


Methane Projects barriers to development

G.A.S. Energietechnologie GmbH

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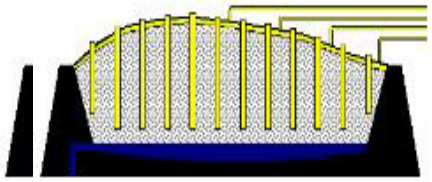
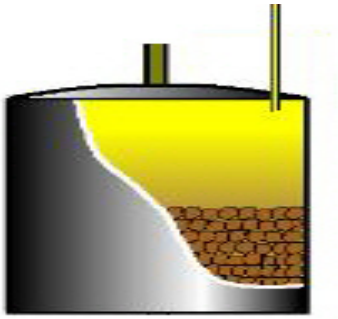
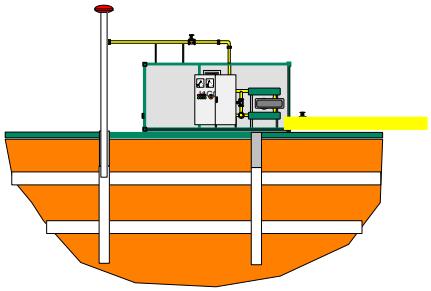
Methane Resources

Landfill Gas	Sewage Gas Biogas	Coal Mine Gas
		
World Potential	Potential in EU	World Potential
9.000 MW_{el}	2.400 MW_{el}	6.500 MW_{el}

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Coal Mine Gas

Technological barriers

- gas availability & quality
- emerging technology on ventilation air methane (VAM)
- inefficient CMM drainage systems
- access to the grid

Commercial barriers

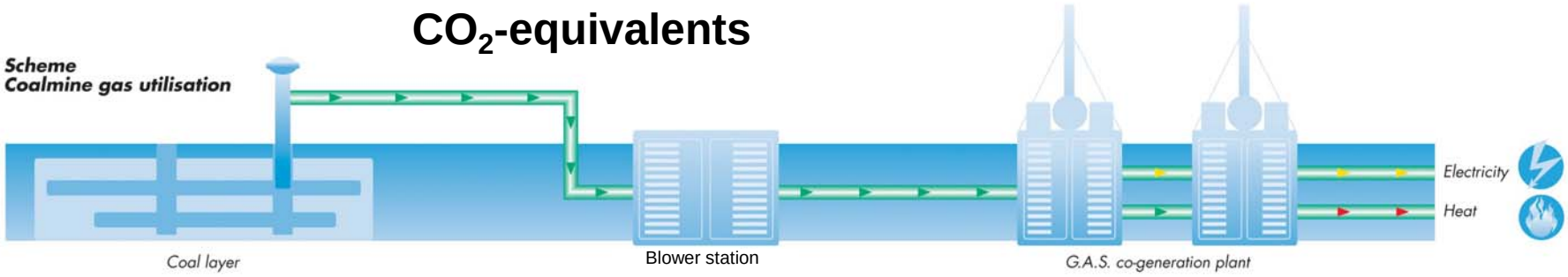
- electricity price
- gas ownership
- lack of financing

Political barriers

- support in CO_2 credit regulations
- support in legal structure
- approval mechanism
- foreign investment policy

Coal Mine Gas example

project	**Kurl 3**
location	**Lünen, Germany**
fuel	**coal mine gas**
commissioning	**2002/2003**
el. performance	**4.074 kW_{el}**
th. performance	**- kW_{th}**
energy for	**appr. 10.000 households/a**
emission reductions of	**approx. 130.000 t/a CO_2-equivalents**



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Landfill gas

Technological barriers

- quality of waste disposal system
  - gas collection system
  - collecting system for leakage
  - landfill covering and sealing
- gas quality
  - methane content
  - trace elements

  → gas treatment necessary

Landfill gas

Commercial barriers

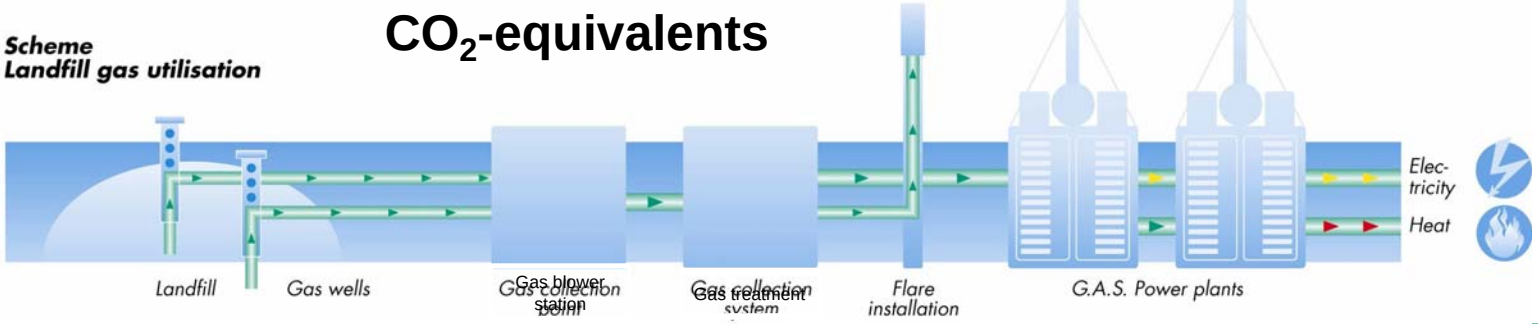
- lack of financing
- size of the project
- electricity price (secured to financing period)

