

*PP Comments on request for review of ESTRE Itapevi Landfill Gas Project
(EILGP)*

- 1 -

Reason for Request:

The additionality of the project is not clearly demonstrated:

- *Although the step 4 analysis mentions which landfills have forced methane extraction, there is no data presented to show what share of total landfill sites these represent or whether they have applied as CDM project (It would be possible that these sites did represent a significant share of the sector and are common practice).*

According to the Ministério da Ciência e Tecnologia¹, “There is no data related to the methane recovery in Brazil, although it is possible to affirm that there are very few solid waste final disposal sites where the methane extraction is possible.” and, “Anyway, the recovery is unknown and it is known that, when it happens, this extraction amount is insignificant”.

Table 1 below, presents the final destination of the waste per municipality, according to PNSB 2000².

Table 1. Districts with waste collection services, by final waste destination unit, according with the Geographical Regions and Federation Units - 2000

Geographical Regions and Federation Units	Districts with waste collection services								
	Total	Units of collected waste final destination							
		Open Dump	Open dumps in Flooded Areas	Controlled Landfill	Sanitary Landfill	Special Waste Landfill	Composting	Recycling	Incineration
<i>Brazil</i>	<i>8.381</i>	<i>5.993</i>	<i>63</i>	<i>1.868</i>	<i>1.452</i>	<i>810</i>	<i>260</i>	<i>596</i>	<i>325</i>
North	512	488	8	44	32	10	1	0	4
Rondônia	54	50		7	3				
Acre	22	17		2	4	1			
Amazonas	71	60	2	11	4	1			3
Roraima	15	15							
Pará	183	191	5	11	17	5	1		0
Amapá	23	23	1						1
Tocantins	144	132		13	4	3			
Northeast	2.714	2.538	7	169	134	69	19	28	7
Maranhão	204	199	1	11	2	18	2	1	4

¹ Emissões de Metano no Tratamento e na Disposição de Resíduos - Primeiro Inventário Brasileiro de Emissões Antrópicas de Gases de Efeito Estufa – Relatórios de Referência, Ministério da Ciência e Tecnologia, 2006, Brasil;

² Pesquisa Nacional de Saneamento Básico 2000, Instituto Brasileiro de Geografia e Estatística – IBGE, 2002, Rio de Janeiro, Brasil.

*PP Comments on request for review of ESTRE Itapevi Landfill Gas Project
(EILGP)*

- 2 -

Piauí	217	212	3	11	3	2			
Ceará	551	512	1	16	62	1			
Rio Grande do Norte	171	158	2	17	5	2	1	2	
Paraíba	268	264		2	5	7	8	4	1
Pernambuco	359	329		43	15	8	5	12	1
Alagoas	113	107		9	1	6	1	2	
Sergipe	80	65		21	2	4			
Bahia	751	692		39	39	21	2	7	1
Southeast	2.846	1.713	36	785	683	483	117	198	210
Minas Gerais	1.396	1.153	17	293	97	108	56	52	50
Espírito Santo	236	133		66	66	31	1	8	10
Rio de Janeiro	273	199	7	92	61	61	22	42	6
São Paulo	941	228	12	334	459	283	38	96	144
South	1.746	848	11	738	478	219	117	351	101
Paraná	619	402	4	210	134	142	12	43	4
Curitiba	1				1	1			1
Santa Catarina	376	199	2	130	107	26	19	52	29
Rio Grande do Sul	751	247	5	398	237	51	86	256	68
Mid-West	563	406	1	132	125	29	6	19	3
Mato Grosso do Sul	118	91	1	39	18	1		10	
Mato Grosso	158	124		35	13	7	5	4	1
Goiás	286	191		57	94	20		4	1
Distrito Federal	1			1		1	1	1	1

Source: IBGE, Diretoria de Pesquisas, Departamento de População e Indicadores Sociais, Pesquisa Nacional de Saneamento Básico 2000.

