Vega Bahia Landfill Project Design Document

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A. General Description of Project Activity

- **Title: Slavador da Bahia Landfill Gas Project**

- **Description**
  - 850,000 t MSW/yr
  - Organic content of waste 65%
  - Flaring equipment with capacity of 6,250 m^3/hr in 2000 to be expanded to 46,250 m3/hr in 2020
  - 5% of CER proceeds will be allocated to local community and environmental activities (sustainable development)

- **Technical Description**
  - Biogas capture and treatment system complying with European standards

- **National and Sectoral Policies**
  - No specific requirement on gas management
  - New waste management policy under discussion but currently no changes are anticipated

B. Baseline Methodology

- **Title and Reference**
  - Contractual amount of landfill gas capture and flaring defined through public concession contract

- **Justification of Choice of Methodology**
  - There exists a contractual agreement where the operator is responsible for all aspects of the landfill
  - Contract awarded through competitive bidding
  - Contract stipulates amount of landfill gas to be flared → performance among top 20% in the previous 5 years
  - No generation of electricity using captured methane occurs or planned

B. Baseline Methodology

- **Description of Methodology**

$CH4_{flared,y}$

$CH4_{baseline,y}$

Project **Baseline**

$$ER\_CH4_y = CH4_{flared,y} - CH4_{baseline,y}$$

$$ER_Y = ER\_CH4_y * CF * GWP\_CH4$$

ER_y:	GHG reduction in t CO_{2e}
ER_CH4_y:	Methane emission reduction in m^3
CF:	0.000662 t CH_4/m^3 CH_4
GWP_CH4:	21 (Global warming potential for CH_4)

B. Baseline Methodology

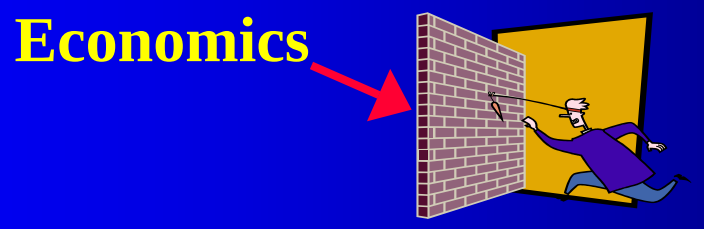
- **Description of Methodology**
  - First order decay model
  - Applied to a single batch (either a layer or a year), then results are summed for all batches

$$CH4_{projected,y} = k * L_o * \sum_{t=0 \text{ to } y} Waste_{contract,t} * e^{-k(y-t)}$$

$CH4_{projected,y}$:	Methane projected to be generated during a given year
K:	Decay rate
L_o:	m^3 CH4 / t MSW
$Waste_{contract,t}$:	Waste projected to be lanfilled at year t

B. Baseline Methodology

- Description of how emissions are reduced below baseline (Additionality)



  - Services are paid through a fixed fee per ton MSW
  - Contract clearly indicates amount of methane to be flared
  - No regulatory requirement governs recovery, therefore, passive system of 20% efficiency are considered best practice

B. Baseline Methodology

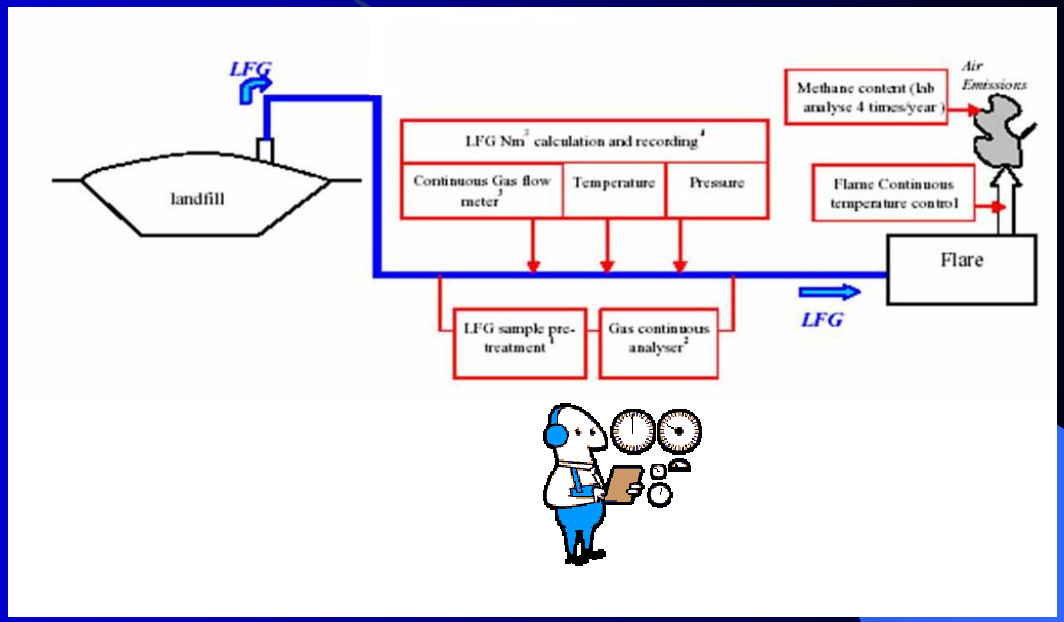
- Description of how the definition of project boundary is applied to the project
  - Emissions occur within project boundary
  - Leakage emissions – Electricity used to pump the methane gas in the new collection system. This was ignored given the domination of hydro in the energy resource mix of Bahia
- Details of baseline development
  - Date of completing baseline: 18 June 2003
  - Name of person/entity determining baseline: ICF consulting

