



**Monitoring report form**  
**(Version 05.1)**

*Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.*

**MONITORING REPORT**

<b>Title of the project activity</b>	Gwangju metropolitan city sanitary landfill LFG power plant CDM project	
<b>UNFCCC reference number of the project activity</b>	4294	
<b>Version number of the monitoring report</b>	1.0	
<b>Completion date of the monitoring report</b>	18/05/2016	
<b>Monitoring period number and duration of this monitoring period</b>	2nd Monitoring period 01/01/2015 ~ 31/12/2015(First and last days are included)	
<b>Project participant(s)</b>	Environmental Corporation of Gwangju PANAX ENERGY Co.,Ltd Gwangju Metropolitan City Ecoeye Co., Ltd.	
<b>Host Party</b>	Republic of Korea	
<b>Sectoral scope(s)</b>	1: Energy industries (renewable - / non-renewable sources) 13: Waste handling and disposal	
<b>Selected methodology(ies)</b>	AMS-III. G. ver. 6 (Landfill methane recovery) AMS- I . D. ver. 16 (Grid connected renewable electricity generation)	
<b>Selected standardized baseline(s)</b>	N/A	
<b>Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD</b>	30,565tCO <sub>2</sub> e	
<b>Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period</b>	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	0	49,830

## SECTION A. Description of project activity

### A.1. Purpose and general description of project activity

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- **Purpose of the project activity and the measures taken for GHG emission reductions**

The proposed project includes LFG(landfill gas) collection and electricity generation with grid connection. The main purpose of this project is to recover landfill gas generated from landfill site and use it to generate electricity. It does not include LFG flaring. The Second purpose of this project is to prevent global warming by combusting methane which is emitted to atmosphere. Moreover, the project activity improves environmental quality and contributes to green domestic electricity supply.

- **Brief description of the installed technology and equipment**

The project facilities consist of three system which are LFG collection system, LFG pre-treatment system, and electricity generation system. Generator was installed total 2MW<sup>1</sup> in this project site.

Item	Gwangju
Generator capacity	2MW(1MW x 2EA)
Manufacturer	JES AG
Engine type	J 320 GS-C81
Working principle	4-Stroke

- **Relevant dates for the project activity**

In the beginning stage of project design, total capacity was planned to 2MW installation. Plant capacity of 1MW has been operated from 2010 and another 1MW was added in 2013.

Item		Completion of Construction	Electricity equipment test period	Starting Date of Operation
Date	1# generator	28/01/2010	25/01/2010	15/01/2010
	2# generator	31/07/2013	31/07/2013	25/07/2013

- **Total emission reductions achieved in this monitoring period**

Total emission reductions from the electricity generated by the project is calculated as 49,830 tCO<sub>2</sub>e

### A.2. Location of project activity

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Project activity landfill site is located in #26, Yanggwa-Dong, Nam-Gu, Gwangju Metropolitan City, which is the province located in the south-western part of Korea. 35° 05' 18.84" N / 126° 53' 10. 79" E (35.088567°/126.886331°)

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<sup>1</sup> Refer to the IRR, the generator capacity was written as respectively 1,060kW by plant and economic evaluation was performed reflecting 1,060kW. But when PP registered PDD, PP simply marked generator capacity as 1MW.



### A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
Republic of Korea (Host)	Public entity: Environmental Corporation of Gwangju	No
	Private entity: PANAX ENERGY Co.,Ltd	
	Public entity: Gwangju Metropolitan City	
	Private entity: Ecoeye Co. Ltd	

### A.4. Reference of applied methodology and standardized baseline

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#### • The applied methodology(ies):

The version 06 of AMS III.G “Landfill Methane Recovery”

The version 16 of AMS I.D “Grid connected renewable electricity generation”

#### • The applied tools:

“Tool to calculate the emission factor for an electricity system Ver.2”

“Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site Ver.4”

“Tools for the demonstration and assessment of additionality” Ver.5.2”

### A.5. Crediting period of project activity

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- Type : Fixed
- Start date : 21/02/2011
- Length of the crediting period : 10y(21/02/2011 ~ 20/02/2021)
- 2nd monitoring period : 01/01/2015 ~ 31/12/2015

**A.6. Contact information of responsible persons/entities**

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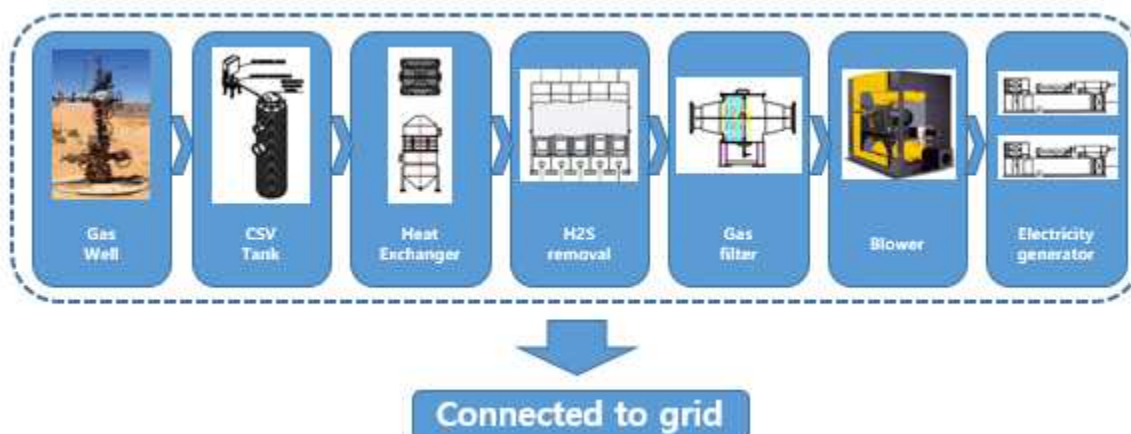
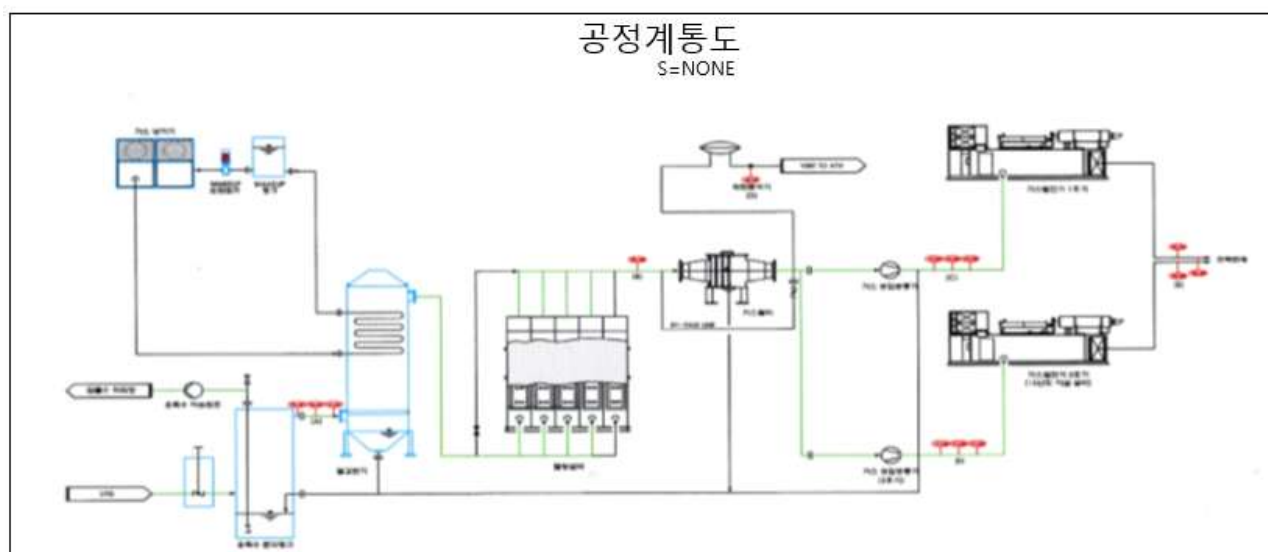
Name	Position	Is the person a PP in Appendix	PP which is involved in	E-mail
Myungmin Kim	Consultant	Yes	ECOEYE Co.,Ltd.	Ky08715@ecoeye.com