Note: one same district might have more than one final destination of waste collected.

Note: This table was adapted from the original table from PNSB

It can be confirmed, although the number of final units are not presented, that only 17% of the Brazilian districts send the municipal waste collected to landfills, confirming an uncommon practice of landfills in Brazil.

Also, the districts which send the waste to landfills with an active methane recovery system represent a very small (only 231) part of the 1.452 ones and those mentioned landfills were developed under the CDM because there is no legal obligation to destroy the methane and because such projects would not be implemented without the CDM as the CERs revenues are the only source of income for those projects, as presented in the table below:

*PP Comments on request for review of ESTRE Itapevi Landfill Gas Project
(EILGP)*

- 3 -

Table 2. Landfills operating a CDM Project

Project Title	Period for Comments	Situation	Municipalities Attended
Salvador da Bahia Landfill Gas Management Project	12 Dec 03 - 12 Jan 04	Registered (registration number 0052)	1 ³ (Salvador)
NovaGerar Landfill Gas to Energy Project	05 Apr 04 - 06 May 04	Registered (registration number 0008)	1 ⁴ (Nova Iguaçu)
Landfill gas to energy project at Lara landfill, Maua, Brazil	21 May 04 - 21 Jun 04	Registered (registration number 0091)	8 ⁵ (Diadema Mauá Praia Grande Ribeirão Pires Rio Grande da Serra São Bernardo do Campo São Caetano do Sul São Vicente)
Brazil MARCA Landfill Gas to Energy Project	24 May 04 - 24 Jun 04	Registered (registration number 0137)	9 ⁶ (Cariacica Domingos Martins Marechal Floriano Santa Leopoldina Santa Teresa Serra Venda Nova do Imigrante Viana Vitória)
Onyx gas recovery project – SASA, Brazil	25 Oct 04 - 25 Nov 04	Registered (registration number 0027)	7 ³ (Campos do Jordão Caçapava Cunha)

³ Project Design Document – Salvador da Bahia Landfill Gas Management Project;

⁴ Relatório Ambiental – Central de Tratamento e Disposição Final de Resíduos de Nova Iguaçu – Adrianópolis – Nova Iguaçu – RJ - Brasil, 2003;

⁵Source: CETESB – Inventário Estadual de Resíduos Sólidos Domiciliares; Relatório 2005;

⁶ <http://www.marcaambiental.com.br/clipublicos.asp>

*PP Comments on request for review of ESTRE Itapevi Landfill Gas Project
(EILGP)*

- 4 -

Project Title	Period for Comments	Situation	Municipalities Attended
			Ilhabela São José do Barreiro São Bento do Sapucaí São Sebastião)
Caieiras landfill gas emission reduction	04 Dec 04 - 04 Jan 05	Registered (registration number 0171)	5 ³ (Caieiras Cajamar Franco da Rocha São Paulo Taboão da Serra)
ESTRE's Paulínia Landfill Gas Project (EPLGP)	24 Dec 04 - 24 Jan 05	Registered (registration number 0165)	12 ³ (Americana Artur Nogueira Capivari Cesário Lange Hortolândia Jaguariúna Paulínia Pereiras Santo Antônio de Posse Sumaré Tietê Valinhos)
Bandeirantes Landfill Gas to Energy Project (BLFGE)	28 Jan 05 - 28 Feb 05	Registered (registration number 0164)	1 ³ (São Paulo)
São João Landfill Gas to Energy Project (SJ)	17 Feb 05 - 20 Mar 05	Registered (registration number 0373)	1 ³ (São Paulo)
Project Anaconda	30 Apr 05 - 31 May 05	Registered (registration number 0226)	4 ³ (Francisco Morato Jandira Nazaré Paulista Santa Isabel)

PP Comments on request for review of ESTRE Itapevi Landfill Gas Project (EILGP)