Political barriers

- legal transparence to the waste, energy and environmental issues
- support in CO_2-credits regulation
- foreign investment policy

Utilization – example: cogeneration units

project	**Garraf**
location	**Barcelona (ES)**
fuel	**landfill gas**
commissioning	**2002/2003**
el. performance	**12.430 kW_{el}**
th. performance	**- kW_{th}**
energy for	**appr. 30.000 households/a**
emission reductions of	**approx. 400.000 t/a CO_2-equivalents**



G.A.S. Technology for Green Energy

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Sewage- / Biogas

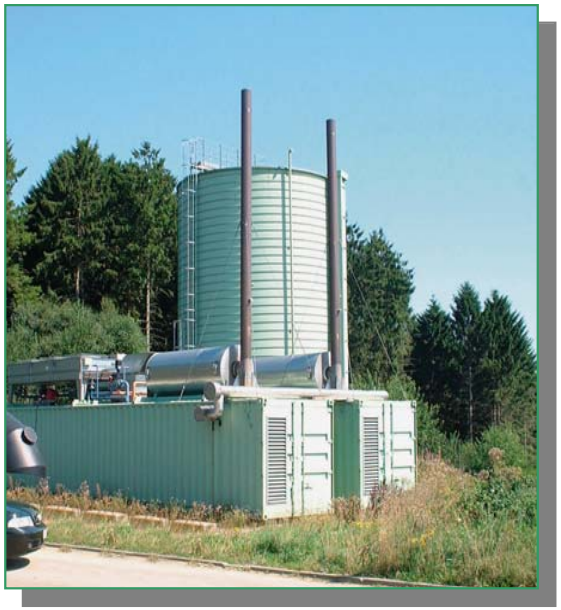
Technical barriers
- logistics of biomass have to be secured for long period
- proven technology for fermentation

Commercial barriers
- feasibility due to project size
- price for biomass and electricity (secured to financing period)

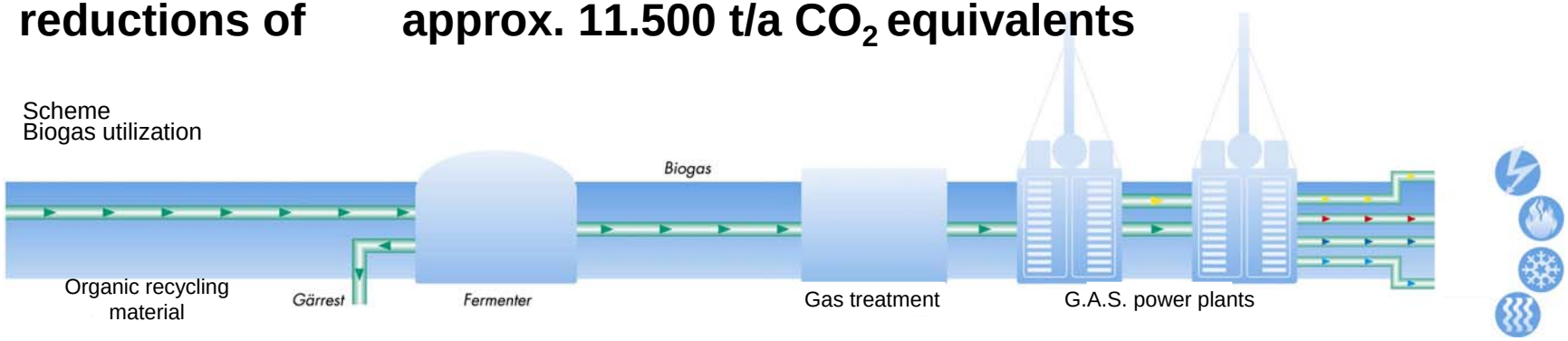
Political barriers
- clear structure for biomass / bio-waste management
- support in CO_2 credits regulation
- forcing investment policy

Utilization – example: cogeneration units

project	**Lutosa**
location	**Leuze-en-Hainaut, Belgium**
fuel	**biogas**
commissioning	**2002**
el. performance	**2.500 kW_{el}**
th. performance	**3.300 kW_{th}**
energy for	**approx. 6.000 households/a**
emission reductions of	**approx. 11.500 t/a CO_2 equivalents**



Scheme
Biogas utilization



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Conclusion

- Technological barriers could be managed by technical systems (s.a. gas treatment, drainage system, etc.)
- Clear and stable conditions due to the financing period are necessary to overcome commercial barriers
- Countries are able to reduce political barriers by support in
  - foreign investments
  - CO_2 regulations
  - clear legal structures for methane projects

Thank you very much for your

kind attention!

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