**SECTION B. Implementation of project activity****B.1. Description of implemented registered project activity**

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• **Technical process**

The proposed project includes LFG(landfill gas) collection and electricity generation with grid connection. The project facilities consist of largely three systems, which are LFG collection system, LFG pre-treatment system, and electricity generation system. The project activity does not include LFG flaring system and existing flaring tips not operate after the project implementation. Therefore, the whole captured LFG used for electricity generation only. For preventing methane leakage from LFG collection pipes and power generation system, a block system is installed.

• **System diagram**• **Installed technology**

Type	Details	Quantity
Gas Well	· material : PE pipe	79well

	<ul style="list-style-type: none"> <li>· main pipe : 100A(5EA), 150A(1EA), 250A(1EA)</li> <li>· Pipe connection : 50A</li> <li>· Gas collection extract tablet : 150A(79EA)</li> </ul>	
CSV Tank	<ul style="list-style-type: none"> <li>· material : High Density Poly Ethylene</li> <li>· weight : Approx 1450kg</li> <li>· size : DIA/L : 1,000/4,215mm</li> <li>· pump type: Positive Displacement</li> <li>· flow operating of pump: 80L/min</li> </ul>	1
Heat Exchanger	<ul style="list-style-type: none"> <li>· material : STS304, STC302</li> <li>· weight : 815kg</li> <li>· size : 1,835x1,635x3,652</li> <li>· volume : 2,000m<sup>3</sup>/h</li> <li>· design pressure : -15Kpa/MAX</li> </ul>	1
H <sub>2</sub> S removal set	<ul style="list-style-type: none"> <li>· type : dry process</li> <li>· H<sub>2</sub>S density of input gas : 500ppm</li> <li>· H<sub>2</sub>S density of exhaust gas : 50ppm</li> <li>· size : 2,500x1,600x2700mm</li> <li>· volume : 1,200Nm<sup>3</sup>/hr</li> <li>· max internal pressure : -20kpa</li> </ul>	1
Gas Filter	<ul style="list-style-type: none"> <li>· material : STS304, STC302</li> <li>· weight : 250kg</li> <li>· size : 1,600x1210x949</li> <li>· fluid flow : methane</li> <li>· capacity : 1,000m<sup>3</sup>/h</li> <li>· design pressure : 150KGF/CM<sup>2</sup>G</li> </ul>	1
Blower	<ul style="list-style-type: none"> <li>· type : SP 125 IM</li> <li>· no : 3099418</li> <li>· capacity : 17m<sup>3</sup>/min</li> <li>· speed : 1770RPM</li> <li>· discharge pressure : 0.1kg/cm<sup>2</sup></li> </ul>	2
Generator	<ul style="list-style-type: none"> <li>· manufacturer : STAMFORD</li> <li>· type : HCI 634 K2</li> <li>· volume : 1,060kW</li> <li>· voltage : 480v</li> <li>· speed : 1,800rpm</li> </ul>	2

• **Events of situations which may impact on the applicability of the methodology**

There are no events of situations that occurred during the monitoring period that may impact the applicability of the applied methodology.

**B.2. Post-registration changes**

**B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

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N/A

**B.2.2. Corrections**

>>  
N/A

**B.2.3 Changes to start date of crediting period**

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N/A

#### B.2.4 Inclusion of a monitoring plan to the registered PDD that was not included at registration

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N/A

#### B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

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N/A

#### B.2.6. Changes to project design of registered project activity

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N/A

#### B.2.7. Types of changes specific to afforestation or reforestation project activity

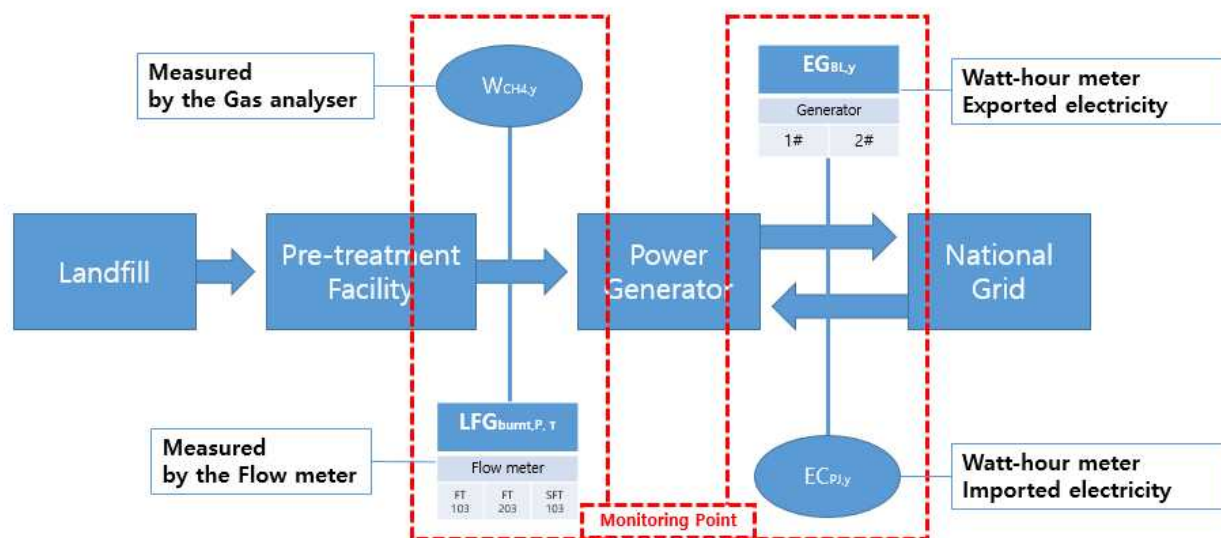
>>  
N/A

### SECTION C. Description of monitoring system

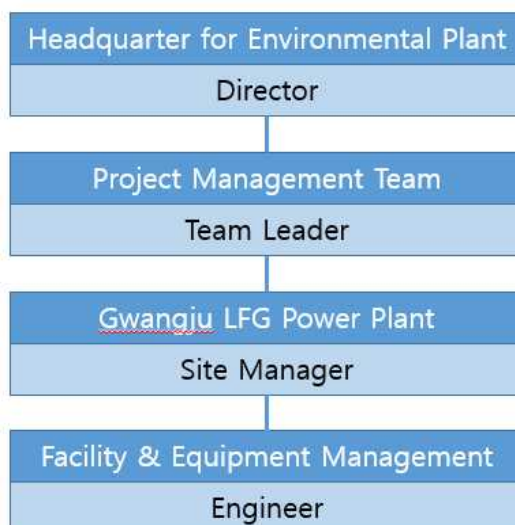
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#### • Date collection procedure and Monitoring Point for the project

A gas flow meter was installed between the blower and generating facility to measure LFG flow rate. The gas flow meter automatically measure the amount of collected LFG and, at the same time, its temperature and pressure expressing LFG volumes in normalized cubic meters. A continuous methane analyzer is used to measure the fraction of methane in LFG volume fed into the gas engine. The quantity of electricity to be exported to or imported from the grid is measured separately by Watt-hour meters.



