THE GOLD STANDARD:
Project Design Document for Gold Standard Voluntary Offset projects

(GS-VER-PDD)

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Explanatory information on how to complete the PDD and how to obtain Gold Standard registration can be found in the project developer's manual available on the Gold Standard website.

This template of the PDD is applicable for micro-, small- and large-scale projects. Note that the shaded boxes present information on the Gold Standard VER project development procedures. Project developers should delete these shaded boxes when preparing their PDD.

VOLUNTARY OFFSET PROJECTS

PROJECT DESIGN DOCUMENT FORM (GS-VER-PDD)
Version 01 - in effect as of: January 2006)

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Annexes

SECTION A. General description of project activity

A.1 Title of the project activity

Title: Suzhou Qizi Mountain Landfill Gas Recovery Project
Version: 1.0
Date: 29/09/2015

A.2. Description of the project activity

Summary

The Suzhou Qizi Mountain Landfill Gas Recovery Project, which is developed by Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd., is located at Qizi Mountain Landfill, Suzhou, Jiangsu Province, China. The proposed project applies for Gold Standard VER. The purpose of the proposed project is to utilize landfill gas (LFG) for electricity generation It is a combination project including LFG collection, LFG processing system and electricity generation. LFG collected will be used for electricity generation with internal combustion engines and generators.

There are 4 units in the proposed project. Each unit has an installation capacity of 1.25 MW. Power generation by proposed project will be supplied to East China Power Grid. These 4 units are separated into two phases. For each phase, there is a respective processing system, whose description is in the following context. Both of phases share a landfill gas collection system, which could guarantee the proper operation of these four units. The first stage, which is not the same as the two phases of the proposed project, of landfill site (15m-80m above sea level) will be closed in 2008, with 15 years operation period. The second stage of landfill gas will be set up vertically above the the first phase, with 15 years operation period as well. During the first crediting period, the project is expected to collect 4584.6 tonnes CH4 per year on average. The exported electricity is estimated to be 23,963 MWh a year on average. The electricity generated will replace equivalent amount of electricity from East China Power Grid. In absence of the project, equivalent amount of electricity exported to the grid by the proposed project would have otherwise been supplied by East China Power Grid. Greenhouse gas (GHG) emissions will be reduced by avoiding CO2 emissions from those fuel-based power plants connected to the grid and by avoiding GHG emissions from releasing LFG into atmosphere at the landfill site. The expected average annual emission reductions are 82,233 tCO2e during the second crediting period. Emission reductions from steam generation with waste heat are not counted for a conservative approach.

The proposed project is owned by Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd.. The controlling company, China Everbright International Limited, is a company listed in Hong Kong Stock Exchange. Early in 2006, the project failed to apply for CDM LoA from Chinese DNA due to China's not issuing CDM LoAs to Hong Kong listed companies. Hence the project owner continued to develop the project as a Gold Standard VER project with South Pole Carbon Asset Management Ltd.

Technology to be employed by the project activity

Most of the equipment, which is technically very advanced, is imported from Germany and other foreign countries. Therefore, the project activity introduces new technology to the host country. The process works as follows:

Landfill gas collection system

Through an extraction system, the landfill gas is extracted from the landfill site. The extraction technology applied will basically consist of vertical wells, collectors and piping.

- Vertical wells drilled into the waste to extract the LFG with function of extracting pipe;
- The gas extracting pipe consists of pipes that connect groups of gas wells to the manifolds, and each pipe was drilled with loophole to maximize gas collection. The manifolds are primary connected into a main pipe and then into the main header pipe;
- The main header pipe designed with HDPE to prevent air and transfer the LFG to the processing system,

Processing system
For the extracting LFG containing water and impurities, it will be pre-treated by the processing system. This includes:

- Water segregator removes the moisture;
- A high efficiency particular air filter removes the impurities;
- The condensate separator is equipped to ensure that the concentration of methane in the LFG remains high;
- The pressure regulator is installed between processing system and power generation system to make sure the gas flow has a stable pressure.
- The pre-treated LFG will finally fulfill the operation requirements of power generator.

Energy generation system
In the power generator system, the LFG is combusted to produce heat energy, which is converted into electric energy. There are 4 Container engine units installed to generate electricity and the total installed capacity is 5MW. Then the generated electricity is transferred to the distribution and controlling system. Finally it is connected Suzhou City local power grid, which is part of East China Power Grid (ECPG).

Table A.1 Details of electricity generating system

Manufacture	Deutz Power Systems GmhH&Co.,KG
Name	Engine
Type	TBG620V16K
Installed capacity	1294KW
Technical description	Modern stationary 4-stroke Otto gas engine with lean-mix conbustion; 16 cylinder V-engine

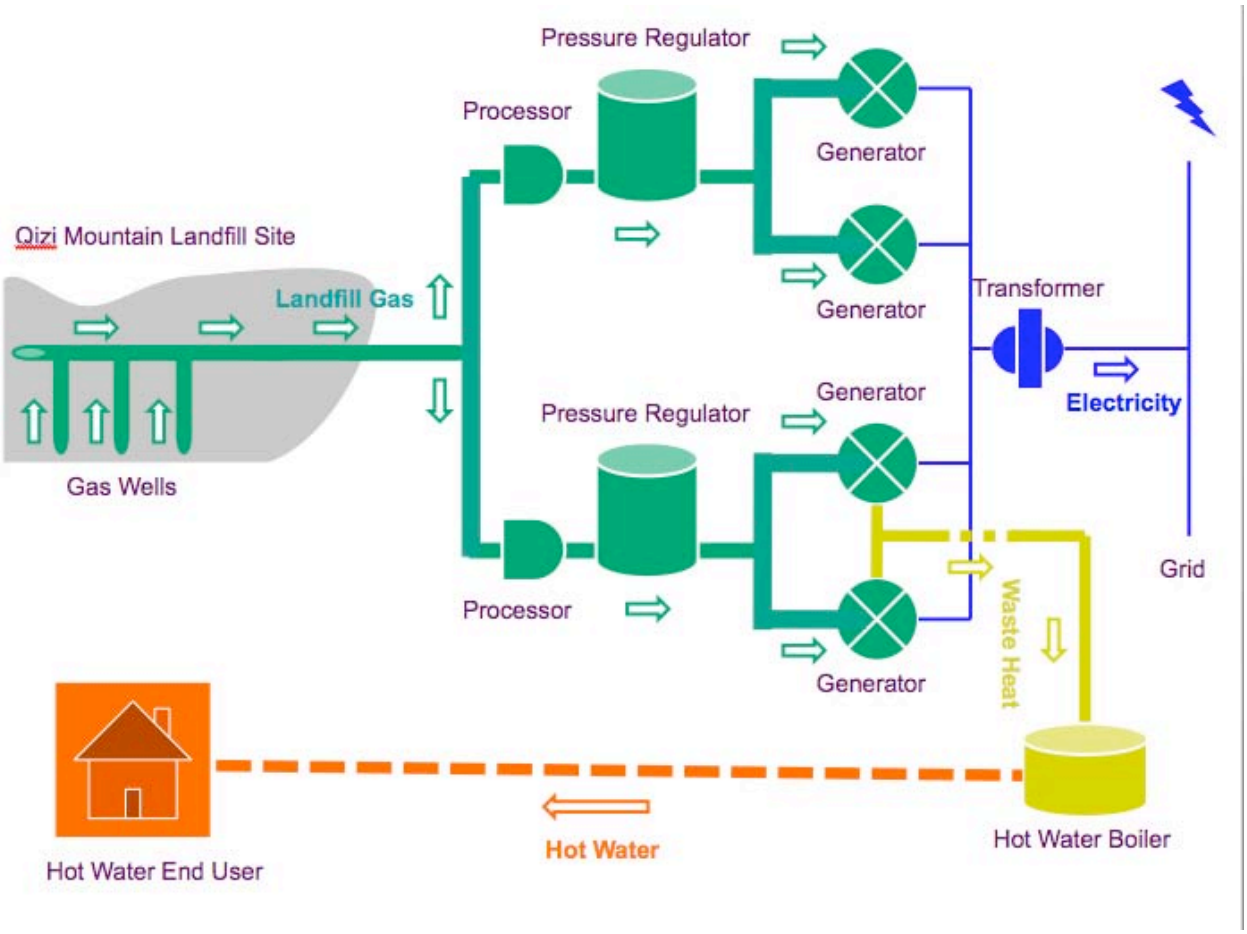
Manufacture	AVK Deutschland GmbH & Co.KG
Name	Generator
Type	DIG 120 i/4
Installed capacity	1250KW
Technical description	Rotary current internal pole synchronous generator. Three phase, brushless, self-exciting, self regulating

Manufacture	Deutz Power Systems GmhH&Co.,KG
Name	TEM EVO System
Technical description	The DEUTZ Total Electronic Management (TEM) system includes the control and monitoring of all functions of a gas engine auxiliary drive in one unit.

In addition, there is a waste heat recovery system connected with the generators in the 2nd phase. The gas vented from generators with 455 °C temperature is recovered to heat water in hot water boiler. Therefore, it is different from the utilization of LFG and heat generation from flaring. No LFG is intended to be used for heat generation. For the proposed project, this part of waste heat will not be calculated in the emission reduction.

Figure A.2 shows the process of the proposed project activity.

Fig A.2 Schematic Diagram of Suzhou Qizi Mountain Landfill Gas Recovery, electricity generation and hot water production



Contribution to sustainable development

The project activity contributes significantly to the region's sustainable development in the following ways:

- In recent years, China has experienced a huge increase in power consumption. Both public and private parties are struggling to meet the demand of electricity. The proposed project will help to bridge the gap between supply and demand of power in a sustainable manner on a regional and national level.

- Energy and resources will be saved by the utilization of a waste product to generate electricity. This is in accordance with the national and local industry policies. In China, more than 80% of total electricity is generated from coal-based power plants. With China being so heavily dependant on coal for its energy demand, this project carries environmental benefits to the country's air, soil and water sources. The project activity will replace the generation of fossil fueled power and reduce CO2, SOx and NOx emissions significantly, as well as mitigate the air pollution and its adverse impacts on human health. The proposed project will contribute in mitigating global warming and climate change by reducing anthropogenic emissions of greenhouse gas that would have otherwise happened in absence of the project activity.
- By utilizing the modern technology of landfill gas recovery, the proposed project will contribute in promoting advanced environmental-friendly technology in the solid waste treatment industry of China. The proposed project will improve the local environment by LFG recovery and processing system.
- The safety situation at the landfill site will be improved, since the combustible LFG will be properly collected and utilized for electricity generation.
- The proposed project activity will bring more employment opportunities for local people. The plant owner estimates that more than 54 people will be engaged in construction period of one year and there will be 20 people engaged on the plant operation on a regular basis.

Sustainable Development Assessment

The project is applying for Gold Standard certification. In order for the project to be eligible for the Gold Standard, the project activity is assessed against a matrix of sustainable development indicators.

Asterisk * marks the indicators that will be monitored in monitoring plan additionally to those monitored for ER calculation.

Component • Indicators	**Score** (-2 to +2)	**Rational**
Local / Regional / Global Environment		
• Water quality and quantity	0	The wastewater from proposed project will be properly treated. Therefore, no significant change comparing with baseline, in terms of water quality and quantity. Source: 1st EIA, page 18; 2nd EIA, page 32
• Air quality (emissions other than GHG)	+1*	Besides GHG emission reductions, implementation of the project also has other advantages over baseline scenario in terms of impacts on air quality. By installation of the landfill gas processing unit, the emissions of H2S, NH3 and other gases will be prevented. Source: 1st FSR, page 37; 1st EIA, page 18; 2nd EIA, page 32; Report of Environment Protection for Check & Accept 1st Phase.
• Other pollutants (including, where relevant, toxicity, radioactivity, POPs, stratospheric ozone layer depleting gases)	0	No significant change comparing with baseline. Source: 1st EIA, page 3; Report of Environment Protection for Check & Accept 1st Phase.
• Soil condition (quality and quantity)	0	Construction of the project's units I and II are on vacant land, which is 800m far from the landfill site. The construction of the project's units III and IV are on vacant land, which is 1000m far from the landfill site. Implementation of the proposed project does not lead to soil pollution. As compared to the baseline, there is no significant change in soil condition, in quality and quantity. Source: 1st EIA, page 14; 2nd EIA, page 23; Report of Environment Protection for Check & Accept 1st Phase.
• Biodiversity (species and habitat conservation)	0	As compared to the baseline, no significant change in biodiversity is expected since the project only takes place within the site boundary. Source: 1st EIA, page 14 & 16; 2nd EIA, page 23; Report of Environment Protection for Check & Accept 1st Phase.
Sub Total	**+1**	
Social Sustainability and Development		
• Employment (including job quality, fulfilment of labour standards)	+1*	The project leads to employment generation in the landfill gas recovery itself and in the implementation as a GS VER project. These jobs do have a significant impact on job quality since they include technically advanced knowledge

		mostly. It is the first time local employees get to know the concept of carbon emissions. Project manager and operators in the plant will have a chance to learn new knowledge of sophisticated monitoring equipments and computer operations. Source: 2nd FSR page 6 and 7
• Livelihood of the poor (including poverty alleviation, distributional equity, and access to essential services)	+1*	The project will generate additional income to workers involved. Source: 1st FSR page 43
• Access to energy services	+1	Suzhou City has been in lack of power for years due to its fast economy development. The project activity adds new capacity to grid and helps improving electricity availability. Power generation from the project activity will be monitored and reported to verifier. Source: Xinhua News, http://www.js.xinhuanet.com/xin_wen_zhong_xin/2008-07/03/content_13713041.htm
• Human and institutional capacity (including empowerment, education, involvement, gender)	+1*	People involved will be trained for operation of the power generation facility and knowledge of Kyoto Protocol. This is the first time local people are organised to work on a project under the Kyoto Protocol. Success of the project will contribute a team with experience of landfill gas recovery technology. In addition, there are five opportunities of overseas training for the local officials every year. Source: 1st FSR page 41
Sub Total	**+4**	
Economic and Technological Development		
• Employment (numbers)	+2*	The project activity generates employment opportunities during the project's construction and operation period. Operation of the project needs around two dozen people. Source: 1st FSR page 43; 2nd FSR page 41
• Balance of payments (sustainability)	+1	Implementation of the project activity involves import of advanced engines and equipments from Germany and other countries, which leads to payments in foreign currency equivalent to USD 3,980,500. This will slightly contribute to the relief of trade surplus pressure of Jiangsu province. Source: 1st FSR page 40; 2nd FSR page 44
• Technological self reliance (including project replicability, hard currency liability, institutional capacity, technology transfer)	+1	Implementation of the proposed project involves imports of advanced generators and equipments from Germany and other countries. The project showcases an innovative way to use landfill gas for power generation in solid waste treatment industry of China. Landfill is a derivate of modern city life. China still has a lot to improve in urban planning. Implementation of the proposed project will encourage more similar practice and hence results in improvement in landfill management.

		Source: 1st FSR page 5; 2nd FSR page 13
Sub Total	**+4**	
Total	**+9**	

A.3. Project participants:

Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (host)	Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd.	No
Switzerland	South Pole Carbon Asset Management Ltd. (VER buyer, private entity)	No

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

A.4.1.1. Host Party(ies):

People's Republic of China

A.4.1.2. Region/State/Province etc.:

Jiangsu Province

A.4.1.3. City/Town/Community etc:

Qizi Mountain, Mudu County, Wuzhong District, Suzhou City

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity:

The project is located on Qizi Mountain, Mudu County, Wuzhong District, Suzhou City, Jiangshu Province, P.R.China. It is 13km far from the centre of Suzhou City. The exact location of the project is 31°14′15″N 120°33′9″E. A map indicating the location of the project site is provided in Fig A.1:

Fig A.1. Location of the proposed project

A.4.2. Size of the project:

According to Gold Standard Rules and Procedures Updates and Clarifications, the new threshold is 60'000 VERs p.a. for SSC projects. Therefore, it is counted as a large-scale project.

A.4.3. Category(ies) of project activity:

The proposed project falls under following category of Gold Standard:
Renewable Energy (Electricity, Heat): Ecologically sound biomass, biogas and liquid biofuels.
The specific technology falls under "A.1.1.2.1 Landfill gas" of the GS eligible technologies

Per GS rules, for LFG-to-Energy projects, a minimal utilization threshold for methane usage of 65% averaged over one year has been set. Besides electricity generation, there is no other treatment for LFG utilization. Therefore, utilization threshold for methane usage of at nearly 100% averaged over one year has been set is collected methane.

