

IEA Bioenergy Task 37

Swiss Country Report

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erep

Traitement et valorisation de
déchets et
d'effluents organiques

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Biogas Plant Inventory

Number of Plants

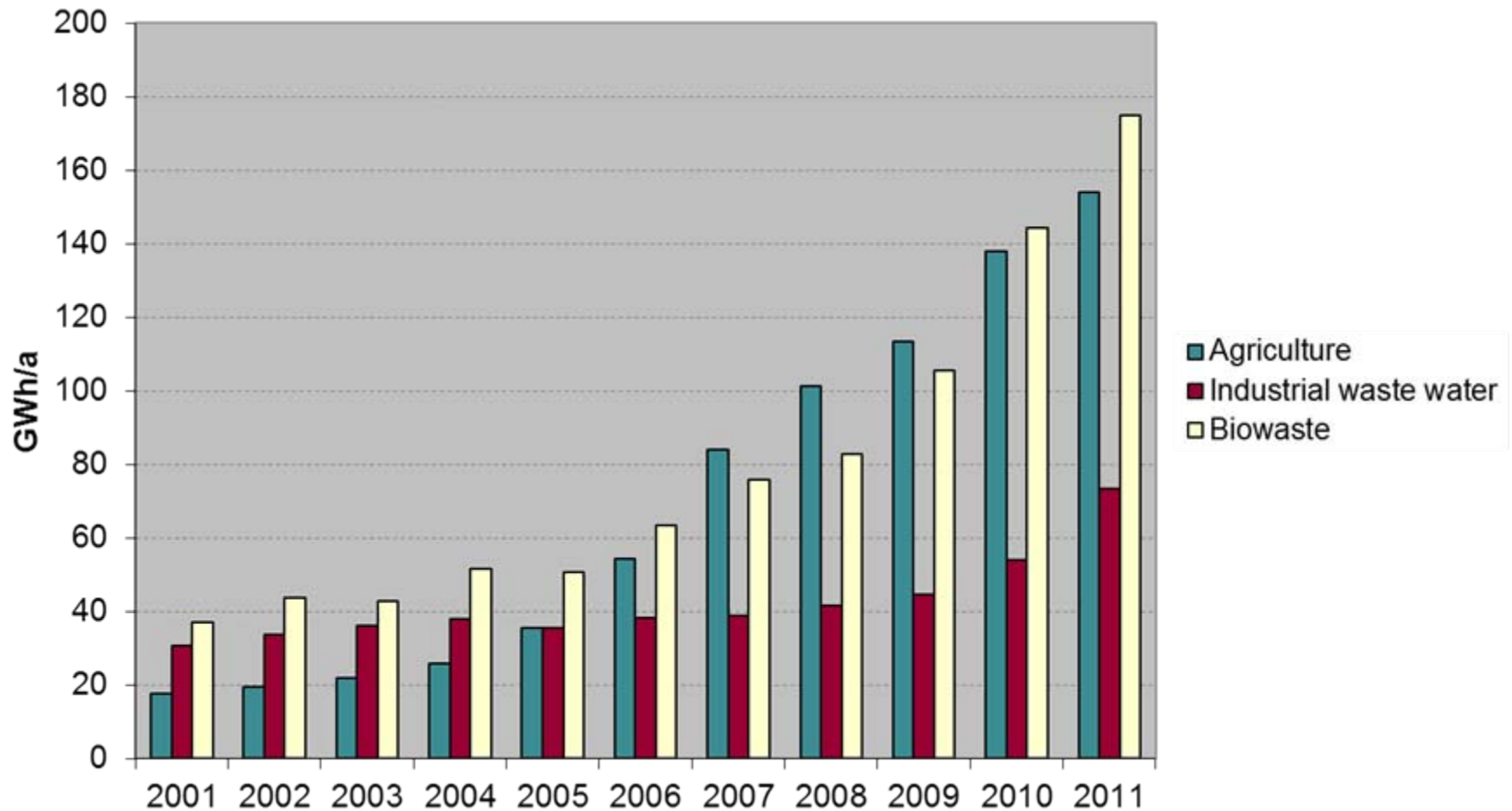
Number of plants (2011)

Agriculture:	80 plants
Biowaste:	28 plants
Industrial waste water:	22 plants
Waste water treatment plants: (codigestion)	~ 463 plants (about 60 with codigestion)