#### • Operational and management structure



• **Quality Control(QC) / Quality Assurance(QA) and Emergency procedure**

1. Monitoring equipment

- 1-1. Electricity measuring meters was set up transparently in accordance with “Law regarding measurement” and “Act on operation of electricity market” and was sealed after affirmation of Korea Power Exchange.
- 1-2. Other monitoring equipments was installed and operated in accordance with AMS I.D and AMS III.G.
- 1-3. The monitoring equipments was certified when they are produced. Since then periodic calibration was made as stated in B.7.1. Calibration frequency is determined in accordance with domestic and UNFCCC regulations. If any monitoring equipments are considered to perform abnormally, appropriate actions will be made immediately.

2. Electricity monitoring

- 2-1. The amount of electricity transmitted to the grid was measured automatically by established meter. The measured data are also checked by central control system of Korea Power Exchange.
- 2-2. The measured data of electricity production was collected daily, weekly, and monthly in electronic way, imported electricity data was collected monthly in bill form KEPCO.
- 2-3. The collected electricity production data as in article 2-2 are comparing with those of Korea Power Exchange.
- 2-4. If the two data compared as in article 2-3 are different each other, project site manager will investigate the reason for the difference. This event and its justification, how the event is considered in ER calculation will be specified in the corresponding CDM monitoring report. In case meters are improperly operated equipments, internal investigation and correction procedure shall be followed by the site manager.

3. Other parameters monitoring

- 3-1. The major parameters measured automatically by metering equipments ( $LFG_{burnt,y}$ ,  $W_{CH4,y}$  etc.) are monitoring continuously and recorded automatically in computer.
- 3-2 Other monitoring parameters are monitoring in accordance with B.7.1.

4. Training & guideline for CDM monitoring

- 4-1. All employees directly involved in the monitoring process are training for monitoring and managing its data and equipments. The engineers at the project site is in touch with the CDM consultants to get proper guideline for monitoring activity. In addition, the separate monitoring manual is prepared for the engineers to implement monitoring and managing monitoring equipments appropriately.

The monitored data will be archived until 2 years after the end of the period of the project activity.

**SECTION D. Data and parameters****D.1. Data and parameters fixed ex ante or at renewal of crediting period**

<b>Data / Parameter:</b>	$\varepsilon$ BL
Unit:	%
Description:	Destruction efficiency of the baseline system(fraction)
Source of data:	Survey for estimating GHG emission and establishing statistics in landfill, August 2006, Ministry of Environment
Value(s) applied):	5.2%
Choice of data or measurement methods and procedures	Sourced from the research document.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	CE
Unit:	%
Description:	LFG capturing efficiency of the proposed project LFG collection system
Source of data:	Seohee Construction Co. Ltd.
Value(s) applied):	55%
Choice of data or measurement methods and procedures	Technological survey of Seohee Construction Co. Ltd.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	$D_{CH_4}$
Unit:	$tCH_4/m^3 CH_4$
Description:	Methane density
Source of data:	ACM0001 version 05
Value(s) applied):	$0.0007168 tCH_4/m^3 CH_4$
Choice of data or measurement methods and procedures	At standard temperature and pressure(0 degree Celsius and 1,013 bar) the density of methane is $0.0007168 tCH_4/m^3 CH_4$
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	$EF_{Grid,CM,y}$
Unit:	$tCO_2e/MWh$
Description:	$CO_2$ emission factor for electricity grid in baseline
Source of data:	Calculated
Value(s) applied):	$0.6018 tCO_2e/MWh$
Choice of data or measurement methods and procedures	This value was calculated according to "Tool for calculation of emission factor for electricity system ". Applied value was calculated using Statistics of Electric Power in KOREA (2006,2007,2008, KEPCO) and Status of Generation facility(2008) (Korea Power Exchange)
Purpose of data:	Calculation of baseline emissions
Additional comment:	This value corresponds to $EF_{CO_2}$ in ER calculation. More details described in annex 3



<b>Data / Parameter:</b>	EF <sub>Grid,OM,y</sub>
Unit:	tCO <sub>2</sub> e/MWh
Description:	CO <sub>2</sub> Operating Margin emission factor of the grid
Source of data:	Calculated
Value(s) applied:	0.6816 tCO <sub>2</sub> e/MWh
Choice of data or measurement methods and procedures	This value was calculated according to “Tool for calculation of emission factor for electricity system”. Applied value was calculated using Statistics of Electric Power in KOREA (2006,2007,2008, KEPCO) and Status of Generation facility(2008) (Korea Power Exchange).
Purpose of data:	Calculation of baseline emissions
Additional comment:	More details described in annex 3

<b>Data / Parameter:</b>	EF <sub>Grid,BM,y</sub>
Unit:	tCO <sub>2</sub> e/MWh
Description:	CO <sub>2</sub> Build Margin emission factor of the grid
Source of data:	Calculated
Value(s) applied:	0.5221 tCO <sub>2</sub> e/MWh
Choice of data or measurement methods and procedures	This value was calculated according to “Tool for calculation of emission factor for electricity system “.Applied value was calculated using Statistics of Electric Power in KOREA (2006,2007,2008, KEPCO) and Status of Generation facility(2008) (Korea Power Exchange).
Purpose of data:	Calculation of baseline emissions
Additional comment:	More details described in annex 3

<b>Data / Parameter:</b>	ø
Unit:	NA
Description:	Model correction factor to account for model uncertainties
Source of data:	“Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site Ver.4”
Value(s) applied:	0.9
Choice of data or measurement methods and procedures	The above default value is suggested in “Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site Ver.4”
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	OX
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:	Use the IPCC 2006 Guidelines for National Greenhouse Gas Inventories for the choice of the value to be applied.
Value(s) applied:	0.1
Choice of data or measurement methods and procedures	For managed solid waste disposal sites which are covered with oxidizing material such as soil or compost. As Gwangju landfill has daily soil cover, OX is 0.1
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	DOC <sub>j</sub>
Unit:	%

