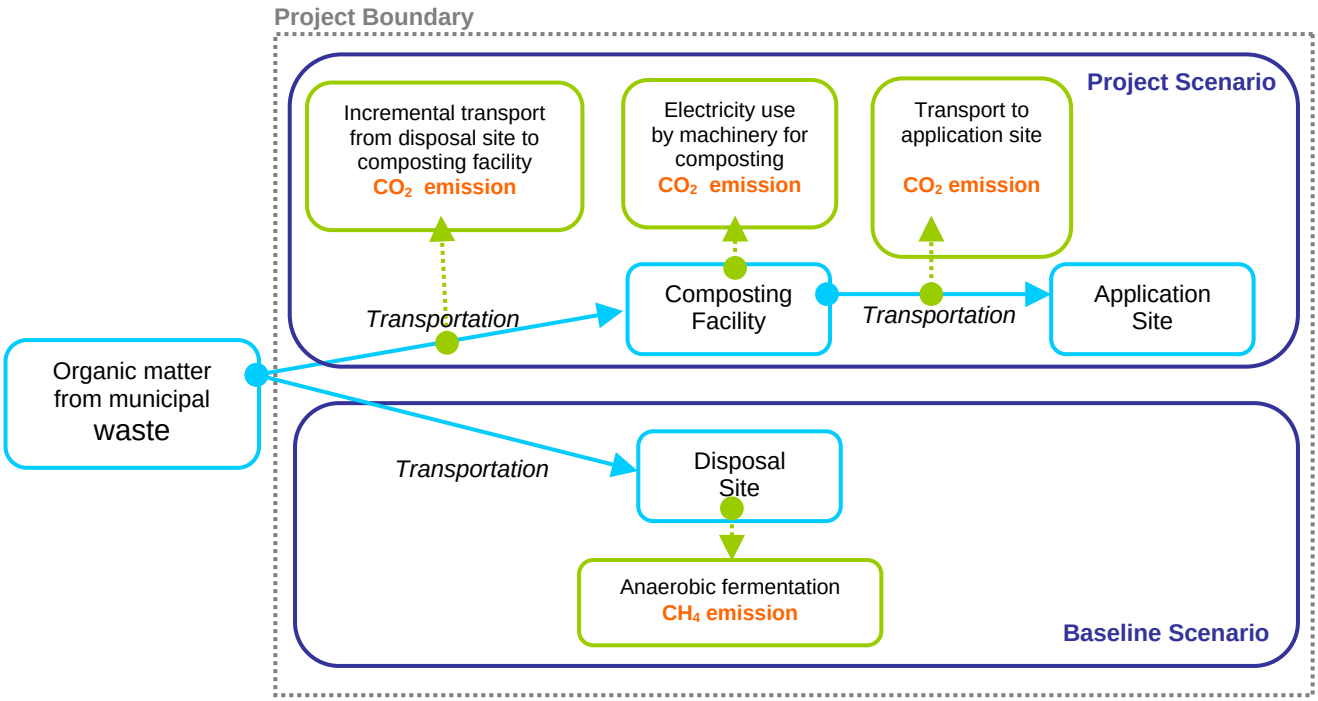
This Project provides measures to avoid the production of methane from biomass or other organic matter, which would have otherwise been left to decay anaerobically at a solid waste disposal site. With the project activity, decay is prevented by treating the waste aerobically through composting and proper soil application of the compost. The project activity does not recover or combust methane, and does not undertake controlled combustion of the waste. Annual emissions of methane from each CPA are expected to be less than 60 kilotons CO_2e annually as described in Section E.

This Project aims to construct and expand composting facilities, as well as promote activities that increase treatment capacities of existing composting facilities. For existing composting facilities, additional technologies and methods necessary to increase composting production capacity will be identified and described through the PoA.

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

The project boundary for this Project is illustrated in the following figure. The boundary applies to each CPAs under PoA and includes the municipal disposal site, composting facility site and application site.

Figure 12. Layout of Project Boundary



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

The baseline scenario is the continued disposal of organic waste material at open dumpsites in the project boundary, Bohol Province, and the resulting methane production at dumpsites due to anaerobic fermentation. Baseline scenario is identified based on parameters such as population projections, per capita waste generation volume, waste composition, percentage of biodegradable organic carbon content by waste type, rate of decay by waste type, waste collection rate, etc.

