

# IEA Bioenergy Task 37

## Swiss Country Report

Norway – April 2012



Traitement et valorisation de  
déchets et  
d'effluents organiques

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# Biogas Plant Inventory

*Number of Plants*

## Number of plants by sector (2011)

**Agriculture:** 76 plants

**Biowaste:** 27 plants

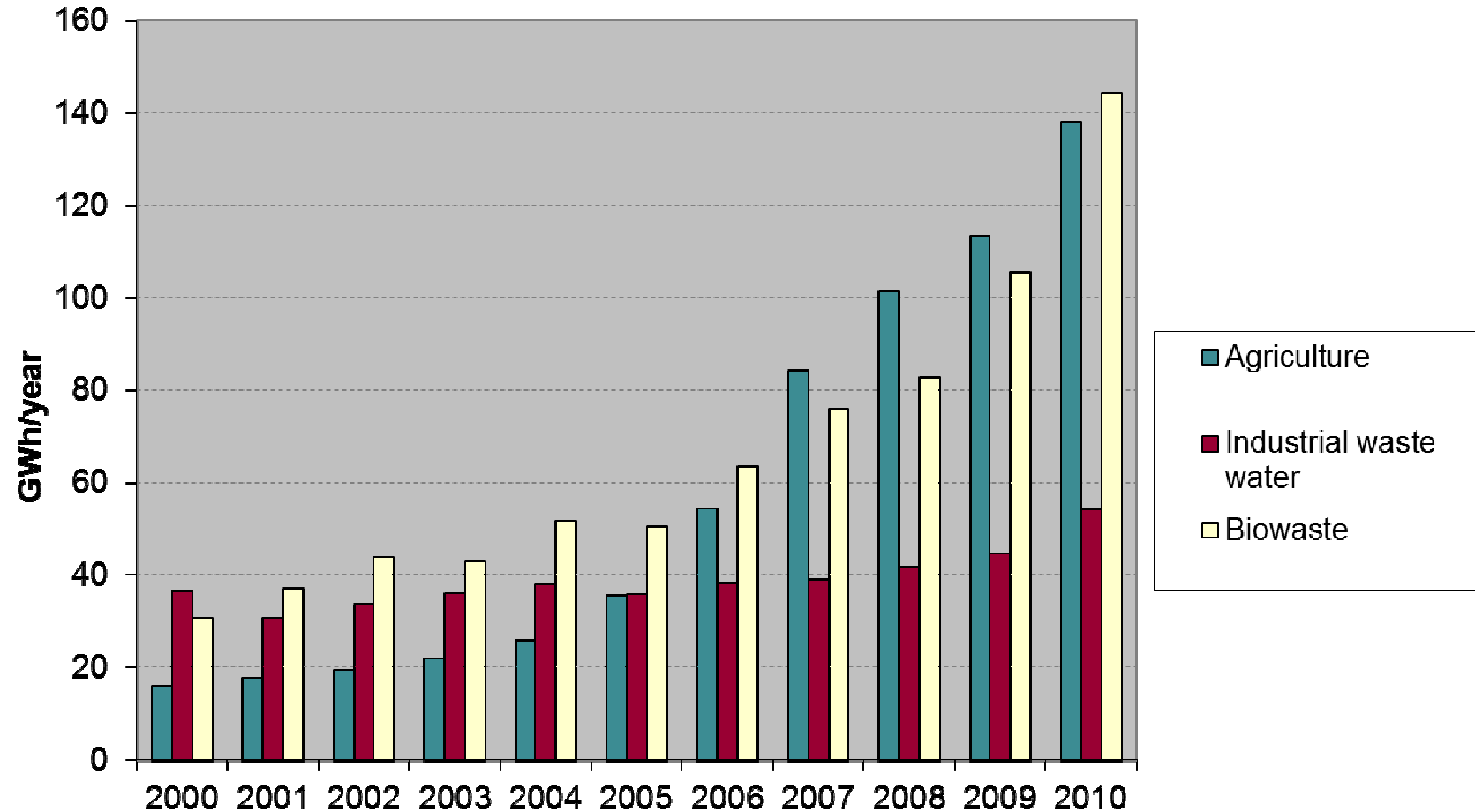
**Industrial waste water:** 22 plants

**Waste water treatment plants (WWTP):** ~ 460 plants (~ 60 codigestion)



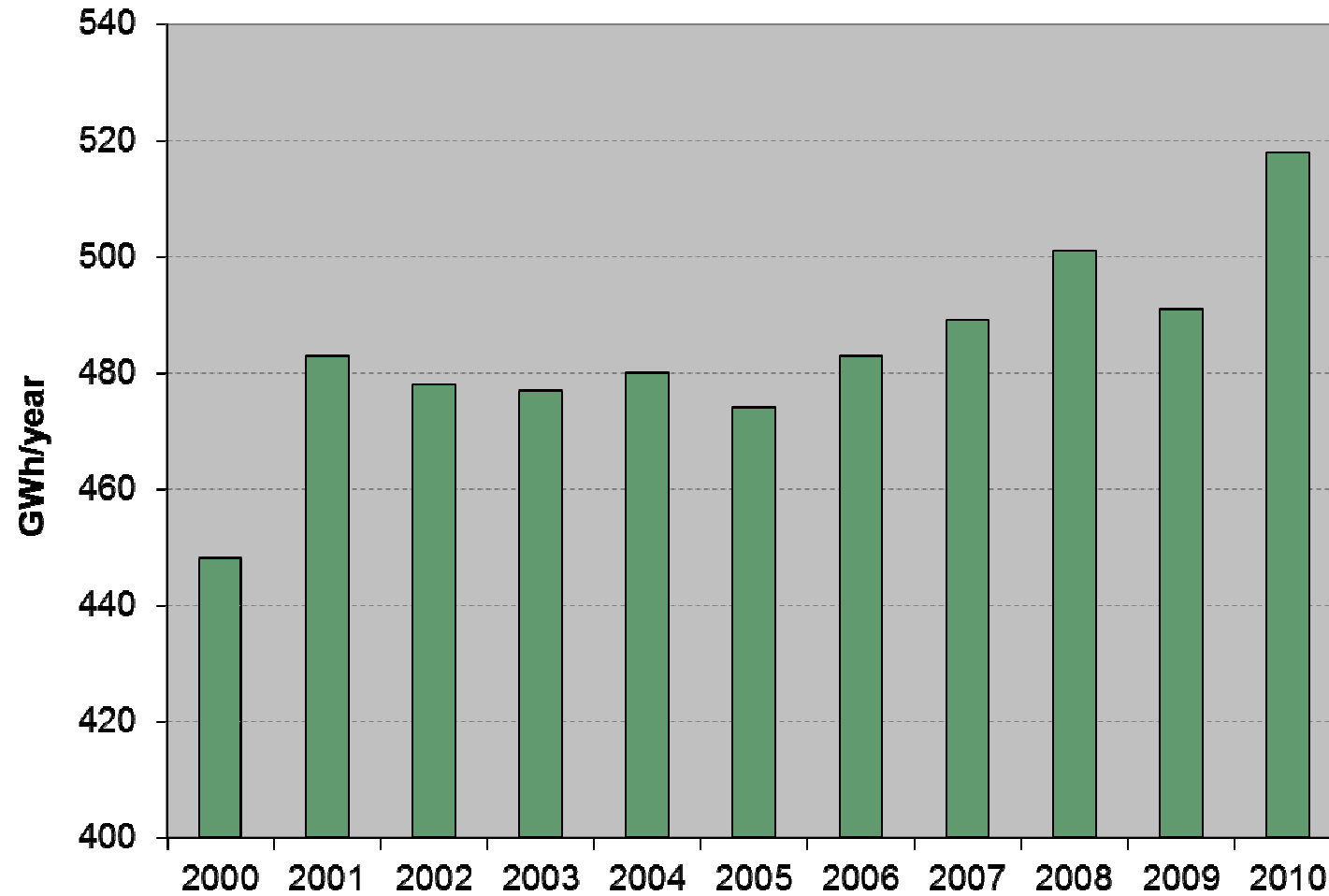