Description:	Fraction of degradable organic carbon (by weight) in the waste type j														
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Tables 2.4, and 2.5)														
Value(s) applied:	<table border="1"> <thead> <tr> <th>Waste type j</th><th>DOCj(% wet waste)</th></tr> </thead> <tbody> <tr> <td>Wood and wood product</td><td>43%</td></tr> <tr> <td>Pulp, paper and cardboard(other than sludge)</td><td>40%</td></tr> <tr> <td>Food, food waste, beverages and tobacco</td><td>15%</td></tr> <tr> <td>Textiles</td><td>24%</td></tr> <tr> <td>Garden, yard and park waste</td><td>20%</td></tr> <tr> <td>Glass, plastic, metal, other inert waste</td><td>0%</td></tr> </tbody> </table>	Waste type j	DOCj(% wet waste)	Wood and wood product	43%	Pulp, paper and cardboard(other than sludge)	40%	Food, food waste, beverages and tobacco	15%	Textiles	24%	Garden, yard and park waste	20%	Glass, plastic, metal, other inert waste	0%
Waste type j	DOCj(% wet waste)														
Wood and wood product	43%														
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Textiles	24%														
Garden, yard and park waste	20%														
Glass, plastic, metal, other inert waste	0%														
Choice of data or measurement methods and procedures	The above default value is suggested in "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site Ver.4".														
Purpose of data:	Calculation of baseline emissions														
Additional comment:	N/A														

<b>Data / Parameter:</b>	DOC <sub>f</sub>
Unit:	%
Description:	Fraction of degradable organic carbon (DOC) that can decompose
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value(s) applied:	0.5
Choice of data or measurement methods and procedures	The above default value is suggested in "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site Ver.4".
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	MCF
Unit:	N/A
Description:	Methane correction factor
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value(s) applied:	1.0
Choice of data or measurement methods and procedures	The project site is categorized as „anaerobic managed solid waste disposal site“.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	W <sub>j,x</sub>
Unit:	%
Description:	Amount of organic waste type j prevented from disposal in the SWDS in the year x (tons)
Source of data:	The project site(Gwangju landfill)-specific data collected by Gwangju Environmental Installations Co.
Value(s) applied:	Refer to the separate calculation sheet.
Choice of data or measurement methods and procedures	Since the landfill operation started, Gwangju Environmental Installations Co. has collected the waste amount and composition data by monitoring and analyzing the waste received.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

Data / Parameter:	K <sub>j</sub>																
Unit:	N/A																
Description:	Decay rate for the waste type j																
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Tables 3.3)																
Value(s) applied:	<table><tr><th colspan="2">Waste type j</th><th>K<sub>j</sub> Dry (MAP/PET &lt; 1)</th></tr><tr><td rowspan="2">Slowly Degrading</td><td>Pulp, paper, cardboard(other than sludge), textiles</td><td>0.04</td></tr><tr><td>Wood, wood products and straw</td><td>0.02</td></tr><tr><td>Moderately degrading</td><td>Other (non-food) organic putrescible garden and park waste</td><td>0.05</td></tr><tr><td>Rapidly degrading</td><td>Food, food waste, beverages and tobacco (other than sludge)</td><td>0.06</td></tr></table>			Waste type j		K <sub>j</sub> Dry (MAP/PET < 1)	Slowly Degrading	Pulp, paper, cardboard(other than sludge), textiles	0.04	Wood, wood products and straw	0.02	Moderately degrading	Other (non-food) organic putrescible garden and park waste	0.05	Rapidly degrading	Food, food waste, beverages and tobacco (other than sludge)	0.06
Waste type j		K <sub>j</sub> Dry (MAP/PET < 1)															
Slowly Degrading	Pulp, paper, cardboard(other than sludge), textiles	0.04															
	Wood, wood products and straw	0.02															
Moderately degrading	Other (non-food) organic putrescible garden and park waste	0.05															
Rapidly degrading	Food, food waste, beverages and tobacco (other than sludge)	0.06															
Choice of data or measurement methods and procedures	The above default values applicable for the region where Mean Annual Temperature (MAT) is below 20°C and mean annual precipitation(MAP) is less than Potential evapo-transpiration(PET), according to the “Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site.” The MAT of Gwangju city is 13.9°C which is consistent with the above condition. It is assumed that MAP is less than PET in conservative manner because there is no information about PET in Gwangju.																
Purpose of data:	Calculation of baseline emissions																
Additional comment:	10 years mean value (1996~2005) MAT(Mean Annual Temperature) : 13.9 MAP(Mean Annual Precipitation): 1524.6 mm PET(Potential evapo-transpiration): N/A Based on data observed at meteorological observatory in Gwangju Data source :Korea Meteorological Association																

<b>Data / Parameter:</b>	F
Unit:	N/A
Description:	Fraction of methane in the SWDS gas (volume faction)
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value(s) applied:	0.5
Choice of data or measurement methods and procedures	This factor reflects the fact that some degradable organic carbon doesn't degrade, or degrades very slowly, under anaerobic conditions in the SWDS. A default value of 0.5 is recommended by IPCC
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	f
Unit:	N/A
Description:	Fraction of methane captured at the SWDS and flared, combusted or used in another manner
Source of data:	Written information from the operator of the solid waste disposal site and/or site visits at the solid waste disposal site
Value(s) applied:	0
Choice of data or measurement methods and procedures	According to the AMS.III.G, this value corresponds to zero. $MD_{reg,y}$ is considered in the ER calculation.
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

## D.2. Data and parameters monitored

<b>Data / Parameter:</b>	MG <sub>PR,1</sub>
Unit:	tCH <sub>4</sub>
Description:	Amount of methane generated during the first year of the project activity estimated using the actual amount of waste disposed in the landfill
Measured/ Calculated / Default:	Calculated using "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site Ver.4"
Source of data:	Calculated from the data collected by the Environmental Corporation of Gwangju
Value(s) of monitored parameter:	1,276.31tCH <sub>4</sub>
Monitoring equipment:	N/A
Measuring/ Reading/ Recording frequency:	Continuous measuring and reading, hourly recording
Calculation method (if applicable):	N/A
QA/QC procedures:	As per "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site Ver.4"
Purpose of data:	Calculation of baseline emissions
Additional comment:	This parameter was measured at 1 <sup>st</sup> monitoring period to calculate ε <sub>PR,1</sub> .

<b>Data / Parameter:</b>	MD <sub>PR,1</sub>
Unit:	tCH <sub>4</sub>
Description:	Amount of methane destroyed by the project activity during the first year of the project activity
Measured/ Calculated / Default:	Calculated from the monitoring data.
Source of data:	Using the value of the first year collected through the monitoring equipment(flow meter & gas analyser)
Value(s) of monitored parameter:	958.43tCH <sub>4</sub>
Monitoring equipment:	N/A
Measuring/ Reading/ Recording frequency:	Continuous measuring and reading, hourly recording
Calculation method (if applicable):	N/A
QA/QC procedures:	Related monitoring equipments (flow meter & gas analyser) are subject to a regular maintenance and testing regime to ensure accuracy.
Purpose of data:	Calculation of baseline emissions
Additional comment:	This parameter was measured at 1 <sup>st</sup> monitoring period to calculate ε <sub>PR,1</sub> .