Data collection at the local level is necessary for calculating the population projection, per capita waste generation volume, waste collection rate and waste composition. Waste collection rate is gathered from both the municipal government and Bohol Provincial Government for each CPA. Due to the lack of waste composition data in many municipalities, waste composition figure of Tagbilaran City is used for all CPAs. Details of other parameters are provided in E.6.3.and E.7.1.

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 the absence of the project activity, organic waste materials are most likely to be disposed in legally allowable solid waste disposal sites in the province of Bohol, resulting in the production and release of methane into the atmosphere, as is the current situation. The project activity will reduce greenhouse gas emissions by avoiding the production of methane at dumpsites by composting the organic matter through an aerobic process instead of an anaerobic process.

However, the existence of the following barriers prevents the implementation of the Project, leading to higher emissions indicated above.

Determination of additionality will be established in line with Attachment A of Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities. The project participants will provide an explanation to show that the project activity would not have occurred without the PoA, due to at least one of the following barriers: Investment barrier, Technology barrier and Barrier due to prevailing practice.

(a) Investment barrier

Despite the initial investments required for the implementation of the composting project, compost produced from organic waste material is expected to have a very low or no market value. Therefore, without the income from certified emissions reduction (CER) sales, the Project is not financially viable.

(b) Technology barrier

There is a technology barrier for the implementation of the PoA since the technologies that are proposed to be implemented for the middle and large-scale projects have not yet been applied in full scale in the Philippines. There is a need to bring in new technologies for this Project since, although there has been an example of a middle-scale composting project in Manila with a partial mechanized process, due to the high O/M costs, it is currently not in operation. The windrow method for middle-scale projects and MBT system for large-scale projects proposed to be implemented through this PoA are not only new technologies to be introduced into the Philippines, but also have high potentials of generating income through CER sales, which will make the Project economically viable.

Most composting projects are currently being implemented in the Philippines at the small-scale Barangay level. At such small-scale composting projects there are no identifiable technology barriers since local technologies are utilized.

(c) Barrier due to prevailing practice

RA 9003 established by the Philippine Government in 2001 requires the reduction of waste volume through re-use, recycling and composting of the waste. Although composting is indicated as one of the

methods for waste reduction within RA 9003, it is not required by law. The implementation of composting has been very slow in the Philippines with only 3.7%[7] of all Barangays' in the Philippines constructing MRFs for waste treatment by 2006. The majority of the organic waste materials are still managed at dumpsites. Similarly, composting of solid waste is uncommon in Bohol Province, and only seven facilities[8], most of which are small-scale, exist at March, 2008.

Impact of CDM registration

The approval and registration of the CDM project will alleviate the identified barriers through diversion of some risks in the project to the CDM partner. Moreover, additional revenue from the sales of CER and technology transfer and investment from countries such as Japan will allow the municipalities to finance and implement new composting equipments.

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

Below are the key criteria for assessing the additionality of the CPA when proposed to be included in the registered PoA.

- Investment barrier: profits from sales of the compost are below the operation cost of the project
- Barrier to prevailing practice: low adoption rate of composting facilities, and most organic waste materials are being treated at dump sites
- Technology barrier: a large-scale composting project that is operated by a group of LGUs or an entire city with a total solid waste generation of more than 50 t/day (Type 3 CPA)

CPA under PoA must meet at least one of the above criteria to meet the additionality requirement.

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:

Baseline emissions and project emissions are calculated by the equations defined by "SSC AMS III.F Avoidance of Methane Production from Decay of Biomass through Composting (Version 5)." The parameters used for calculation are locally obtained values and default values determined by IPCC Guidelines for National Greenhouse Gas Inventories (2006).

According to SSC AMS-III.F., the yearly methane generation potential for the solid waste should be calculated using the first order decay model as described in category AMS III.G. "Landfill Methane Recovery (Version 5)" referring to Methodological Tool in Annex 10 of the EB 35 meeting Report: "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site for the estimation of baseline emission of organic matter undergoing anaerobic decay at the solid waste dump site (Version 2)"(referring to equation (1) in E.6.2.).