The electricity generation from the proposed project will be finally sent to the East China Power Grid. The monitoring plan of LFG projects cover monitoring of legislative development and monitoring of electricity generation.
The electricity generation from the proposed project will be finally sent to the East China Power Grid.

A.4.4. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed project activity, including why the emission reductions would not occur in the absence of the proposed project activity, taking into account national and/or sectoral policies and circumstances:

The proposed GS VER project activity is unlikely to be financially attractive, and the detailed explanation refers to B.3. To make the project financially feasible, the project owner decided to develop it as a CDM project under the Kyoto protocol. Early in 2006, the project failed to apply for CDM LoA from Chinese DNA due to China's not issuing CDM LoAs to Hong Kong listed companies, which is the reason why the project was continued to be developed as a VER project.

The proposed project has already met the financial barriers before construction. In addition, the project activity does not use Official Development Assistance (ODA) funding, directly or indirectly.

The current situation is that LFG is released into the atmosphere directly. It is common practice in Suzhou Province and China and is not against any EB decisions on national and/or sectoral policies and regulations.

A.4.4.1. Estimated amount of emission reductions over the crediting period:

The specific project activity applies for renewable crediting periods, and the estimation of the emission reductions during the second crediting period amount to 560,476 tCO_2e.

SECTION B. Application of a baseline methodology

B.1. Title and reference of the approved baseline methodology applied to the project activity:

The approved large-scale consolidated methodology ACM0001 *"Flaring or use of landfill gas" (*Version 15.0*)* is applied to the project activity.

In accordance with the methodology, the project makes use of the following tools:
"Tool to calculate the emission factor for an electricity system" (Version 04.0)
"Tool for the demonstration and assessment of additionality" (Version 05.2)
"Combined tool to identify the baseline scenario and demonstrate additionality" (Version 06.0)

For more information about the methodology and tools please refer to the website:
http://cdm.unfccc.int/methodologies/PAmethodologies/approved

B.1.1. Justification of the choice of the methodology and why it is applicable to the project activity:

The methodology referenced above is applicable to this project activity because the following criteria are met:

- The project activity installed a new LFG capture system in an existing SWDS where no LFG capture system was installed prior to the implementation of the project activity;
- The project activity uses the captured LFG for generating electricity;
- No organic waste would be recycled in the absence of the project activity;
- In the absence of the project activity, LFG would be released into the atmosphere, which complies with regulations;
- LGF collected is used for electricity generation with internal combustion engines and generators, and the electricity generated is supplied to East China Power Grid;
- The methodology is not in combination with other approved methodologies;
- The management of the SWDS in the project activity is not changed during the crediting period compared to the situation prior to the implementation of the project activity.

B.2. Description of how the methodology is applied in the context of the project activity:

In line with the methodology ACM0001 (Version 15.0), procedures according to the "Combined tool to identify the baseline scenario and demonstrate additionality" Version 06.0 are applied here to select the most plausible baseline scenario with the following steps:

Step 0: Demonstration whether the proposed project activity is the First-of-its-kind

This step is not applied and the proposed project activity is not the First-of-its-kind.

Step 1: Identification of alternative scenarios

Step 1a: Define alternative scenarios to the proposed VER project activity

In this step, the following baseline alternatives for the destruction of LFG are taken into consideration and are discussed in following Table B.1 below:

Table B.1 Discussion of Alternatives for the destruction of LFG

ID	Alternatives from ACM0001	Justification/Explanation	Plausible/ Not
LFG1	The project activity implemented without being registered as a VER project activity (i.e. capture and flaring or use of LFG).	The proposed project activity not undertaken as a emission reduction project is not against any laws or regulations of China. According to the *Feasibility Study Report*, the project activity is technically feasible (although poses poor economical factors). Hence, LFG1 is a plausible alternative.	Y
LFG2	Atmospheric release of the LFG or capture of LFG and destruction through flaring to comply with regulations or contractual requirements, to address safety and odour concerns, or for other reasons.	Landfill gas being released to the atmosphere was the actual situation before the implementation of the project activity. This is the original design of the landfill and the emission of landfill gas meets the national environmental standards. The original design documents and EIA report of the plant with approval will be shown to DOE during site validation upon request. Hence, LFG2 is a plausible alternative.	Y
LFG3	LFG generation is partially avoided because part of the organic fraction of the solid waste is recycled and not disposed in the SWDS.	The project activity is implemented at a landfill site whose purpose if the final disposition of waste through adopting of landfilling practices and techniques. With or without the project activity, no recycling of the organic fraction of the waste is expected to occur. Thus this scenario is excluded.	N
LFG4	LFG generation is partially avoided because part of the organic fraction of the solid waste is treated aerobically and not disposed in the SWDS.	The project activity is implemented at a landfill site whose purpose if the final disposition of waste through adopting of landfilling practices and techniques. With or without the project activity, no aerobic treatment of the organic fraction of the waste is expected to occur. Thus this scenario is excluded.	N
LFG5	LFG generation is partially avoided because part of the organic fraction of the solid waste is incinerated and not disposed in the SWDS.	The project activity is implemented at a landfill site whose purpose if the final disposition of waste through adopting of landfilling practices and techniques. With or without the project activity, no incineration of the organic fraction of the waste is expected to occur. Thus this scenario is excluded.	N

In addition to the alternative baseline scenarios identified for the destruction of LFG, alternative scenarios for the use of LFG for electricity generation shall also be identified and are discussed below in Table B.2:

Table B.2 Discussion of Alternatives for the use of LFG for Electricity Generation

ID	Alternatives from ACM0001	Justification/Explanation	Plausible/ Not
E1	Electricity generation from LFG, undertaken without being registered as VER project activity.	The proposed project activity not undertaken as an emission reduction project is not against any laws or regulations of China. According to the *Feasibility Study Report*, the project activity is technically feasible (although poses poor economical factors). Hence, E1 is a plausible alternative.	Y
E2	Electricity generation in existing or new renewable or fossil fuel based captive power plant(s).	This alternative is not feasible, technically or economically. As common knowledge, Jiangsu Province is not rich of renewable energy source. According to China Electric Power Year Book 2007, in 2006 Hydropower wind power and other renewable power generation's installation capacity is 298 MW, accounts only 0.57% of total capacity of Jiangsu. Among this limited renewable energy generation: - Hydropower is already fully developed. Installation capacity of 2006 is 136MW, even dropped 4.9% from the level of previous year; - Wind power reached 15MW, but most distributes in coastal area, far from Suzhou city. Moreover, as common knowledge, wind power is economically unattractive in comparison with coal-fired power plant. - Biomass and other renewable power generation capacity is 147 MWh. Biomass is not economically attractive in comparison with coal-fired power plant either, not to mention a biomass plant with a capacity as little as 5 MW, the equivalent capacity as proposed project. There is no existing fossil fuel based captive plant or identified plant that can directly provide electricity to Suzhou Landfill Site. According to Chinese regulations, coal-fired power plants with capacity less than 135MW are prohibited for construction in the areas covered by the large grids such as provincial grids, and the fossil fuel power units with less than 100MW is strictly regulated for installation[1]. Considering that the capacity of the proposed project activity is 5 MW, a new fossil fuel based captive plant with equivalent amount of capacity is now allowed in China.	N

[1] This regulation has been valid since 2002, the notification is available on the Internet: http://www.gov.cn/gongbao/content/2002/content_61480.htm.

		As a conclusion, E2 is not plausible.	
E3	Electricity generation in existing and/or new grid-connected power plants.	This is the current situation. The relevant grid is East China Power Grid. E3 is plausible.	Y

Heat generation scenarios using LFG collected at the landfill as fuel are not part of the project activity as no LFG is intended to be used for heat generation. Therefore, scenarios H1 to H7 are not considered on the present analysis. This is in accordance with ACM0001 (Version 15.0).

Supply of LFG to a natural gas distribution network is not considered as part of the project activity either. There is no natural gas distribution network at the landfill. Moreover, this type of utilization for collected LFG is not part of the project activity either, therefore, not considered on the present analysis. This is in accordance with ACM0001 (Version 15.0).

Based on discussion above, the plausible alternatives are:

- LFG1: The project activity implemented without being registered as a VER project activity (i.e. capture and flaring or use of LFG.
- LFG2: Atmospheric release of the LFG or capture of LFG and destruction through flaring to comply with regulations or contractual requirements, to address safety and odour concerns, or for other reasons.
- E1: Electricity generation from LFG, undertaken without being registered as VER project activity.
- E3: Electricity generation in existing and/or new grid-connected power plants.

Outcome of Step 1a: The realistic and credible alternative scenarios to the project activity are LFG1, LFG2, E1 and E3.

Step 1b: Consistency with mandatory applicable laws and regulations

According to the China "National Action Plan for Recovery and Utilization of Landfill Gas (12/2001) the situation is as follows:

"At present, in China the municipal refuse is disposed using the technology of traditional landfill, without consideration of recovery and utilization of landfill gas. Almost all landfills do not have landfill gas recovery systems, except a few newly built landfills, and the landfill gas is emitted to the atmosphere openly...About 10 sanitary landfills have been set up in a few cities. However, there was no landfill gas recovery system in these sanitary landfills. In 1997, the first system of landfill gas recovery and utilization in China was built is Hangzhou, Zhejiang Province, and the landfill gas is utilized for power generation. However, there is no mechanism and policy to guide the whole country to have landfill gas recovery and utilization systems... Therefore it is still a blank paper for landfill management to establish landfill gas recovery and utilization systems."

According to the description above, the release of LFG directly into the atmosphere without any recovery or utilization and the alternative LFG2 is in compliance with national laws and regulations. Therefore, LFG2 is not excluded from this step.
For LFG1, E1 and E3, they are all in compliance with all mandatory applicable legal and regulatory requirements in China.

Therefore, there are four alternatives related to destruction of LFG and power generation still remaining: LFG1, LFG2, E1 and E3. And the combination of possible baseline options and scenarios are summarized below:

		E1	E3
Combination 1	LFG1	Applicable	Not applicable: If LFG is utilized to generate electricity and replace the electricity from power grid, it is conflict with the alternative of E3.
Combination 2	LFG2	Not applicable: Under LFG2 alternative, there is no power generated from LFG. E1 is electricity generation from LFG. So LFG2 is conflict with E1.	Applicable

According to the analysis in the table above, the plausible combinations of baseline scenario alternatives are:

- Alternative B1 (LFG1+E1): Proposed project activity not undertaken as a VER project activity.
- Alternative B2 (LFG2+E3): Atmospheric release of LFG; equivalent amount of electricity is supplied from East China Power Grid.

Alternative B2 is also continuation of current situation before the implementation of the proposed project activity.

Outcome of Step 1b: Therefore, common practice within the Host Country remains venting. Alternative scenarios B1 and B2 both are in compliance with requirements of EB and the Gold Standard.

Step 2: Barrier analysis

The proposed VER project activity is unlikely to be the most financially/economically attractive after the analysis in section B.3, so this step is not applicable.

Step 3: Investment analysis

The objective of Step 3 is to compare the economic or financial attractiveness of the alternative scenarios remaining after the previous step by conducting an investment analysis. As per the analysis above, B1 (LFG1+E1) and B2 (LFG2+E3) are two credible and realistic alternative scenarios. Please refer to details of the investment analysis in section B.3.
Based on the analysis, the combination alternative scenario B1 (LFG1+E1) is financially unattractive without the revenue of VER.

Outcome of Step 3: The investment analysis shows a clear conclusion that the alternative B2 (LFG2+E3) is the baseline scenario, this is, to release the LFG into atmosphere directly and the equivalent amount of electricity is supplied from East China Power Grid.

Step 4: Common practice analysis

Please refer to details of the common practice analysis in section B.3. Based on the analysis, the proposed project activity is not regarded as common practice.

As a result of the analysis in preceding steps, only one credible and plausible scenario remains, which is:

Table B.3 Plausible Baseline Scenario

ID	Baseline Option			Description of Combinations
	Destruction of LFG	Power Generation	Heat Generation	
B2	LFG2	E3	/	Atmospheric release of the LFG; equivalent amount of electricity is supplied from East China Power Grid.

B.3. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered VER project activity:

3.3.1 Previously announced project screen

The project owner was in an early stage aware about the potential of carbon revenues to support the project activity. Project owner has fully considered the revenues from CDM when making the decision to implement the project activity. The main events in the development of the project are shown below:

Table B.4 Overview of key events in the development of the Stage I of the Project

November 26th, 2005	Start of construction 1st Stage
June 20th, 2006—end of 2006	Test period 1st Stage
October 12th, 2006	The contract of CDM developing was signed with a CDM developer
December 15th, 2006	Initial Stakeholder Consultation of CDM held
January 1st, 2007	Start of operation 1st Stage

Table B.5 Overview of key events in the development of the Stage II of the Project

August 2007	Start of construction 2nd Stage
April 10th, 2008	Gold Standard Initial Stakeholder Consultation held
May 1st, 2008—now	Test period 2nd Stage, only with the third generator
September, 2008	Planned start date of construction of 4th generator

The proposed project is owned by Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd. The controlling company, China Everbright International Limited, is a company listed in Hong Kong Stock Exchange. Stage I of the project was initially developed as a CDM project. Early in 2006, the project got stuck in the CDM process due to China's being reluctant to issue CDM LoAs to Hong Kong listed companies. Hence the Project owner needed to receive the revenues from alternative greenhouse gas reduction programmes and finally decided to implement a Gold Standard VER project with South Pole Carbon Asset Management Ltd. There was no public announcement of the project going ahead

without emission reductions for this proposed project. Revenues from emission reduction programmes were considered and discussed seriously and comprehensively in an early stage of feasibility study.

Therefore, the project participants here confirm that the proposed project has not been a public announcement of the project going ahead without it being a carbon offset project, prior to any payment being made for the implementation of the project.

ODA Additionality Screen
In order to meet the requirements of the Gold Standard, the project participants here confirm that the project activity does not use Official Development Assistance (ODA) funding, directly or indirectly.

A clear and transparent finance plan will be provided on request of DOE so the validator can assess whether the project financing includes ODA. This will be presented as a separate document, and remains in commercial confidence.

3.3.2 Additionality tool

As per ACM0001, the additionality of the project activity will be demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality" agreed by the CDM Executive Board. Version 05.2 of the tool is the latest one.

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

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

As stated in preceding section B.2, the realistic and credible options for destruction of LFG are LFG1 and LFG2; the realistic and credible options for electricity generation are E1 and E3. As a result, the plausible combinations of baseline scenario alternatives are:

- Alternative B1 (LFG1+E1): Proposed project activity not undertaken as a VER project activity.
- Alternative B2 (LFG2+E3): Atmospheric release of LFG; equivalent amount of electricity is supplied from East China Power Grid.

Alternative B2 is also continuation of current situation before the implementation of the proposed project activity.

Outcome of Sub-step 1a: The realistic and credible alternative scenarios to the project activity are scenario B1 and B2 stated above. Please refer to section B.2 for more details of options identification.

Sub-step 1b. Consistency with mandatory laws and regulations:

According to the China "National Action Plan for Recovery and Utilization of Landfill Gas (12/2001) the situation is as follows:

"At present, in China the municipal refuse is disposed using the technology of traditional landfill, without consideration of recovery and utilization of landfill gas. Almost all landfills do not have landfill gas recovery systems, except a few newly built landfills, and the landfill gas is emitted to the atmosphere openly...About 10 sanitary landfills have been set up in a few cities. However, there was no landfill gas

recovery system in these sanitary landfills. In 1997, the first system of landfill gas recovery and utilization in China was built is Hangzhou, Zhejiang Province, and the landfill gas is utilized for power generation. However, there is no mechanism and policy to guide the whole country to have landfill gas recovery and utilization systems... Therefore it is still a blank paper for landfill management to establish landfill gas recovery and utilization systems."

Outcome of Sub-step 1b: Therefore, common practice within the Host Country remains venting. Alternative scenarios B1 and B2 both are in compliance with requirements of EB and the Gold Standard.

Step 2. Investment analysis

Investment analysis determines whether the proposed project activity is economically or financially less attractive than alternative B2, identified in step 1, without the revenue from the sale of emission reductions. To conduct the investment analysis, the PDD uses the following sub-steps:

Sub-step 2a. Determine appropriate analysis method

The "Tool for the Demonstration and Assessment of Additionality" provides three investment analysis methods for selection, which are simple cost analysis (Option I), investment comparison analysis (Option II) and benchmark analysis (Option III).