<b>Data / Parameter:</b>	LFG <sub>burnt,y</sub>
Unit:	Nm <sup>3</sup>
Description:	Landfill gas flared or used as fuel in the year y
Measured/ Calculated / Default:	Measured by flow meter Measured and archived continuously in form of electronic data file Calibrate the meter every two years
Source of data:	Data of acquisition for Flow meter

Value(s) of monitored parameter:	<table border="1"> <thead> <tr> <th>Date</th><th>#1</th><th>#2</th><th>total</th></tr> </thead> <tbody> <tr> <td>01/Jan/15 ~ 31/Dec/15</td><td>2,507,440Nm<sup>3</sup></td><td>3,614,430Nm<sup>3</sup></td><td>6,121,870Nm<sup>3</sup></td></tr> <tr> <td>total</td><td>2,507,440Nm<sup>3</sup></td><td>3,614,430Nm<sup>3</sup></td><td>6,121,870Nm<sup>3</sup></td></tr> </tbody> </table>	Date	#1	#2	total	01/Jan/15 ~ 31/Dec/15	2,507,440Nm <sup>3</sup>	3,614,430Nm <sup>3</sup>	6,121,870Nm <sup>3</sup>	total	2,507,440Nm <sup>3</sup>	3,614,430Nm <sup>3</sup>	6,121,870Nm <sup>3</sup>																														
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01/Jan/15 ~ 31/Dec/15	2,507,440Nm <sup>3</sup>	3,614,430Nm <sup>3</sup>	6,121,870Nm <sup>3</sup>																																								
total	2,507,440Nm <sup>3</sup>	3,614,430Nm <sup>3</sup>	6,121,870Nm <sup>3</sup>																																								
Monitoring equipment:	<p>- Equipment: Flow meter</p> <p>- Quantity: 3 (Main-flow meter: 2, Sub-flow meter: 1)</p> <p>- Details:</p> <table border="1"> <tr><td>Tag</td><td>FT-103</td></tr> <tr><td>Model</td><td>8840MP-SSS-133-DC24-6"-LFG</td></tr> <tr><td>Accuracy class</td><td>± 1.0%</td></tr> <tr><td>Serial number</td><td>28041404</td></tr> <tr><td>Calibration frequency</td><td>2years</td></tr> <tr><td>Date of last calibration</td><td>14/11/2014</td></tr> <tr><td>Validity period</td><td>14/11/2014 ~ 13/11/2016</td></tr> </table> <table border="1"> <tr><td>Tag</td><td>FT-203</td></tr> <tr><td>Type</td><td>8840MP-SSS-133-DC24-6"-LFG</td></tr> <tr><td>Accuracy class</td><td>± 1.0%</td></tr> <tr><td>Serial number</td><td>23082001</td></tr> <tr><td>Calibration frequency</td><td>2years</td></tr> <tr><td>Date of last calibration</td><td>22/05/2014</td></tr> <tr><td>Validity period</td><td>22/05/2014 ~ 21/05/2016</td></tr> </table> <table border="1"> <tr><td>Tag</td><td>SFT-103</td></tr> <tr><td>Type</td><td>8840MP-SSS-DC24-6"-LFG</td></tr> <tr><td>Accuracy class</td><td>± 1.0%</td></tr> <tr><td>Serial number</td><td>13121202</td></tr> <tr><td>Calibration frequency</td><td>2years</td></tr> <tr><td>Date of last calibration</td><td>23/01/2014</td></tr> <tr><td>Validity period</td><td>23/01/2014 ~ 22/01/2016</td></tr> </table>	Tag	FT-103	Model	8840MP-SSS-133-DC24-6"-LFG	Accuracy class	± 1.0%	Serial number	28041404	Calibration frequency	2years	Date of last calibration	14/11/2014	Validity period	14/11/2014 ~ 13/11/2016	Tag	FT-203	Type	8840MP-SSS-133-DC24-6"-LFG	Accuracy class	± 1.0%	Serial number	23082001	Calibration frequency	2years	Date of last calibration	22/05/2014	Validity period	22/05/2014 ~ 21/05/2016	Tag	SFT-103	Type	8840MP-SSS-DC24-6"-LFG	Accuracy class	± 1.0%	Serial number	13121202	Calibration frequency	2years	Date of last calibration	23/01/2014	Validity period	23/01/2014 ~ 22/01/2016
Tag	FT-103																																										
Model	8840MP-SSS-133-DC24-6"-LFG																																										
Accuracy class	± 1.0%																																										
Serial number	28041404																																										
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Date of last calibration	14/11/2014																																										
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Type	8840MP-SSS-133-DC24-6"-LFG																																										
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Serial number	23082001																																										
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Date of last calibration	23/01/2014																																										
Validity period	23/01/2014 ~ 22/01/2016																																										
Measuring/ Reading/ Recording frequency:	Continuous measuring and reading, hourly recording																																										
Calculation method (if applicable):	N/A																																										
QA/QC procedures:	Flow meters should be subject to a regular maintenance and testing regime to ensure accuracy.																																										
Purpose of data:	Calculation of baseline emissions																																										
Additional comment:	N/A																																										

<b>Data / Parameter:</b>	W <sub>CH<sub>4</sub>,y</sub>									
Unit:	m <sup>3</sup> CH <sub>4</sub> /m <sup>3</sup> LFG									
Description:	Methane content in landfill gas in the year y									
Measured/ Calculated / Default:	Measured by gas analyser Measured and archived continuously in form of electronic data file Calibrate the meter every three years									
Source of data:	Data of acquisition for Gas analyser									
Value(s) of monitored parameter:	<table border="1"> <thead> <tr> <th>Date</th><th>#1</th><th>#2</th></tr> </thead> <tbody> <tr> <td>01/Jan/15 ~ 31/Dec/15 (Average)</td><td>44.8%</td><td>44.8%</td></tr> <tr> <td>total</td><td>44.8%</td><td>44.8%</td></tr> </tbody> </table>	Date	#1	#2	01/Jan/15 ~ 31/Dec/15 (Average)	44.8%	44.8%	total	44.8%	44.8%
Date	#1	#2								
01/Jan/15 ~ 31/Dec/15 (Average)	44.8%	44.8%								
total	44.8%	44.8%								

Monitoring equipment:	<ul style="list-style-type: none"> <li>- Equipment: Gas analyser</li> <li>- Quantity: 1</li> <li>- Details: <table border="1"> <tr><td>Tag</td><td>AN-101</td></tr> <tr><td>Type</td><td>ZRJF4C15-BUXRX-RYYLVAY-A</td></tr> <tr><td>Accuracy class</td><td>± 1.0%</td></tr> <tr><td>Serial number</td><td>A9K5306T</td></tr> <tr><td>Calibration frequency</td><td>3years</td></tr> <tr><td>Date of previous calibration</td><td>30/11/2011</td></tr> <tr><td>Date of last calibration</td><td>06/01/2015</td></tr> <tr><td>Validity period</td><td>30/11/2011 ~ 29/11/2014 06/01/2015 ~ 05/01/2018</td></tr> <tr><td>Delayed date</td><td>01/01/2015 ~ 05/01/2015</td></tr> </table> </li> </ul> <p>The permissible error 1% was applied to measured <math>W_{CH_4,y}</math> value due to overdue calibration (from 01/01/2015 to 05/01/2015)</p>	Tag	AN-101	Type	ZRJF4C15-BUXRX-RYYLVAY-A	Accuracy class	± 1.0%	Serial number	A9K5306T	Calibration frequency	3years	Date of previous calibration	30/11/2011	Date of last calibration	06/01/2015	Validity period	30/11/2011 ~ 29/11/2014 06/01/2015 ~ 05/01/2018	Delayed date	01/01/2015 ~ 05/01/2015
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Validity period	30/11/2011 ~ 29/11/2014 06/01/2015 ~ 05/01/2018																		
Delayed date	01/01/2015 ~ 05/01/2015																		
Measuring/ Reading/ Recording frequency:	Continuous measuring and reading, hourly recording																		
Calculation method (if applicable):	N/A																		
QA/QC procedures:	The gas analyzer is subject to a regular maintenance and testing regime to ensure accuracy.																		
Purpose of data:	Calculation of baseline emissions																		
Additional comment:	N/A																		