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

[7] Information provided by the National Solid Waste Management Commission. In September 2006, 1,550 of the 41,943 Barangays in the country are covered by Material Recovery Facilities (MRFs).

[8] One of the seven facilities is not in operation

(i) Baseline Emissions

Baseline emissions were calculated by equation (1).

$BE_y = BE_{CH4,SWDS,y} - MD_{reg,y} \times GWP\_CH_4 + MEP_{y,ww} \times GWP\_CH_4$ …(1)

Where:

BE_y: Baseline emissions in year "y" (tCO_2e)
$BE_{CH4,SWDS,y}$: Methane emissions avoided during year y from preventing waste disposal at the solid waste disposal site during the period from the start of the project activity to the end of the year y (tCO_2e)
$MD_{reg,y}$: Amount of methane that would have to be captured and combusted in the year "y"to comply with the prevailing regulations
$MEP_{y,ww}$: Methane emission potential in the year "y" of the wastewater. The value of this term is zero if co-composting of wastewater is not included in the project activity.
CH_4_GWP: Global Warming Potential (GWP) of methane, valid for the relevant commitment period (tCO_2e/tCH_4)

Parameters required for the calculation of equation (1) are determined as follows:

- $BE_{CH4,SWDS,y}$: Methane emissions avoided during the year y from preventing waste disposal at the solid waste disposal site during the period from the start of the project activity to the end of the year y (tCO_2e)

Methane emissions from disposal site without the Project is determined utilizing the following equation provided in the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site," which has been revised at Executive Board (EB) 35.

$$BE_{CH4,SWDS,y} = \varphi \cdot (1-f) \cdot GWP_{CH4} \cdot (1-OX) \cdot \frac{16}{12} \cdot F \cdot DOC_f \cdot MCF \cdot \sum_{x=1}^{y} \sum_{j} W_{j,x} \cdot DOC_j \cdot e^{-k_j \cdot (y-x)} \cdot \left(1-e^{-k_j}\right)$$

…(2)

Where:

ϕ: Model correction factor to account for model uncertainties (0.9)
OX: Oxidation factor (reflecting the amount of methane from SWDS that is oxidised in the soil or other material covering the waste)
F: Fraction of methane in the SWDS gas (volume fraction) (0.5)
DOC_f: Fraction of degradable organic carbon (DOC) that can decompose
MCF: Methane correction factor
DOC_j: Fraction of degradable organic carbon (by weight) in the waste type j
k_j: Decay rate for the waste type j
x: Year during the crediting period: x runs from the first year of the first crediting period (x = 1) to the year y for which avoided emissions are calculated (x = y)
y: Year for which methane emissions are calculated

For the extension of the crediting period, the most updated "IPCC Guidelines for National Greenhouse Gas Inventories" will be referred for figures regarding OX, F, DOC_f, MCF, DOC_j, k_j, GWP.

■ $W_{j,x}$: Amount of organic waste type j prevented from disposal in the SWDS in the year x
Where different waste types j are prevented from disposal, determine the amount of different waste types ($W_{j,x}$) through sampling and calculate the mean from the samples, as follows:

$$W_{j,x} = W_x \times \frac{\sum_{n=1} P_{n,j,x}}{Z} \quad \ldots(3)$$

Where:

$W_{j,x}$: Amount of organic waste type j prevented from disposal in the SWDS in the year x (tons)
W_x: Total amount of organic waste prevented from disposal in year x (tons)
$P_{n,j,x}$: Weight fraction of the waste type j in the sample n collected during the year x
Z: Number of samples collected during the year x

■ W_x : Total amount of organic waste prevented from disposal in year x
As indicated in equation (4) below, the generation volume of organic waste (W_x) was calculated by multiplying the Bohol's average per capita waste generation volume (0.45kg/person/day) by the total population in Bohol.

$$W_x = POP_x \times WC_x \times CR_x \quad \ldots(4)$$

Where:

POP_x: Population of the related municipalities in year x
WC_x: Per capita garbage production in year x (0.45 kg/person/day: Mean value of Bohol Province)
CR_x: Percent of garbage collected in year x

However, for municipalities with self-produced waste management assessments available, waste generation volumes were calculated utilizing figures from the local assessments.