Besides the revenue from the GS VERs, the project activity does generate financial and economic benefits through sale of electricity and hot water. Therefore Option I "simple cost analysis" is not appropriate. Currently the plant owner has no more investment option other than the proposed project activity, hence Option II "investment comparison analysis" is not preferable; The official benchmark IRR is publicly available and has a value of 8%[2] in the waste incineration sector. Therefore, the benchmark analysis (Option III) is preferable. The PDD here applies Option III "benchmark analysis" to perform the investment analysis and demonstrate that the proposed project activity without GS VER revenues is not likely to be implemented.

Sub-step 2b – Option III. Benchmark Analysis

The proposed project is located in Suzhou Qizishan landfill site. Project owner's major business is incineration of waste to electricity generation. Hence the most reasonable benchmark is the one prepared for the waste to electricity generation project. In early 2005, the board of the parent company (Everbright Environmental Energy (Suzhou) Investment Co.Ltd.) met a predicament of investment. The company realized the potential revenue from the LFG utilization. However, the technology of LFG to energy was and is still very new and rare in China. There have been only several projects applying this kind of technology. For the project owner, lack of specialists and special experience for LFG recovery and utilization and the unstable amount of LFG recovery were among the problems they had to face. For each of the two phases, the IRR without revenues from emission reductions was below the benchmark of 8% at the point of investment decision.

As mentioned above, the applied benchmark is not exact for the LFG utilization project. In addition, with the consideration of the technical risks, the proposed project without the revenues from the sales of carbon credits is financially not attractive. After the failure of developing as a CDM project, the project

[2] The reference document is "The Economic Assessment Method and Parameters for Construction Projects (version 03)", which is published by Chinese National Development and Reform Commission and Ministry of Construction and clarifies different benchmarks for each field.

owner needed another revenue from carbon credits. Therefore the project owner is developing the proposed project as a GS VER project and considers the revenues from the sales of hot water to compensate price difference between CER and GS VER.

Sub-step 2c. Calculation and comparison of financial indicators:

The proposed project consists of four units. The first two units were designed in the first FSR. The third and forth units were designed in the second FSR based on a new electricity price and other revised parameters.

The project owner was developing stage I of the proposed project as a CDM project. The key figures and IRR without revenue from CERs for the first and second generators in the proposed project are listed in the following Table B.6

Table B.6 Key Financial figures and Project IRR without CERs Revenue for the First and Second Unit

Parameter	Unit	Value	Source
Total Investment	10,000 RMB	3015	1st FSR
Installation Capacity	MW	2.5	1st FSR
Annual Net Power Supply	MWh	15,840	1st FSR
Electricity Teriff	RMB/ kWh	0.636	Latest Power Purchase Agreement in 2008
Project Lifetime	Yr	18	1st FSR
Income Tax rate	%	24%	Tax document
IRR without CERs Revenue	%	5.31%	IRR calculation
IRR with CERs Revenue	%	14.32%	IRR calculation

The IRR for the first and second unit is 5.31%. Because of the uncertainty of the LFG collection for the electricity generation, the carbon credits are difficult to be estimated. However, even with a very conservative estimate, the IRR with CERs revenue is much higher than the one without CER revenues and compensates the risks associated with the project.

For the second stage of the proposed project the project owner tried to increase the profitability by selling hot water. However, the IRR again was below the benchmark. Therefore the project owner is developing the project as a Gold Standard VER project to overcome the benchmark and to secure the project against the high risks of uncertainty of the amount of gas collected.

The key figures and IRR without revenue from GS VERs for the third and fourth generators and hot water sales are listed in the following Table B.7.

Table B.7 Key Financial figures and Project IRR without GS VERs Revenue for the third and fourth Unit

Parameter	Unit	Value	Source
Total Investment	10,000 RMB	3555	2nd FSR
Price of Hot Water	RMB/m3	12	2nd FSR
Annual Quantity of Hot Water Sold	m3	61970	2nd FSR
Installation Capacity	MW	2.5	2nd FSR
Annual Net Power Supply	MWh	17,120	2nd FSR
Electricity Tariff (Before the	RMB/ kWh	0.636	Latest Power

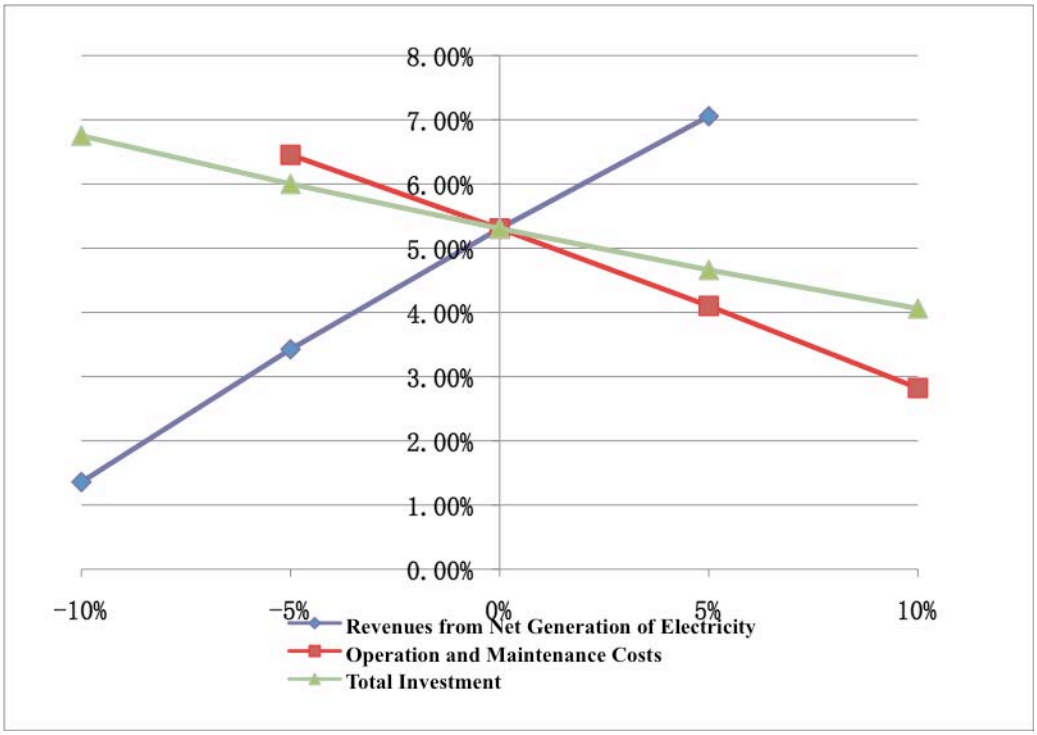
15th operation year)			Purchase Agreement
Electricity Tariff (Including and after the 15th operation year)	RMB/ kWh	0.386	2nd FSR
Project Lifetime	Yr	18	2nd FSR
Income Tax Rate	%	24%	Tax document
IRR without GS VERs Revenue	%	-2.26%	IRR calculation
IRR with GS VERs Revenue	%	3.61%	IRR calculation

Sub-step 2d. Sensitivity analysis:

Purpose of sensitivity analysis is to show whether the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions. The variables chosen for sensitivity analysis are total investment, cost of operation and maintenance (O&M) and revenues.

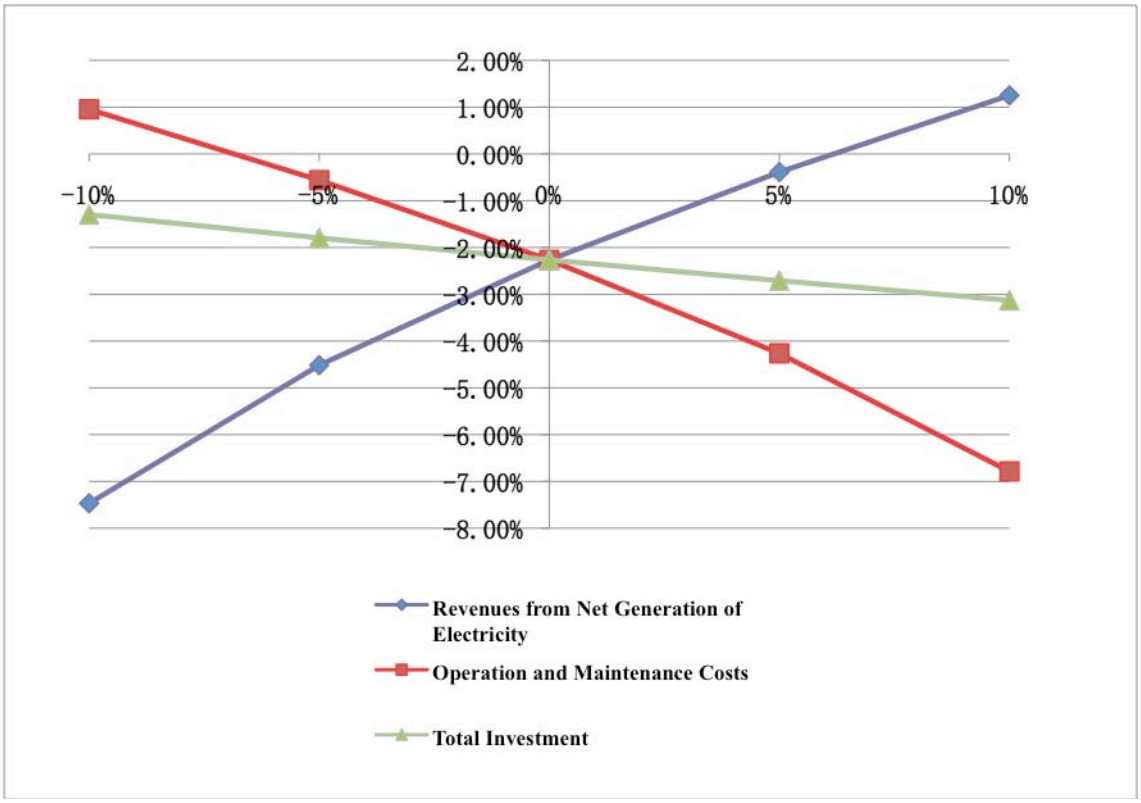
Variations in IRR driven from fluctuation of O&M cost and revenues are summarized in Figure B.1 and Table B.6 as following:

Figure B.1 Sensitivity Analysis of IRR for the First and Second Unit



Electricity tariff in the 1st phase FSR is 0.527 CNY/KWh while the actual electricity tariff in 2008 is 0.636 CNY/KWh. To be conservative, 0.636 CNY/KWh is used in IRR calculation. It is already very coservative. Therefore, it does't make sense to assume that the electricity tariff could be increased 10% in sensitivity analysis. Due to the increased inflation rate, salary and welfare of employees, the operation and maintenance costs have been increased in fact. Therefore, it does't make sense to assume that the operation and mainteanance costs could be decreaed 10% in sensitivity analysis.

Figure B.2 Sensitivity Analysis of IRR for the third and fourth Unit



It is not likely that the IRR can be increased because of the following reasons: Firstly, since the tendency of the total investment is increasing because of increasing material costs in China and most of the investment has been spent on the construction period, the investment is relatively fixed. Secondly, it is not possible to reduce the OM cost because of the increasing welfare and salary costs, the fixed amount of employees and relatively stable other costs. Thirdly, the electricity price already is extremely high for the proposed project. It is even higher than the price of imported electricity from the local grid. Finally, from the experience of similar projects in China it can be seen that the likelihood of lower gas output is higher than the likelihood of higher gas output.

Outcome of Step 2:

Since after the sensitivity analysis it is concluded that the proposed GS VER project activity is unlikely to be financially attractive without carbon revenues, step 3 of the additionality tool does not necessarily require a “barrier analysis”.

Step 3.Barrier analysis

Sub-step 3a.Identify barriers that would prevent the implementation of this type of proposed Project Activity

In the case of this project, there are several barriers existing in the process of developing and operating of the Project as follows.

Investment barrier:

Why is the LFG collection and utilization business not attractive for investors in China? An expert analysis shows that there exist three main barriers: the first barrier lies in the system, i.e. the functions of the government department in charge of environment sanitation administration and the enterprises in charge of waste collection and landfill management were disjoined, thus there is no base for industrialized operation; the second barrier lies in policy; i.e., all the municipal waste treatment cost was born only by the city government, and most of cities were poor in financial ressources and lack of ability for environment pollution treatment in MSW landfills; the third barrier lies in technology; i.e., there is very little experience in landfill gas collection machine manufacturing, installation and operation in China.

These factors lead to an investment barrier that was obstructing the implementation of the Project Activity.

Technological barrier:

Because of lack of specialists and special expertise for LFG recovery and utilization, most of LFG equipment and technology used in proposed project was produced abroad, which leads to problems during the maintenance of the equipments and higher fees.

Prevailing practice barrier:

At present, in China the municipal refuse is disposed using the technology of traditional landfill, without consideration of recovery and utilization of landfill gas. Almost all landfills do not have landfill gas recovery systems, except a few newly built landfills, and the landfill gas is emitted to the atmosphere openly. About 10 sanitary landfills have been set up in a few cities. However, there was no landfill gas recovery system in these sanitary landfills. In 1997, the first system of landfill gas recovery and utilization in China was built is Hangzhou, Zhejiang Province, and the landfill gas is utilized for power generation. However, there is no mechanism and policy to guide the whole country to have landfill gas recovery and utilization systems. Therefore it is still a blank paper for landfill management to establish landfill gas recovery and utilization systems.

Sub-step 3b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):

The Alternative1 would not be prevented by the identified barriers. It means that the landfill operator would continue the current business as usual practice of not collecting and flaring LFG from the waste management operations; East China Power Grid would continue to serve as the provider for the same capacity and electricity output as the proposed project.

In this scenario the LFG will not be collected and utilized for energy purpose. Methane generated by the landfill will be emitted. No electricity and hot water will be generated by the proposed project resulting in the equivalent electricity being sourced from the grid that is mainly from coal fuel power source.

Step 4. Common practice analysis

Jiangsu Province, where the proposed project is located, with an area of 102,600 km² considerably larger than many countries, shall be taken as the analysis boundary for common practice. The analysis scope is LFG to Energy, which includes electricity generation and heat generation.

Sub-step 4a.Analyze other activities similar to the proposed Project Activity

Tracing back to 1988, there was a comprehensive technical standard on MSW management developed by the Ministry of Construction; however, in general, the standards were not adequately followed due to investment and technology barriers. Nowadays, there has been limited development of LFG collection and utilization projects in China.

With the advancing of living standard, the organic content of the waste tends to be increasing. Methane emission from landfills has become one of the fastest growing sectoral sources of GHG in China.

Still, there remains an open question in these landfills. Most landfills have inappropriate or no cover system, limited or no compaction, no gas control system, no waste screening system in place, etc. So far, very few landfills[3], most of which are demonstration projects funded by development assistance resources, have been designed to collect and utilize (or even flare) LFG, while the majority of landfills are currently not capturing and/or flaring landfill gas except for the purpose of safety.

In one word, the passive venting method remains the common practice in current landfill situation in China. Given that the Project is not an economically attractive course of action considering risk and barriers, the only remaining plausible baseline scenario is Alternative 1, i.e. no collection and flaring of landfill gas from the waste management operations was implemented. Since this Alternative 1 is the baseline scenario, the Project is considered additional.

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

There are 4 LFG recovery and utilization projects exclude the proposed project in Jiangsu province under operation or construction, as described in table B-8 below.

Table B.8 Common Practice Analysis in Jiangsu Province

Name of landfill gas project	Location	Starting date of the project activity	Applying for CDM or not	Investor	Remarks
Nanjing Shuige LFG to energy project	Nanjing City	25/07/2002	No	GEF	Demonstration project, GEF funding[4]
Nanjing Tianjingwa Landfill Gas to Electricity Project	North Gate Street, Huangyao Village, Taishan Town, Pukou District, Nanjing City	01/07/2004	Yes	Nanjing Green Waste Recovery Engineering Co., Ltd	Registered[5]

[3] Adapted from Research Report of MSW disposal (2007), Construction Ministry.