<b>Data / Parameter:</b>	T
Unit:	°C
Description:	Temperature of the landfill gas
Measured/ Calculated / Default:	Measured to determine the density of methane $D_{CH_4}$ No separate monitoring of temperature will be done as the project LFG flow meter automatically measures temperature and pressure, expressing LFG volumes in normalized cubic meters
Source of data:	Data of acquisition for Temperature Gauges
Value(s) of monitored parameter:	Reference data
Monitoring equipment:	N/A
Measuring/ Reading/ Recording frequency:	Continuous measuring and reading, hourly recording
Calculation method (if applicable):	N/A
QA/QC procedures:	Measuring instruments should be subject to a regular maintenance and testing regime in accordance to appropriate national/international standards
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	P
Unit:	Pa
Description:	Pressure of the landfill gas
Measured/ Calculated / Default:	Measured to determine the density of methane $D_{CH_4}$ No separate monitoring of temperature will be done as the project LFG flow meter automatically measures temperature and pressure, expressing LFG volumes in normalized cubic meters

Source of data:	Data of acquisition for Pressure Gauges
Value(s) of monitored parameter:	Reference data
Monitoring equipment:	N/A
Measuring/ Reading/ Recording frequency:	Continuous measuring and reading, hourly recording
Calculation method (if applicable):	N/A
QA/QC procedures:	Measuring instruments should be subject to a regular maintenance and testing regime in accordance to appropriate national/international standards
Purpose of data:	Calculation of baseline emissions
Additional comment:	N/A

Data / Parameter:	EG <sub>BL,y</sub>																															
Unit:	MWh																															
Description:	Total amount of electricity exported to the grid by the project activity																															
Measured/ Calculated / Default:	Measured by watt-hour meter Calibrate the meter every three years																															
Source of data:	Measured by Watt-hour meters installed at the project site																															
Value(s) of monitored parameter:	<table><tr><td>Date</td><td>#1</td><td>#2</td><td>total</td></tr><tr><td>01/Jan/15 ~ 31/Dec/15</td><td>2,829MWh</td><td>3,920MWh</td><td>6,749MWh</td></tr><tr><td>total</td><td>2,829MWh</td><td>3,920MWh</td><td>6,749MWh</td></tr></table>				Date	#1	#2	total	01/Jan/15 ~ 31/Dec/15	2,829MWh	3,920MWh	6,749MWh	total	2,829MWh	3,920MWh	6,749MWh																
Date	#1	#2	total																													
01/Jan/15 ~ 31/Dec/15	2,829MWh	3,920MWh	6,749MWh																													
total	2,829MWh	3,920MWh	6,749MWh																													
Monitoring equipment:	<div>- Equipment: watt-hour meter</div> <div>- Quantity: 2</div> <div>- Details:</div> <table><tr><td>Tag</td><td>WH-101(1# generator)</td></tr><tr><td>Type</td><td>SCE8711</td></tr><tr><td>Accuracy class</td><td>± 0.5%</td></tr><tr><td>Serial number</td><td>53048181</td></tr><tr><td>Calibration frequency</td><td>Within 3years</td></tr><tr><td>Date of initial/previous calibration</td><td>23/07/2012</td></tr><tr><td>Validity period</td><td>23/07/2012 ~ 22/07/2015</td></tr></table> <table><tr><td>Tag</td><td>WH-201(2# generator)</td></tr><tr><td>Type</td><td>TWR-ALM1</td></tr><tr><td>Accuracy class</td><td>± 0.5%</td></tr><tr><td>Serial number</td><td>4349712</td></tr><tr><td>Calibration frequency</td><td>Within 3years</td></tr><tr><td>Date of initial/previous calibration</td><td>24/12/2012</td></tr><tr><td>Validity period</td><td>24/12/2012 ~ 23/12/2015</td></tr></table>				Tag	WH-101(1# generator)	Type	SCE8711	Accuracy class	± 0.5%	Serial number	53048181	Calibration frequency	Within 3years	Date of initial/previous calibration	23/07/2012	Validity period	23/07/2012 ~ 22/07/2015	Tag	WH-201(2# generator)	Type	TWR-ALM1	Accuracy class	± 0.5%	Serial number	4349712	Calibration frequency	Within 3years	Date of initial/previous calibration	24/12/2012	Validity period	24/12/2012 ~ 23/12/2015
Tag	WH-101(1# generator)																															
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Date of initial/previous calibration	24/12/2012																															
Validity period	24/12/2012 ~ 23/12/2015																															
Measuring/ Reading/ Recording frequency:	Continuous measuring and reading, hourly recording																															
Calculation method (if applicable):	N/A																															
QA/QC procedures:	The watt-hour meter is subject to a regular maintenance and testing regime to ensure accuracy.																															
Purpose of data:	Calculation of baseline emissions																															
Additional comment:	N/A																															

<b>Data / Parameter:</b>	EC <sub>PJ,y</sub>															
Unit:	MWh															
Description:	Electricity supplied from the grid by the project activity during the year y															
Measured/ Calculated / Default:	The electricity for the project activity is from the grid. If any, corresponding amount will be monitored and considered as PE <sub>EC,y</sub> . Measured by watt-hour meter Calibrate the meter every three years															
Source of data:	Data of acquisition for electronic bills															
Value(s) of monitored parameter:	<p>Generator #1: 47,980kWh</p> <table border="1"> <tr> <td>01/Jan/15 ~ 31/Dec/15</td><td>2,067kWh</td></tr> <tr> <td>Total</td><td>47,981kWh</td></tr> </table> <p>Generator #2: 4,949kWh</p> <table border="1"> <tr> <td>01/Jan/15 ~ 31/Dec/15</td><td>2,926kWh</td></tr> <tr> <td>Total</td><td>4,950kWh</td></tr> </table> <p><b>Total : 52,931kWh -&gt; 52.931MWh<sup>2</sup></b></p>		01/Jan/15 ~ 31/Dec/15	2,067kWh	Total	47,981kWh	01/Jan/15 ~ 31/Dec/15	2,926kWh	Total	4,950kWh						
01/Jan/15 ~ 31/Dec/15	2,067kWh															
Total	47,981kWh															
01/Jan/15 ~ 31/Dec/15	2,926kWh															
Total	4,950kWh															
Monitoring equipment:	<ul style="list-style-type: none"> <li>- Equipment: watt-hour meter</li> <li>- Quantity: 1</li> <li>- Details:</li> </ul> <table border="1"> <tr> <td>Tag</td><td>WH-102</td></tr> <tr> <td>Type</td><td>AmrPower-T415</td></tr> <tr> <td>Accuracy class</td><td>± 1.0%</td></tr> <tr> <td>Serial number</td><td>0913172</td></tr> <tr> <td>Calibration frequency</td><td>Within 3years</td></tr> <tr> <td>Date of previous calibration</td><td>23/07/2012</td></tr> <tr> <td>Validity period</td><td>23/07/2012 ~ 22/07/2015</td></tr> </table>		Tag	WH-102	Type	AmrPower-T415	Accuracy class	± 1.0%	Serial number	0913172	Calibration frequency	Within 3years	Date of previous calibration	23/07/2012	Validity period	23/07/2012 ~ 22/07/2015
Tag	WH-102															
Type	AmrPower-T415															
Accuracy class	± 1.0%															
Serial number	0913172															
Calibration frequency	Within 3years															
Date of previous calibration	23/07/2012															
Validity period	23/07/2012 ~ 22/07/2015															
Measuring/ Reading/ Recording frequency:	Real-time measurement and monthly records.															
Calculation method (if applicable):	N/A															
QA/QC procedures:	The watt-hour meter is subject to a regular maintenance and testing regime to ensure accuracy.															
Purpose of data:	Calculation of baseline emissions															
Additional comment:	N/A															