(ii) Project Emissions
Emissions from the Project are the sum of the emissions from incremental transportation and electricity or diesel consumption due to project activity, as described in the following equation.

$$PE_y = PE_{y,transp} + PE_{y,power} \quad \ldots(5)$$

Where:
PE_y: Project activity emissions in the year "y" (tCO_2e) tCO_2/year
$PE_{y,transp}$: Emissions from incremental transportation in the year "y" tCO_2/year
$PE_{y,power}$: Emissions from electricity or diesel consumption in the year "y" tCO_2/year

Parameters utilized to calculate equation (5) are determined as follows:

■ $PE_{y,transp}$: Emissions from incremental transportation in the year "y"

$$PE_{y,transp} = (Q_y/CT_y) \times DAF_w \times EF_{CO2} + (Q_{y,comp}/CT_{y,comp}) \times DAF_{comp} \times EF_{CO2} \quad \ldots(6)$$

Where:
Q_y: Quantity of waste composted and/or wastewater co-composted in the year "y" (tons)

Ct_y: Average truck capacity for waste transportation (tons/truck)
DAF_w: Average incremental distance for solid waste and/or wastewater transportation (km/truck)
EF_{CO2}: CO_2 emission factor from fuel use due to transportation ($kgCO_2$/km, IPCC default values or local values may be used).
$Q_{y,comp}$: Quantity of final compost product produced in the year "y" (tons)
$CT_{y,comp}$: Average truck capacity for final compost product transportation (tons/truck)
DAF_{comp}: Average distance for final compost product transportation (km/truck)

■ $PE_{y,power}$: Emissions from power usage in the year "y"

$PE_{y,power}$ will be calculated by power consumption by the composting facilities in kWh/year and the electricity emission factor. For composting facilities that use on-site generator, fuel consumption will be calculated. Electricity emission factor will be used for the Luzon-Visayas grid since Bohol Province is located within the Luzon-Visayas grid.

(iii) Leakage Emissions
Emissions from leakage are calculated when composting facilities are transferred from other activities or existing composting facilities are transferred into other activities.

(iv) Emissions Reduction of Greenhouse Gas
GHG emissions reduction is calculated as indicated in equation (7).

$$ER_y = (BE_y - (PE_y + Leakage_y) \quad \ldots (7)$$

ER_y: Emissions reduction in year "y" (tCO_2e)
BE_y: Baseline emissions in year "y" (tCO_2e)
PE_y: Project emissions in year "y" (tCO_2e)
$Leakage_y$: Emissions due to leakage in year y

The emissions reduction achieved by the project activity from increase of utilization capacity of existing composting facilities will be measured by calculating the difference between the baseline emission and the sum of the project emission and leakage.

$$ER_y = (BE_y - PE_y) \times (1\text{-}r) \quad \ldots (8)$$

The value for r is determined as follows:

$$r = WCOM_{BAU}/TWCOM_y \quad \ldots (9)$$

Where:

$WCOM_{BAU}$: Reregistered annual amount of waste composted (tons) at the facility on a BAU basis calculated as the highest amount of annual compost production in the last five years prior to the project implementation
$TWCOM_y$: Total quantity of waste composted in a year (tons) at the facility

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

Data unit:	-
Description:	Model correction factor to account for model uncertainties
Source of data used:	"Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site (Version 2)"
Value applied:	0.9
Justification of the choice of data or description of measurement methods and procedures actually applied:	IPCC default values recommended in "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site (Version 2)"
Any comment:	Oonk et el. (1994) have validated several landfill gas models based on 17 realized landfill gas projects. The mean relative error of multi-phase models was assessed to be 18%. Given the uncertainties associated with the model, and in order to estimate emission reductions in a conservative manner, a discount of 10% is applied to the model results.