[4] Adapted from Xinhua News, http://news.xinhuanet.com/newscenter/2002-07/25/content_498364.htm

[5] Adapted from UNFCCC, http://cdm.unfccc.int/Projects/DB/DNV-CUK1129289693.13

Wuxi Taohuashan Landfill Gas to Electricity Project	Wuxi Taohuashan Landfill site, East Valley of Taohuashan Mountain	01/10/2004	Yes	Wuxi Tianshun Environmental Technology Co. Ltd.	Electricity Tariff (Excluding VAT): 0.5 Yuan IRR without CDM revenue: 2.03% IRR with CDM revenue: 8.78% Benchmark: 8% Investment barrier: no banks loans; high-interest private loans Technology barrier: landfill site condition not appropriate; lack of special experience for LFG utilization; etc. Registered[6]
Jiaozishan Landfill Gas Recovery and Utilisation Project	Dou County and Jiangning district of Nanjing City	30/06/2006	Yes	Nanjing Yunsheng New Energy Development Co., Ltd	Price for electricity consumed from East China Grid: 0.7 Yuan/KWh IRR without CERs: 6.15% IRR with CERs: 35.65% Benchmark: 8% Sensitivity Analysis takes the hot water price into consideration. This is the first project to utilize LFG to heating boilers for hot water. Barrier Analysis: boilers; hot water supply marketing risk; etc. Registered[7]

Out of four comparable projects, Nanjing Shuige LFG to energy project was invested and promoted by Global Environment Facility (GEF) and was a demonstration project in China. Therefore, it did not face any barriers from financial and technical perspectives. All of other three projects have been already registered as CDM project.

As we can conclude from the analysis above, there is no application case of landfill gas to power generation project in absence of CDM mode or other financial supports. Therefore, it is not a common practice for project similar activities in the analysis area. Sub-steps 1a and 4b of the Tool for Demonstration and Assessment of Additionality are satisfied.

Conclusion: according to the Additionality Tool and the above analysis from Step1 to Step4, the Project Activity is additional.

[6] Adapted from UNFCCC, http://cdm.unfccc.int/Projects/DB/DNV-CUK1168515319.23

[7] Adapted from UNFCCC, http://cdm.unfccc.int/Projects/DB/SGS-UKL1178631263.99/view

B.4. Description of how the definition of the project boundary related to the baseline methodology selected is applied to the project activity:

As per ACM0001 (Version 15.0), the project boundary of the project activity includes the following:

(a) Sites where the LFG is flared or used (e.g. flare, power plant, boiler, air heater, glass melting furnace, kiln, natural gas distribution network or biogas processing facility);
For this case, it is the landfill site of Qizi Mountain Landfill.

(c) Captive power plant(s) or power generation sources connected to the grid, which are supplying electricity in the baseline that is displaced by electricity generated by captured LFG in the project activity. Here the extended project boundary includes all the power generation sources connected to the grid to which the project activity is connected. For this case, it is the East China Power Grid, to which the electricity will be exported.

Spatial extent of the grid is as defined in the "Tool to calculate the emission factor for an electricity system". The PDD will discuss the spatial extent of the grid in B.5 below in details.

B.5. The key parameters and assumptions used in baseline scenario:

Data / Parameter:	Regulatory requirements related to landfill gas projects
Data unit:	--
Description:	Regulatory requirements related to landfill gas projects
Source of data used:	The DNA shall be contacted to provide information regarding host country regulation.
Measurement procedures (if any):	
Any comment:	The information though recorded annually, is used for changes to the adjustment factor (AF) or directly $MD_{BL,y}$ at renewal of the crediting period. Relevant regulations for LFG project activities shall be updated at renewal of each crediting period. Changes to regulation should be converted to the amount of methane that would have been destroyed/combusted during the year in the absence of the project activity ($MD_{BL,y}$). Project participants should explain how regulations are translated into that amount of gas.

Data / Parameter:	GWP_{CH4}
Data unit:	$tCO_2e/tCH4$
Description:	Global warming potential of CH_4
Source of data used:	IPCC
Measurement procedures (if any):	21 for the first commitment period. Shall be updated according to any future COP/MOP decisions.
Any comment:	

Data / Parameter:	D_{CH4}
Data unit:	tCH_4/m_3CH_4
Description:	Methane Density

Source of data used:	
Measurement procedures (if any):	At standard temperature and pressure (0 degree Celsius and 1,013 bar) the density of methane is 0.0007168 tCH_4/m^3CH_4
Any comment:	

Data / Parameter:	$BE_{CH4,SWDS,y}$
Data unit:	tCO_2e
Description:	Methane generation from the landfill in the absence of the project activity at year *y*
Source of data used:	Calculated as per the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site".
Measurement procedures (if any):	As per the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site"
Any comment:	Used for ex-ante estimation of the amount of methane that would have been destroyed/combusted during the year

Data / Parameter:	φ
Data unit:	-
Description:	Model correction factor to account for model uncertainties
Value to be applied:	0.9
Any comment:	Oonk et el. (1994) have validated several landfill gas models based on 17 realized landfill gas projects. The mean relative error of multi-phase models was assessed to be 18%. Given the uncertainties associated with the model and in order to estimate emission reductions in a conservative manner, a discount of 10% is applied to the model results.

Data / Parameter:	OX
Data unit:	-
Description:	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)
Source of data:	Conduct a site visit at the solid waste disposal site in order to assess the type of cover of the solid waste disposal site. Use the IPCC 2006 Guidelines for National Greenhouse Gas Inventories for the choice of the value to be applied.
Value to be applied:	Use 0.1 for managed solid waste disposal sites that are covered with oxidizing material such as soil or compost. Use 0 for other types of solid waste disposal sites.
Any comment:	

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

Data / Parameter:	**DOC_f**

Data unit:	-
Description:	Fraction of degradable organic carbon (DOC) that can decompose
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value to be applied:	0.5
Any comment:	

Data / Parameter:	**MCF**
Data unit:	-
Description:	Methane correction factor
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value to be applied:	Use the following values for MCF: • 1.0 for anaerobic managed solid waste disposal sites. These must have controlled placement of waste (i.e., waste directed to specific deposition areas, a degree of control of scavenging and a degree of control of fires) and will include at least one of the following: (i) cover material; (ii) mechanical compacting; or (iii) leveling of the waste. • 0.5 for semi-aerobic managed solid waste disposal sites. These must have controlled placement of waste and will include all of the following structures for introducing air to waste layer: (i) permeable cover material; (ii) leachate drainage system; (iii) regulating pondage; and (iv) gas ventilation system. • 0.8 for unmanaged solid waste disposal sites – deep and/or with high water table. This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of greater than or equal to 5 meters and/or high water table at near ground level. Latter situation corresponds to filling inland water, such as pond, river or wetland, by waste. • 0.4 for unmanaged-shallow solid waste disposal sites. This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of less than 5 metres.
Any comment:	The methane correction factor (MCF) accounts for the fact that unmanaged SWDS produce less methane from a given amount of waste than managed SWDS, because a larger fraction of waste decomposes aerobically in the top layers of unmanaged SWDS.

Data / Parameter:	**DOC_j**
Data 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 to be applied:	Apply the following values for the different waste types j:

Waste type j	**DOCj (% wet waste)**	**DOCj (% dry waste)**
Wood and wood products	43	50
Pulp, paper and cardboard (other than sludge)	40	44
Food, food waste, beverages and tobacco (other than sludge)	15	38
Textiles	24	30
Garden, yard and park waste	20	49

	Glass, plastic, metal, other inert waste | 0 | 0 If a waste type, prevented from disposal by the proposed project activity, can not clearly be attributed to one of the waste types in the table above, project participants should choose among the waste types that have similar characteristics that waste type where the values of DOCj and kj result in a conservative estimate (lowest emissions), or request a revision of / deviation from this methodology. For example, in the case of empty fruit bunches (EFB), as their characteristics are similar to wood in terms of cellulose, hemi-cellulose, and lignin content, the parameters correspondent of wood should be used.
Any comment:	According to 2nd FSR, page 10, wet waste is treated in the propose project.

Data / Parameter:	**k_j**
Data unit:	-
Description:	Decay rate for the waste type j
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Table 3.3)
Value to be applied:	Apply the following default values for the different waste types *j*

Waste type j		**Boreal and Temperate (MAT≤20°C)**		**Tropical (MAT>20°C)**	
		Dry (MAP/PET <1)	**Wet (MAP/PET >1)**	**Dry (MAP< 1000mm)**	**Wet (MAP> 1000mm)**
Slowly degrading	Pulp, paper and cardboard (other than sludge), Textiles	0.04	0.06	0.045	0.07
	Wood, wood products and straw	0.02	0.03	0.025	0.035
Moderately degrading	Other (non-food) organic putrescible garden, yard and park waste	0.05	0.10	0.065	0.17
Rapidly degrading	Food, food waste, sewage sludge, beverages and tobacco	0.06	0.185	0.085	0.40

NB: MAT – mean annual temperature, MAP – Mean annual precipitation, PET – potential evapotranspiration. MAP/PET is the ratio between the mean annual

	precipitation and the potential evapotranspiration. If a waste type, prevented from disposal by the proposed project activity, can not clearly be attributed to one of the waste types in the table above, project participants should choose among the waste types that have similar characteristics that waste type where the values of DOCj and kj result in a conservative estimate (lowest emissions), or request a revision of / deviation from this methodology. For example, in the case of empty fruit bunches (EFB), as their characteristics are similar to wood in terms of cellulose, hemi-cellulose, and lignin content, the parameters correspondent of wood should be used.
Any comment:	Document in the CDM-PDD the climatic conditions at the SWDS site (temperature, precipitation and, where applicable, evapotranspiration). Use long-term averages based on statistical data, where available. Provide references. The effective reference is not available; therefore the conservative value is determined for each waste type.

Data / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO2/MWh
Description:	Combined margin CO2 emission factor of East China Power Grid in year *y*
Source of data used:	*China Electric Power Yearbook 2005-2007, China Energy Statistics Yearbook 2007, 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
Value applied:	0.8847
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	Based on combined margin calculation of OM and BM of East China Power Grid. Weighting of OM and CM are both 50%. The proposed project uses fixed ex ante emission factor in the first crediting period. Detailed calculation is provided in Annex 3.

Data / Parameter:	$EF_{grid,OMsimple,y}$
Data unit:	tCO2/MWh
Description:	Simple operating margin CO2 emission factor of East China Power Grid in year *y*
Source of data used:	*China Electric Power Yearbook 2005-2007, China Energy Statistics Yearbook 2007, 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
Value applied:	0.9540
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	The proposed project uses fixed ex ante emission factor in the first crediting period. Detailed calculation is provided in Annex 3.

Data / Parameter:	$EF_{grid,BM,y}$
Data unit:	tCO2/MWh
Description:	Build margin of East China Power Grid in year *y*
Source of data used:	*China Electric Power Yearbook 2005-2007, China Energy Statistics Yearbook 2007, 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
Value applied:	0.8154
Measurement	Officially released statistics; publicly accessible and reliable data source

procedures (if any):	
Any comment:	The proposed project used Chinese NDRC method to calculate BM emission factor. This alternative method was accepted by EB in registered projects from China. The proposed project uses fixed ex ante emission factor in the first crediting period. Detailed calculation is provided in Annex 3.

Data / Parameter:	$EG_{m,y}$
Data unit:	MWh
Description:	Electricity delivered to the grid by relevant power sources *m* in (years) *y* (2004-2006, East China Power Grid)
Source of data used:	*China Electric Power Yearbook 2005-2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate the OM and BM

Data / Parameter:	*Electricity Imports from Connected Electricity Systems to* East China Power Grid
Data unit:	MWh
Description:	Electricity Imports from Connected Electricity Systems to East China Power Grid in (years) y (2004-2006)
Source of data used:	*China Electric Power Yearbook 2005-2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate the OM

Data / Parameter:	$FC_{i,m,y}$
Data unit:	10^4t/10^8m^3
Description:	Amount of fuel *i* consumed by relevant power sources *m* in (years) *y* (2004-2006, East China Power Grid)
Source of data used:	*China Energy Statistics Yearbook 2005-2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate OM and BM

Data / Parameter:	NCV_i
Data unit:	TJ/10^3 t
Description:	Net calorific value per mass or volume unit of fuel *i*
Source of data used:	*China Energy Statistics Yearbook 2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate OM and BM

Data / Parameter:	$EF_{CO2,i}$
Data unit:	tCO2/TJ
Description:	CO2 emission factor per energy unit of fuel *i*
Source of data used:	*Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories*

Value applied:	Provided in Annex 3
Measurement procedures (if any):	IPCC default value
Any comment:	To calculate OM and BM

Data / Parameter:	*Efficiency level of best technology commercially available in China for coal-fired power generation*
Data unit:	%
Description:	Efficiency level of best technology commercially available in China for coal-fired power generation
Source of data used:	*China DNA: Notification on Determining the Regional Grid Emission Factors of China*
Value applied:	37.28%
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate BM

Data / Parameter:	*Efficiency level of best technology commercially available in China for oil and gas-fired power generation*
Data unit:	%
Description:	Efficiency level of best technology commercially available in China for oil and gas-fired power generation
Source of data used:	*China DNA: Notification on Determining the Regional Grid Emission Factors of China*
Value applied:	48.81%
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate BM

Data / Parameter:	$CAP_{y,i}$
Data unit:	MW
Description:	The installed capacity of power generation sources j in (years) y (2004-2006, East China Power Grid)
Source of data used:	*China Electric Power Yearbook 2005-2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate BM

B.5. Details of baseline information, including the date of completion of the baseline study and the name of person (s)/entity (ies) determining the baseline:

Date of completion of the baseline study: 24/09/2015

Badseline for electricity production is in line with Chinese DNA's official electricity grid EF data.

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SECTION C. Duration of the project activity / Crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

Unit I and II started construction in November 2005, Unit III started construction in August 2007, Unit IV will start construction in September 2008. Therefore, the starting date of the project activity is in November 2005.

C.1.2. Expected operational lifetime of the project activity:

18 years

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

Starting date of the first crediting period: 22/04/2007
Starting date of the second crediting period: 01/02/2015

C.2.1.2. Length of the first crediting period:

7 years

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

Not applicable

C.2.2.2. Length:

Not applicable

SECTION D. Application of a monitoring methodology and plan

D.1. Name and reference of approved monitoring methodology applied to the project activity:

The proposed project applies the approved Large-scale consolidated methodology ACM0001: Flaring or use of landfill gas, Version 15.0 for preparing the monitoring plan.

D.2. Justification of the choice of the methodology and why it is applicable to the project activity:

The current situation before the implementation of the project activity is that LFG is released into atmospheric directly. In addition, the project activity will capture the LFG for electricity generation. Therefore methodology (ACM 0001) is applicable.

D.2.1. Monitoring Objective

The baseline emission factor of East China Power is fixed during the second crediting period by ex-ante calculations. Annex 3 of the PDD has details of the calculation. Hence, the monitoring plan provides further monitoring work for baseline emissions.

The monitoring plan provides for continuous measurement of the quantity of methane used to generate electricity ($MD_{electricity,y}$).It is shown in Figure B.1.

In addition, the energy generated by use of LFG ($EL_{LFG,y}$) and energy consumed by the project activity that is produced using fossil fuels are required to measure.

Furthermore, potential mitigation measures from the EIA should be included

D.2.2. Data and parameters monitored

Data / Parameter:	$LFG_{electricity,y}$
Data unit:	m^3
Description:	Amount of landfill gas combusted in power plant at Normal Temperature and Pressure
Source of data to be used:	Project participants
Measurement procedures (if any):	Measured by a flow meter. Data to be aggregated monthly and yearly.for each power plant
Monitoring frequency:	Continuous
QA/QC procedures:	Flow meters should be subject to a regular maintenance and testing regime to ensure accuracy.
Any comment:	In proposed project, there is no any other treatment of LFG besides electricity utilization. Therefore LFG electricity equals LFG total,y

Data / Parameter:	w_{CH4}
Data unit:	m^3 CH_4 / m^3 LFG
Description:	Methane fraction in the landfill gas
Source of data to be	To be measured continuously by project participants using certified equipment

used:	
Measurement procedures (if any):	Methane fraction will be measured continuously by gas analyzer mounted in the gas pipe work between the gas pre-treatment package and the generator sets
Monitoring frequency:	Continuous
QA/QC procedures:	The gas analyser should be subject to a regular maintenance and testing regime to ensure accuracy.
Any comment:	

Data / Parameter:	T
Data unit:	°C
Description:	Temperature of the landfill gas
Source of data to be used:	Project participants
Measurement procedures (if any):	Measured to determine the density of methane D_{CH4}.
Monitoring frequency:	Continuous
QA/QC procedures:	Measuring instruments should be subject to a regular maintenance and testing regime in accordance to appropriate national/international standards.
Any comment:	

Data / Parameter:	P
Data unit:	Pa
Description:	Pressure of the landfill gas
Source of data to be used:	Project participants
Measurement procedures (if any):	Measured to determine the density of methane D_{CH4}.
Monitoring frequency:	Continuous
QA/QC procedures:	Measuring instruments should be subject to a regular maintenance and testing regime in accordance to appropriate national/international standards.
Any comment:	

Data / Parameter:	EL_{LFG}
Data unit:	MWh
Description:	Net amount of electricity generated using LFG.
Source of data to be used:	Project participants
Measurement procedures (if any):	$EL_{LFG} = EL_{generation} - EL_{internal\ consuption}$
Monitoring frequency:	Continuous
QA/QC procedures:	Related Electricity meter will be subject to regular (in accordance with stipulation of the meter supplier) maintenance and testing to ensure accuracy.
Any comment:	Required to estimate the emission reductions from electricity generation from LFG, if credits are claimed.

