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

CONTENTS

NOTE:

This form is for the submission of a CDM PoA whose CPAs apply a large scale approved methodology.

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

SECTION A. General description of programme of activities (PoA)

A.1 Title of the programme of activities:

MSW Intermediate Treatment Programmatic CDM in West Java

A.2. Description of the programme of activities:

West Java Province, located on Java Island of Indonesia, has 25 municipalities (16 prefectures and 9 cities) with a total population of around 40 million people, which has been increasing at over 2.1 % per annum. One of the most significant environmental concerns of the growing urban areas has been the management of municipal solid wastes (MSW). In West Java Province, about 4,500 tons of municipal solid waste is generated daily, and its amount is rapidly increasing due to the population growth. So far as disposal of MSW is concerned, the common practice in Indonesia is to dispose the wastes in landfills (mostly open dumpsites) wherein landfill gasses are not extracted. These landfills thus generate and emit significant amount of methane to the atmosphere, as well as environmental pollutants to the ambient area.

The goal of the program is to avoid methane emissions from municipal solid waste landfills by undertaking segregation and composting of the wastes in the cities/prefectures in West Java Province. The project activities apply Mechanical Biological Treatment (MBT) involving the sorting and recovering of the recyclable, reusable and recoverable resources from mixed municipal waste generated in West Java Province, and aerobic treatment of the organic waste utilizing composting technology.

Besides climate change mitigation, the project will contribute to the sustainable development of Indonesia in the following aspects:

Environmental well-being

- The project will promote sanitization of landfill site.
- The project will reduce current environmental and health impacts deriving from landfill sites in the region of the Project site as the result of reducing the load of MSW, particularly the contained organics disposed of at landfill sites

Economic and social well-being

- The project will extend operational lifetime of the landfill site.
- The project will improve local economy by providing job opportunity to local people for the operation of the facility.
- The project will contribute the development of the sustainable society in Depok City which is suit to the national policy of Indonesia.

The operating and implementing framework for the project is depicted in the flowchart below:

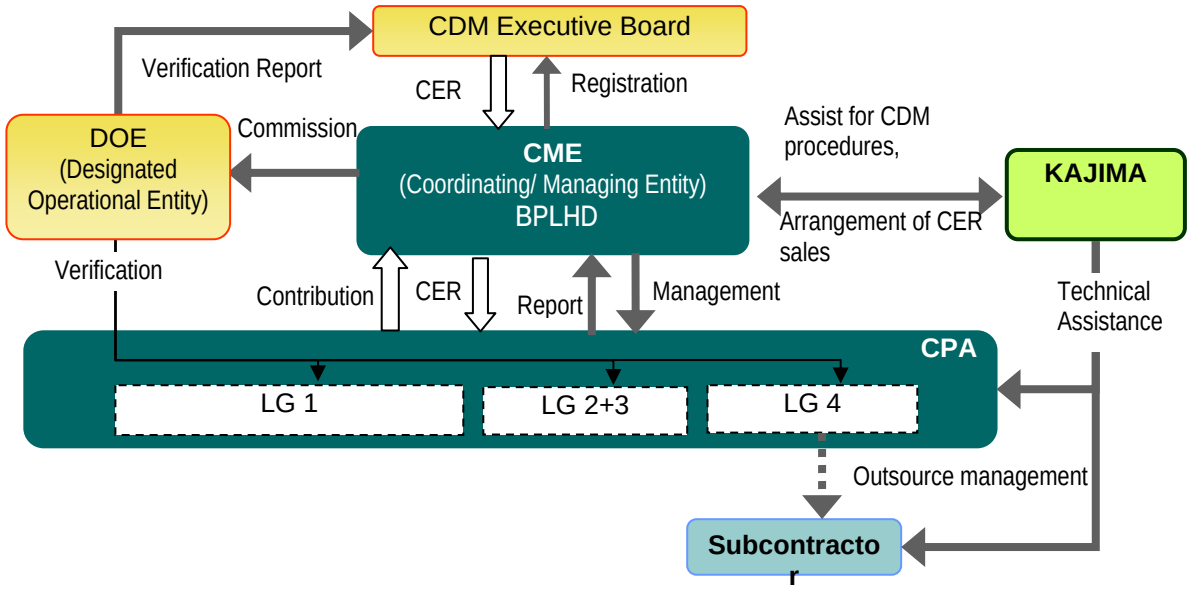

Figure 1: Implementing Framework for the Project

Environmental Protection Agency of West Java Province (BPLHD) would be the Coordinating/Managing Entity (CME) for the project activities under the Programme of Activities (PoA). The MBT projects would be implemented by the individual local governments, and each of these MBT projects is considered as a CDM Project Activity (CPA).

BPLHD, as CME, would take responsibility for CDM procedures necessary for registration, technical assistance/instruction to the local governments implementing CPAs, supervision of CPAs, and promotion of MBT technologies throughout the West Java Province through the programmatic CDM scheme. Each local government participating the program would develop and implement a plan for CPA in own site. Local government may also contract out the implementation work to private sector. The co-operation agreement would be signed between the local governments and BPLHD, which clarifies the role of each participating party.

At present the technical requirement as well as the common practice for municipal solid waste disposal in Indonesia is landfills, and there are no specific requirements for capturing and flaring the landfill gas from landfills. As a result, significant amount of methane is emitted to the atmosphere. Methane emissions to the atmosphere from the landfills will be avoided through implementation of the waste composting program. Organic matters from the waste will be recovered through composting. The entire program is voluntary in nature both for provincial and the local governments, as there are no specific regulations that mandate waste composting as the only means of solid waste disposal in the country.

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

BPLHD would be the Coordinating/Managing Entity (CME) for the project activities under the Programme of Activities (PoA), and manage the communications with the CDM Executive Board.

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)
Republic of Indonesia (host)	The Government of West Java Province	
Japan	KAJIMA Corporation (private entity)	

A.4. Technical description of the programme of activities:

A.4.1. Location of the programme of activities:

A.4.1.1. Host Party(ies):

Republic of Indonesia

A.4.1.2. Physical/ Geographical boundary:

The programme of activities would be implemented in several cities/ prefectures in West Java Province, Indonesia. West Java Province is located on Java Island, and borders Jakarta and Banten province to the west, and Central Java to the east. To the north is Java Sea.
The cities/prefectures where the programme of activities would be implemented are spread across West Java Province, and major cities /prefectures are shown in the map below.

Figure 2: Map of West Java Province

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

The local government would undertake improvement of its waste collection systems within their jurisdiction area. The waste collected would be transported to the MBT facilities, which in most cases, would be located adjacent to / within existing landfill sites. The incoming waste would be mechanically / manually segregated, and separated organic waste would be aerobically composted. The compost product would be sold, or utilized in the public area such as parks, public gardens and forests.
The organic components of the waste would not be disposed of in the landfill sites subsequent to the implementation of the project activity and the potential methane generation in the landfill would be avoided.

