

IEA Bioenergy Task 37

Energy from Biogas

Swiss Country Report

Switzerland – April 2013

ENB

Energie Conseil Bachmann

Nathalie BACHMANN

ENB | Ch. du Cerisier 9 | 1004 Lausanne - Switzerland

enbachmann@gmail.com

Biogas Plant Inventory

Number of plants

Number of plants (end of 2011)

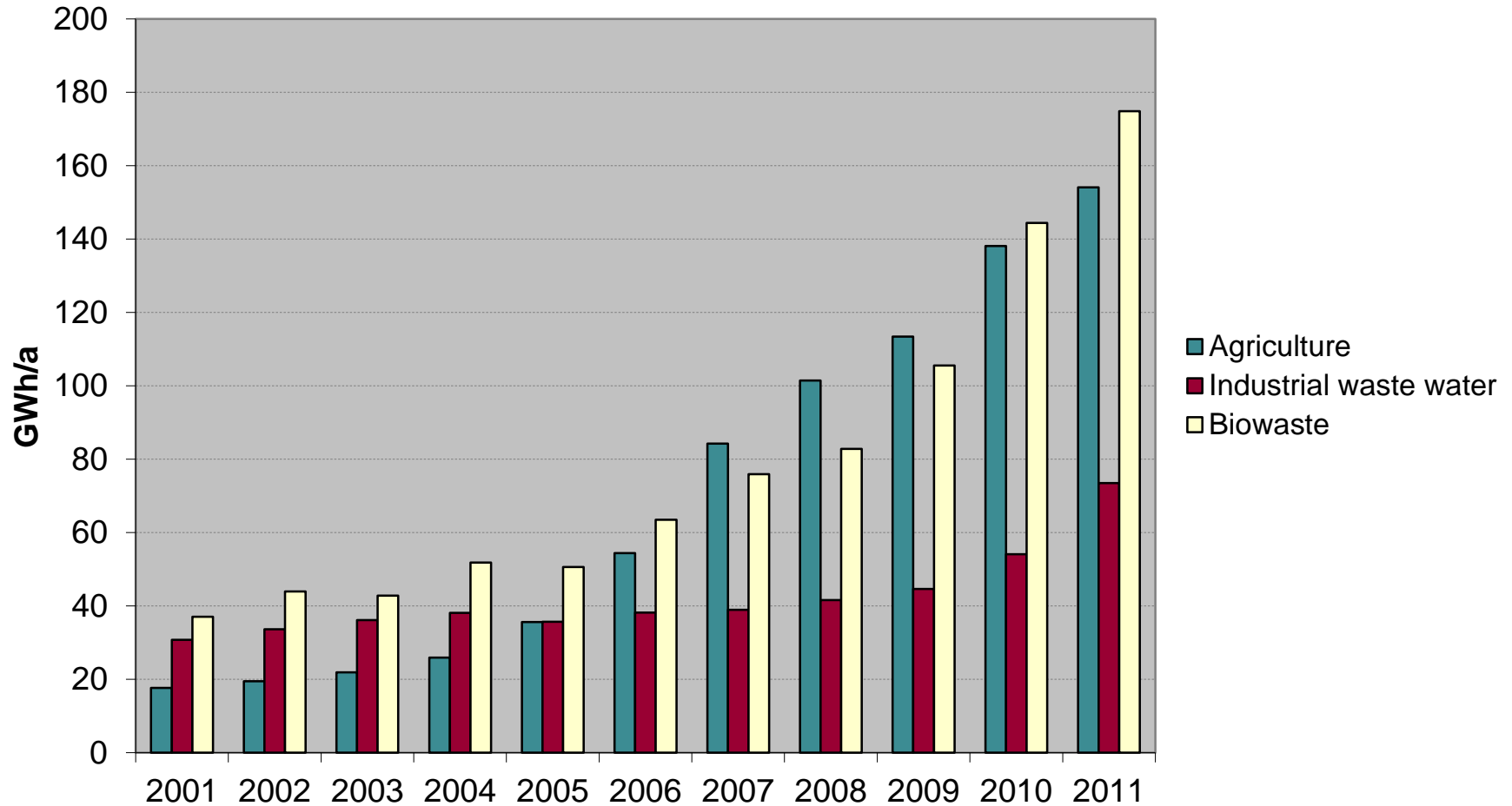
Agriculture:	80 plants
Biowaste:	28 plants
Industrial waste water:	22 plants
Waste water treatment plants:	~ 463 plants (282 with CHP)