- 5 -

Project Title	Period for Comments	Situation	Municipalities Attended
Canabrava Landfill Gas Project	18 Aug 05 - 17 Sep 05	Registered (registration number 0893)	1 ⁷ (Salvador)
Aurá Landfill Gas Project	02 Dec 05 - 01 Jan 06	Submitted for registration	1 ⁸ (Belém)
Manaus Landfill Gas Project	07 Dec 05 - 06 Jan 06	Validation	1 ⁹ (Manaus)
Central de Resíduos do Recreio Landfill Gas Project	09 Mar 06 - 08 Apr 06	Registered (registration number 0648)	105
Alto-Tiete landfill gas capture project	13 Mar 06 – 12 Apr 06	Validation	9 ³ (Arujá Carapicuíba Ferraz de Vasconcelos Itaquaquecetuba Mairiporã Mogi das Cruzes Poá Suzano Vargem Grande Paulista)
ESTRE Itapevi Landfill Gas Project (EILGP)	22 Mar 06 - 21 Apr 06	Submitted for registration	3 ³ (Cotia Itapevi São Roque)
Quitauna Landfill Gas Project	05 May 06 - 04 Jun 06	Submitted for registration	1 ³ (Guarulhos)
Natal Landfill Gas Recovery Project	26 Jul 06 - 24 Aug 06	Validation	8 ¹⁰ (Ceará-Mirim Extremoz)

⁷ Project Design Document - Canabrava Landfill Gas Project

⁸ Project Design Document - Aurá Landfill Gas Project

⁹ Project Design Document - Manaus Landfill Gas Project;

¹⁰ SEMPLA – Secretaria Municipal de Planejamento e Gestão Estratégica de Natal; Natal: Diretrizes e Estratégias para uma Cidade Sustentável; available at < www.natal.rn.gov.br/sempla/paginas/File/plano_integrado.pdf>; Accessed on 19 April 2007

PP Comments on request for review of ESTRE Itapevi Landfill Gas Project (EILGP)

- 6 -

Project Title	Period for Comments	Situation	Municipalities Attended
			Macaíba Natal Nísia Floresta Parnamirim São Gonçalo do Amarante São José de Mipubu)
SANTECH – Saneamento & Tecnologia Ambiental Ltda. – SANTEC Resíduos landfill gas emission reduction Project Activity	15 Aug 06 - 13 Sep 06	Validation	19 ¹¹
CTRVV Landfill emission reduction project	30 Sep 06 - 29 Oct 06	Validation	1 (Vila Velha)
Probiogas - JP-João Pessoa Landfill Gas Project	05 Dec 06 - 03 Jan 07	Validation	5 (Bayeux Cabedelo Conde João Pessoa Santa Rita)
Proactiva Tijuquinhas Landfill Gas Capture and Flaring project	20 Feb 07 - 21 Mar 07	Validation	21 ¹²
ESTRE Pedreira Landfill Gás Project (EPLGP)	03 Mar 07 - 01 Apr 07	Validation	1 (São Paulo)
Terrestre Ambiental Landfill Gás Project	03 Mar 07 - 01 Apr 07	Validation	3 ³ (Bertioga Cubatão Santos)
Embralixo/Araúna - Bragança Landfill Gas Project (EABLGP)	10 Mar 07 - 08 Apr 07	Validation	1 ³ (Bragança Paulista)
URBAM/ARAUNA - Landfill Gas Project (UALGP)	10 Mar 07 - 08 Apr 07	Validation	2 ³

¹¹ Project Design Document SANTECH – Saneamento & Tecnologia Ambiental Ltda. – SANTEC Resíduos landfill gas emission reduction Project Activity.

¹² Project Design Document - Proactiva Tijuquinhas Landfill Gas Capture and Flaring project, January 2007, version 3

*PP Comments on request for review of ESTRE Itapevi Landfill Gas Project
(EILGP)*

- 7 -

Project Title	Period for Comments	Situation	Municipalities Attended
			(Paraibuna São José dos Campos)

Thus, this kind of project activity is not widely spread in Brazil and the landfills that operate this type of project represent only a small portion of the total existing landfills.