<b>Data / Parameter:</b>	PE <sub>EC,y</sub>
Unit:	tCO <sub>2</sub> e/yr
Description:	Project emissions from the electricity generated by (an) off-grid fossil fuel fired captive power plant(s).
Measured/ Calculated / Default:	The project is planning to use no electricity from (an) off-grid fossil fuel fired captive power plant(s) in doing project activity. If such electricity is used, corresponding amount will be monitored and calculated according to the latest version of "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"
Source of data:	N/A
Value(s) of monitored parameter:	0

<sup>2</sup> Imported meter was installed just one monitoring equipment, but according to internal regulation, imported electricity have recorded and managed separately plant #1, #2.



Monitoring equipment:	N/A
Measuring/ Reading/ Recording frequency:	If such electricity is used, corresponding amount will be monitored and calculated according to the latest version of "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"
Calculation method (if applicable):	N/A
QA/QC procedures:	If applicable, related monitoring equipments are subject to regular maintenance and testing regime to ensure accuracy.
Purpose of data:	Calculation of project emissions
Additional comment:	N/A

<b>Data / Parameter:</b>	$PE_{FC,j,y}$
Unit:	tCO <sub>2</sub> e/yr
Description:	Project emissions from fossil fuel combustion in process j for the project activity during the year y
Measured/ Calculated / Default:	The project is planning to use no fossil fuel in doing project activity. If any fossil fuel is used, corresponding amount will be monitored and calculated according to the latest version of "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"
Source of data:	N/A
Value(s) of monitored parameter:	0
Monitoring equipment:	N/A
Measuring/ Reading/ Recording frequency:	If any fossil fuel is used, corresponding amount will be monitored and calculated according to the latest version of "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"
Calculation method (if applicable):	N/A
QA/QC procedures:	If applicable, related monitoring equipments are subject to regular maintenance and testing regime to ensure accuracy.
Purpose of data:	Calculation of project emissions
Additional comment:	N/A

<b>Data/parameter:</b>	GWP <sub>CH<sub>4</sub></sub>
Unit	tCO <sub>2</sub> /tCH <sub>4</sub>
Description	Global warming potential for methane (CH <sub>4</sub> )
Source of data	Default value in IPCC & ACM0001 version 5
Value(s) applied)	25
Choice of data or measurement methods and procedures	Refer the decisions under UNFCCC and the Kyoto Protocol(Decision 24/CP.19)
Purpose of data	Calculation of baseline emissions
Additional comments	N/A

### D.3. Implementation of sampling plan

&gt;&gt;

N/A

**SECTION E. Calculation of emission reductions or GHG removals by sinks****E.1. Calculation of baseline emissions or baseline net GHG removals by sinks**

&gt;&gt;

## 1. Baseline emission

$$BE_y = MD_y - MD_{reg,y} + BE_{electricity,y}$$

Where:

- $MD_y$  Methane captured and destroyed/gainfully used by the project activity in the year "y" (tCO<sub>2</sub>e).
- $MD_{reg,y}$  Methane emissions that would be captured and destroyed to comply with national or local safety requirement or legal regulations in the year "y" (tCO<sub>2</sub>e).
- $BE_{electricity,y}$  The baseline emission from the electricity generation in the absence of the Project activity at year y (tCO<sub>2</sub>e). This parameter is calculated according to AMS I.D while other parameters in this equation are calculated according to AMS III.G.

## • Generator #1

Period	$BE_y$ (tCO <sub>2</sub> e)	$MD_y$ (tCO <sub>2</sub> e)	$MD_{reg,y}$ (tCO <sub>2</sub> e)	$(EG_{BL,y} - EC_{PJ,y})$ (MWh)	$EF_{CO_2}$ (tCO <sub>2</sub> e/MWh)
2015	20,448	20,140	1,349	2,829	0.6018
Total	20,448				

## • Generator #2

Period	$BE_y$ (tCO <sub>2</sub> e)	$MD_y$ (tCO <sub>2</sub> e)	$MD_{reg,y}$ (tCO <sub>2</sub> e)	$(EG_{BL,y} - EC_{PJ,y})$ (MWh)	$EF_{CO_2}$ (tCO <sub>2</sub> e/MWh)
2015	29,381	29,031	2,009	3,920	0.6018
Total	29,381				

$$MD_y = LFG_{burnt,y} \times W_{CH_4,y} \times D_{CH_4} \times GWP_{CH_4}$$

Where:

- $LFG_{burnt,y}$  Landfill gas flared or used as fuel in the year "y" (Nm<sup>3</sup>)
- $W_{CH_4,y}$  Density of methane at the temperature and pressure of the landfill gas<sup>5</sup>
- $D_{CH_4}$  Methane content in landfill gas in the year "y"
- $GWP_{CH_4}$  Global warming potential of CH<sub>4</sub>

## • Generator #1

Period	$MD_y$ (tCO <sub>2</sub> e)	$LFG_{burnt,y}$ (Nm <sup>3</sup> )	$W_{CH_4,y}$ (%)	$D_{CH_4}$ (tonCH <sub>4</sub> /Nm <sup>3</sup> CH <sub>4</sub> )	$GWP_{CH_4}$
2015	20,140	2,507,440	44.8%	0.0007168	25
Total	20,140				

## • Generator #2

Period	$MD_y$ (tCO <sub>2</sub> e)	$LFG_{burnt,y}$ (Nm <sup>3</sup> )	$W_{CH_4,y}$ (%)	$D_{CH_4}$ (tonCH <sub>4</sub> /Nm <sup>3</sup> CH <sub>4</sub> )	$GWP_{CH_4}$
2015	29,031	3,614,430	44,8	0.0007168	25
Total	29,031				

$$MD_{reg,y} = MD_y \times AF_y$$

Where:

- $AF_y$  Adjustment factor for year y

Period	$MD_{reg,y}$ (tCO <sub>2</sub> e)	$MD_y$ (tCO <sub>2</sub> e)	$AF$ (%)
2015	3,403	49,170	6.92%

Total	3,403	
-------	-------	--

$$AF_y = \epsilon_{BL} / \epsilon_{PR,1}$$

Where;