Data / Parameter:	OX
Data unit:	-
Description:	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)
Source of data used:	Conduct a site visit at the solid waste disposal site in order to assess the type of cover of the solid waste disposal site. Use the IPCC 2006 Guidelines for National Greenhouse Gas Inventories for the choice of the value to be applied.
Value applied:	Use 0.1 for managed solid waste disposal sites that are covered with oxidizing material such as soil or compost. Use 0 for other types of solid waste disposal sites.
Justification of the choice of data or description of measurement methods and procedures actually applied:	IPCC default values recommended in "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site (Version 2)"
Any comment:	

Data / Parameter:	F
Data unit:	-
Description:	Fraction of methane in the SWDS gas (volume fraction)
Source of data used:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value applied:	0.5
Justification of the choice of data or description of measurement methods and procedures actually applied:	This factor reflects the fact that some degradable organic carbon does not degrade, or degrades very slowly, under anaerobic conditions in the SWDS. A default value of 0.5 is recommended by IPCC.
Any comment:	

Data / Parameter:	DOC_f
Data unit:	-
Description:	Fraction of degradable organic carbon (DOC) that can decompose
Source of data used:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value applied:	0.5
Justification of the choice of data or description of measurement methods and procedures actually applied:	IPCC default value since no local values are available
Any comment:	

Data / Parameter:	DOC_j
Data unit:	-
Description:	Fraction of degradable organic carbon (by weight) in the waste type j
Source of data used:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Tables 2.4 and 2.5)
Value applied:	Wood and wood products: 43 Pulp, paper and cardboard: 40 Food and food waste: 15 Garden and park waste: 20 Glass, plastic, metal and inert waste: 0
Justification of the choice of data or description of measurement methods and procedures actually applied:	IPCC default values for wet base waste since no local values are available
Any comment:	

Data / Parameter:	k_j
Data unit:	-
Description:	Decay rate for the waste type j
Source of data used:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Table 3.3)
Value applied:	Pulp, paper, cardboard :0.07 Wood and wood products:0.035 Other (non-food) putrescible garden and park waste: 0.17 Food, food waste, sewage sludge, beverages and tobacco: 0.4
Justification of the choice of data or description of measurement methods	IPCC default values for wet tropical climate since no local data was available. Mean annual precipitation in Bohol Province is 1,290mm[9] (>1000 mm) and the mean annual temperature is 29 centigrade[10] (>20 centigrade).

[9] Global Historical Climatology Network (GHCN), selected data on WorldClimate.com <http://www.worldclimate.com/cgi-bin/data.pl?ref=N09E123+2100+98644W>

[10] Provincial Government of Bohol. Official Website: <http://www.bohol.gov.ph/profile.html>

and procedures actually applied:	
Any comment:	

Data / Parameter:	MCF
Data unit:	-
Description:	Methane correction factor
Source of data used:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value applied:	· 1.0 for **anaerobic managed solid waste disposal sites**. These must have controlled placement of waste (i.e., waste directed to specific deposition areas, a degree of control of scavenging and a degree of control of fires) and will include at least one of the following: (i) cover material; (ii) mechanical compacting; or (iii) leveling of the waste. · 0.8 for **unmanaged solid waste disposal sites – deep and/or with high water table**. This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of greater than or equal to 5 meters and/or high water table at near ground level. Latter situation corresponds to filling inland water, such as pond, river or wetland, by waste. · 0.4 for **unmanaged-shallow solid waste disposal sites.** This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of less than 5 meters.
Justification of the choice of data or description of measurement methods and procedures actually applied:	The default values are given by "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site (Version 2)". Bohol Provincial Government conducted field visits to landfill sites of each municipalities in November 2007.
Any comment:	

Data / Parameter:	$MD_{y,reg}$
Data unit:	-
Description:	Methane that would be destroyed or removed in the year "y" for safety or comply with regulation.
Source of data used:	
Value applied:	0
Justification of the choice of data or description of measurement methods and procedures actually applied:	No national/local regulations exist which enforce recovery or removal of landfill gas.
Any comment:	

Data / Parameter:	W_x
Data unit:	tons/year
Description:	Total amount of organic waste prevented from disposal in year x (tons)
Source of data used:	Measurements undertaken by the composting plant operator of each CPA
Value applied:	To be measured by each CPA

Justification of the choice of data or description of measurement methods and procedures actually applied:	The value will be obtained by the figures of the related municipalities of each CPA: population, estimated population increase, organic content of the waste, and garbage collection ratio (See equation (4) in section E.6.2.).
Any comment:	

