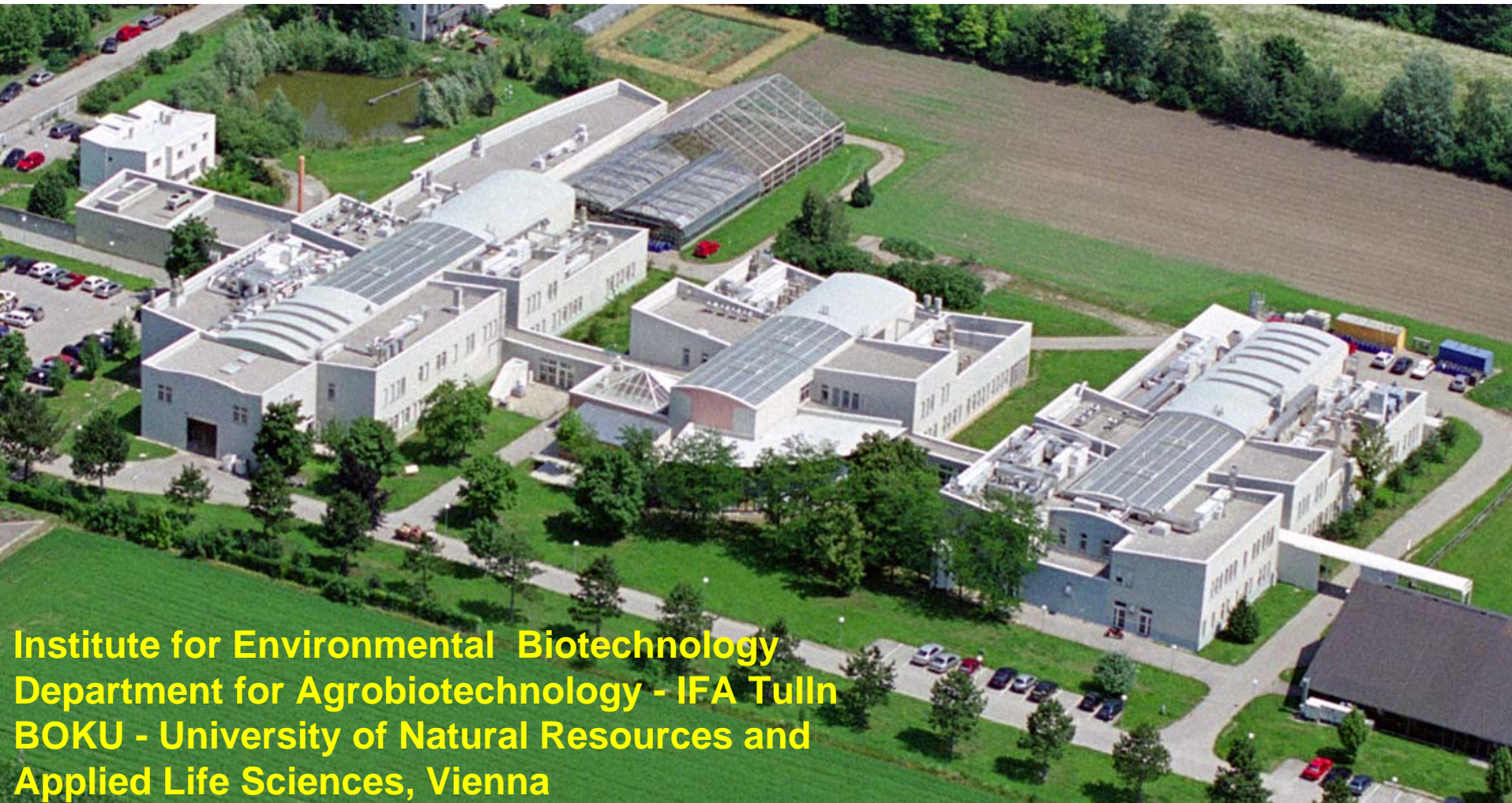


Country Update Austria - 2007

R. Braun 9. 5. 2007



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IEA Task 37 „Energy from Biogas and Landfill Gas“



Renewable Energy Sources in Austria

(Statistics Austria, 2001)

Hydropower	151 PJ \approx 11.6 % of PED ¹⁾
Others	142 PJ \approx 11 % of PED
Total PED in Austria	1,290 PJ
OTHERS	
Firewood	69.2 %
Industrial residual waste liquors	15.6 %
Combustible waste	7.3 %
Heat pump	4.9 %
Biogas, sewage gas, landfill gas	1.6 %
Straw	1.0 %
Wind- & solar energy	0.4 %
100,0 %	

¹⁾ Primary energy demand

Biogas Plants in Austria - September 2006

Source	Number of Plants	Mio m ³ Biogas per Year	% of Total Biogas
Landfills	62 Grey Waste - Landfill Gas Recov. Pl.	45-100	21.3
Sewage sludge	134 Sewage sludge digesters	75 - 100	25.8
Agriculture ¹	~350 Biogas- u. Co-Fermentation Plants	121 - 182	44.6
Industry ¹	25 Anaerobic Wastewater Treatment Pl.	9 - 14	3.4
Municipalities ¹	~15 Biowaste Digestion Plants	15 - 18	4.9
TOTAL		265 - 414	100