- *The PP argues that the only alternative is the continuation of the landfill. This may not be a correct conclusion. The project with electricity generation using the captured LFG should be added to the alternatives examined. Investment analysis should be revised incorporating the changes in identification of alternatives;*

Presently, as written in the ESTRE Itapevi Project Design Document, methane recovery is not mandatory for landfills in Brazil and the cost of capturing the methane and investing in electricity generation is not economically feasible as a baseline scenario. The fact of the majority of the waste in Brazil (83%) is disposal at sites which are not at the level of sanitary landfill (see Table 1 above).

According to CDM pipeline¹³, in Brazil there are 6 CDM landfill projects with power generation. All the others (20 projects) consist in methane flaring. It is possible to conclude that, even with the CERs revenue incentive, the power generation with landfill gas is not a common practice in Brazil.

One reason for the small quantity of landfill power generation is the lack of technical expertise in the country. As there was so far just little research on this subject in Brazil, the companies that decide to use this kind of technology, will preferably buy the equipments from companies based in US or EU, and train the work labor to operate the system.

Another reason is the high investment costs estimated for biogas collection for power generation. If a project implements only the biogas collection and flaring system, the costs are estimated to be around €770.000,00 for a similar project, as showed in Table 3 below:

Table 3. Estimated costs for a similar biogas collection and flare systems

Pipelines and wellheads	€124.300,00
Biogas plant (blowers, chillers, flares, manifolds and others)	€576.684,50
Facility building	€15.000,00
Engineering expenses	€66.469,00
Total estimated costs	€774.953,50

Effective methane recovery for electricity generation can be achieved at sanitary landfills, but only with significant investments. From our experience, the cost involved in the implementation of a power generation system (out of the needed biogas collection system) is estimated to be also around €770.000,00¹⁴ per MW of installed capacity.

¹³ CDM Pipeline overview updated 1st April 2007, Capacity Development for the Clean Development Mechanism – CD4CDM, available at <http://www.cd4cdm.org>.

¹⁴ Market data and Master Thesis – Diagnóstico técnico institucional da recuperação e uso energético do biogás gerado pela digestão anaeróbica de resíduos, João Wagner Silva Alves, São Paulo, 2000;

In Table 4 below, it can be noted that the estimated costs involved in installing the collection system and a 3 MW power generation are very high and, as demonstrated above, such projects are only being pursued in conjunction with the support of CER revenues.

Table 4. Estimated costs for a similar biogas collection and power generation system

Power generation group	€1.286.446,26
Electric panels	€283.445,09
Power transformers	€38.982,03
Sound attenuators	€30.050,04
Electromechanical installations	€458.455,51
Transport	€41.185,62
Insurance	€13.744,64
Emergency power generation group	€3.691,69
Filters	€158.108,74
<i>Total Power Generation system 3MW Installed capacity</i>	€2.314.109,63
Biogas collection and backup flare	€744.951,72
<i>Total Power Generation + biogas collection and backup flare</i>	€3.059.061,35

In addition, there is a lack of funding in Brazil. CNI¹⁵ says that “...the bank loans are expensive; the payments are in short terms and not enough to supply the market. The capital market is not very developed, restricting the shares sells and others bonds directly to investors. And external financing, in the last years, has been oscillating in payment terms and costs, also being an unstable resource”. Furthermore, to get the loans, companies underwent through lot of bureaucracy, and the whole process could last months.

As showed above, it is reasonable to conclude that the lack of technical expertise, the high investment costs and the lack of funding make the landfill power generation not a plausible scenario. Thus, the only plausible scenario is the continuation of the actual scenario (no active methane collection and flaring).

¹⁵ Financiamento no Brasil – Desafio ao Crescimento, CNI – Confederação Nacional da Indústria, Brasília, 2003.