Data / Parameter:	$EL_{internal\ consumption}$
Data unit:	MWh
Description:	Electricity imported from the grid in the year y. It includes the electricity consumption of the gas collection system. (Auxiliary electricity consumption)
Source of data to be used:	Measured by meter

Description of measurement methods and procedures to be applied:	Measured continuously by two kilowatt meter and recorded on a monthly basis using monitoring personnel.
QA/QC procedures to be applied:	▪ The imported electricity from the grid is measured by kilowatt meters, which are controlled by the power grid company ▪ Trained and qualified staff is responsible for recording electricity import data from the kilowatt meter ▪ Meters will be calibrated periodically according to relevant national standards
Any comment:	

Data / Parameter:	$EL_{generation}$
Data unit:	MWh
Description:	Electricity generation from the generator in the year y
Source of data to be used:	Measured by meter
Description of measurement methods and procedures to be applied:	Measured continuously by four kilowatt meters and recorded on a monthly basis using monitoring personnel.
QA/QC procedures to be applied:	▪ The imported electricity from the grid is measured by kilowatt meters, which are controlled by the power grid company ▪ Trained and qualified staff is responsible for recording electricity generation data from the kilowatt meter ▪ Meters will be calibrated periodically according to relevant national standards
Any comment:	

Data / Parameter:	Operation of the energy plant
Data unit:	Hours
Description:	Operation of the energy plant
Source of data to be used:	Project participants
Measurement procedures (if any):	
Monitoring frequency:	Annually
QA/QC procedures:	
Any comment:	This is monitored to ensure methane destruction is claimed for methane used in electricity plant when it is operational.

Data / Parameter:	Laws and regulations about waste management system in China
Data unit:	-
Description:	Relevant laws and regulations about solid waste management system in China will be monitored yearly. When there are relevant changes, the baseline scenario or monitor plan will change accordingly.
Source of data to be used:	Project participants
QA/QC procedures:	Regular follow-up of law and regulations by project participants (e.g.

	governmental publications, official communications, official journal, conferences)
Any comment:	

Data to be collected in order to monitor the project's performance on the sustainable development indicators:

Data / Parameter:	AQ_y
Data unit:	n/a
Description:	Negative air quality effects (emissions other than GHG) that are prevented by processing units.
Source of data to be used:	Report of Environment Protection for Check & Accept from Local Environment Protection Agency.
Description of measurement methods and procedures to be applied:	Processing units will be calibrated periodically according to relevant national standards. Local Environment Protection Agency will publish a report after project starts to operate and check periodically.
QA/QC procedures to be applied:	Certificates from the calibration authority, Report of Environment Protection for Check & Accept from Local Environment Protection Agency will be provided to DOE. The proposed project should meet the following environment standards during operation: -Air Quality Standard (GB3095-1996) or Replaced Standard of (GB3095-1996)
Any comment:	

Data / Parameter:	WQ_y
Data unit:	n/a
Description:	Negative water quality effects that are prevented by processing units.
Source of data to be used:	Report of Environment Protection for Check & Accept from Local Environment Protection Agency
Description of measurement methods and procedures to be applied:	The landfill leachate will be collected properly and transported to Suzhou Gaoxin wastewater treatment plant finally. Local Environment Protection Agency will publish a report after project starts to operate and check periodically.
QA/QC procedures to be applied:	Report of Environment Protection for Check & Accept from Local Environment Protection Agency will be provided to DOE. The proposed project should meet the following environment standards during operation: -Aquatic Environment standard (GB3838-2002) or Replaced Standard of (GB3838-2002)
Any comment:	

Data / Parameter:	***Other Pollutant***
Data unit:	n/a
Description:	Noise impacts that are prevented by several approaches.
Source of data to be used:	Report of Environment Protection for Check & Accept from Local Environment Protection Agency.
Description of	In order to minimize the noise impacts, few measures are carried out, such as the

measurement methods and procedures to be applied:	high dB (A) will be strictly forbidden from 10 pm to 6 am and 12 am to 2pm; enforcement of the onsite management and establishing related bylaws. The noise during the construction period has locality and temporality characteristic; it will disappear when the construction work finished. After the project is put into operation, the major resource of noise pollution is from running of the turbines, generator and valves. Muffler is installed to avoid the noise impact on the local citizens and employees. Local Environment Protection Agency will publish a report after project starts to operate and check periodically.
QA/QC procedures to be applied:	Report of Environment Protection for Check & Accept from Local Environment Protection Agency will be provided to DOE. The proposed project should meet the following environment standards during operation: -Noise Controlling Standard (GB3096-93) or the Replaced Standard of (GB3096-93)
Any comment:	

Data / Parameter:	***Employment***
Data unit:	n/a
Description:	It includes job quality, fulfillment of labour standards. These jobs do have a significant impact on job quality since they include technically advanced knowledge mostly. Project manager and operators in the plant will have a chance to learn new knowledge of sophisticated monitoring equipments and computer operations.
Source of data to be used:	n/a
Description of measurement methods and procedures to be applied:	Fulfillment of labour standards will be checked by local labour authority.
QA/QC procedures to be applied:	Documents of training program will be provided to DOE. Certificates from the local labour authority will be provided to DOE, if possible.
Any comment:	

Data / Parameter:	***Livelihood of the poor***
Data unit:	n/a
Description:	In the proposed project, wages will be monitored.
Source of data to be used:	Accounting report by human resource office of the plant
Description of measurement methods and procedures to be applied:	People engaged during the fiscal year will be recorded in the accounting system of the plant. The number of people engaged, the gender, the responsibilities of them and the training they take will all be covered in the report.
QA/QC procedures to be applied:	Pay roll of these employees will be provided as evidence for contribution in employment of local people
Any comment:	

Data / Parameter:	***Human and institutional capacity***

Data unit:	n/a
Description:	Education or training fee and gender will be monitored.
Source of data to be used:	n/a
Description of measurement methods and procedures to be applied:	People engaged during the fiscal year will be recorded in the accounting system of the plant. The number of people engaged, the gender, the responsibilities of them and the training they take will all be covered in the report.
QA/QC procedures to be applied:	Pay roll or invoice of these employees and local officials will be provided as evidence for contribution in employment of local people
Any comment:	

Data / Parameter:	Emp_y
Data unit:	n/a
Description:	Number of people engaged will be monitored
Source of data to be used:	Accounting report by human resource office of the plant
Description of measurement methods and procedures to be applied:	People engaged during the fiscal year will be recorded in the accounting system of the plant. The number of people engaged, the gender, the responsibilities of them and the training they take will all be covered in the report.
QA/QC procedures to be applied:	Pay roll of these employees will be provided as evidence for contribution in employment of local people
Any comment:	

Data / Parameter:	$R_{LFG,y}$
Data unit:	%
Description:	The ratio between the LFG collected and the LFG used within the engines on average each year will be monitored.
Source of data to be used:	The actual layout of the entire collection pipelines, which covers from the well to electricity generator.
Description of measurement methods and procedures to be applied:	If there is no other way, such as flaring or venting, to treat the collected LFG besides generating electricity, this ratio can be nearly closed to 100 %, at least higher than 65%.
QA/QC procedures to be applied:	The actual layout of the entire collection pipelines, which covers from the well to electricity generator will be checked by DOE carefully during each verification.
Any comment:	

D.2.3. Treatment of leakage in the monitoring plan

No leakage effects need to be accounted under this methodology.

D.2.4. Description of formulae used to estimate emission reductions for the project activity (for each gas, source, formulae/algorithm, emissions units of CO_2 equ.)

Please refer to section E.4

D.3. Please describe the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects, generated by the project activity

Operational and Management Structure

The operational and management structure of the proposed project is summarized within Table D.1 below.

Table D.1 Operational and Management Structure

Name	Organization	Responsibility
Mr. Yunyue Zhang	Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd.	Mr. Zhang is the chairman of Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd. He has extended knowledge about both the Kyoto Protocol and GS VERs and takes the responsibility of overall project management.
Mr. Kai Wu	Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd.	Mr. Wu is the monitoring manager of the plant. He is responsible for the training of the monitoring personnel. Training courses will be held for monitoring staff about basic knowledge and operational procedures of all monitors and the data processing system. Previously, South Pole Carbon Asset Management Ltd. has provided training about GHG, GS VER and requirements.
		Mr. Wu is the monitoring system engineer of Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd. He is in charge of data recording, processing and reporting for the project. The data will be either automatically recorded or manually recorded by operators. All data will be imported to an Excel sheet for validation or verification. Please see Section B.7.1 for more details of procedures of monitoring and recording.
	South Pole Carbon Asset Management Co., Ltd.	South Pole Carbon Asset Management Co., Ltd. Will provide review of reported data before submitting to DOE for verification.
Mr. Kai Wu	Everbright Environment and Energy (Suzhou) Landfill Gas to Energy Co., Ltd.	Mr. Wu is the manager for safety and environment. He is responsible of validation, registration and verification from the plant owner's part under assistance of South Pole Carbon Asset Management Ltd.

Monitoring Equipment and Program

To determine these variables, the following parameters have to be monitored:

- The amount of landfill gas power plant(s) ($LFG_{electricity,y}$) (in m³, using a continuous flow meter).
- The fraction of methane in the landfill gas ($w_{CH4,y}$) should be measured with a continuous analyzer or, alternatively, with periodical measurements, at a 95% confidence level , using calibrated portable gas meters and taking a statistically valid number of samples and accordingly the amount of land fill gas from $LFG_{electricity,y}$, shall be monitored in the same frequency. The continuous methane analyser should be the preferred option Methane

fraction of the landfill gas to be measured on wet basis;

- Temperature (T) and pressure (p) of the landfill gas are required to determine the density of methane in the landfill gas;
- The quantity of electricity internal consumption, in the baseline and the project situation, to meet the requirements of the project activity, if any;
- Relevant regulations for LFG project activities shall be monitored and updated at renewal of each credit period. Changes to regulation should be converted to the amount of methane that would have been destroyed/combusted during the year in the absence of the project activity ($MD_{BL,y}$). Project participants should explain how regulations are translated into that amount of gas;
- The operating hours of the energy plant(s).
- $R_{LFG,y}$The ratio between the LFG collected and the LFG used within the engines on average each year must be monitored.

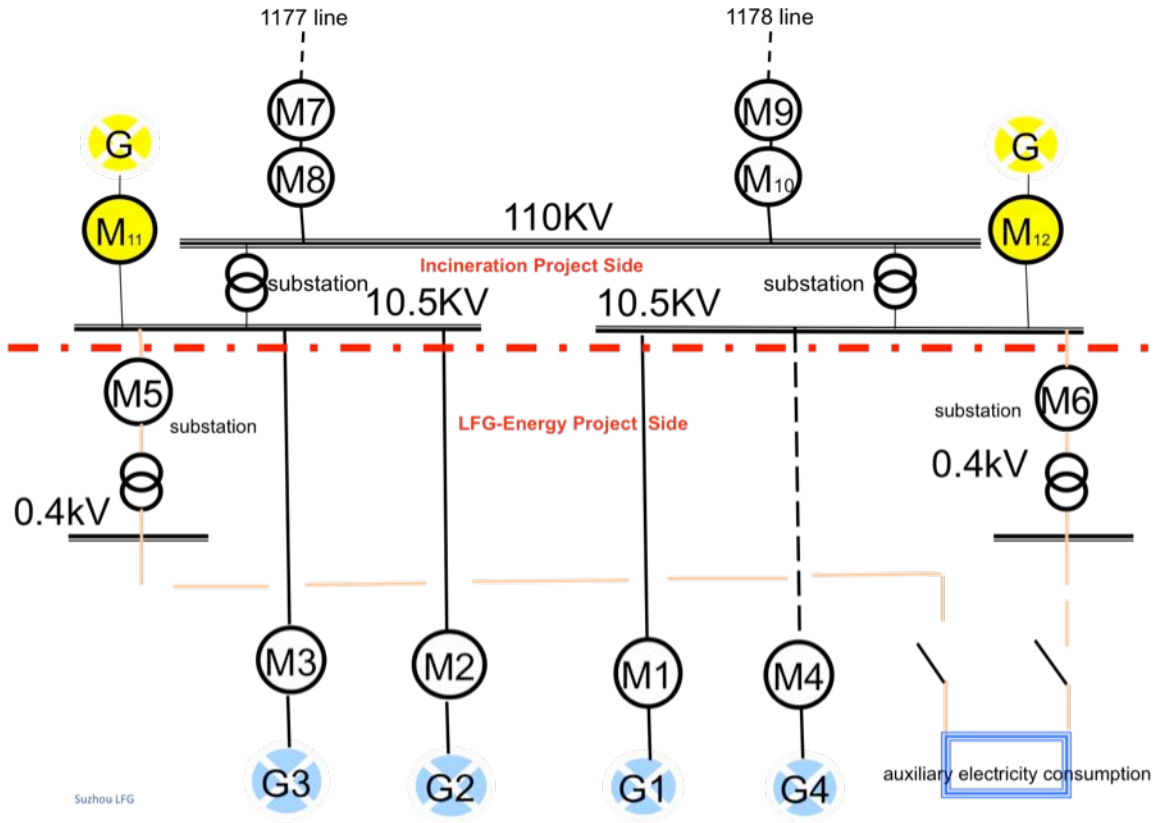
The measurement equipment for gas quality (humidity, particulate, etc.) is sensitive, so a strong QA/QC procedure for the calibration of this equipment is needed.

Electricity Generation

According to the Chinese national standard "*Technical Management Code for Electricity Metering" (DL/T448-2000),* the electricity metering equipment will be properly configured and the metering equipment will be checked by both the project owner and the grid company before the project is in operation.

Meter M1, M2 and M3, which are with an accuracy of 0.5% and bidirection electronic meters, are installed to measure gross power generation of generators. M4 will be installed to measure gross power generation of the fourth generator. M7 and M8 measure net electricity output from the proposed project and incineration project to the grid and imported electricity of the proposed project and incineration project from grid. M5 and M6, which are with an accuracy of 1% , measure internal auxiliary electricity consumption of the proposed project. M1, M2, M3, M4, M5 and M6 are the key meters for emission reduction calculation. When readings from M1, M2, M3, M4, M5 and M6 are questionable (due to abnormal circumstances) or not possible (due to meter failure or meter reparation), reading of M7, M8, M9, M10 and seperated meters (M11 and M12)of incineration project are used for crosscheck. M7 and M9 are the invoice meters, which measure the exported electricity to the grid and are with accuracy of 0.2%. M8 and M10 are also the invoice meters, which measure the imported electricity from the grid and are with accuracy of 0.5%. Incineration project and the proposed project share two 10.5 kv transmission lines. Please see Fig. D.1 for the simplified diagram of electric layout.