Data / Parameter:	$CT_{y,comp}$ and C_{ty}
Data unit:	m^3/truck
Description:	Truck capacity for hauling raw and finished compost
Source of data used:	Trucks currently used for collection in municipality
Value applied:	To be measured by each CPA
Justification of the choice of data or description of measurement methods and procedures actually applied:	Average truck capacity to be used
Any comment:	

Data / Parameter:	DAF_w
Data unit:	km/truck
Description:	Average incremental distance for raw waste collection
Source of data used:	Incremental collection distance between dumpsite and composting facility
Value applied:	To be measured by each CPA operating agency
Justification of the choice of data or description of measurement methods and procedures actually applied:	
Any comment:	

Data / Parameter:	DAF_{comp}
Data unit:	km/truck
Description:	Average distance for compost transportation
Source of data used:	Based on typical transportation distance in municipalities
Value applied:	To be measured by each CPA operating agency
Justification of the choice of data or description of measurement methods and procedures actually applied:	Most probably the actual end users of the compost will not be known ex ante, therefore an average value will be estimated depending on the local conditions of each CPA.
Any comment:	

Data / Parameter:	$EFCO_2$

Data unit:	$kgCO_2/km$
Description:	CO_2 emission factor from fuel use due to transportation
Source of data used:	Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3, Table 1-28, p.1.71 and Table 1-31, p. 1.74.
Value applied:	Light duty gasoline trucks: 0.579 Light duty diesel trucks: 0.331
Justification of the choice of data or description of measurement methods and procedures actually applied:	The figure will be determined depending on the trucks to be used at each CPA.
Any comment:	

Data / Parameter:	GWP_{CH4}
Data unit:	tCO_2e / tCH_4
Description:	Global Warming Potential (GWP) of methane, valid for the relevant commitment period
Source of data used:	Decisions under UNFCCC and the Kyoto Protocol
Value applied:	21
Justification of the choice of data or description of measurement methods and procedures actually applied:	A value of 21 is to be applied for the first commitment period of the Kyoto Protocol
Any comment:	After first commitment period of the Kyoto Protocol, the figure should be reviewed under decisions under UNFCCC.

Data / Parameter:	f
Data unit:	-
Description:	Fraction of methane captured at the SWDS and flared, combusted or used in another manner
Source of data used:	
Value applied:	0
Justification of the choice of data or description of measurement methods and procedures actually applied:	This project does not involve methane recovery.
Any comment:	

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

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

Data / Parameter:	W_x
Data unit:	tons/year
Description:	Total amount of organic waste prevented from disposal in year x (tons)
Source of data to be used:	Measurements undertaken by the composting plant operator of each CPA
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:	[Type 1] For small-scale project (Type1), measurement will be taken by the compost facility operator. The weight will be estimated by the volume and the density of the waste. For Type1 CPA, measurement by number of bags (boxes) used for transporting organic waste can be used. In this case, the mean weight of a bag (box) filled with organic waste shall be measured and used. [Type2, 3] All the collected organic wastes will be weighed by each composting facility operator using scales on site before the material is transferred to composting process. [Type1~3] Measurements will be conducted daily and the data is recorded and compiled in either digital or analogue format. The data will be sent regularly (at least annually) to the Bohol Provincial Government for checking and computation.
QA/QC procedures to be applied:	Potential error is low. Commercially available scales will be used for measurement. Procedures will include regular calibration of scales since error could increase if scales are not calibrated.
Any comment:	

Data / Parameter:	$Q_{y,comp}$
Data unit:	tons/year
Description:	Quantity of compost produced in the year
Source of data to be used:	Measurements undertaken by the composting plant operator of each CPA
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:	All the collected organic wastes will be weighed by each composting facility operator using scales on site before the material is transferred to composting process. For Type 1 CPA, measurement by number of bags (boxes) for organic waste transportation can be used. In this case, the mean weight of a bag (box) filled with organic waste shall be measured and used as measurement unit. Measurements will be conducted daily the composting facility operator of each CPA and the data is recorded and compiled in either digital or analogue format by them. The data will be sent regularly (at least annually) to the Bohol Provincial Government for checking and computation.
QA/QC procedures to	Potential error is low. Commercially available scales will be used and regular

be applied:	calibration of scales will be done in order to avoid error increase.
Any comment:	