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

The principal technology to be applied in this project activity is Mechanical Biological Treatment (MBT) which includes mechanical/manual segregation of municipal solid waste and aerobic stabilization of organic wastes. The process starts with the separation of solid waste into recyclable materials, organic wastes, and other wastes using machines such as tronmel, or by hand. Organic wastes in this project include organic matters such as food waste, wood, and papers. Balky organic waste is shredded by shredder. Once separated, the organic fraction enters in the bio-treatment areas, and the biological degradation process starts. During the process, organic waste is decomposed aerobically under controlled temperature, humidity, and air concentration. After being stabilized with adequate humidity, the compost would be either sold or used in public area by the government agencies. A schematic diagram of the process is shown in Figure 3.

During the initial periods, when the market for compost is still being developed, portion of the matured compost, which is unsold, would be given to government agencies to use in the park, public garden and/or forests. However, to improve the economics of the project activities, efforts will be directed to sell a major portion of the compost in the long run.

It is proposed to set up MBT plants at each of the municipalities, representing a CPA, with the necessary equipments and facilities to undertake aerobic composting. The facility would be covered with a roof to avoid leachate generation due to rainwater percolation through the wastes.

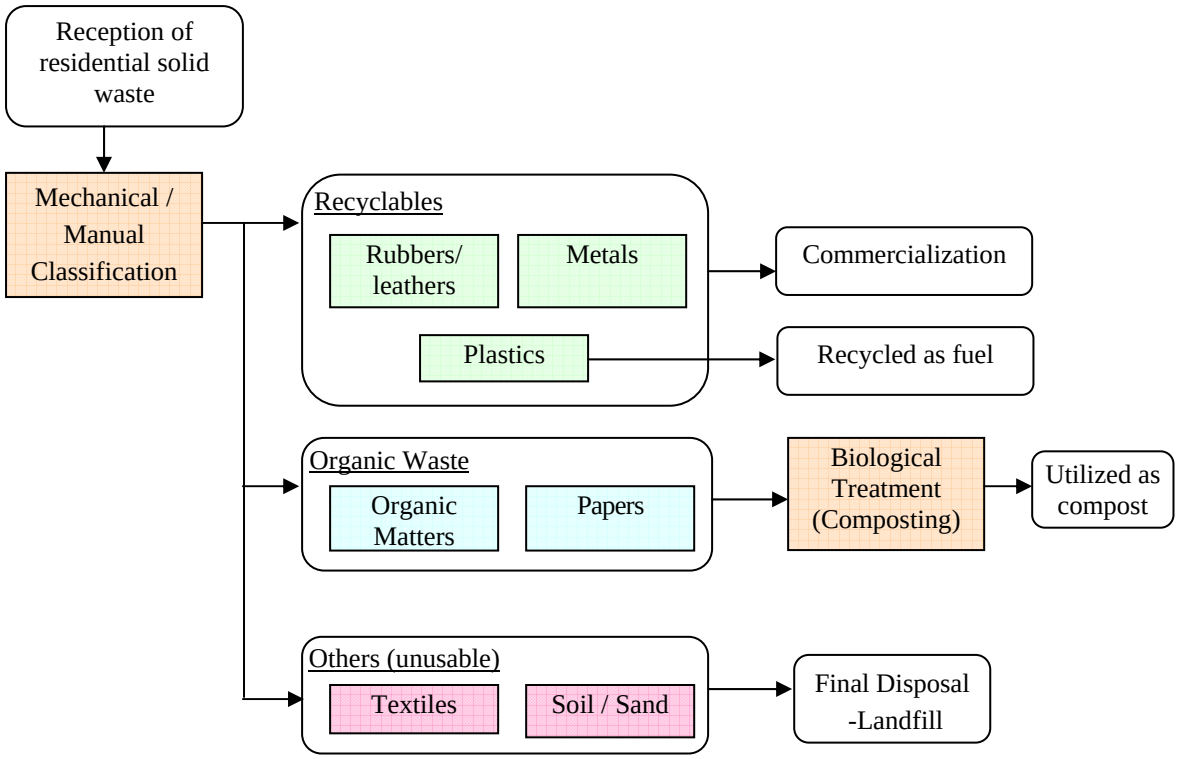

Figure 3: Schematic Diagram for the Treatment Process

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

The following criteria will be followed to enrol a CPA;

a. The CPA would be from a municipality (city / prefecture) in West Java Province.
b. The local government would prepare land for the MBT plant (Private-owned land may be utilized.)
c. The local government would have signed a cooperation agreement with BPLHD, as CME, to participate in the program, and to share the financial benefit with the BPLHD.
d. The local government shall take responsibility for operating the MBT facility and landfill, as per the guidelines and training provided in the program.

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

To date, no laws and regulation requires the local governments to follow composting as the only option for processing the municipal solid wastes, that is, the local governments are not obligated to set up composting plants. The proposed CPA which applies MBT of MSW is thus a voluntary action by the local governments.

If the proposed PoA is not implemented, the current practice would be continued, and no reduction of GHG emission would be achieved. The technology of MBT in the large scale is new for the country.

Although there are several composting plants constructed and operated by the central / local government, most of existing facilities are merely small scale for trial, not for industry practice. Furthermore, many of those existing facilities halted their operation because of the financial constrain.

As such, the composting of MSW faces the investment barriers due to the low budget for MSW management in the city / prefecture, the MBT technologies to be introduced in the proposed CPA would not be implemented in the absence of the PoA.

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

A.4.4.1. Operational and management plan:

The local governments participating in the program are responsible for implementing the solid waste treatment activity, including construction of the MBT facility, transport of wastes to the MBT facility, operation of the facility to treat MSW, selling/provision of compost produced and disposal of rejects from the facility etc.

As part of the inclusion of the CPA under the PoA, a Cooperation Agreement would be signed by each of the CPA project participant (local government) with CME. Suitable training programs will be conducted for the local governments proposing a CPA to make certain everyone understand the rules of the CDM and PoA. In addition, the Cooperation Agreement would include specific provisions and declarations that make CPA project proponents acknowledge that aware and have agreed that their activity is being subscribed under the PoA. The agreement would also require the proponent of CPA to confirm that they have not previously been a part of any CDM project, and part of any PoA.

CME acting on behalf of the local governments participating in the program shall maintain the data about each of the CPA's. The names of local governments proposing a CPA shall be included in the title of each CPA for easy identification. The record keeping would be both in paper and in electronic format. The basic database about the CPA and the monitoring data for each of the CPA is introduced in annex 4.

A.4.4.2. Monitoring plan:

The relevant parameters included in the monitoring plan shall be monitored and recorded for each of the CPAs independently. Monitoring reports will be prepared separately for each of the CPAs for the purpose of verification and request for issuance of CERs.

The records and documentations pertaining to monitoring and verification for all the local governments participating in the program would be maintained by the CME and shall be made available to DoE for checking status at any point of time. The DoE will be provided with all the monitoring reports and other project related documents of each CPA during verification.

A.4.5. Public funding of the programme of activities:

The programme of activity will not receive any national or international public funding for the development of the proposed project.

SECTION B. Duration of the programme of activities

B.1. Starting date of the programme of activities:

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The PoA is planned to be started on 1st January 2010.