C. Duration of Project Activity

- Starting date
  - 1/1/03
- Expected lifetime
  - 17 years
- Crediting period
  - 7 years to be renewed

D. Monitoring Methodology

- Monitoring emissions from project activity



  - Measured
    - LFG (c)
    - % CH4 in LFG (c)
    - Temp. (c)
    - Pressure (c)
    - SW disposed (d)
  - Calculated
    - Amount of methane flaring for baseline (a)
    - Amount of methane collected in addition to baseline (a)
    - CO_{2e} reduced (a)

a annual, d daily, c continuous

D. Monitoring Methodology

- Quality Control / Quality Assurance Procedures
  - Procedure for equipment calibration
  - ISO 9000/14000 certification

E. Calculation of Emission Reduction

22,076,034 t CO_{2e}

Project

7,568,926 t CO_{2e}

Baseline

Corrected by monitoring CH_4 flared

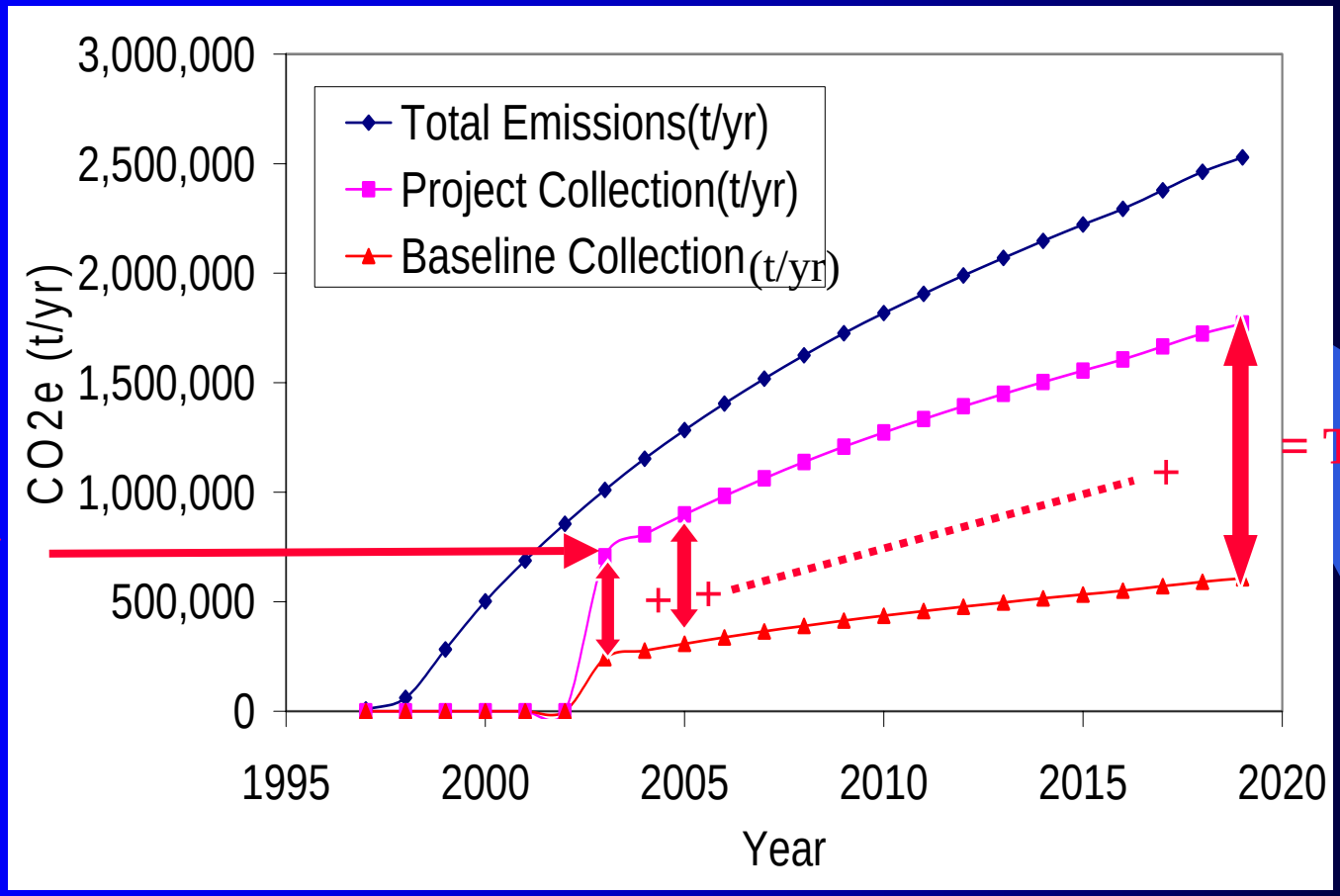
Corrected by monitoring actual waste and % CH_4 in LFG

$$ER\_CH4_{y=1to15} = \boxed{22{,}076{,}034^{*}} - \boxed{7{,}568{,}926^{*}} = 14{,}507{,}108 \quad tCO_{2e}$$

* Based on rough calculations (actual ICF calculations not included in PDD)

E. Calculation of Emission Reduction

*



* Based on rough calculations (actual ICF calculations not included in PDD)

F. Environmental Impacts

- The project will destroy other emissions of local impacts besides methane e.g. volatile organic compounds (VOCs) → positive environmental impact
- No negative environmental impacts are associated with the project → no need for an environmental impact assessment

G. Stakeholders Comments

- Meeting with the press → article in one of the newspapers, television broadcast, radio broadcast
- Public presentation with local stakeholders announced in 3 newspapers
- local authorities, press, NGOs, private sector, universities attended. A form for comments was distributed during the presentation
- Project brief available on website and an email for any comments from stakeholders
- Only technical comments were received