$\epsilon_{BL}$  Destruction efficiency of the baseline system(fraction)  
 $\epsilon_{PR,1}$  Destruction efficiency of the system used in the project activity that will remain fixed for the whole crediting period(fraction)

AF	$\epsilon_{BL}$	$\epsilon_{PR,1}$
6.92%	5.2%	75%

## 2. Emission reduction

$$ER_y = MD_y - MD_{reg,y} + (EC_{BL,y} - EC_{PJ,y}) \times EF_{CO_2} - PE_y - Leakage$$

Where:

$MD_y$  Methane captured and destroyed by the project activity in the year “y”(tCO<sub>2</sub>e)  
 $MD_{reg,y}$  Methane emissions that would be captured and destroyed to comply with national or local safety requirement or legal regulations in the year “y” (tCO<sub>2</sub>e)  
 $EC_{BL,y}$  Total amount of electricity exported to the grid by the project activity in the year y (MWh)  
 $EC_{PJ,y}$  Electricity supplied from the grid for the project activity in the year y (MWh)  
 $EF_{CO_2}$  CO<sub>2</sub> Emission Factor in year y; tCO<sub>2</sub>e/MWh.  $EF_{CO_2}$  value corresponds to  $EF_{grid,CM,y}$   
 $PE_y$  Project emissions in year y (tCO<sub>2</sub>e/yr)  
 Leakage If the methane recovery technology is equipment transferred from another activity or if the existing equipment is transferred to another activity, leakage effects are to be considered. The project leakage is zero.

## E.2. Calculation of project emissions or actual net GHG removals by sinks

>>

As the project activity is not supplied any electricity from (an) off-grid fossil fuel fired captive power plant(s) or not used any fossil fuel during the activity, project emissions not to be calculated.

$$PE_y = PE_{EC,y} + PE_{FC,j,y}$$

Where:

$PE_{EC,y}$  Project emissions from the electricity generated by (an) off-grid fossil fuel fired captive power plant(s). The project emissions from electricity consumption ( $PE_{EC,y}$ ) will be calculated following the latest version of “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”.  
 $PE_{FC,j,y}$  Project emissions from fossil fuel combustion in process *j* for the project activity during the year *y* The project emissions from fossil fuel combustion ( $PE_{FC,j,y}$ ) will be calculated following the latest version of “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”.

$$PE_y = 0$$

## E.3. Calculation of leakage

>>

As the methane recovery technology is not equipment transferred from another activity, leakage is not to be considered.

$$LE_y = 0$$

**E.4. Summary of calculation of emission reductions or net GHG removals by sinks**

Item	Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (t CO <sub>2</sub> e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
<b>Total</b>	49,830	0	0	0	49,830	49,830

**E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD**

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	30,565tCO <sub>2</sub> e	49,830tCO <sub>2</sub> e

**E.6. Remarks on difference from estimated value in registered PDD**

&gt;&gt;

The actual amount of emission reduction in the monitoring period (From 01 Jan. 2015 to 31 Dec. 2015) are 49,830tCO<sub>2</sub>e, which are about 163% more than estimated in the PDD (30,565tCO<sub>2</sub>e).

This is because that the proportion of organic matter is higher than expected at the time of registration of PDD. Furthermore, the efficiency of collection from waste land is better than expected at the time of registration of PDD. This is due that management system of LFG facilities is doing well.

## Appendix 1. Contact information of project participants and responsible persons/ entities

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	Gwangju City
<b>Street/P.O. Box</b>	Naebangro 111
<b>Building</b>	City hall
<b>City</b>	Gwangju City
<b>State/region</b>	
<b>Postcode</b>	
<b>Country</b>	Republic of Korea
<b>Telephone</b>	+81-62-613-4331
<b>Fax</b>	
<b>E-mail</b>	<a href="mailto:gjcity@gwangju.co.kr">gjcity@gwangju.co.kr</a>
<b>Website</b>	<a href="http://www.gwangju.go.kr">http://www.gwangju.go.kr</a>
<b>Contact person</b>	
<b>Title</b>	Mayor
<b>Salutation</b>	Mr.
<b>Last name</b>	Yoon
<b>Middle name</b>	
<b>First name</b>	Jang-Hyun
<b>Department</b>	
<b>Mobile</b>	
<b>Direct fax</b>	
<b>Direct tel.</b>	+82-62-613-4331
<b>Personal e-mail</b>	<a href="mailto:horse@korea.kr">horse@korea.kr</a>

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	Environmental Corporation of Gwangju
<b>Street/P.O. Box</b>	79, Cheonbyeonaha-ro, Seo-gu
<b>Building</b>	
<b>City</b>	Gwangju City
<b>State/region</b>	
<b>Postcode</b>	
<b>Country</b>	Republic of Korea
<b>Telephone</b>	+82-62-603-5206
<b>Fax</b>	+82-62-603-5678
<b>E-mail</b>	
<b>Website</b>	www.eco-g.or.kr
<b>Contact person</b>	
<b>Title</b>	Chief director
<b>Salutation</b>	Mr.
<b>Last name</b>	Park
<b>Middle name</b>	
<b>First name</b>	Hwa-gang
<b>Department</b>	
<b>Mobile</b>	
<b>Direct fax</b>	
<b>Direct tel.</b>	+82-62-603-5606
<b>Personal e-mail</b>	signing1@naver.com

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	PANAX ENERGY Co., Ltd
<b>Street/P.O. Box</b>	183, Geumsa-ro, Geumjeong-gu
<b>Building</b>	
<b>City</b>	Busan-si
<b>State/region</b>	
<b>Postcode</b>	
<b>Country</b>	Republic of Korea
<b>Telephone</b>	+82-62-675-0277
<b>Fax</b>	+82-62-676-0277
<b>E-mail</b>	
<b>Website</b>	www.panaxenergy.co.kr
<b>Contact person</b>	
<b>Title</b>	CEO
<b>Salutation</b>	Mr.
<b>Last name</b>	Kim
<b>Middle name</b>	
<b>First name</b>	Hak-Sun
<b>Department</b>	
<b>Mobile</b>	
<b>Direct fax</b>	
<b>Direct tel.</b>	+82-62-675-0277
<b>Personal e-mail</b>	jhlee73@panaxenergy.co.kr

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	Ecoeye Co. Ltd.
<b>Street/P.O. Box</b>	70 Dusan-ro, Geumcheon-gu
<b>Building</b>	1503~1504 Tower B, Hyundai Knowledge Industrial Center
<b>City</b>	Seoul City
<b>State/region</b>	
<b>Postcode</b>	153-813
<b>Country</b>	Republic of Korea
<b>Telephone</b>	+82-2-6480-7300
<b>Fax</b>	+82-2-6480-7398
<b>E-mail</b>	
<b>Website</b>	<a href="http://www.ecoeye.com">http://www.ecoeye.com</a>
<b>Contact person</b>	
<b>Title</b>	CEO
<b>Salutation</b>	Mr.
<b>Last name</b>	Jeon
<b>Middle name</b>	
<b>First name</b>	Jong Soo
<b>Department</b>	
<b>Mobile</b>	
<b>Direct fax</b>	+82-2-6480-7398
<b>Direct tel.</b>	+82-2-6480-7300
<b>Personal e-mail</b>	smilef84@ecoeye.com