B.2. Length of the programme of activities:

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:

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1. Environmental Analysis is done at PoA level ☐
2. Environmental Analysis is done at CPA level ☐ ✔

Environmental analysis will be undertaken at CPA level. The laws and regulations related to EIA in the Indonesia stipulate the project to prepare and submit necessary documents per area. Complying with this provision, the project will take necessary actions at CPA level.

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

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The project might have some environmental impacts such as air pollution, noise and odour emissions, etc. which may occur along with construction and operation of the facility. However, the project's overall impact on environment will be small, and be reduced to minimum by implementation of project.

Negative impacts that may occur on environment during construction and operation include as follows;

<Construction>
- Air pollution, through the use of fossil fuel on vehicles required for transportation of construction materials, and machinery required for construction
- Generation of noise to some extent, due to material transportation, number of worker increase, installing of facilities, etc.

<Operation>

- Generation of noise due to facility operation
- Generation of unpleasant smells, due to the storage and treatment of organic wastes
- Generation of wastes (or residue) through the sorting and treatment process

These negative impacts shall be reduced by taking the appropriate mitigation measures. In addition, all the potential negative impacts were taken into account in the environmental management plan which was developed in accordance with the Environmental Impact Assessment System defined by the Law on Environmental Protection.

Positive environmental impacts of the project activity are as follows;

- Significant decrease of methane generation due to organic waste degradation in the landfill, which contributes to avoiding the GHG emissions
- Decrease of leachate generation and of its contaminant load in the landfill
- Extension of the landfill life time due to reduction of waste disposal amount
- Decrease of fire and explosions risk in the landfill site caused by methane emissions from disposed organic wastes
- Recovery of recycling materials

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),:

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In Indonesia, EIA procedure is stipulated in Laws on Environmental Management (Number 4 of 1982) and the Decree of State Minister for the Environment on Types of Business and/or Activity Plans that are required to be completed with the Environmental Impact Assessment (Number 17 of 2001). According to these laws and regulations, construction of the facility with capacity over 10 ha is required to prepare an EIA report called AMDAL, and those with capacity below 10 ha is not required AMDAL, but is required a simplified environmental management plan (UKL) and environmental monitoring plan (UPL).
Each local government implementing CPA would prepare necessary documents depending on the capacity of its facility, and in accordance with the instruction of provincial government.

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 CPA level ☐ ✔

Local stakeholder consultations have been undertaken at the PoA level, inviting the national and state authorities concerned and local governments in West Java Province which have shown interests in participation in PoA. As the CPAs are for cities and prefectures, the local governments were also invited to include their views into the program formulation.

In addition to the above stakeholder consultation targeting at stakeholders in national/local authorities, consultations for the residents around the project sites of CPA will be done at CPA level, to correct

comments from the local residents. Since the proposed PoA covers all the cities and prefectures in West Java Province, it is difficult to convene all the stakeholders from the proposed project site.

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

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This project is to establish the waste treatment facilities within on the area of the existing landfill site. Thus, the local stakeholders in the project area include;

- Ministry of Environment (MOE) - as they have jurisdiction over the waste management, and MOE is the DNA in Indonesia
- Ministry of Public Works (PU) - as they have jurisdiction over the public construction in Indonesia
- West Java Environment Protection Agency (BPLHD) – as they are a local authority that govern waste management in West Java Province
- Local Governments – Planning Department and Cleansing Department from 25 municipalities in West Java Province, as they are in charge of planning/ implementing MSW management.

To collect suggestions and comments from the stakeholders, the project participants have conducted a workshop in Bandung City on 5th November 2008, inviting all the above-mentioned stakeholders. About 80 participants from national/local authorities, academic institution, non-governmental organization were present in the workshop. In the workshop, the general plans on project activities including applied methodologies, project scale, implementation structures, schedule, etc were presented, followed by the discussion about the feasibility of the study and feedback comments from the participants.

The meeting with the local community has not been completed. It will be arranged and carried out before the project implementation.

D.3. Summary of the comments received:

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Basically, the project was welcomed as it would contribute to the improvement of the local MSW management and the local environment, and raise revenue from the CER sales to help local government financially.

The summary of the comments received from the stakeholders includes:

- Fully understand the methodologies for this project activity and, it can be considered to be suitable to West Java Province, and correspond to the national policies of Indonesia, as well.
- The proposed scheme using programmatic CDM would be very useful mechanism to expand the composting activity to whole West Java Province.

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

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The comments received from the stakeholders will be incorporated into the design of the program including the implementation arrangements.

SECTION E. Application of a baseline and monitoring methodology

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

AM0025 "Avoided emissions from organic waste through alternative waste treatment process", Version 11 (EB44)

"Tool to determine methane emissions avoided from dumping wastes at a solid waste disposal site", Version 04 (EB41)

"Tool for the demonstration and assessment of additionality" version 05.2, (EB39)

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

As stated in the methodology, the methodology is applicable to scenarios which involve one or a combination of the following waste treatment options.

a) a composting process in aerobic conditions;
b) gasification to produce syngas and its use;
c) anaerobic digestion with biogas collection and flaring and/or its use;
d) mechanical / thermal treatment process to produce refuse-derived fuel (RDF)/stabilized biomass (SB) and its use. The thermal treatment process (dehydration) occurs under controlled conditions (up to 300 degrees Celsius). In case of thermal treatment process, the process shall generate a stabilized biomass that would be used as fuel or raw material in other industrial process. The physical and chemical properties of the produced RDF/SB shall be homogenous and constant over time;
e) incineration of fresh waste for energy generation, electricity and/or heat. The thermal energy generated is either consumed on-site and/or exported to a nearby facility. Electricity generated is either consumed on-site, exported to the grid or exported to a nearby facility. The incinerator is rotating fluidized bed or circulating fluidized bed or hearth or grate type.

The proposed project activity corresponds to a) a composting process in aerobic conditions. In addition, the proposed project satisfies the following requirements as described in the methodology.

Requirement	Project Condition
In case of composting, the produced compost is either used as soil conditioner or disposed of in landfills	The proposed project aims to dispose all of the compost produced in the landfill.
The proportions and characteristics of different types of organic waste processed in the project activity can be determined, in order to apply a multiphase landfill gas generation model to estimate the quantity of landfill gas that would have been generated in the absence of the project activity	The proportions and characteristics of different types of organic waste processed in the project activity can be determined.

Requirement	Project Condition
Waste handling in the baseline scenario shows a continuation of current practice of disposing waste in landfill despite environmental regulation that mandates the treatment of waste, if any, using any of the project activity mentioned above.	The baseline scenario shows that the current practice of disposing waste in landfill without any treatment will be continued.
The compliance rate of the environmental regulation during (part of) the crediting period is below 50%, if monitored compliance with the MSW rules exceeds 50%, the project activity shall receive no further credit, since the assumption that the policy is not enforced is no longer tenable.	The current compliance rate is below 50%. This parameter will be monitored through out the project activity period.
The project activity does not involve thermal treatment process of neither industrial or hospital waste.	The proposed project activity handles household waste and wastes from offices and markets. Therefore, neither industrial nor hospital waste is treated in the project activity.
This methodology is not applicable project activities that involve capture and flaring of methane from existing waste in the landfill. This should be treated as a separate project activity due to the difference in waste characteristics of existing and fresh waste, which may have an implication on the baseline scenario determination.	The proposed project does not involve landfill gas capture or flaring.