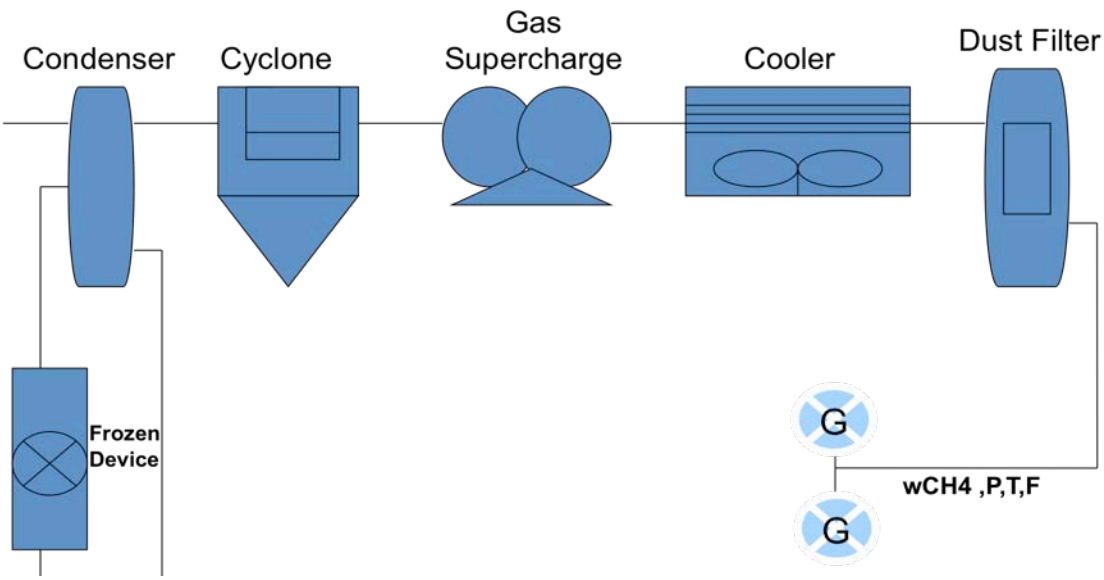
Fig. D.1 Simplified Diagram of the Electric Layout



LFG utilization

Temperature (*T*) and pressure (*p*) of the landfill gas are required to determine the density of methane in the landfill gas. Therefore temperature and pressure meters are installed between gas treatment package and generator sets. The accuracy of temperature meter is 1.5%; The accuracy of pressure meter is 2.5%. For the purpose of crosscheck, additional temperature and pressure meters will be installed at the same location.
At the same location, flow volume meter, whose accuracy is 0.5%, and methane percentage analyzer, whose accuracy is 0.1%, are installed for each phase.
Please see Fig. D.2, the simplified diagram of pre-processing treatment layout.

Fig. D.2, the simplified diagram of pre-processing treatment layout.



According to GS requirements , potential mitigation and/or compensation measures from the EIA

In section F, noise impact and impacts on aquatic environment and air quality can be evaluated. The institute which wrote the EIA, and the Environmental Protection Agency are conducting the reevaluation monitoring for the first phase since the first two generators started operation.

The proposed project should meet the following environment standards during operation:
-Air Quality Standard (GB3095-1996)
-Aquatic Environment standard (GB3838-2002)
-Noise Controlling Standard (GB3096-93)

After that, the local EPA will be responsible for the further monitoring, but this is not conducted annually. As the project's environmental impact will only differ from the outcomes of the first reevaluation if changes in the project design happen. These aspects will be monitored for the first verification, and later only if project design changes happen.

The ratio ($R_{LFG,y}$) between the LFG collected and the LFG used within the engines on average each year must be a monitoring parameter. If there is no other way, such as flaring or venting, to treat the collected LFG besides generating electricity, this ratio can be nearly close to 100 %, at least higher than 65%. The actual layout of the entire collection pipelines, which covers from the wells to electricity generators will be checked by DOE carefully during each verification.

Data Collection:

Data related to LFG

The project owner is responsible for operation monitoring of the main meters and guarantee that the measuring equipments are in good operation and completely sealed.

The main monitoring process is as follows:

i Methan fraction and flow volume are continuously recorded and measured by project participants using certified equipment. Temperature and pressure are measured continuously and recorded hourly.
ii The project owner keeps the records of the main meter's data readings for verification by the DOE.

If inaccuracy of the reading data from the main meter exceeds the allowable tolerance, when the meter operates abnormally during a month or any other unexpected problems occur, the amount of LFG generated shall not be counted.

Data related to Electricity Generation

The project owner and the Grid Company are responsible for operation monitoring of the main meters and guarantee that the measuring equipments are in good operation and completely sealed.

The electricity recorded by the main meter alone will suffice for the purpose of billing and emission reduction verification as long as the main meter error is within the allowable tolerance. The main monitoring process is as follows:

iii The project owner and Grid Company read and check the main meter and record the data at 00:00 am on the second to last day of every month;
iv The project owner sells the electricity to the Grid Company;
v The project owner provides an electricity sales invoice to the Grid Company. A copy of the invoice is stored by the project owner, together with a record of the payment by the grid company.
vi The Grid Company provides an electricity receipt confirmation to the project owner and the confirmation is stored by the project owner.
vii The project owner records the net electricity supplied to the grid electronically;
viii The project owner keeps the records of the main meter's data readings for verification by the DOE.

If inaccuracy of the reading data from the main meter exceeds the allowable tolerance, when the meter operates abnormally during a month or any other unexpected problems occur, the net amount of electricity exported to the grid shall be determined by:

ii Using readings from the backup meter (taking potential transmission losses into consideration), unless a test by either party reveals it is inaccurate;
iii If the backup system is not within acceptable limits of accuracy or performed improperly, the proposed project owner and the Grid Company shall, based on mutual agreement, determine the amount of supplied electricity to the grid during the period of the occurred distortion or mal-function of backup meters by means of referring to voltage and current data in accordance with relevant rules; and
iv If the proposed project owner and the Grid Company fail to reach an agreement concerning the amount of supplied electricity to the grid during the period of the occurred distortion or mal-function of backup meter, then the matter will be submitted for arbitration according to agreed procedures.

The meter readings will be readily accessible for the DOE. Calibration test records will be maintained for verification.

Calibration

The verification and calibration of electricity meters will be carried out periodically according to relevant national electric industry standards and regulations. After verification and calibration, meters will be sealed. Meters related to the electricity generation will be jointly inspected and sealed on behalf of the project owner and Grid Company and shall not be accessible by either party except in the presence of the other party or its accredited representatives.

The meters, which is related to the electricity generation, installed will be tested by the qualified metrical organization co-authorized by the project owner and the Grid Company within 10 days after:

i The detection of a difference larger than the allowable tolerance in the readings of the main meter and/or the backup meters;

ii Repair to the faulty meter caused by improper operation.

In addition, the flow volume meter, temperature meter and pressure meter will be calibrated periodically as well according to relevant national standards and regulations.

Data Management

Data will be archived at the end of each month using electronic spreadsheets. The electronic files will be stored on hard disk and CD-ROM. In addition, a hard copy printout will be archived.

The project owner will also collect sales receipts for the power delivered to the grid as a crosscheck. At the end of each crediting year, a monitoring report will be compiled detailing the metering results backed up by sales receipts.

Physical documentation will be collected and stored by the project owner in a central place, together with the monitoring plan. In order to facilitate the auditor's reference, monitoring results will be indexed. All data records will be kept for a period of 2 years following the end of the crediting period.

D.4 Name of person/entity determining the monitoring methodology:

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SECTION E. Estimation of GHG emissions by sources

E.1. Estimate of GHG emissions by sources:

As per ACM0001, overview of emission sources included in or excluded from the project boundary is provided in the following table E.1:

Table E.1 Summary of Greenhouse Gases and Sources Included in and excluded from the Project Boundary

	Source	Gas	Included/ Excluded	Justification/Explanation
Baseline	Emissions from decomposition of waste at the SWDS site	CH_4	Yes	The major source of emissions in the baseline
		N_2O	No	N_2O emissions are small compared to CH_4 emissions from SWDS. This is conservative.
		CO_2	No	CO_2 emissions from decomposition of organic waste are not accounted since the CO_2 is also released under the project activity.
	Emissions from electricity generation	CO_2	Yes	Major emission source if power generation is included in the project activity.
		CH_4	No	Excluded for simplification. This is conservative.
		N_2O	No	Excluded for simplification. This is conservative.
	Emissions from heat generation	CO_2	No	No heat generation from LFG in the project activity
		CH_4	No	Excluded for simplification. This is conservative.
		N_2O	No	Excluded for simplification. This is conservative.
	Emissions from the use of natural gas	CO_2	No	Excluded for simplification. This is conservative.
		CH_4	No	No LFG supply through natural gas distribution network or using trucks in the project activity
		N_2O	No	Excluded for simplification. This is conservative.
Activity	Emissions from fossil fuel consumption for purposes other than electricity generation or transportation	CO_2	No	There is no fossil fuel used in project activity. Therefore, there is no CO_2

	due to the project activity			emission.
		CH_4	No	Excluded for simplification. This emission source is assumed to be very small.
		N_2O	No	Excluded for simplification. This emission source is assumed to be very small.
	Emissions from electricity consumption due to the project activity	CO_2	No	Excluded for simplification. This emission source is assumed to be very small.
		CH_4	No	Excluded for simplification. This emission source is assumed to be very small.
		N_2O	No	Excluded for simplification. This emission source is assumed to be very small.
	Emissions from flaring	CO_2	No	Emissions are considered negligible
		CH_4	Yes	May be an important emission source
		N_2O	No	Emissions are considered negligible
	Emissions from distribution of LFG using trucks	CO_2	No	The project does not include LFG distribution through using trucks. Therefore, there is no CO_2 emission.
		CH_4	No	The project does not include LFG distribution through using trucks. Therefore, there is no CH_4 emission.
		N_2O	No	Emissions are considered negligible

E.2. Estimated leakage:

No leakage effects are accounted for under this methodology.

E.3. The sum of E.1 and E.2 representing the project activity emissions:

In the proposed project, the PE_y is zero.

E.4. Estimated anthropogenic emissions by sources of greenhouse gases of the baseline:

Baseline Emissions

As per the methodology, the baseline emissions for the year *y* shall be determined as follows:

$$BE_y = BE_{CH4,y} + BE_{EC,y} + BE_{HG,y} + BE_{NG,y} \quad (1)$$

Where:

BE_y	=	Baseline emissions in year y (tCO_2e/yr)
$BE_{CH4,y}$	=	Baseline emissions of methane from the SWDS in year y (tCO_2e/yr)
$BE_{EC,y}$	=	Baseline emissions associated with electricity generation in year y (tCO_2e/yr)
$BE_{HG,y}$	=	Baseline emissions associated with heat generation in year y (tCO_2e/yr)
$BE_{NG,y}$	=	Baseline emissions associated with natural gas use in year y (tCO_2e/yr)

Supply of LFG through a natural gas distribution network is not included in the project activity. Moreover, the project participants do not intend to utilize the LFG for heat generation and nature gas use. Therefore, $BE_{HG,y} = 0$ and $BE_{NG,y} = 0$; and baseline emissions shall be calculated as below:

$$BE_y = BE_{CH4,y} + BE_{EC,y} \quad (2)$$

i) Baseline emissions of methane from the SWDS ($BE_{CH4,y}$)

Baseline emissions of methane from the SWDS are determined as follows, based on the amount of methane that is captured under the project activity and the amount that would be captured and destroyed in the baseline (such as due to regulations). In addition, the effect of methane oxidation that is present in the baseline and absent in the project is taken into account:

$$BE_{CH4} = ((1 - OX_{top\_layer}) \times F_{CH4,PJ,y} - F_{CH4,BL,y}) \times GWP_{CH4} \quad (3)$$

Where:

$BE_{CH4,y}$	=	Baseline emissions of methane from the SWDS in year y (tCO_2e/yr)
OX_{top_layer}	=	Fraction of methane in the LFG that would be oxidized in the top layer of the SWDS in the baseline (dimensionless)
$F_{CH4,PJ,y}$	=	Amount of methane in the LFG which is flared and/or used in the project activity in year y (tCH_4/yr)
$F_{CH4,BL,y}$	=	Amount of methane in the LFG that would be flared in the baseline in year y (tCH_4/yr)
GWP_{CH4}	=	Global warming potential of CH_4 (tCO_2e/tCH_4)

Ex post determination of $F_{CH4,PJ,y}$

According to ACM0001, during the crediting period, $F_{CH4,PJ,y}$ shall be determined ex post as follows:

$$F_{CH4,PJ,y} = F_{CH4,flared,y} + F_{CH4,EL,y} + F_{CH4,HG,y} + F_{CH4,NG,y} \quad (4)$$

Where:

$F_{CH4,PJ,y}$	=	Amount of methane in the LFG which is flared and/or used in the project activity in year y (tCH_4/yr)
$F_{CH4,flared,y}$	=	Amount of methane in the LFG which is destroyed by flaring in year y (tCH_4/yr)
$F_{CH4,EL,y}$	=	Amount of methane in the LFG which is used for electricity generation in year y (tCH_4/yr)

$F_{CH4,HG,y}$ = Amount of methane in the LFG which is used for heat generation in year y (tCH_4/yr)
$F_{CH4,NG,y}$ = Amount of methane in the LFG which is sent to the natural gas distribution network and/or to the trucks in year y (tCH_4/yr)

As there is no heat generation and natural gas distribution network involved in the project activity, $BE_{HG,y}$ = 0 and $BE_{NG,y}$ = 0. The equation (4) could be simplified as equation (5):

$$F_{CH4,PJ,y} = F_{CH4,flared,y} + F_{CH4,EL,y} \quad (5)$$

$$F_{CH4,flared,y} = F_{CH4,sent\_flare,y} - PE_{flare,y} / GWP_{CH4} \quad (6)$$

Where:
$F_{CH4,flared,y}$ = Amount of methane in the LFG which is destroyed by flaring in year y (tCH_4/yr)
$F_{CH4,sent\_flare,y}$ = Amount of methane in the LFG which is sent to the flare in year y (tCH_4/yr)
$PE_{flare,y}$ = Project emissions from flaring of the residual gas stream in year y (tCO_2e/yr)
GWP_{CH4} = Global warming potential of CH_4 (tCO_2e/tCH_4)

Ex ante estimation of $F_{CH4,PJ,y}$

An ex ante estimate of $F_{CH4,PJ,y}$ is required to estimate baseline emission of methane from the SWDS (according to equation (3) in order to estimate the emission reductions of the proposed project activity. It is determined as follows:

$$F_{CH4,PJ,y} = \eta_{PJ} \, x \, BE_{CH4,SWDS,y} / GWP_{CH4} \quad (7)$$

Where:
$F_{CH4,PJ,y}$ = Amount of methane in the LFG which is flared and/or used in the project activity in year y (tCH_4/yr)
$BE_{CH4,SWDS,y}$ = Amount of methane in the LFG that is generated from the SWDS in the baseline scenario in year y (tCO_2e/yr)
η_{PJ} = Efficiency of the LFG capture system that will be installed in the project activity
GWP_{CH4} = Global warming potential of CH_4 (tCO_2e/tCH_4)

$BE_{CH4,SWDS,y}$ determined using the methodological tool "Emissions from solid waste disposal sites" (version 07.0)

$$BE_{CH4,SWDS,y} = \varphi_y \times (1 - f_y) \times GWP_{CH4} \times (1 - OX) \times \frac{16}{12} \times F \times DOC_{f,y} \times MCF_y \times \sum_{x=1}^{y} \sum_{j} (W_{j,x} \times DOC_j \times e^{-k_j \times (y-x)} \times (1 - e^{-k_j})) \quad (8)$$

Where:
$BE_{CH4,SWDS,y}$ = Baseline methane emissions occurring in year y generated from waste disposal at a SWDS during a time period ending in year y (tCO_2e/yr)
x = Years in the time period in which waste is disposed at the SWDS, extending from the first year in the time period ($x = 1$) to year y ($x = y$)
y = Year of the crediting period for which methane emissions are calculated (y is a consecutive period of 12 months)
$DOC_{f,y}$ = Fraction of degradable organic carbon (DOC) that decomposes under the specific

		conditions occurring in the SWDS for year *y* (weight fraction)
$W_{j,x}$	=	Amount of solid waste type *j* disposed or prevented form disposal in the SWDS in the year *x* (t)
φ_y	=	Model correction factor to account for model uncertainties for year *y*
f_y	=	Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year *y*
GWP_{CH4}	=	Global warming potential of CH_4 (tCO_2e/tCH_4)
OX	=	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)
F	=	Fraction of methane in the SWDS gas (volume fraction)
MCF_y	=	Methane correction factor for year *y*
DOC_j	=	Fraction of degradable organic carbon in the waste type *j* (weight fraction)
k	=	Decay rate for the waste type j (1 / yr)
j	=	Type of residual waste or types of waste in the MSW

The following guidance has been taken into account when applying the tool:
(a) f_y in the tool shall be assigned a value of 0 because the amount of LFG that would have been captured and destroyed is already accounted for in equation 3;
(b) In the tool, *x* begins with the year that the SWDS started receiving wastes (e.g. the first year of SWDS operation); and
(c) Sampling to determine the fractions of different waste types is not necessary because the waste composition can be obtained from previous studies.

