

UNFCCC Clean Development Mechanism Monitoring Report

**Copiulemu landfill gas project**  
(Center for the Storage and Transfer, Recovery and Control of Waste,  
Treatment and Disposal of Industrial and Household Waste)

CDM registration number: 0096

Monitoring period: 01/12/2006 - 31/07/2007

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## Project background

Copiulemu landfill gas project (Improvement of Gas Extraction System in Copiulemu Dump) has been registered as CDM project by the UNFCCC on 03 Dec 2005 under reference number 0096.

Further background on this project can be found in the PDD and associated documents, which are available on the UNFCCC website:

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1126875537.72/view.html>

Party involved is Chile (Host Country). The project participant is Copiulemu S.A., a Chilean company specialising in the treatment of industrial and household waste substances in the 8<sup>th</sup> Region.

## Monitoring background

Basis for the calculation of emission reductions is the monitoring plan in the Project Design Document (PDD). The calculation of emission reduction in the PDD applied methodology ACM0001 (version 01 of 03/09/04).

The validation report specifies that detailed monitoring procedures need to be developed and implemented prior to commencement of the project. Such procedures have been made operational in the Monitoring Protocol Version 7. This document is necessary to make the monitoring plan operational but is not an official document in the CDM project cycle.

## Monitoring results

Emission reductions:

The calculated emission reductions for the monitoring period amount to **16,215 tCO<sub>2</sub>** equivalent (see spreadsheet results copied below).

## Covered monitoring period

This is the second monitoring report of this project and covers the period December 1<sup>st</sup> 2006 to July 31<sup>st</sup> 2007.

### Presentation of monitoring results - spreadsheets

All monitoring data have been included in an Excel workbook 'Spreadsheet ERs from Copiulemu', which includes:

1. Overview. This worksheet contains an overview of the content of the entire workbook.
2. Factors & Data Variables. A list of the default values and/or values defined in the PDD which are used to calculate emission reductions.
3. Input 2006 and Input 2007. Contains the raw monitoring data generated in the period of reference by the site.
4. ERs Calculation 2006 and ERs Calculation 2007. Shows the calculation of emission reductions on the basis of raw data. Missing values or corrected values have been colour-coded. Moreover, a summary of total emission reductions, the project emissions and the net emission reductions for the period covered under this report is also included.

## Calculation methodology

The calculation methodology of emission reduction for this project is summarized below.

Calculation took place in the following steps for the data generated by each of the flare systems:

1. Total flow is recorded in Nm<sup>3</sup> each day.
2. Methane content (%vol) of landfill gas is measured and recorded daily.
3. Daily flow is multiplied by daily methane content, which in turn is multiplied by density of CH<sub>4</sub> to obtain tCH<sub>4</sub>; Result from 3. Is multiplied by flare efficiency to obtain tCH<sub>4</sub> actually flared (MD<sub>flared,y</sub>). The flare efficiency is established from a yearly check, calculated as follows: (% methane in LFG - % methane in exhaust -0,5) / % methane in LFG: 98,78%
4. Result from 3. Is multiplied by GWP of CH<sub>4</sub> to obtain MD<sub>project, y</sub> in tCO<sub>2</sub>eq.
5. Result from 4. Is multiplied by GWP of CH<sub>4</sub> as well as the AF (17%) to obtain MD<sub>reg, y</sub> in tCO<sub>2</sub>eq i.e. the amount of tCO<sub>2</sub>eq that would have already been flared without the project activity.
6. kWh consumed from the grid for the project activity per month are transformed into MWh and multiplied by the grid emission factor as stated in the PDD (0,987 tCO<sub>2e</sub>/MWh) to obtain emissions from electricity consumption in tCO<sub>2</sub>.
7. Result from 5 and 6. Are subtracted to the result from 4. To establish daily tCO<sub>2</sub>eq reduced i.e. daily net emission reductions.
8. Data from 4.-7. Is aggregated per month.
9. Total net emission reductions per month are added to obtain total overall net emission reductions for the specified time frame to be included in the monitoring report.

### Special event:

In the period of the 01<sup>st</sup> to the 23<sup>rd</sup> of February 2007, there was a mechanical failure of the flare. As it can be appreciated in the calculations, no CERs were claimed for this period.

The monitoring report has been checked by management to ensure that the information contained within is correct.

**Table 1: Summary Data**

YEAR								
2006 - 2007	Aggregated results	MD <sub>flared, y</sub>	MD <sub>project y</sub>	MD <sub>reg y</sub>	Aggregated EG <sub>y</sub>	Emissions from Electricity Consumption	ER y	
Month	tCH <sub>4</sub>	tCH <sub>4</sub>	tCO <sub>2e</sub>	tCO <sub>2e</sub>	MWh	tCO <sub>2e</sub>	tCO <sub>2e</sub>	
DEC	112.29	110.93	2,329.57	396.03	2.00	1.97	1,932	
JAN	124.30	122.80	2,578.80	438.40	2.97	2.94	2,137	
FEB	17.73	17.52	367.86	62.54	0.34	0.33	305	
MAR	127.06	125.52	2,635.97	448.11	3.23	3.19	2,185	
APR	131.85	130.25	2,735.33	465.01	3.69	3.64	2,267	
MAY	119.63	118.19	2,481.92	421.93	3.96	3.91	2,056	
JUN	130.48	128.90	2,706.87	460.17	3.86	3.81	2,243	
JUL	179.76	177.58	3,729.26	633.97	4.95	4.89	3,090	
			<b>19,565.56</b>	<b>3,326.15</b>		<b>24.68</b>	<b>16,215</b>	