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

The project boundary is the site of the project activity where the waste is segregated and composted as shown in the figure below. This includes the facilities for sorting, aerobic conversion and composting. The project boundary does not include facilities for waste collection, prior sorting (before reaching project site) nor transport to the project site.

The project activity avoids methane emissions by diverting organic waste to a MBT facility instead of dumping the waste at a landfill, where methane emissions are generated due to anaerobic processes. Since the composting process is basically aerobic, no methane is generated. The GHG involved in the baseline and project emissions are CO_2, CH_4 and N_2O as shown in Table below.

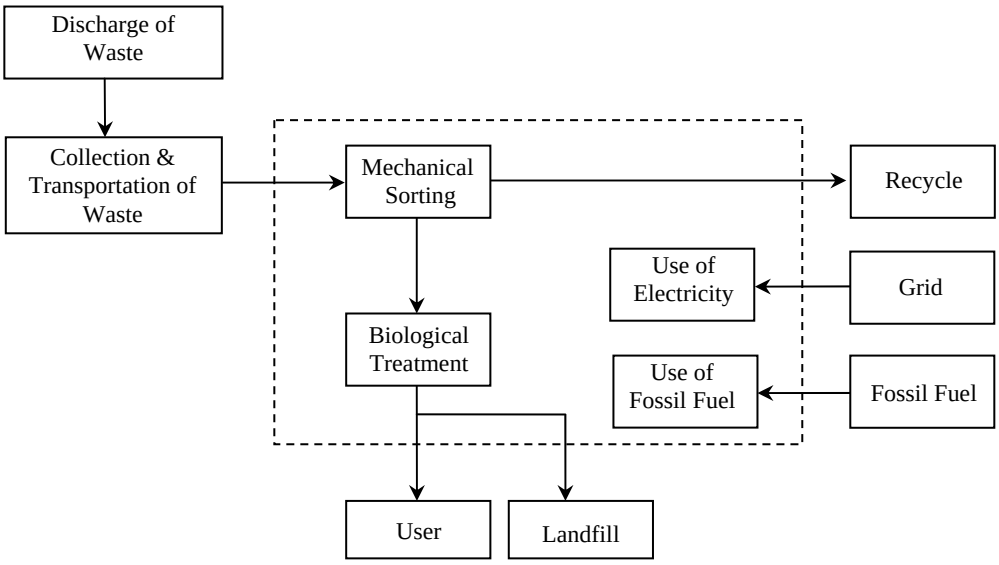

Figure 4: Project Boundary

The gases and sources relevant to the Project are listed below based on the AM0025 methodology.

Table 1: The Greenhouse Gases included in or excluded from the Project Boundary

	Source	Gas		Justification / Explanation
Baseline	Emissions from decomposition of waste at the landfill site	CH_4	Included	The major source of emissions in the baseline from the landfill.
		N_2O	Excluded	N_2O emissions are small compared to CH_4 emissions from landfills. This is conservative.
		CO_2	Excluded	Not accounted for.
	Emissions from electricity consumption	CO_2	Included	There is no electricity consumption at the project site in the absence of the project activity.
		CH_4	Excluded	Excluded for simplification. This is conservative.
		N_2O	Excluded	Excluded for simplification. This is conservative.
	Emissions from thermal energy generation	CO_2	Included	There is no thermal energy generation at the project site in the absence of the project activity.
		CH_4	Excluded	Excluded for simplification. This is conservative.
		N_2O	Excluded	Excluded for simplification. This is conservative.
Project Activity	On-site fossil fuel consumption due to the project activity other than for electricity generation	CO_2	Included	May be an important emission source.
		CH_4	Excluded	Excluded for simplification. This emission source is assumed to be very small.
		N_2O	Excluded	Excluded for simplification. This emission source is assumed to be very small.

	Source	Gas		Justification / Explanation
	Emissions from on-site electricity use	CO_2	Included	Operation of the anaerobic digester.
		CH_4	Excluded	Excluded for simplification. This emission source is assumed to be very small.
		N_2O	Excluded	Excluded for simplification. This emission source is assumed to be very small.
	Direct emissions from the waste treatment processes	N_2O	Included	May be an important emission source for composting activities.
		CH_4	Included	The composting process may not be complete and result in anaerobic decay.
		CO_2	Excluded	CO2 emissions from the decomposition of organic waste are not accounted.

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

AM0025 version 11 requires a procedure of 4 steps for the selection of the most plausible baseline scenario:

Step 1. Identification of alternative scenarios

Sub-step 1a: Define alternatives to the project activity:
All realistic and credible alternatives to the project activity that can be (part of) the baseline scenario are defined as follows.
M1. The project activity is not implemented as a CDM project;
M2. Disposal of waste at a landfill where landfill gas is captured and flared;
M3. Disposal of waste at a landfill without the capture of landfill gas.

Sub-step 1b: Consistency with mandatory laws and regulations:
All alternatives are in compliance with the mandatory laws and regulations that are set by the Government of Indonesia.

Step 3. Investment analysis

The alternative M1 is unrealistic and should be eliminated as possible baseline. Although composting of the organic component of municipal solid waste is a well known technology, its implementation has been limited in Indonesia due to lack of budget and technical capability. In addition, compost market in Indonesia has not yet been fully developed, in view of the current situation of compost demand. As the compost products produced through the proposed project would be either sold or used in the public area, some CPA would be able to obtain additional income from compost sales, but, under the current circumstances, it cannot be expected to generate profits enough to cover operational & maintenance cost of the facilities. Furthermore, the necessary expenses (incl. investment and operational & maintenance costs) to develop and implement the proposed project would be additional MSW management cost for the local governments. It faces the risk of the investment and high operational & maintenance costs, as well as risks of compost sales. Thus, M1 cannot be financially attractive without CDM revenue, and thus can be eliminated from consideration as baseline scenario.

In scenario M2, since there are no mandatory laws or regulations that specify that the gases from the landfill must be captured and flared, there will be no public funding, money grants, or any sort of incentive for the installation of gas collection and flaring equipments. There is no income other than the CDM related income. Therefore, it can be clearly stated that scenario M2 is economically unattractive, and shall also be excluded from further consideration.

The above identified barriers do not affect M3 (continuation of the current situation). It faces no financial barriers and it is economically feasible one for the project proponent. Through the assessment above, it is determined that the most plausible baseline scenario is M3 which is the disposal of waste at a landfill without the capture of landfill gas.

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 CPA being included as registered PoA (assessment and demonstration of additionality of CPA): >>

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

The latest version of the "Tool for the demonstration and assessment of additionality", version 05.2 is used to demonstrate the additionality of the program.

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

Sub-step 1a. Define alternatives to the project activity:

Realistic and credible alternatives available are the following.
M1. The project activity not implemented as a CDM project;
M2. Disposal of waste at a landfill where landfill gas is captured and flared;
M3. Disposal of waste at a landfill without the capture of landfill gas.