Determination of $F_{CH4,BL,y}$

This step provides a procedure to determine the amount of methane that would have been captured and destroyed (by flaring) in the baseline due to regulatory or contractual requirements, to address safety and odour concerns, or for other reasons (collectively referred to as requirement in this step). The four cases in the Table below are distinguished. The appropriate case should be identified and the corresponding instructions followed.

Table E.2 Cases for determining methane captured and destroyed in the baseline

Situation at the start of the project activity	Requirement to destroy methane	Existing LFG capture and destruction system
Case 1	No	No
Case 2	Yes	No
Case 3	No	Yes
Case 4	Yes	Yes

There was no regulation or standard that enforces methane destruction in LFG when Qizi Mountain Landfill began operating. Besides, Qizi Mountain Landfill didn't collect and utilize the LFG prior to the implementation of the project activity, and no landfill gas capture and destruction system existing. Therefore, this project activity is satisfied with the situation of Case 1: No requirement to destroy methane exits and no existing LFG capture and destruction system.

In this situation: $F_{CH4,BL,y} = 0$

ii) Baseline emissions associated with electricity generation ($BE_{EC,y}$)

The baseline emissions associated with electricity generation in year y ($BE_{EC,y}$) shall be calculated using the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption". When applying the tool:

(a) The electricity sources *k* in the tool correspond to the sources of electricity generated identified in the selection of the most plausible baseline scenario; and

(b) $EC_{BL,k,y}$ in the tool is equivalent to the net amount of electricity generated using LFG in year *y* ($EG_{PJ,y}$).

$$BE_{EC,y} = \sum_{k} EC_{BL,k,y} \times EF_{EL,k,y} \times (1 + TDL_{k,y})$$

Where:

$BE_{EC,y}$	=	Baseline emissions from electricity consumption in year *y* (tCO_2/yr)
$EC_{BL,k,y}$	=	Quantity of electricity that would be consumed by the baseline electricity consumption source *k* in year *y* (MWh/yr)
$EF_{EL,k,y}$	=	Emission factor for electricity generation for source k in year y (tCO_2/MWh)
$TDL_{k,y}$	=	Average technical transmission and distribution losses for providing electricity to source *k* in year *y*
k	=	Sources of electricity consumption in the baseline

Due to the fact that the baseline scenario is LFG2+E3 (the LFG from Qizi Mountain Landfill if released directly into atmosphere and equivalent electricity generation by the project activity was supplied by East China Power Grid), Scenario A of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" applies. $EF_{EL,k,y}$ shall therefore be determined in accordance with Option A1 of the tool, i.e. the applied emission factor shall be the combined margin emission factor of the Ease China Power Grid, calculated in accordance with the "Tool to calculate the emission factor of an electricity system" Version 04.0 ($EF_{EL,k,y} = EF_{grid,CM,y}$). For details of the calculation please see below.

Determination of $EF_{EL,k,y}$

The emission factor ($EF_{EL,k,y}$) is equal to the $EF_{grid,CM,y}$ which is calculated according to "*Tool to calculate the emission factor for an electricity system*" (Version 04.0). The following steps should be applied:

Step 1: Identify the relevant electricity systems

As per delineation of Chinese national electric system published by *National Development and Reform Commission*, which is also Chinese DNA, the relevant electricity system is *East China Power Grid*. The Project's electricity generation unit is connected to the *Jiangsu Grid* via local grid network, and thus finally to the *East China Power Grid*. The *East China Power Grid* is a large regional grid, which consists of five sub-grids: *Shanghai Grid, Jiangsu Grid, Zhejiang Grid, Anhui Grid* and *Fujian Grid*. There is substantial inter-grid power exchange among the above-mentioned sub-grids of the *East China Power Grid*. The *East China Power Grid* can be clearly identified as regional grid and information on the characteristics of this grid is publicly available. [8]

[8] National Development and Reform Commission of China published delineation of the electricity grid of China. Please visit http://cdm.ccchina.gov.cn/ for more details.

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:
Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.
No power generation from off-grid was included in the emission factor calculation of China DNA, therefore, Option I is used in this project.

Step3:. Select a method to determine the operating margin (OM)

"Tool to calculate the emission factor for an electricity system" outlines four options for the calculation of the Operating Margin emission factor ($EF_{grid,OM,y}$):

(a) Simple OM; or
(b) Simple adjusted OM; or
(c) Dispatch data analysis OM; or
(d) Average OM.

Any of the four methods can be used. "Dispatch Data Analysis" method is not selected herein, because dispatch data, let alone detailed dispatch data, are not available to the public or to the project participants. For the same reason, the simple adjusted OM methodology cannot be used.

The Simple OM method has been chosen instead. This is possible because low cost/ must run resources account for less than 50% of the power generation in the grid in most recent years. From 2001 to 2006, according to gross annual power generation statistics for the East China Power Grid, the ratio of power generated by hydro-power and other low cost/compulsory resources was: 36.76% in 2001, 35.95% in 2002, 34.43% in 2003, 38.37% in 2004, 38% in 2005 39.14% in 2006 respectively, significantly lower than 50%.[9]

The simple OM of the grid for the proposed project is calculated using the Ex ante option: A 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD to the DOE for validation, without requirement to monitor and recalculate the emissions factor during the crediting period.

Step4:. Calculate the operating margin emission factor according to the selected method

The simple Operating Margin (OM) emission factor is calculated as the generation-weighted average emissions per electricity unit (tCO2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units. As per *"Tool to calculate the emission factor for an electricity system"* (Version 04.0), it may be calculated:

- Option A: Based on the net electricity generation and a CO_2 emission factor of each power unit, or
- Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

[9] *China Energy Year Book, 2002-2006*

Since neither the data of fuel consumption nor the net electricity generation for every single electricity generation plant/unit is publicly available for East China Power Grid, the proposed project uses Option B for simple OM calculation. The calculation is based on the total net electricity generation and the fuel types and total fuel consumption of each provincial sub-grid of East China Power Grid. A three-year average, based on the most recent fuel consumption statistics available at the time of PDD submission, is used ("ex-ante" approach).

The calculation equation of the Simple OM is as follows:

$$EF_{grid,OMsimple,y=} \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_y}$$

Where:

$EF_{grid,OMsimple,y}$	=	Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$FC_{i,y}$	=	Amount of fuel type i consumed in the project electricity system in year y (mass or volume unit)
$NCV_{i,y}$	=	Net calorific value (energy content) of fuel type i in year y (GJ/mass or volume unit)
$EF_{CO2,i,y}$	=	CO_2 emission factor of fuel type i in year y (tCO_2/GJ)
EG_y	=	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must-run power plants/units, in year y (MWh)
i	=	All fuel types combusted in power sources in the project electricity system in year y
y	=	The relevant year as per the data vintage chosen in Step 3

The Operating Margin emission factors for 2004, 2005 and 2006 are calculated separately and then the three-year average is calculated as a full-generation-weighted average of the emission factors. For details please refer to Annex 3. The result of the Operation Margin Emission Factor calculation is 0.8095 tCO_2e/MWh.

The operating margin emission factor of the baseline is calculated as a fixed ex-ante value and will not be renewed within the second crediting period of the project activity.

Step 5: Calculate the build margin (BM) emission factor

In terms of vintage of data, project participants can choose between one of the following two options:

Option 1. For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

Option 2. For the first crediting period, the build margin emission factor shall be updated annually, ex- post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex-ante, as described in option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Project participants have chosen *Option 1* for BM calculation, and calculate the BM emission factor based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE, without requirement to monitor the emission factor during the second crediting period.

According to the tool, the sample group of power units *m* used to calculate the build margin should be determined using six procedures. However, due to the availability of data, this PDD adopted an alternative method proposed by the Chinese NDRC[10], which was approved by CDM Executive Board[11]. Since there is no way to separate the different generation technology capacities based on coal, oil or gas fuel etc from the generic term "thermal power" in the present energy statistics, the following calculation measures will be taken:

First, according to the energy statistics of the selected period in which approximately 20% capacity has been added to the grid, determine the ratio of CO_2 emissions produced by solid, liquid, and gas fuel consumption for power generation; then multiply this ratio by the respective emission factors based on commercially available best practice technology in terms of efficiency. Finally, this emission factor for thermal power is multiplied with the ratio of thermal power identified within the approximation for the latest 20% installed capacity addition to the grid. The result is the BM emission factor of the grid.

Sub-step 1
Calculate the proportion of CO_2 emissions related to consumption of coal, oil and gas fuel used for power generation as compared to total CO_2 emissions from the total fossil fuelled electricity generation (sum of CO_2 emissions from coal, oil and gas).

$$\lambda_{Coal,y} = \frac{\sum_{i \in Coal,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO2,i,j,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO2,i,j,y}}$$

$$\lambda_{Oil,y} = \frac{\sum_{i \in Oil,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO2,i,j,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,j} \times EF_{CO2,i,j,y}}$$

[10] The build margin calculations is derived from the "Bulletin on the baseline emission factor of the Chinese Electricity Grid", which has been published by the Chinese DNA (Office of National Coordination Committee on Climate Change) on Oct. 16. 2006.

[11] This is in accordance with the request for guidance: Application of AM0005 and AMS-I.D in China, a letter from DNV to the Executive Board, dated 07/10/2005, available online at: http://cdm.unfccc.int/UserManagement/FileStorage/6POIAMGYOEDOTKW25TA20EHEKPR4DM. This approach has been applied by many registered CDM projects using methodology ACM0002 so far.

$$\lambda_{Gas,y} = \frac{\sum_{i \in Gas,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO2,i,j,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO2,i,j,y}}$$

Where,
$F_{i,j,y}$ is the amount of fuel *i* (in a mass or volume unit) consumed by power sources j in year(s) y,
$NCV_{i,y}$ is the net calorific value of fuel i in year y (GJ/t for solid and liquid fuels, GJ/m^3 for gas fuels),
$EF_{CO2,i,j,y}$ is the CO_2 emission coefficient of fuel *i* (tCO_2/GJ)
Coal, Oil and *Gas* stands for solid, liquid and gas fuels respectively.

Sub-step 2: Calculate the operating margin emission factor of fuel-based generation.

$$EF_{Thermal,y} = \lambda_{Coal,y} \times EF_{Coal,Adv,y} + \lambda_{Oil,y} \times EF_{Oil,Adv,y} + \lambda_{Gas,y} \times EF_{Gas,Adv,y}$$

Where,
$EF_{Thermal,y}$ is the weighted emissions factor of thermal power generation with the efficiency level of the best commercially available technology in China in the previous three years.
$EF_{Coal,adv,y}$, $EF_{Oil,Adv,y}$, $EF_{Gas,Adv,y}$ are the emission factors of coal, oil and gas-fired power generation with efficiency levels of the best commercially available technology in China in the previous three years.

A coal-fired power plant with a total installed capacity of 600 MW is assumed to be the best commercially available technology in terms of efficiency, the estimated coal consumption of such a National Sub-critical Power Station with a capacity of 600MW is 307gce/kWh, which corresponds to an efficiency of 40.03% for electricity generation.

For gas and oil power plants a 390MW power plant with a specific fuel consumption of 232.3gce/kWh, which corresponds to an efficiency of 52.9% for electricity generation, is selected as the best commercially available technology in terms of efficiency.

The main parameters used for calculation of the thermal power plant emission factors are provided in Annex 3.

Sub-step 3: Calculate the Build Margin emission factor

$$EF_{grid,BM,y} = \frac{CAP_{Thermal,y}}{CAP_{Total,y}} \times EF_{Thermal,y}$$

Where,

$CAP_{Total,y}$ is the total capacity addition of the selected period in which approximately 20% capacity has been added to the grid,

$CAP_{Thermal,y}$ is the total thermal power capacity addition of the selected period in which approximately 20% capacity has been added to the grid.

Detailed calculations are provided in Annex 3.

The result of the Build Margin emission factor calculation is 0.6861 tCO_2/MWh.

The data sources for calculating OM and BM are:

1. Installed capacity, power generation and the rate of internal electricity consumption of thermal power plants for the years 2010 to 2012
   Source: *China Electric Power Yearbook* (2011-2013)
2. Fuel consumption and the net caloric value of thermal power plants the years 2010 to 2012
   Source: *China Energy Statistics Yearbook* (figures are for 2011-2013)
3. Carbon emission factor and carbon oxidation factor of each fuel
   Source: *Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook*, P1.23 and P1.24 in Chapter one.

Step 6: Calculate the combined margin emissions factor

The Baseline Emission Factor is calculated as a Combined Margin, using the weighted average of the Operating Margin and Build Margin.

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times \omega_{OM} + EF_{grid,BM,y} \times \omega_{BM}$$

The operating margin emission factor ($EF_{grid,OM,y}$) of East China Power Grid is 0.8095 tCO_2e/MWh and the build margin emission factor ($EF_{grid,BM,y}$) is 0.6861 tCO_2e/MWh. The defaults weights are used as specified in the emission factor tool: $\omega_{OM} = 0.25$ and $\omega_{BM} = 0.75$ for the second crediting period.

The result of the Baseline Emission Factor ($EF_{grid,CM,y}$) calculation is 0.71695 tCO_2e/MWh. Which is the same as $EF_{EL,k,y}$.

E.5. Difference between E.4 and E.3 representing the emission reductions of the project activity:

Project Emissions:

The Methodology clearly states that possible CO_2 emissions, resulting from other fuels than the recovered methane, should be accounted as project emissions. In this case, the proposed project activity will consume electricity from the grid when the electricity generation scheme is still not implemented or the generation equipment is under maintenance. Electricity imported from the grid for the operation of the project activity will be monitored as stated in Section D.2.2.

When the Project generates electricity, there is a net export of electricity to the grid and the project emissions from its electricity use are deducted from the emission reductions from its electricity generation.

Emission Reduction

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where:

ER_y Emission reductions in year y (tCO_2e/yr)

BE_y Baseline emissions in year *y* (tCO_2e/yr)
PE_y Project emissions in year *y* (tCO_2/yr)

Data and parameters that are available at validation:

Data / Parameter:	Regulatory requirements related to landfill gas projects
Data unit:	--
Description:	Regulatory requirements related to landfill gas projects
Source of data used:	The DNA shall be contacted to provide information regarding host country regulation.
Measurement procedures (if any):	
Any comment:	The information though recorded annually, is used for changes to the adjustment factor (AF) or directly $MD_{BL,y}$ at renewal of the crediting period. Relevant regulations for LFG project activities shall be updated at renewal of each crediting period. Changes to regulation should be converted to the amount of methane that would have been destroyed/combusted during the year in the absence of the project activity ($MD_{BL,y}$). Project participants should explain how regulations are translated into that amount of gas.

Data / Parameter:	GWP_{CH4}
Data unit:	$tCO_2e/tCH4$
Description:	Global warming potential of CH_4
Source of data used:	IPCC
Measurement procedures (if any):	21 for the first commitment period. Shall be updated according to any future COP/MOP decisions.
Any comment:	

Data / Parameter:	D_{CH4}
Data unit:	tCH_4/m_3CH_4
Description:	Methane Density
Source of data used:	
Measurement procedures (if any):	At standard temperature and pressure (0 degree Celsius and 1,013 bar) the density of methane is 0.0007168 tCH_4/m_3CH_4
Any comment:	

Data / Parameter:	$BE_{CH4,SWDS,y}$
Data unit:	tCO_2e
Description:	Methane generation from the landfill in the absence of the project activity at year *y*
Source of data used:	Calculated as per the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site".
Measurement procedures (if any):	As per the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site"

Any comment:	Used for ex-ante estimation of the amount of methane that would have been destroyed/combusted during the year

Data / Parameter:	φ
Data unit:	-
Description:	Model correction factor to account for model uncertainties
Value to be applied:	0.9
Any comment:	Oonk et el. (1994) have validated several landfill gas models based on 17 realized landfill gas projects. The mean relative error of multi-phase models was assessed to be 18%. Given the uncertainties associated with the model and in order to estimate emission reductions in a conservative manner, a discount of 10% is applied to the model results.