Data / Parameter:	$P_{n,j,x}$
Data unit:	-
Description:	Weight fraction of the waste type j in the sample n collected during year x
Source of data to be used:	Sampling by the municipal engineer in each municipality
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:	The Bohol Provincial Government using proper equipment for weight fraction measurement will conduct sample measurement quarterly. Waste types include: (i) Pulp, paper, cardboard (other than sludge), textiles (ii) Wood, wood products and straw; (iii) Other (non-food) organic putrescible garden and park waste and (iv) Food, food waste, sewage sludge, beverages and tobacco in accordance with the waste types in IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Table 3.3)
QA/QC procedures to be applied:	Potential error is low. Each municipality will take sufficient samples to ensure a maximum uncertainty of 20% at a 95% confidence level. Regular calibration will be conducted and technical engineers will ensure proper procedures of sampling.
Any comment:	

Data / Parameter:	CT_y
Data unit:	tons/truck
Description:	Average truck capacity for waste transport
Source of data to be used:	Based on the size of trucks to be used for waste transport
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:	Bohol Provincial Government will record the capacity of truck to be used for waste transport annually.
QA/QC procedures to be applied:	Potential error is low. The capacity data will be obtained by the record provided by the manufacturer.
Any comment:	

Data / Parameter:	$PE_{y,power}$
Data unit:	tCO_2e/year
Description:	Based on record of power and/or fuel consumption for composting facility operation

Source of data to be used:	
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:	Power consumption will be monitored by electricity meter in kWh on a monthly basis and fuel consumption will be recorded by fuel purchase bill compiled by composting facility operator of each CPA. Bohol Provincial Government will gather data annually.
QA/QC procedures to be applied:	Potential error is low. Accuracy of commercially available analog meters to be used is high (error <5%) provided periodic maintenance is undertaken. Technical engineers will conduct regular calibration.
Any comment:	

Data / Parameter:	DAF_w
Data unit:	km/truck
Description:	Average incremental distance for solid waste transportation
Source of data to be used:	Based on the distance of waste transportation by comparing the current waste transportation of related municipalities and the waste transportation plan developed for each CPA.
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:	Bohol Provincial Government, based on the current waste transportation distance and the waste transportation plan developed for each CPA, will monitor incremental distance using odometer.
QA/QC procedures to be applied:	Potential error is low.
Any comment:	

Data / Parameter:	DAF_{comp}
Data unit:	km
Description:	Distance for destination of compost materials to be transferred
Source of data to be used:	Based on the mean distance from the composting facility to destination of the compost materials and the frequency of transport
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:	Distance will be estimated using rout map from the composting facility to destinations of the compost material. The composting facility operator of each CPA will record the destination and the frequency. Bohol Provincial Government will gather the data annually.

QA/QC procedures to be applied:	Potential error is low.
Any comment:	

Data / Parameter:	$CT_{y,comp}$
Data unit:	tons/truck
Description:	Average truck capacity for waste transport
Source of data to be used:	Based on the size of trucks to be used for compost material transport
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:	Composting facility operator will monitor and record the capacity of the truck to be used for compost transport. Bohol Provincial Government will gather the data annually.
QA/QC procedures to be applied:	Potential error is low. The capacity data will be obtained by the record provided by the manufacturer.
Any comment:	

Data / Parameter:	Aerobic degree of composting procedures
Data unit:	-
Description:	Based on the aerobic degree of the waste during composing process
Source of data to be used:	Analysed data of the samples taken at composting facilities
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:	Samples of the waste under composting will be taken four times a year by Bohol Provincial Government to measure the aerobic degree of the composting process. The sample taking and the analyzing method will be based on the proper procedures under provision of technical engineers.
QA/QC procedures to be applied:	Potential error is low since the analysis will be conducted in a proper laboratory of the third party.
Any comment:	

Data / Parameter:	Soil application method to ensure aerobic condition of the compost
Data unit:	-
Description:	Aerobic condition of the compost soil application
Source of data to be used:	Based on the soil application condition of the compost after distribution to the end users
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:	The soil application method of each destination will be briefly recorded when if is distributed/sold to the end user by composting facility operator of each CPA. The Bohol Provincial Government will gather the data annually and the spot check to take samples to analyse aerobic degree of the compost will be conducted quarterly by the Bohol Provincial Government.
QA/QC procedures to be applied:	Potential error will be low since the analysis will be conducted in a proper laboratory of the third party.
Any comment:	