Sub-step 1b: Consistency with mandatory laws and regulations:
As stated in the previous section for assessment of the baseline scenario, all alternatives are in compliance with the mandatory laws and regulations that are set by the Government of Indonesia.

Step 3. Barrier analysis

In order to apply barrier analysis to the proposed project activity, it is required to show the project activity faces barriers that:
(a) Prevent the implementation of this type of proposed activity; and
(b) Do not prevent the implementation of at least one of the alternatives.

The demonstration involves two sub-steps:

Sub-step 3a. Identify barriers that would prevent the implementation of the proposed CDM project activity

Composting of organic waste faces investment and technological barriers, and barriers due to prevailing practice.

1) Investment barrier

Since the compost standard set by the Government of Indonesia is quite high, it would be very difficult for compost derived from municipal solid waste to meet the standard. Therefore, it has significantly lower market price and a limited use such as improving soil in park and forest, or final cover for landfills. Consequently, compost product cannot be a big source of income for this project.

Although this program plans to collect tipping fee for the treatment of solid waste (about 4USD/ton), this fee is insufficient to cover the costs of implementation of new alternative waste treatment (compost) in Indonesia. This program activity can be feasible only with CER

LFG extraction in landfill site is not economically feasible in Indonesia. It requires quite high investment cost and operational & maintenance cost for facilities to capture of LFG, while actual amount of collected LFG is often smaller than pre-estimated amount. It cannot expect great investment effect through the project, thus it obviously faces the financial barrier.

2) Technical barrier

The technology to develop a large scale compost plant has not been well developed in Indonesia. At present, some composting plants with domestically-produced equipments have already been developed and operated in Indonesia. However, most of these plants are in small scale for trial, and there are no large scale MBT / compost plants in Indonesia to treat municipal solid wastes, which are operated commercially. To develop such a large scale plants, most of equipments with adequate capacity cannot be supplied from the domestic market, but should be imported from overseas, which would be very expensive.

In addition, the technology of the aerobic composting process in Indonesia is not well developed. The lower level of the technology is the root cause of the low efficiency, high investment and poor product quality in the composting process. On the other hand, the compost standard set by Indonesian Government is quite high, most of domestically produced compost cannot meet the standard.
So it faces a number of technical barriers, such as the lack of technical know-how and lack of availability of equipment.

Currently, there are no landfills in Indonesia that stably extracts LFG, it cannot be considered as the prevailing technology.

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed activity:

Although small scale composting projects have been implemented in Indonesia, composting itself, as well as its commercial use is under way. The similarity between those existing projects is the low income from compost sales compared to the initial and operational costs. The operation of the existing composting plants in West Java Province is made possible by subsidy from the local government. Most of composting facilities without any subsidy were forced to shut down because of the high operational cost. Moreover, Indonesian people still have a poor understanding in the composting of MSW, some facilities had to halt the operation due to stubborn opposition from adjacent neighbourhood.

Sub-step 4b.Discuss any similar options that are occurring:

As discussed in 4a, even with the income from compost sales, implementation of a composting project is difficult due to the high operational cost.
The proposed project activity aims to develop larger scale facilities than the existing plants, clearly distinguishing the circumstance of the proposed project activity from the composting projects that have already been implemented. The proposed project activity is economically unattractive, and it will not be implemented without the incentive provided by the CDM. Therefore, the proposed project activity is additional.

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

The following criteria would be used for assessing additionality of CPA.

1. There should not be any commercially and continuously-operating MBT plant of similar size in the city / prefecture. The facilities built and operated with subsidies from the central/local government or foreign grant would be excluded.
2. The common practice for waste disposal in the city / prefecture should be disposal of wastes at landfills / dumpsites.
3. The barrier analysis of MBT operations should prove the project to be unviable without carbon revenues.
4. There should not be any MBT plant which receives tipping fee higher than the estimated value used in the cost analysis for the proposed CDM

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 CPA:

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The emission reductions caused by the proposed composting project are calculated according to the approved methodology AM0025 Version 11, Scope 01 and 13, EB44, “Avoided emissions from organic waste through alternative waste treatment processes”, with “Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site Version 04”.

The CPAs would constitute new MBT facilities to avoid methane emission in landfill. They do not involve upgrading of existing facilities, anaerobic digestion in closed reactors or co-composting with waste water. Residual wastes would be landfilled.

The project boundary is the facility where the MBT operations take place and the transport of compost takes place.

Project emissions are considered for the operation of facilities using electricity and fuel, and transportation of compost within the site. The emissions due to additional transport of waste are not included as the MBT facilities will be located close to the existing landfill sites.

Methane emissions that would have occurred if the wastes were to be landfilled are considered the baseline emission. A multi phase first order decay model as per the tools is used to calculate this baseline emission.

The baseline situation will be re-assessed during the renewal of the crediting period. If changes in the regulations with respect to waste disposal practices have resulted in implementation of new compost plants without considering CDM or has resulted in capture and flare of LFG from landfills without considering CDM, then the baseline emissions shall be re-estimated. All the default parameters used in the calculations, including the IPCC values will be checked for their validity and changed accordingly.

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

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Project Emissions

Project emissions are calculated using equation (1) provided in the methodology. $PE_{a,y}$, $PE_{g,y}$, $PE_{r,y}$, $PE_{i,y}$, $PE_{w,y}$, are excluded from the calculation since the proposed project activity involves only composting.

$$PE_y = PE_{elec,y} + PE_{fuel,on-site,y} + PE_{c,y} \quad (1)$$

Where:

PE_y	is the project emissions during the year *y* (tCO_2e/yr)
$PE_{elec,y}$	is the emissions from electricity consumption due to the project activity during the year *y* (tCO_2/yr)
$PE_{fuel,on-site,y}$	is the emissions due to fuel consumption on-site in year *y* (tCO_2/yr)
$PE_{c,y}$	is the emissions during the composting process in year *y* (tCO_2e/yr)

Emissions from electricity use ($PE_{elec,y}$)

The proposed project activity involves consumption of electricity. The emissions from electricity consumption are calculated using equation (2).

$$PE_{elec,y} = EG_{PJ,EF,y} \times CEF_{elec} \quad (2)$$

Where:

$PE_{elec,y}$	is the emissions from electricity consumption due to the project activity during the year *y* (tCO_2/yr)

$EG_{PJ,EF,y}$ is the amount of electricity generated in an on-site fossil fuel fired power plant or consumed from the grid in the project activity, measured using an electricity meter (MWh/yr)
CEF_{elec} CO_2 emission factor for electricity generation in the project activity (tCO_2/MWh)

Since electricity will be purchased from the grid, CEF_{elec} will be calculated according to the "Tool to calculate the emission factor for an electricity system".