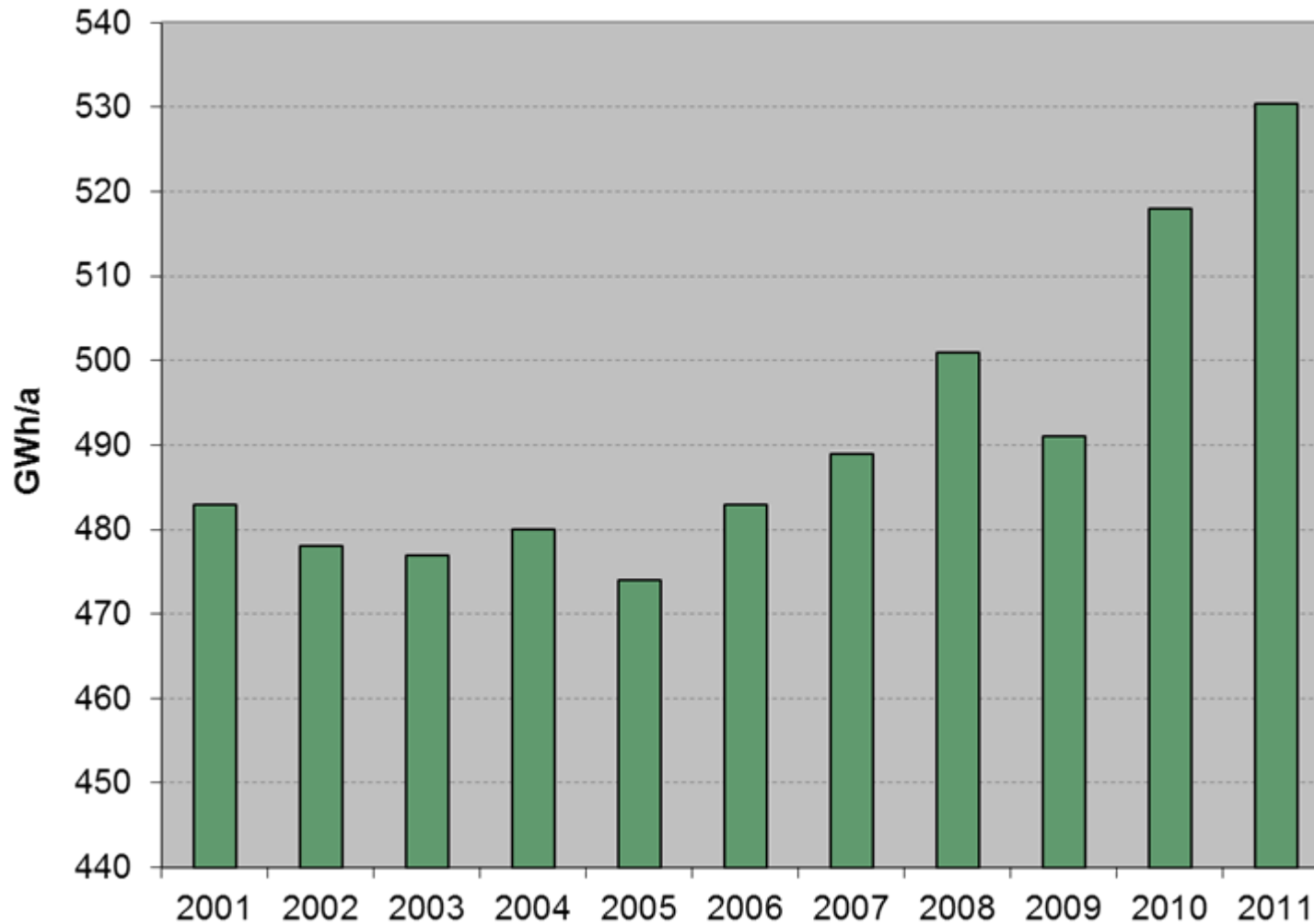
Biogas Plant Inventory

Gross gas production



Biogas Plant Inventory

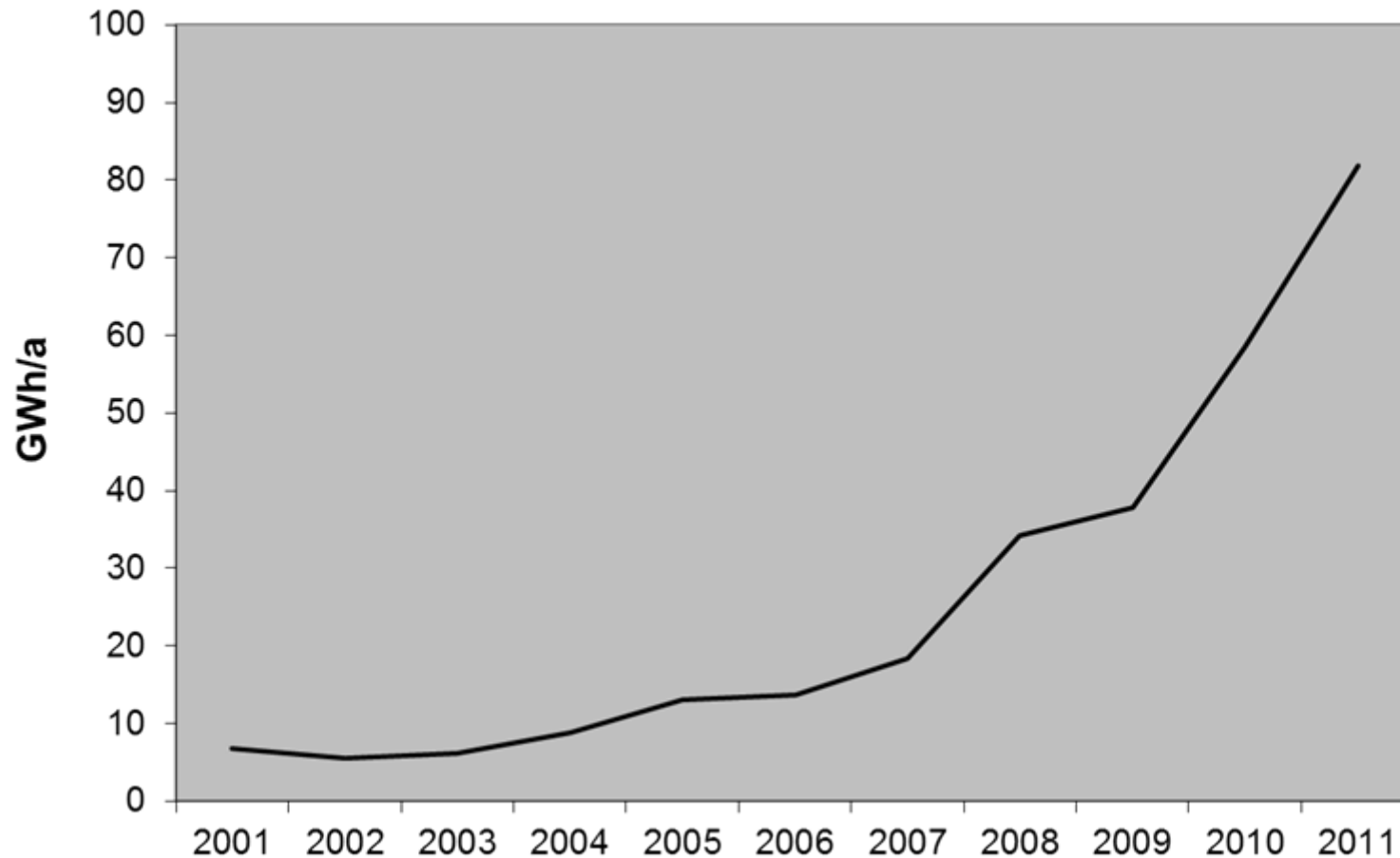
WWTP – gross gas production



Biogas Plant Inventory

Upgrading plants

Gross gas production for upgrading [GWh/year]



New biogas plants (2012)

Agriculture

- **Bellechasse**
March 2012, 16.000 tpy, CHP
- **Düdingen**
February 2012, 35.000 tpy, CHP
- **Chézard St. Martin**
January 2012, 7.500 tpy, CHP
- **Satigny**
June 2012, 25.000 tpy, CHP
- **Zwillikon**
July 2012, CHP (60 kW)
- **Cernier**
August 2012, CHP (120 kW)
- **Ferpicloz Le Mouret**
September 2012, CHP (250 kW)

WWTP

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

Biogas plants under construction/ revision

Agricultural installations

Bure, Cournillens, Meiringen,
Gutenswil (all CHP)

Biowaste

Vétroz (CHP)

WWTP

Revision of gas transformation:

-Geneva / Aïre: gas upgrading planned for 2013

-Zurich / Werdhölzli: separated digestion of sludge and biowaste,
biggest upgrading unit in CH planned



03.11.2012: Fire in a biogas plant

Green Power Uri

- Fire in hall for substrate and digestate storage
- Digester and gas storage not affected
- Cause of the fire unknown (at time of this report)
- Severe damage, if and when operation continues is not clear



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
Maximum [CHF/kWh]	0.485	0.435	0.375	0.255	0.20

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>

Current studies and research projects

MBR II : Digestion of manure and co-substrates

Efficiency improvement for economic and space savings. 2007 - 2012

J.L. Hersener/ Hersener Ingenieurbüro, U. Maier/MERITEC, U. Baier et al./ ZHAW

Sources of odour emissions on biogas plants

Identification and quantification of odour emissions on agricultural biogas plants. 2009 – 2012

R. Zah/EMPA

Post-treatment of digestate

Evaluation of energy consumption, emissions, nutrients and hygienic aspects. 2011 – 2013

H. Engeli/ Engeli Engineering



Current studies and research projects

Mini-Biogas

Identification and evaluation of technologies for small-scale digestion.

2012 – 2013

Y. Membrez/ EREP

Development of a model for odour emissions of biogas plants

The model for odour emissions should serve to planners, investors and authorities to foresee possible problems. 2009 – 2011

Methane losses at biogas plants

Identification of the main sources of methane losses. 2009 – 2011

M. Schick/ ART



Studies and research projects

Published reports 2012

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

Link to publications:

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

QM Biogas

Quality Management for Biogas Plants

Folder with checklists

Objectif:

Improve quality of existing and future biogas plants over their whole lifecycle

Scope:

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

Languages:

German & French



Energy strategy 2050

Main direction

- 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