

# Carbon Trading with Landfill Gas (LFG) and carbon credits; JI - and CDM - projects

Trade with greenhouse gas emissions respectively greenhouse gas allowances

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## 1. General

The presentation will give you some basics and back rounds about GreenHouseGases (GHG), the effects, the history, assessments and prognoses. Furthermore the consequences of an increasing greenhouse effect, Global Warming Potential (GWP) as an extract:

Table 1

Greenhouse gas	Estimated life-time (years)	20 years GWP	100 years GWP	500 years GWP
CO <sub>2</sub>	Variable	1	1	1
CH <sub>4</sub>	12	62	<b>23</b>	7
N <sub>2</sub> O	114	275	296	156
Various CFCs (Chlorofluorocarbons)	Depending on the gas type	Depending on the gas type	Depending on the gas type	Depending on the gas type

## 2. Emission trade – in accordance with the Kyoto protocol (act on greenhouse gas emission trade)), the EU directive 003/87/EU and the “grey market”- “environmental indulgence”

Timetables of establishing and furthermore, the two project-related mechanisms exist abroad (from the emitter's point of view) called "Joint Implementation" (JI) and the "Clean Development Mechanism" (CDM) – see slides during the lecture. The emission allowances (“certificates”) of these projects are named ERUs (Emission Reduction Units) for JI projects and CERs

(Certified Emission Reductions) for CDM projects. You will see actual market price and projects in the presentation and the prices dated in April 2005 of the proceedings.

Potential buyers – potential sellers  
source: BMfUNR, Mr F. Schafhausen

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EU-member state	CO2-Emission 1990	CO2-Emission 2000	aim	difference in Mio. t CO <sub>2</sub> -Äquivalenten
Belgium B	143,1	151,9	132,4	- 19,5
Danmark DK	69,4	68,5	54,8	- 13,7
Germany D	1222,8	991,4	966,0	- 25,4 / - 17 Industry
Finnland FIN	77,1	74,0	77,1	+ 3,1
France F	551,8	542,3	551,8	+ 9,5
Greece GR	104,8	129,7	131,0	+ 1,3
Ireland IR	53,4	66,3	60,4	- 5,9
Italy I	522,1	543,5	488,2	- 55,3
Luxemburg L	10,8	5,9	7,8	+ 1,9
Austria A	77,4	79,8	67,3	- 12,5
Portugal P	65,1	84,7	82,7	- 2,0
Sweden SWE	70,6	69,4	73,4	+ 4,0
Espania ESP	286,4	386,0	329,4	- 56,6
United Kingdom UK	742,5	649,1	649,7	+ 0,6
Netherlands NL	210,3	216,9	197,7	-19,2

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Figure 1: Buyers and sellers in Europe (EUA, CER, ERU)

### 3. LANDFILL GAS (LFG) - Technical fields of application, explosion protection

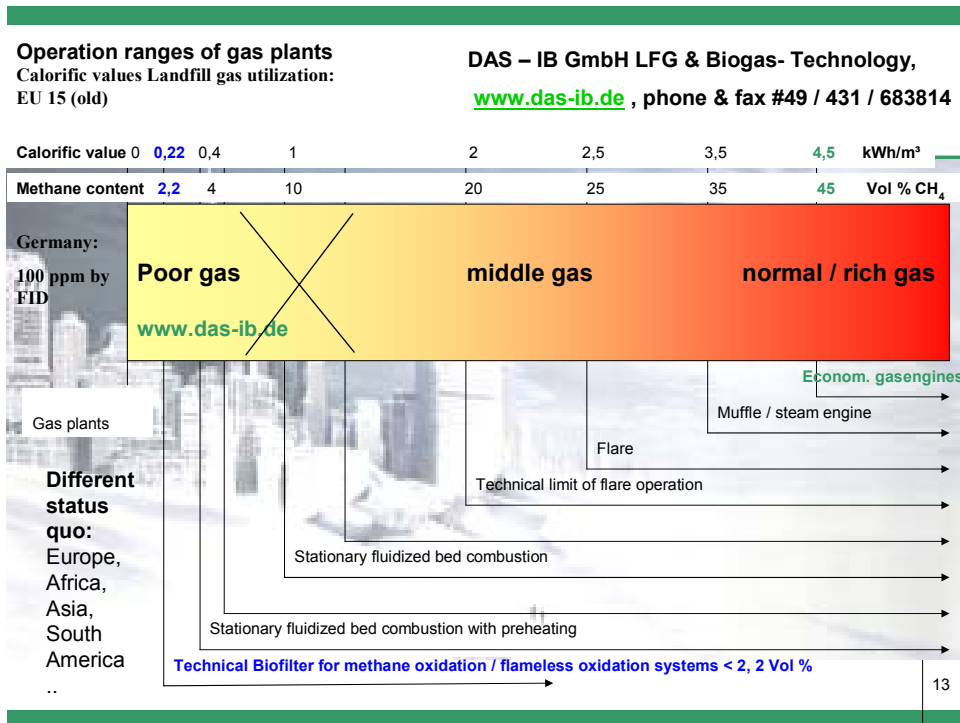


Figure 2. Operating ranges of gas utilization plants

#### 4. Carbon / CO<sub>2</sub> trading certificates for landfill gas? YES

<p>Income, rough estimation CDM - projects</p>	<p>DAS – IB GmbH, LFG &amp; Biogas- Technology, <a href="http://www.das-ib.de">www.das-ib.de</a>, phone &amp; fax #49 / 431 / 683814</p>
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Fig. 3. Rough estimation of your income

The only risk is: “exact” gas prognosis, a “good” gas extraction system, operation costs and the O&M costs for a contract duration of 10 years or 3 times 7 years in a CDM – LFG- project.

See:

\* Stachowitz, 15 Years of experience in the field of LFG disposal – standards, problems, solutions and procedures, Sardinia 2001, 8<sup>th</sup> International Waste Management and Landfill Symposium

\* [http://www.das-ib.de/mitteilungen/Payatas\\_Landfill\\_Gas\\_PDD\\_Comments.pdf](http://www.das-ib.de/mitteilungen/Payatas_Landfill_Gas_PDD_Comments.pdf)

\* [http://www.das-ib.de/vortraege/sardinia\\_en.pdf](http://www.das-ib.de/vortraege/sardinia_en.pdf)

<p>Risks in LFG - project</p>	<p>DAS – IB GmbH, LFG &amp; Biogas- Technology, <a href="http://www.das-ib.de">www.das-ib.de</a>, phone &amp; fax #49 / 431 / 683814</p>
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Figure 4. Risk in LFG - projects

#### 5. CONCLUSIONS

CDM - projects:

Develop your projects before your government will enact regulations with regards to LFG oxidation or “waste to energy” in your host country.

JI - projects in “old” Europe (EU 15):

An ecological balance is more than necessary as a decision-making tool for the maintenance or discontinuance of the poor gas disposal operation for the CO<sub>2</sub> emissions trade, as by means of these plants, CO<sub>2</sub> emissions of the slightly caloric landfill methane gas may be reduced at a reasonable price.