Emissions from fuel use on-site ($PE_{fuel,on-site,y}$)

The proposed project activity involves on-site fossil fuel consumption. The emissions from fossil fuel consumption on-site are calculated using equation (3).

$$PE_{fuel,on-site,y} = F_{cons,y} \times NCV_{fuel} \times EF_{fuel} \quad (3)$$

Where:
$PE_{fuel,on-site,y}$ is the CO_2 emissions due to on-site fuel combustion in year *y* (tCO_2/yr)
$F_{cons,y}$ is the fuel consumption on site in year *y* (l)
NCV_{fuel} is the net calorific value of the fuel (MJ/l)
EF_{fuel} is the CO_2 emission factor of the fuel (tCO_2/MJ)

Emissions from Composting ($PE_{c,y}$)

Project emissions from composting are calculated using equation (4).

$$PE_{c,y} = PE_{c,N2O,y} + PE_{c,CH4,y} \quad (4)$$

Where:
$PE_{c,y}$ is the emissions during the composting process in year *y* (tCO_2/yr)
$PE_{c,N2O,y}$ is the N_2O emissions during the composting process in year *y* (tCO_2e/yr)
$PE_{c,CH4,y}$ is the emissions during the composting process due to methane production through anaerobic conditions in year *y* (tCO_2e/yr)

N_2O emissions

The N_2O emissions during the composting process are calculated using equation (5).

$$PE_{c,N2O,y} = M_{compost,y} \times EF_{c,N2O} \times GWP_{N2O} \quad (5)$$

Where:
$PE_{c,N2O,y}$ is the N_2O emissions during the composting process in year *y* (tCO_2e/yr)
$M_{compost,y}$ is the total quantity of compost produced in year *y* (tonnes/yr)
$EF_{c,N2O}$ is the emission factor for N_2O from the composting process (tN_2O/t compost)
GWP_{N2O} is the Global Warming Potential of nitrous oxide (tCO_2/tN_2O)

CH_4 emissions

The CH_4 emissions during the composting process are calculated using equation (6).

$$PE_{c,CH4,y} = M_{compost,y} \times GWP_{CH4} \times S_{a,y} \quad (6)$$

Where:

$PE_{c,CH4,y}$	is the project methane emissions due to anaerobic conditions in the composting process in year *y* (tCO_2e/yr)
$M_{compost,y}$	is the total quantity of compost produced in year *y* (tonnes/yr)
GWP_{CH4}	is the Global Warming Potential of methane, (tCO_2/tCH_4)
$S_{a,y}$	is the share of the waste that degrades under anaerobic conditions in the composting plant during year *y* (%)

$S_{a,y}$ is calculated using equation (7)

$$S_{a,y} = S_{OD,y} / S_{total,y} \quad (7)$$

Where:

$S_{a,y}$	is the share of the waste that degrades under anaerobic conditions in the composting plant during year *y* (%)
$S_{OD,y}$	is the number of samples per year with an oxygen deficiency (i.e. oxygen content below 10%)
$S_{total,y}$	is the total number of samples taken per year, where $S_{total,y}$ should be chosen in a manner that ensures the estimation of $S_{a,y}$ with 20% uncertainty at a 95% confidence level.

<u>Baseline Emissions</u>

Baseline emissions are calculated using equation (17) provided in the methodology.

$$BE_y = MB_y - MD_{reg,y} + BE_{EN,y} \quad (8)$$

Where:

BE_y	is the baseline emissions in year *y* (tCO_2e/yr)
$MB_{reg,y}$	is the methane produced in the landfill in the absence of the project activity in year *y* (tCO_2e/yr)
$MD_{reg,y}$	is the methane that would be destroyed in the absence of the project activity in year *y* (tCO_2e/yr)
$BE_{EN,y}$	Baseline emissions from generation of energy displaced by the project activity in year *y* (tCO_2/yr)

Adjustment Factor (AF)

Since regulatory or contractual requirements do not specify $MD_{reg,y}$ in the proposed project activity, Adjustment Factor (AF) will be used to determine the methane that would be destroyed in the absence of the project activity.

$$MD_{reg,y} = MB_y \times AF \quad (9)$$

Where:

AF	is Adjustment Factor for MB_y (%)

Rate of Compliance

There are no laws or regulations that mandate the use of the treatment process of the proposed project activity in Indonesia. Therefore, method for adjusting the baseline emissions by rate of compliance does not apply.

Methane generation from the landfill in the absence of the project activity (MB_y)

The amount of methane that is generated each year (MB_y) is calculated as per the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site", considering the following equation:

$$MB_y = BE_{CH4,SWDS,y} \quad (10)$$

$$BE_{CH4,SWDS,y} = \varphi \cdot (1-f) \cdot (1-OX) \cdot \frac{16}{12} \cdot F \cdot DOC_f \cdot MCF \cdot \sum_{x=1}^{y} \sum_{j} W_{j,x} \cdot DOC_j \cdot e^{-kj \cdot (y-x)} \cdot \left(1-e^{-kj}\right) \quad (11)$$

Where:

MB_y	is $BE_{CH4,SWDS,y}$ (tCO_2e/yr)
$BE_{CH4,SWDS,y}$	is the methane emissions avoided during the year *y* from preventing waste disposal at the solid waste disposal site (SWDS) during the period from the start of the project activity to the end of the year *y* (tCO_2e/yr)
ϕ	is the model correction factor to account for model uncertainties (0.9)
f	is the fraction of methane captured at the SWDS and flared, combusted or used in another manner
GWP_{CH4}	is the Global Warming Potential (GWP) of methane, valid for the relevant commitment period
OX	is the oxidation factor (reflecting the amount of methane from SWDS that is oxidised in the soil or other material covering the waste)
F	is the fraction of methane in the SWDS gas (volume fraction) (0.5)
DOC_f	is the fraction of degradable organic carbon (DOC) that can decompose
MCF	is the methane correction factor
$W_{j,x}$	is the amount of organic waste type *j* prevented from disposal in the SWDS in the year *x* (tonnes)
DOC_j	is the fraction of degradable organic carbon (by weight) in the waste type *j*
k_j	is the decay rate for the waste type *j*
j	is the waste type category (index)

x	is the year during the crediting period: x runs from the first year of the first crediting period (x=1) to year y for which avoided emissions are calculated (x=y)
y	is the year for which methane emissions are calculated

$$W_{j,x} = W_x \times \frac{\sum_{n=1}^{z} P_{n,j,x}}{z} \quad (12)$$

Where:

$W_{j,x}$	is the amount of organic waste type j prevented from disposal in the SWDS in the year x (tonnes)
W_x	is the total amount of organic waste prevented from disposal in year x (tonnes)
$P_{n,j,x}$	is the weight fraction of the waste type j in the sample n collected during the year x
z	is the number of samples collected during the year x

Baseline emissions from generation of electricity displaced by the project activity

This section is not applicable since the proposed project activity does not involve any electricity generation.

Baseline emissions from electricity and heat cogeneration that is displaced by the project activity

This section is not applicable since the proposed project activity does not involve cogeneration by electricity or heat.