Detailed statistic data:

http://www.bfe.admin.ch/themen/00526/00541/00543/?dossier_id=00772&lang=de

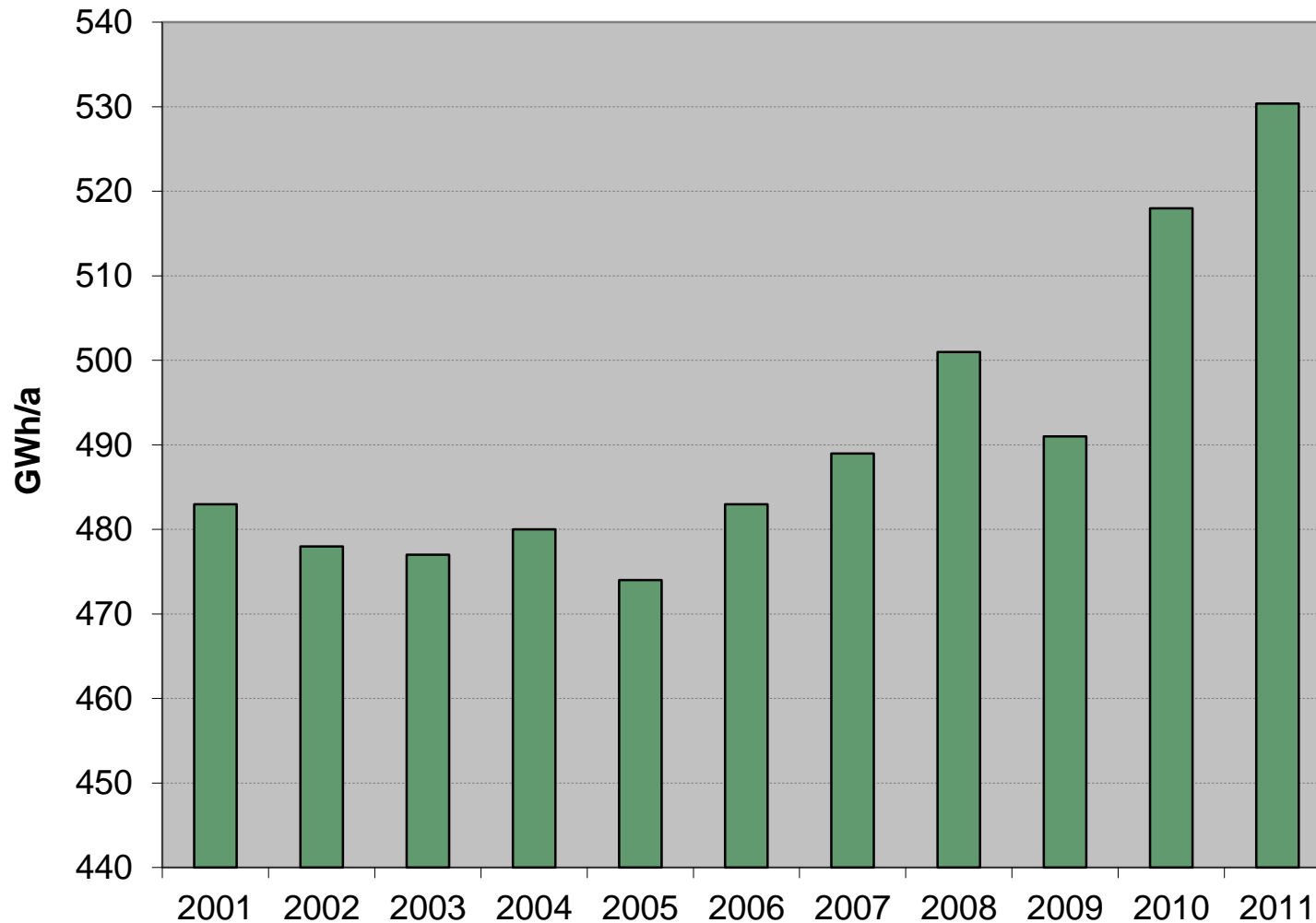
Biogas Plant Inventory

Gross gas production



Biogas Plant Inventory

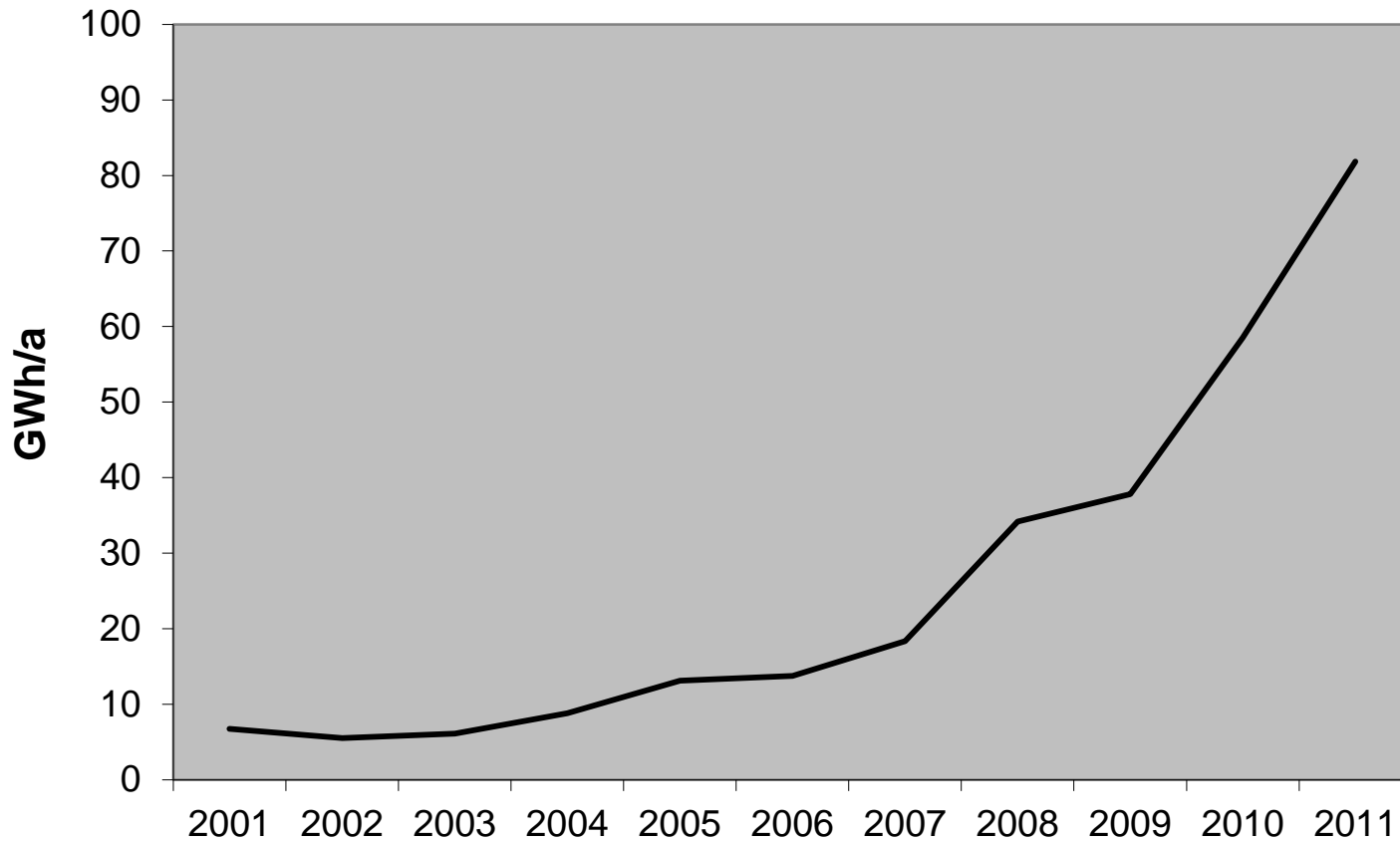
WWTP – gross gas production



Biogas Plant Inventory

Upgrading plants

Gross gas production for upgrading [GWh/year]



New biogas plants (2012, 2013)

Agriculture

- **Bure** Feb 2013, CHP 360 kW
- **Ferpicloz Le Mouret,** Sept 2012, CHP 250 kW
- **Cernier** Aug 2012, CHP 120 kW
- **Zwillikon** July 2012, CHP 60 kW
- **Satigny** June 2012, 25.000 tpy, CHP
- **Bellechasse** March 2012, 16.000 tpy, CHP
- **Düdingen** Feb 2012, 35.000 tpy, CHP
- **Chézard St. Martin** Jan 2012, 7.500 tpy, CHP

WWTP

- **Frutigen** June 2012, codigestion, CHP

Biogas plants under construction / renovation

Agricultural installations

Cournillens, Gutenswil (both CHP)

Meiringen: project suspended (too high investment costs)

Biowaste

Vétroz (Kompogas, CHP)

WWTP

Revision of gas transformation:

- Geneva / Aire: gas upgrading (2013)
- Zurich / Werdhölzli: separated digestion of sludge and biowaste, biggest upgrading unit in CH planned (2013)



Source: www.biogas-zuerich.ch

Financial support systems

Feed-in tariff for electricity from biogas

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
Maximum [CHF/kWh]	0.485	0.435	0.375	0.255	0.20

Found for biomethane injection

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

www.erdgas.ch/biogas/foerderung-der-biogas-einspeisung/

Certificates for emission compensation

Projects reducing GHG emissions can get financial support

www.bafu.admin.ch/publikationen/publikation/00101/index.html?lang=de

News and developments

Energy strategy 2050

- Abandonment of nuclear energy production
- Focus on energy efficiency and renewable energies
- If necessary, additional fossil energy sources and imports
- Development of the energy grid
- Reinforcement of energy research

Statement Biomasse Schweiz:

- Basic direction approved, in particular the removal of cap for subsidies (KEV)
- Main critic: Promotion only for electricity production from biogas. Heat and biofuel must also be promoted

Full statement:

www.biomasseschweiz.ch/images/downloads/de/20130207_stellungnahme_energiestrategie2050.pdf

News and developments

Green Power Uri: A fire caused serious damage to the biogas plant in November 2012

- Hall for substrate and digestate storage caught fire (digester and gas storage not affected)
- January 2013: decision to close down the plant
- Reasons:
 - Expensive reconstruction
 - Too high competition for substrates in Switzerland
 - Unfavourable wind conditions and problems with odour emissions



Source: www.suedostschweiz.ch

News and developments

Communication in case of crisis

To coordinate well the communication in case of a crisis (e.g. EHEC), key actors are elaborating a strategy in order to avoid misinformation. Coordination by Biomasse Schweiz.

Review of the SUVA-leaflet *Secure Biogas Plants*

Modifications of the recommendations concerning mobile flares and simple/double membranes are being discussed. Coordination by Biomasse Schweiz.

Training course Co-digestion in WWTP

The first edition of the course in January was a big success. Further training courses are being planned.

Current studies and research projects

Determination of methane production in the laboratory

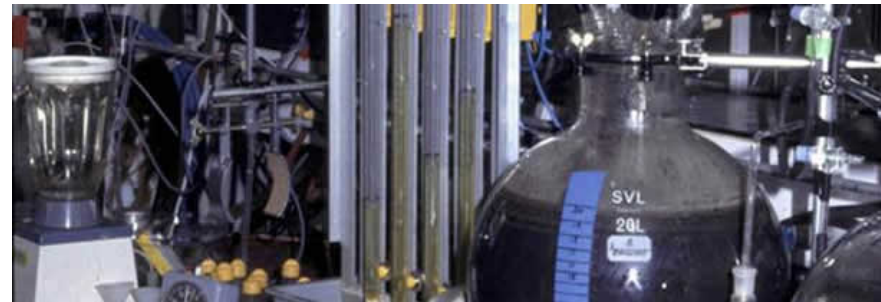
Comparision of laboratory BMP test results and real methane production in full-scale plants (2012 – 2014)

C. Holliger, EPFL (<http://lbe.epfl.ch/page-83701.html>)

ORION – Organic waste management by automated small-scale AD

Development of an on-site organic waste treatment for SME in order to decrease treatment costs (storage, transport, landfill or incineration) and increase on-site hygiene conditions.

- 7th framework programme
- Organisations from 8 countries involved
- CH: HES-SO (J.B. Michel), SCEM, IFGRA, CAND-LANDI
- www.project-orion.eu



Source: www.project-orion.eu

Current studies and research projects

Mini-Biogas

Identification and evaluation of technologies for small-scale digestion (2012 – 2013). Y. Membrez / EREP

Post-treatment of digestate

Evaluation of energy consumption, emissions, nutrients and hygienic aspects (2011 – 2013). H. Engeli / Engeli Engineering

Studies and research projects

Published reports 2012, 2013

- Measures for optimisation of AD through pretreatments, technology- and process engineering and other additives. Hersener J.-L. / (Ger)
- LCA for biomass recovery. Dinkel F. /Carbotech (Ger)
- Energy self sufficient wast water treatment plant. Gabathuler H. / Abwasserverband Vorderes Prättigau (Ger)
- Improvement of standardised digestion tests in batch reactors. Holliger C. / EPFL (F)
- LCA: utilisation of catch crops for biogas production. Hayer et al. (Ger)
- LCA : Biogas production from different substrates. Jungbluth N. / ESU-services (EN)

Link to publications:

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