# Biogas Plant Inventory

*Gross gas production*



# Biogas Plant Inventory

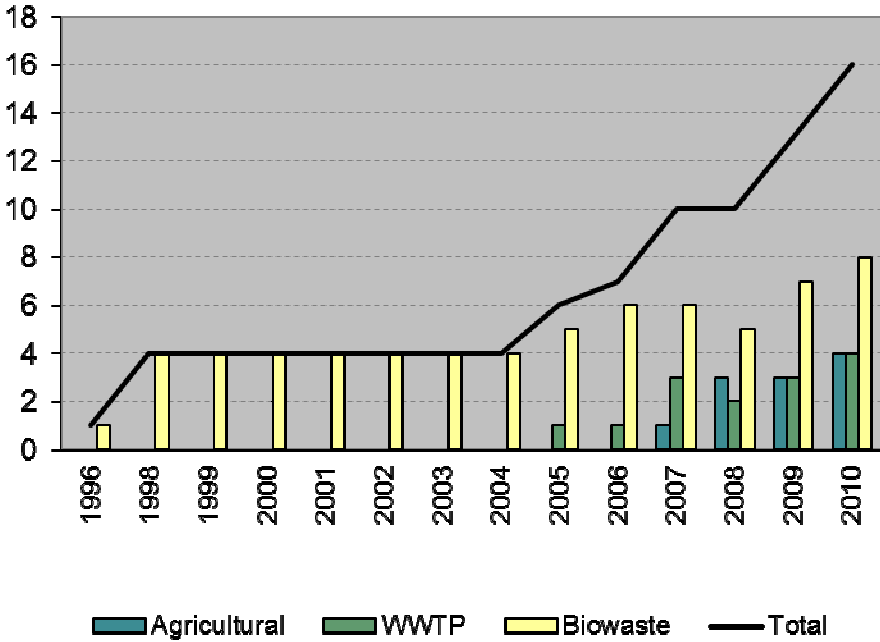
*WWTP – gross gas production*



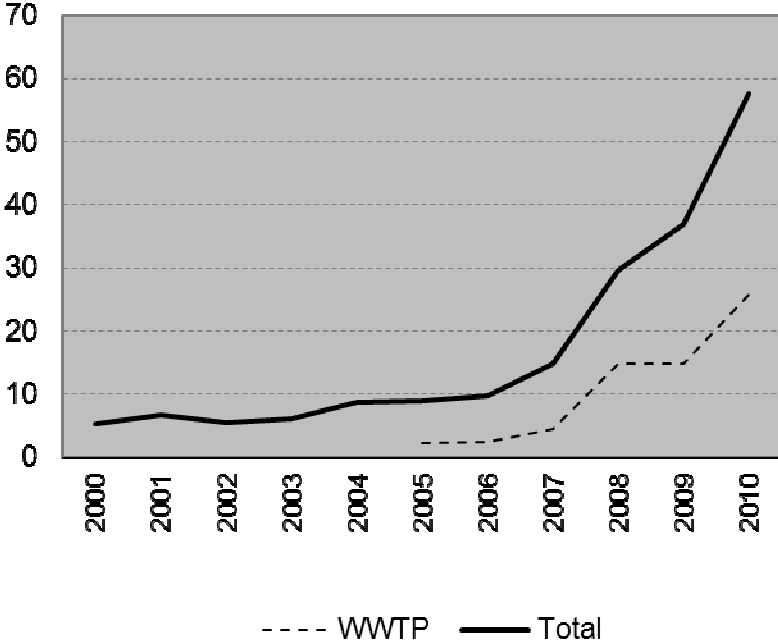
# Biogas Plant Inventory

*Upgrading plants*

Number of plants



Gross gas production [GWh/year]