Leakage

The leakage emissions of the proposed project activity are estimated using the following equation:

$$L_y = L_{t,y} + L_{r,y} + L_{s,y} \quad (13)$$

Where:

L_y	is the leakage emissions during the year y (tCO_2e/yr)
$L_{t,y}$	is the leakage emissions from increased transport in year y (tCO_2e/yr)
$L_{r,y}$	is the leakage emissions from the residual waste from the anaerobic digester, the gasifier, the processing/combustion of RDF/stabilized biomass, or compost in case it is disposed of in landfills in year y (tCO_2/yr)
$L_{s,y}$	is the leakage emissions from end use of stabilized biomass in year y (tCO_2e/yr)

There is no increase of transportation related to the proposed project activity or use of stabilized biomass. Note that AM0025 states that in case of compost disposal in a landfill, the leakage emissions must be accounted. In the ex-ante estimation it is expected that there will be no disposal of the produced compost in a landfill. The project does not involve the use of stabilized biomass, so there are no leakage emissions associated with this. Therefore, leakage in the ex-ante estimation is zero.

Emission Reduction

The emission reductions are calculated by applying the following equation.

$$ER_y = BE_y - PE_y - L_y \quad (14)$$

Where:

ER_y	is the emissions reductions in year y (tCO_2e)
BE_y	is the emissions in the baseline scenario in year y (tCO_2e)
PE_y	is the emissions in the project scenario in year y (tCO_2e)
L_y	is the leakage in year y (tCO_2e)

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

Data / Parameter:	CEF_{elec}
Data unit:	tCO_2/MWh
Description:	The emission factor for electricity generation corresponding to electricity used in the project activity.
Source of data used:	Data for power plants in the interconnected grid provided by the Ministry of Energy and Natural Resources, or other official data source.
Value applied:	0.754
Justification of the choice of data or description of measurement methods and procedures actually applied :	Determined using the "Tool to calculate the emission factor for an electricity system"
Any comment:	

Data / Parameter:	NCV_{fuel}
Data unit:	MJ/l
Description:	Net calorific value of fuel
Source of data used:	IPCC
Value applied:	36.3
Justification of the choice of data or description of measurement methods and procedures actually applied :	Adjusted by multiplying 0.844 kg/l (density of diesel) to the NCV value in TJ/Gg (43.0 TJ/Gg) provided for Gas/Diesel in the IPCC guideline.
Any comment:	

Data / Parameter:	EF_{fuel}
Data unit:	tCO_2/MJ
Description:	Emission factor for the fuel
Source of data used:	IPCC
Value applied:	0.000074

Justification of the choice of data or description of measurement methods and procedures actually applied :	Diesel is a standard fuel, for which IPCC is a reliable data source.
Any comment:	All equipment on site for project activity would use diesel as fuel.

Data / Parameter:	$EF_{C,N2O}$
Data unit:	tN_2O/t compost
Description:	Emission factor for N_2O from the composting process
Source of data used:	AM0025
Value applied:	0.000043
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default value given in the approved methodology AM0025, based on Schenk et al., 1997
Any comment:	

Data / Parameter:	GWP_{N2O}
Data unit:	-
Description:	Global Warming Potential of nitrous oxide
Source of data used:	Kyoto Protocol
Value applied:	310
Justification of the choice of data or description of measurement methods and procedures actually applied :	Valid for the First Commitment Period
Any comment:	

Data / Parameter:	GWP_{CH4}
Data unit:	-
Description:	Global Warming Potential of methane
Source of data used:	Kyoto Protocol
Value applied:	21
Justification of the choice of data or description of measurement methods and procedures actually applied :	Valid for the First Commitment Period
Any comment:	

Data / Parameter:	ϕ

Data unit:	-
Description:	Model correction factor to account for model uncertainties of the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site"
Source of data used:	"Tool to determine the methane emissions avoided from dumping waste at a solid waste disposal site"
Value applied:	0.9
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

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:	AM0025
Value applied:	0
Justification of the choice of data or description of measurement methods and procedures actually applied :	Already accounted for as AF (Adjustment Factor)
Any comment:	

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:	Assessed according to site visit and the "Tool to determine the methane emissions avoided from dumping waste at a solid waste disposal site"
Value applied:	0
Justification of the choice of data or description of measurement methods and procedures actually applied :	The site for the proposed project activity is an unmanaged solid waste disposal site that is not covered with soil.
Any comment:	

Data / Parameter:	***F***
Data unit:	-
Description:	Fraction of methane in the SWDS gas (volume fraction)
Source of data used:	"Tool to determine the methane emissions avoided from dumping waste at a

	solid waste disposal site"
Value applied:	0.5
Justification of the choice of data or description of measurement methods and procedures actually applied :	A default value recommended by the IPCC.
Any comment:	

Data / Parameter:	DOC_f
Data unit:	-
Description:	Fraction of degradable organic carbon (DOC) that can decompose
Source of data used:	"Tool to determine the methane emissions avoided from dumping waste at a solid waste disposal site"
Value applied:	0.5
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	***MCF***
Data unit:	-
Description:	Methane correction factor
Source of data used:	"Tool to determine the methane emissions avoided from dumping waste at a solid waste disposal site"
Value applied:	0.8
Justification of the choice of data or description of measurement methods and procedures actually applied :	Value applied for **unmanaged solid waste disposal site – deep and/or with high water table** stated in the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site". Assessed according to site visit.
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:	"Tool to determine the methane emissions avoided from dumping waste at a solid waste disposal site"

Value applied:	Following values are applied for each waste type *j* according to the values provided in the "Tool to determine the methane emissions avoided from dumping waste at a solid waste disposal site".

Waste Type *j*	DOC_j (% wet waste)	DOC_j (% dry waste)
Food	15	38
Garden	20	49
Wood and Straw	43	50
Paper	40	44
Textiles	24	30
Disposable nappies	24	30

Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	k_j
Data unit:	-
Description:	Decay rate for the waste type j
Source of data used:	"Tool to determine the methane emissions avoided from dumping waste at a solid waste disposal site"
Value applied:	Following values are applied for each waste type *j* according to the values provided in the "Tool to determine the methane emissions avoided from dumping waste at a solid waste disposal site". The conditions for the project site is tropical (MAT>20℃) and wet (MAP>1000mm), and the decomposition of waste is very fast (Rapidly degrading).

Waste Type *j*	Tropical (MAT>20℃) Wet (MAP>1000mm)
Food	0.4
Garden	0.17
Wood and Straw	0.035
Paper	0.07
Textiles	0.07
Disposable nappies	0.17

Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

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

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

Data / Parameter:	$EG_{PJ,EF,y}$
Data unit:	MWh/year
Description:	The amount of electricity consumed from the grid in the project activity.
Source of data to be used:	Measurements at the composting facility and metering data from the electric company.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	279 MWh /year
Description of measurement methods and procedures to be applied:	Electricity consumption will be measure by an electric meter of the composting facility.
QA/QC procedures to be applied:	The electric meter will be checked periodically to test the accuracy of its measurement. The data will be double checked with the electric company.
Any comment:	

Data / Parameter:	$F_{cons,y}$
Data unit:	l/year
Description:	The diesel fuel consumption for equipment used in the composting process
Source of data to be used:	Fuel purchase invoice and/or metering
Value of data applied for the purpose of calculating expected emission reductions in section B.5	24,008
Description of measurement methods and procedures to be applied:	Original invoices for fuel purchases would be kept by paper as well as electronic data by the CPA implementing agency (city/prefecture council).
QA/QC procedures to be applied:	Consistency between the original invoice and the accumulated electronic data will be checked periodically.
Any comment:	