Data / Parameter:	Presence of a methane recovery facility at disposal site used by municipality
Data unit:	-
Description:	Demonstration that the amount of waste composted in the project activity facilities would have been disposed in a solid waste disposal site without methane recovery
Source of data to be used:	Site visits to disposal sites by Bohol Provincial Government
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:	Observation of the presence or absence of a gas collection and use facility
QA/QC procedures to be applied:	Potential error is not expected.
Any comment:	

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

Monitoring and reporting framework is shown in Figure13. The operation and management of composting facilities are carried out by the compost facility operator (related municipalities). Based on a project operation and monitoring manual, municipalities will monitor the project operations and report to the Bohol Provincial Government, who will then undertake data checking, calculation of emission reduction, site visits and provision of advice to the municipalities. Bohol Provincial Government will also be responsible for communication with Designated Operational Entity (DOE) for verification procedures. Items monitored by the Bohol Provincial Government are included in the figure below.

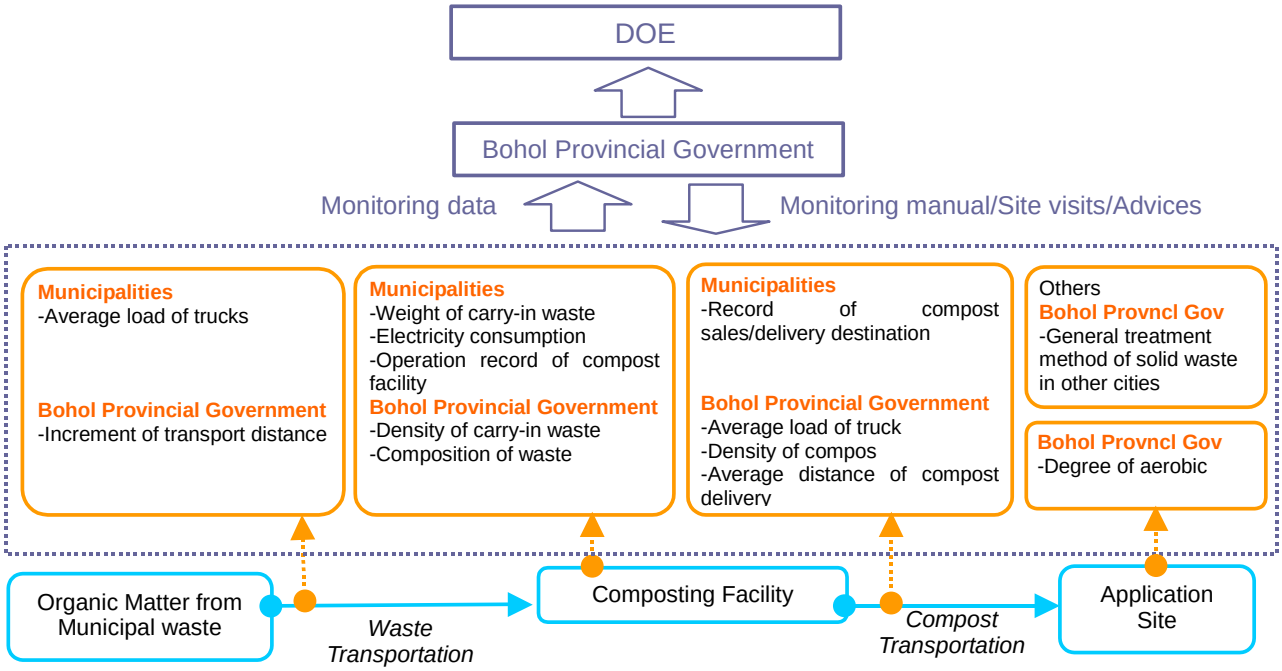


Figure13. Monitoring plan for an SSC-CPA

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)

March 1st, 2008
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Annex 1

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

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding is involved in this PoA and related CPAs.

Annex 3

BASELINE INFORMATION

Baseline information is described in Section E.

Annex 4

MONITORING INFORMATION

Refer to Section D. for the Monitoring Information

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