# New biogas plants

## Agricultural installations

- **Bellechasse**  
march 2012, 16.000 tpy, CHP
- **Düdingen**  
february 2012, 35.000 tpy, CHP
- **Chézard St. Martin**  
january 2012, 7.500 tpy, CHP
- **Gollion**  
autumn 2011, 8.800 tpy, CHP
- **Fleurier**  
octobre 2011, 10.000 tpy, CHP



# Biogas plants under construction/ revision

## Agricultural installations

Ferpicloz Le Mouret, Bure,  
Cernier, Noréaz, Zwillikon, Satigny,  
Diessbach (all with CHP)



## WWTP

Frutigen (Codigestion), Geneva (revision of gas transformation)



# Upgrading project

**WWTP Geneva: Aire Genève, 300'000 PE**

## Current situation

- Gas use: digester heating & sludge drying
- The rest of the gas is burnt without energy utilisation

## Project (2013)

- Biogas upgrading and grid injection (15 GWh/an)
- Technology: PSA (Acrona-Systems)
- Costs: 5'500'000 CHF (~4'600'000 Euros)



**More Information** (in French): <http://www.sig-ge.ch/corporate/media-center/espace-presse/communiqués-de-presse/index.lbl?p=7966E2CE-BA1F-4A3F-9F01-CA36F6184C52>





# Financial support systems

## Feed-in tariff for electricity

*In Swiss currency! 1 Euro ≈ 1.2 CHF*

Power class	≤ 50 kW	≤ 100 kW	≤ 500 kW	≤ 5 MW	> 5 MW
Basic tariff [CHF/kWh]	0.28	0.25	0.22	0.185	0.175
Agricultural bonus [CHF/kWh]	0.18	0.16	0.13	0.045	0
Heat bonus [CHF/kWh]	0.025	0.025	0.025	0.025	0.025
<b>Maximum [CHF/kWh]</b>	<b>0.485</b>	<b>0.435</b>	<b>0.375</b>	<b>0.255</b>	<b>0.20</b>

## Found for biomethane injection

- Voluntary support programme by the Swiss Gas Association
- Objective: injection of 300 GWh biomethane within 6 years

<http://www.erdgas.ch/biogas/foerderung-der-biogas-einspeisung/>

## Certificates for emission compensation

Projects reducing GHG emissions can get financial support

<http://www.bafu.admin.ch/publikationen/publikation/00101/index.html?lang=de>



# Studies and research projects

## Appreciation of organic matter in LCA's

Evaluation of how to integrate the impacts of organic matter (in compost and digestate) in LCA's and how to quantify them

(M. Zschokke, Carbotech, K. Schleiss, UMWEKO GmbH)

## MBR reactor: Digestion of manure and co-substrates

Efficiency improvement for economic and space savings

(J.L. Hersener, Ingenieurbüro Hersener / U. Baier, ZHAW)

## Optimization of AD: Effects of thermochemical and enzymatic pretreatment and microbial additives

Improvement of anaerobic degradation

(U. Baier, ZHAW / J.L. Hersener, Ingenieurbüro Hersener)



# Studies and research projects

## Recently published reports

- Improvement of standardised digestion tests in batch reactors (in French)
- LCA : utilisation of catch crops for biogas production (in German)
- LCA : centralised vs. decentralised agricultural biogas production (in French)
- LCA of biogas production from different substrates (in English)
- Methane emissions in EPDM gas holders, economic and ecological consequences (in German)

***Link to publications:***

<http://www.bfe.admin.ch/forschungbiomasse/02390/02720/03176/index.html?lang=de>



# QM Biogas

## Quality Management for Biogas Plants

Objectif: Improve quality of existing and future biogas plants

Folder covering:

- Construction and operation of biogas plants
- Planners, constructors, operators and controllers
- Broad information
- Checklists

Publication: 2012



# QM Biogas