Data / Parameter:	$M_{compost,y}$
Data unit:	tonnes / yr
Description:	Quantity of compost produced.
Source of data to be used:	Record of compost facility

Value of data applied for the purpose of calculating expected emission reductions in section B.5	<table><tr><th>Year</th><th>$M_{compost,y}$ tonnes/yr</th></tr><tr><td>2010</td><td>31,054</td></tr><tr><td>2011</td><td>31,054</td></tr><tr><td>2012</td><td>31,054</td></tr><tr><td>2013</td><td>31,054</td></tr><tr><td>2014</td><td>31,054</td></tr><tr><td>2015</td><td>31,054</td></tr><tr><td>2016</td><td>31,054</td></tr></table>
Description of measurement methods and procedures to be applied:	Measured by truck scale. Data will be stored by paper as well as electronic data.
QA/QC procedures to be applied:	Periodical calibration of the truck scale.
Any comment:	

Data / Parameter:	$S_{OD,y}$
Data unit:	Dimensionless
Description:	The number of samples taken per year with an oxygen deficiency (i.e. oxygen content below 10%)
Source of data to be used:	On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5	0 (For ex-ante estimation, it is assumed that no samples will have oxygen deficiency in the composting process.)
Description of measurement methods and procedures to be applied:	Oxygen concentration will be measured using a portable oxygen analyzer.
QA/QC procedures to be applied:	Calibration of oxygen analyzer will be done periodically.
Any comment:	

Data / Parameter:	$S_{total,y}$
Data unit:	Dimensionless
Description:	The total number of samples taken per year.
Source of data to be used:	On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in	5,000 (number of samples taken will be decided after commencement of the project taking into account the result of the first measurement)

section B.5	
Description of measurement methods and procedures to be applied:	
QA/QC procedures to be applied:	Frequency of measurement and the number of samples taken will be decided so as to comply with the statistical requirements.
Any comment:	

Data / Parameter:	W_x
Data unit:	Tonnes/year
Description:	Total amount of organic waste prevented from disposal during the year *x*
Source of data to be used:	On-site measurements
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 amount of organic waste prevented from disposal is the amount of organic waste processed at the composting facility. This amount will be measured at the truck scale which will be located at the entrance of the facility.
QA/QC procedures to be applied:	Periodical calibration of the truck scale.
Any comment:	

Year	W_x
	tons/yr
2010	77,636
2011	77,636
2012	77,636
2013	77,636
2014	77,636
2015	77,636
2016	77,636

Data / Parameter:	$P_{n,j,x}$
Data unit:	% by weight of waste
Description:	Weight fraction of the waste type *j* in the sample *n* collected during the year *x*
Source of data to be used:	Sample on-site measurements

Value of data applied for the purpose of calculating expected emission reductions in section B.5	<table><tr><th rowspan="2">Waste Type</th><th>$P_{n,j,x}$</th></tr><tr><th>%</th></tr><tr><td>Food</td><td>46.0</td></tr><tr><td>Garden</td><td>5.5</td></tr><tr><td>Paper</td><td>17.9</td></tr><tr><td>Wood</td><td>1.5</td></tr><tr><td>Textile</td><td>4.4</td></tr><tr><td>Nappies</td><td>3.1</td></tr><tr><td>Plastics, other inert</td><td>21.6</td></tr></table>
Description of measurement methods and procedures to be applied:	Sampling of waste will be conducted at least four times a year. Volume of waste to be sampled, and the frequency of sampling will be adjusted in the project activity to meet the statistical requirements.
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	***z***
Data unit:	Dimensionless
Description:	Number of samples taken per year, for determination of waste composition, $P_{n,j,x}$
Source of data to be used:	On-site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5	N/A
Description of measurement methods and procedures to be applied:	Number of samples taken for analysis will be recorded on paper and electronic format.
QA/QC procedures to be applied:	
Any comment:	

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

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All data will be converted and stored by electronic format and cross checked with the original data. The data and calculation result will be managed by the CME that will be established for project implementation. The various data and calculation results will be verified by a DOE yearly for the issuance of CER's.

	Items	Responsible Organization	Description

1	Monitoring Planning	CME	Training will be done for the O/M team for the good understanding of the monitoring plan and the actual monitoring methods.
2	Monitoring	The city/prefecture council which implements CPA	All data will be stored by paper and electronic files.
3	Monitoring of Regulation	CME or outsourced	Periodical reports will be made
4	Calibration of Monitoring Equipments	Authorized entity	Calibration record will be kept by the SPC

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)

>>

Date of completion of the application of the methodology to the project activity: 01/10/2008

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Annex 1

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

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

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No funds from public national or international sources will be used in any aspect of the proposed project.

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION

Table 4.1 Details of data to be collected in order to monitor emissions from project activity

ID No.	Data variable	Data source	Data unit	Measured (m), calculated (c), or estimated (e)	Recording frequency	How will the data be archived (electronic / paper)	For how long is archived data to be kept?	Comment
1.1	Electricity consumed ($EG_{PJ,EF,y}$)	Electric meter, Bills	MWh	Measured	Monthly	Electronic and paper	Crediting period + 2 years	Aggregated monthly & annually
1.2	Fuel Consumption ($F_{cons,y}$)	Bills	Kilo litres	Calculated	Monthly	Electronic and paper	Crediting period + 2 years	Aggregated monthly & annually
1.3	Quantity of compost produced ($M_{compost,y}$)	Record of compost facility	tonnes	Measured	Quarterly	Electronic and paper	Crediting period + 2 years	Measured by truck scale
1.4	Number of samples taken per year with an oxygen deficiency ($S_{OD,y}$)	On-site measurement	-	Measured	Periodically	Electronic and paper	Crediting period + 2 years	Oxygen concentration will be measured using a portable oxygen analyzer.
1.5	Total number of sampling taken (S_{totaly})	On-site measurement	-	Measured	Periodically	Electronic and paper	Crediting period + 2 years	Frequency of measurement and the number of samples taken will be decided so as to comply with the statistical requirements.
1.6	Total amount of organic waste prevented from	On-site measurement	tonnes	Measured	Daily	Electronic and paper	Crediting period + 2 years	This amount will be measured at the truck scale which will be located at the

ID No.	Data variable	Data source	Data unit	Measured (m), calculated (c), or estimated (e)	Recording frequency	How will the data be archived (electronic / paper)	For how long is archived data to be kept?	Comment
	disposal (W_x)							entrance of the facility.
1.7	Weight fraction of the waste type J in the sample ($P_{n,j,x}$)	On-site measurement	%	Measured	Quarterly	Electronic and paper	Crediting period + 2 years	Volume of waste to be sampled and the frequency of sampling will be adjusted in the project activity to meet the statistical requirements.
1.8	Number of samples taken per year for determination of 1.7	On-site measurement	-	Measured	Quarterly	Electronic and paper	Crediting period + 2 years	