Data / Parameter:	OX
Data unit:	-
Description:	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)
Source of data:	Conduct a site visit at the solid waste disposal site in order to assess the type of cover of the solid waste disposal site. Use the IPCC 2006 Guidelines for National Greenhouse Gas Inventories for the choice of the value to be applied.
Value to be applied:	Use 0.1 for managed solid waste disposal sites that are covered with oxidizing material such as soil or compost. Use 0 for other types of solid waste disposal sites.
Any comment:	

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

Data / Parameter:	**DOC_f**
Data unit:	-
Description:	Fraction of degradable organic carbon (DOC) that can decompose
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value to be applied:	0.5
Any comment:	

Data / Parameter:	**MCF**
Data unit:	-
Description:	Methane correction factor
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value to be applied:	Use the following values for MCF: • 1.0 for anaerobic managed solid waste disposal sites. These must have controlled placement of waste (i.e., waste directed to specific deposition areas, a

	degree of control of scavenging and a degree of control of fires) and will include at least one of the following: (i) cover material; (ii) mechanical compacting; or (iii) leveling of the waste. • 0.5 for semi-aerobic managed solid waste disposal sites. These must have controlled placement of waste and will include all of the following structures for introducing air to waste layer: (i) permeable cover material; (ii) leachate drainage system; (iii) regulating pondage; and (iv) gas ventilation system. • 0.8 for unmanaged solid waste disposal sites – deep and/or with high water table. This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of greater than or equal to 5 meters and/or high water table at near ground level. Latter situation corresponds to filling inland water, such as pond, river or wetland, by waste. • 0.4 for unmanaged-shallow solid waste disposal sites. This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of less than 5 metres.
Any comment:	The methane correction factor (MCF) accounts for the fact that unmanaged SWDS produce less methane from a given amount of waste than managed SWDS, because a larger fraction of waste decomposes aerobically in the top layers of unmanaged SWDS.

Data / Parameter:	**DOC_j**
Data 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 to be applied:	Apply the following values for the different waste types j:

Waste type j	**DOCj (% wet waste)**	**DOCj (% dry waste)**
Wood and wood products	43	50
Pulp, paper and cardboard (other than sludge)	40	44
Food, food waste, beverages and tobacco (other than sludge)	15	38
Textiles	24	30
Garden, yard and park waste	20	49
Glass, plastic, metal, other inert waste	0	0

If a waste type, prevented from disposal by the proposed project activity, can not clearly be attributed to one of the waste types in the table above, project participants should choose among the waste types that have similar characteristics that waste type where the values of DOCj and kj result in a conservative estimate (lowest emissions), or request a revision of / deviation from this methodology. For example, in the case of empty fruit bunches (EFB), as their characteristics are similar to wood in terms of cellulose, hemi-cellulose, and lignin content, the parameters correspondent of wood should be used.

Any comment:	According to 2nd FSR, page 10, wet waste is treated in the proposed project.

<table>
<tr><td>Data / Parameter:</td><td>k_j</td></tr>
<tr><td>Data unit:</td><td>-</td></tr>
<tr><td>Description:</td><td>Decay rate for the waste type j</td></tr>
<tr><td>Source of data:</td><td>IPCC 2006 Guidelines for National Greenhouse Gas Inventories (adapted from Volume 5, Table 3.3)</td></tr>
<tr><td>Value to be applied:</td><td>Apply the following default values for the different waste types j
<table>
<tr><th colspan="2" rowspan="2">Waste type j</th><th colspan="2">Boreal and Temperate (MAT≤20°C)</th><th colspan="2">Tropical (MAT>20°C)</th></tr>
<tr><th>Dry (MAP/PET <1)</th><th>Wet (MAP/PET >1)</th><th>Dry (MAP< 1000mm)</th><th>Wet (MAP> 1000mm)</th></tr>
<tr><td rowspan="2">Slowly degrading</td><td>Pulp, paper and cardboard (other than sludge), Textiles</td><td>0.04</td><td>0.06</td><td>0.045</td><td>0.07</td></tr>
<tr><td>Wood, wood products and straw</td><td>0.02</td><td>0.03</td><td>0.025</td><td>0.035</td></tr>
<tr><td>Moderately degrading</td><td>Other (non-food) organic putrescible garden, yard and park waste</td><td>0.05</td><td>0.10</td><td>0.065</td><td>0.17</td></tr>
<tr><td>Rapidly degrading</td><td>Food, food waste, sewage sludge, beverages and tobacco</td><td>0.06</td><td>0.185</td><td>0.085</td><td>0.40</td></tr>
</table>
NB: MAT – mean annual temperature, MAP – Mean annual precipitation, PET – potential evapotranspiration. MAP/PET is the ratio between the mean annual precipitation and the potential evapotranspiration.

If a waste type, prevented from disposal by the proposed project activity, can not clearly be attributed to one of the waste types in the table above, project participants should choose among the waste types that have similar characteristics that waste type where the values of DOCj and kj result in a conservative estimate (lowest emissions), or request a revision of / deviation from this methodology.
For example, in the case of empty fruit bunches (EFB), as their characteristics are similar to wood in terms of cellulose, hemi-cellulose, and lignin content, the parameters correspondent of wood should be used.</td></tr>
<tr><td>Any comment:</td><td>Document in the CDM-PDD the climatic conditions at the SWDS site</td></tr>
</table>

	(temperature, precipitation and, where applicable, evapotranspiration). Use long-term averages based on statistical data, where available. Provide references. The effective reference is not available; therefore the conservative value is determined for each waste type.

Data / Parameter:	$EF_{CM,y}$
Data unit:	tCO2/MWh
Description:	Combined margin CO2 emission factor of East China Power Grid in year *y*
Source of data used:	*China Electric Power Yearbook 2005-2007, China Energy Statistics Yearbook 2007, 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
Value applied:	0.8847
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	Based on combined margin calculation of OM and BM of East China Power Grid. Weighting of OM and CM are both 50%. The proposed project uses fixed ex ante emission factor in the first crediting period. Detailed calculation is provided in Annex 3.

Data / Parameter:	$EF_{OM,y}$
Data unit:	tCO2/MWh
Description:	Simple operating margin CO2 emission factor of East China Power Grid in year *y*
Source of data used:	*China Electric Power Yearbook 2005-2007, China Energy Statistics Yearbook 2007, 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
Value applied:	0.9540
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	The proposed project uses fixed ex ante emission factor in the first crediting period. Detailed calculation is provided in Annex 3.

Data / Parameter:	$EF_{BM,y}$
Data unit:	tCO2/MWh
Description:	Build margin of East China Power Grid in year *y*
Source of data used:	*China Electric Power Yearbook 2005-2007, China Energy Statistics Yearbook 2007, 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
Value applied:	0.8154
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	The proposed project used Chinese NDRC method to calculate BM emission factor. This alternative method was accepted by EB in registered projects from China. The proposed project uses fixed ex ante emission factor in the first crediting period. Detailed calculation is provided in Annex 3.

Data / Parameter:	*EG*
Data unit:	MWh
Description:	Electricity delivered to the grid by relevant power sources *m* in (years) *y* (2004-2006, East China Power Grid)

Source of data used:	*China Electric Power Yearbook 2005-2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate the OM and BM

Data / Parameter:	*Electricity Imports from Connected Electricity Systems to* East China Power Grid
Data unit:	MWh
Description:	Electricity Imports from Connected Electricity Systems to East China Power Grid in (years) y (2004-2006)
Source of data used:	*China Electric Power Yearbook 2005-2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate the OM

Data / Parameter:	$F_{i,y}$
Data unit:	10^4t/10^8m^3
Description:	Amount of fuel *i* consumed by relevant power sources *m* in (years) *y* (2004-2006, East China Power Grid)
Source of data used:	*China Energy Statistics Yearbook 2005-2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate OM and BM

Data / Parameter:	NCV_i
Data unit:	TJ/10^3 t
Description:	Net calorific value per mass or volume unit of fuel i
Source of data used:	*China Energy Statistics Yearbook 2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate OM and BM

Data / Parameter:	EF_{CO2}
Data unit:	tCO2/TJ
Description:	CO2 emission factor per energy unit of fuel
Source of data used:	*Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	IPCC default value
Any comment:	To calculate OM and BM

Data / Parameter:	*Efficiency level of best technology commercially available in China for coal-fired power generation*
Data unit:	%
Description:	Efficiency level of best technology commercially available in China for coal-fired

	power generation
Source of data used:	*China DNA: Notification on Determining the Regional Grid Emission Factors of China*
Value applied:	37.28%
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate BM

Data / Parameter:	*Efficiency level of best technology commercially available in China for oil and gas-fired power generation*
Data unit:	%
Description:	Efficiency level of best technology commercially available in China for oil and gas-fired power generation
Source of data used:	*China DNA: Notification on Determining the Regional Grid Emission Factors of China*
Value applied:	48.81%
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate BM

Data / Parameter:	CAP
Data unit:	MW
Description:	The installed capacity of power generation sources j in (years) y (2004-2006, East China Power Grid)
Source of data used:	*China Electric Power Yearbook 2005-2007*
Value applied:	Provided in Annex 3
Measurement procedures (if any):	Officially released statistics; publicly accessible and reliable data source
Any comment:	To calculate BM

Data / Parameter:	$R_{LFG,y}$
Data unit:	%
Description:	The ratio between the LFG collected and the LFG used within the engines on average each year.
Source of data to be used:	The actual layout of the entire collection pipelines, which covers from the well to electricity generator.
Value applied:	Higher than 65%. It is close to 100%
Measurement procedures (if any):	The actual layout of the entire collection pipelines, which covers from the well to electricity generator will be checked by DOE carefully.
Any comment:	

E.6. Table providing values obtained when applying formulae above:

SECTION F. Environmental impacts

F.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

According to the relevant environmental law and regulations, an Environmental Impact Assessment Form has been prepared for each phases. The one of 1st phase was approved by the Jiangsu EPA on 23rd January, 2006. The one of 2nd phase was approved by the Jiangsu EPA on 9th May, 2008. The main assessment conclusions are provided below:

1. Impact on the air quality

Dust will be considered as the main impact on the air quality during the construction period. The project owner has already planed several approaches to solve this problem. Therefore, the dust generated during the construction period will effectively controlled through effective onsite management and related bylaws which will have less impact on the environment. After the project put into operation, the project activity will generate NOx in tail gas. However, by utilizing the advanced low NOx combustion facility, the Emission Limits of Atmospheric Pollutants (GB16297-1996) shall be met. The limit by this standard is NOx≤500mg/Nm^3. The implementation of the project will only has very light impact on the regional air quality. The height of tail gas pipe shall be not lower than 15 meters.

2. Noise impact

The major noise resources during the construction period are the operating equipments, the transportation and so on, and the noise impacts the builders and the residents nearby. In order to minimize the noise impacts, few measures are carried out, such as the high dB (A) will be strictly forbidden from 10 pm to 6 am and 12 am to 2pm; enforcement of the onsite management and establishing related bylaws. The noise during the construction period has locality and temporality characteristic; it will disappear when the construction work finished. After the project is put into operation, the major resource of noise pollution is from running of the turbines, generator and valves. Muffler is installed to avoid the noise impact on the local citizens and employees. During construction, Limited Noise on Construction Site (GB12523-1990) shall be meet. During operation, Noise Control Standard in Industrial Plant (GB12348-90) shall be meet.

3. Impact on the aquatic environment

In the proposed project, the landfill leachate will be collected properly and transported to Suzhou Gaoxin wastewater treatment plant finally. In fact, it is not an additional discharge, compared to the baseline scenario. Moreover, the Discharge Limits of Wastewater Pollutants (GB8978-1996) will be fully met after the treatment. Hence, the implementation of the project will not influence the aquatic enviroment.

4. Impact of solid waste on the environment

There is no additional solid waste generated to baseline scenario.

5. Impact on water and soil loss

Construction of the project will not lead to any water and soil loss.

6. Impact on the ecological environment

All construction activity will take place on vacant factory land. Therefore, the project has little impact on the local eco-environment.

F.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

Environmental impacts are considered to be insignificant. Enough consideration has been given to possible impacts on the environment of the Project. The project participants have an environmental friendly system for the implementation of the Project.

SECTION G. Stakeholders' comments

G.1. Brief description how comments by local stakeholders have been invited and compiled:

Since the proposed project is located in an existing landfill site, according to the regulation of EIA in China, it is not necessary to hold a stakeholder consultation for EIA in this case. However, being concerned about the interests of the local stakeholders, the project owner still collected opinions from them in various occasions and forms. Early in 2006, an initial stakeholder consultation for CDM was held by project owner and another CDM developer.

Initial Stakeholder Consultation for GS VER
The invitations of the GS initial stakeholder consultation were sent on 28th March 2008. South Pole Carbon Asset Management Co., Ltd. invited international stakeholders through emails. Recipients of invitation included Gold Standard, local supporters of Gold Standard, Greenpeace and WWF in China. Meanwhile, plant owner invited representatives of local habitants, plant employees, policy makers and local media. Public hearing was held on 10th April 2008, introduction of the project was made and comments were collected.

Internet Stakeholder Consultation
South Pole Carbon Asset Management Co., Ltd. made public the non-technical descriptions of the project design document and potential environmental impacts through its website on *http://www.southpolecarbon.com/goldstandard_consultations.htm*. Comments from stakeholders through the Internet were invited.

2nd Stakeholder Consultation for GS VER

Before the oral hearing for local stakeholders, an invitation was prepared for the 2nd Round Local Stakeholder Consultation including basic information and procedures of the meeting. This invitation, along with the non-technical description of the project, the non-technical description of the project EIA and the Appendix E of Gold standard (the checklist in both English and Chinese) and the Gold Standard Sustainable Development Assessment Matrix, in both English and Chinese, were attached for comments.
The plant owner invited head of county, head of village, representative of villagers committee, and representatives of plant staff by phone call. The local residents near plant site were invited by invitations, which were posted on the billboard of villagers committee and the billboard along the main street of the village.

Meanwhile, South Pole Carbon sent invitations via email on 25th September 2008, to Gold Standard supporting organizations in China, with a copy to the Gold Standard. In addition, South Pole Carbon sent invitations via email again to some of supporting organizations in China on 6th October 2008, in order to receive more confirmations and comments before the oral hearing for local stakeholders. In the end, South Pole Carbon received manual email reply from Gold Standard, auto-reply message from Greenpeace China and phone call from GEI China. Due to limited resources, Greenpeace China and GEI China are not able to participate in this consultation.

The meeting was held at Landfill field of Qizi Mountain on 15th October 2008

Internet Stakeholder Consultation
South Pole Carbon Asset Management Co., Ltd. made public the non-technical descriptions of the project design document and potential environmental impacts through its website on *http://www.southpolecarbon.com/goldstandard_consultations.htm*. Comments from stakeholders through the Internet were invited.

Main Stakeholder Consultation

It took 2 months on website *http://www.southpolecarbon.com/goldstandard_consultations.htm*. South Pole Carbon Asset Management Co., Ltd was responsible for replying comments and questions by interested stakeholders via email (info@southpolecarbon.com). Interested stakeholders could review PDD, non-technical summary, local stakeholders report and so on. They could send their comments to South Pole Carbon Asset Mgt. freely.

G.2. Summary of the comments received:

Initial Stakeholder Consultation for GS VER

Hearing of the initial stakeholder consultation for the project applying for a GS VER project was conducted on 10th April 2008. 17 questionnaires were collected and no negative comments and opinions were found from them. Officer from EPA Ms. Zhou said that this project was in compliance with the Nation Environment Protection Index; she hoped that the project owner could continue to strengthen the monitoring of the environment, and control the situation at anytime. Several villagers live in Gusu and Mudu said that this project shows excellent economical and environmental benefits. Since the construction of Everbright EP industrial park, the atmospheric pollution apparently decreased. They extremely support this project. A workers' representative said that the noise control of this project is good and work place can be kept silent; the odor of the site can be well monitored and controlled; domestic sewage is the main discharge in this project, but with regular control, the amount of water is small. The government will support the project.

Internet Stakeholder Consultation
No comment has been received from internet.

2nd Stakeholder Consultation for GS VER

Mr. Chen from Everbright said this project changes waste to valuable, not only improves the environment but also generates electricity and heat. However, they are sourcing additional revenue to keep the operation of the plant properly, due to the increasing operation and maintenance cost and low electricity tariff. The VER project application is the only way, which they can find out, to get rid of the financial problem.

Head of Mudu County Mr. Qian said that this project obviously improves the surrounding environment, especially the air quality; From the county government prospective, they will continue to support this project and take responsibility to monitor the relevant criteria of sustainable development.

A worker's representative said they are completely in line with health and safety standard during operation. The noise control of this project is good and work place can keep silence; the odor of site place can be well monitored and controlled;

Many villagers said that this project environment benefit and create some employment positions. Since the construction of Everbright EP industrial park, the atmospheric pollution apparently decreased. They have no reason to against this project.

Internet Stakeholder Consultation
No comment has been received from internet.

Main Stakeholder Consultation
No comment has been received from internet.

G.3. Report on how due account was taken of any comments received:

No negative comments were received.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

The Project Owner

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