¹⁾ Estimation

Amendment of the ÖKOSTROMGESETZ“ BGBl. 105/2006

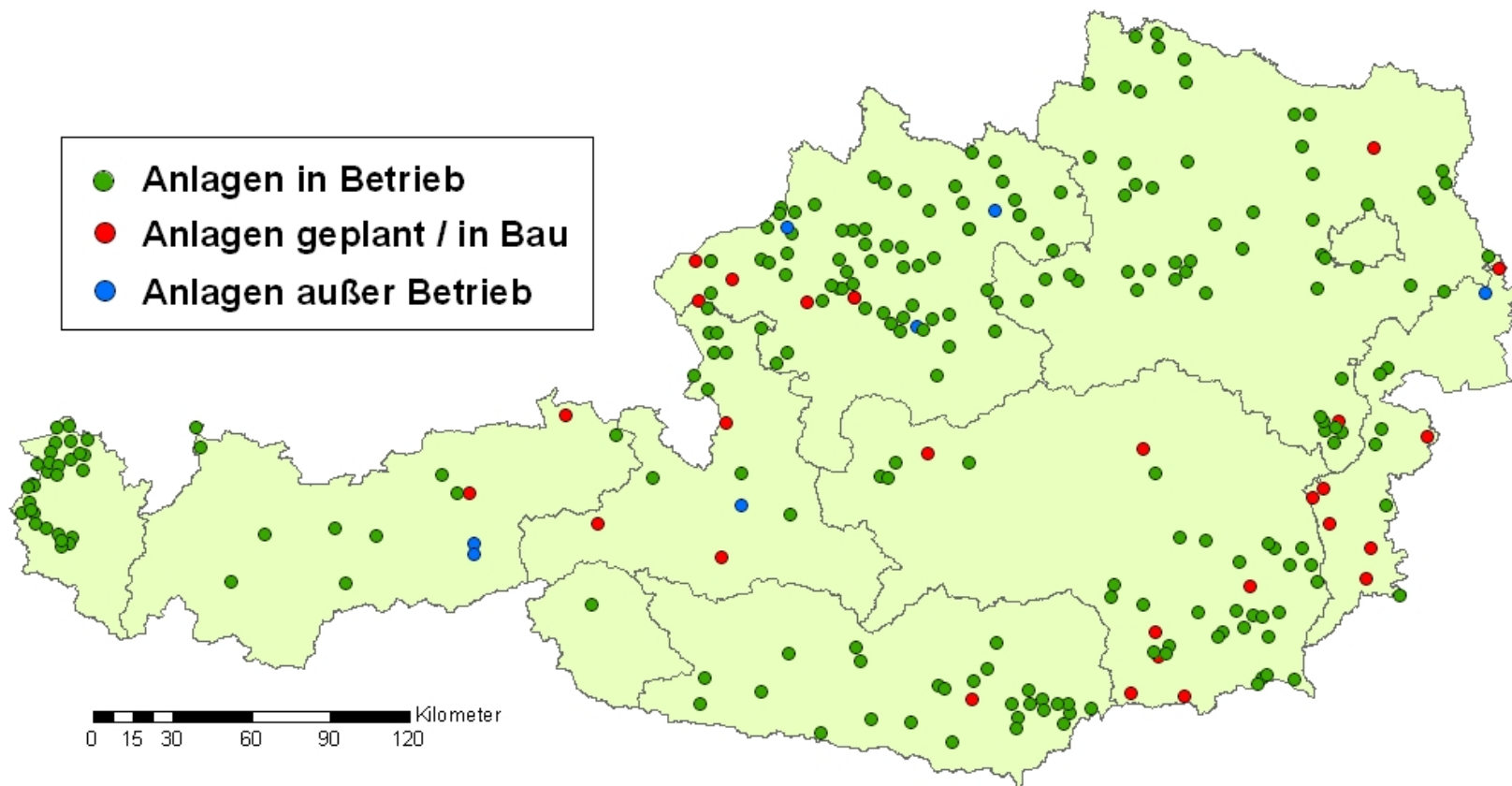
- Overall limit to subsidies for Eco-electricity tariffs, decreasing subsidies
- Share of available subsidies: 40% biomass, 30% biogas, 20% wind, 10% photovoltaic
- Guaranteed tariffs just for 10 years (before 13 years)
- New Eco-energy company founded for administration

Austrian Eco Electricity Act “Ökostromgesetz”

BGBl. II Nr. 508/2002

BGBl. II Nr. 401/2006

Installed capacity (kW)	Feed-in tariff old (€cent / kWh)	Feed-in tariff new (€cent / kWh)
< 100	16.5	17
100-250	14.5	15.2
250-500	14.5	14.1
500-1,000	12.5	12.6
> 1,000	10.3	11.5
Tariff guranteed for	13 years	10 years
Tariff reduction in co-digestion	25 %	30 %



- Anlagen in Betrieb
- Anlagen geplant / in Bau
- Anlagen außer Betrieb

0 15 30 60 90 120 Kilometer



Datenzusammenstellung: E.M. Pötsch
Erstellung: A. Schaumberger / Juli 2006

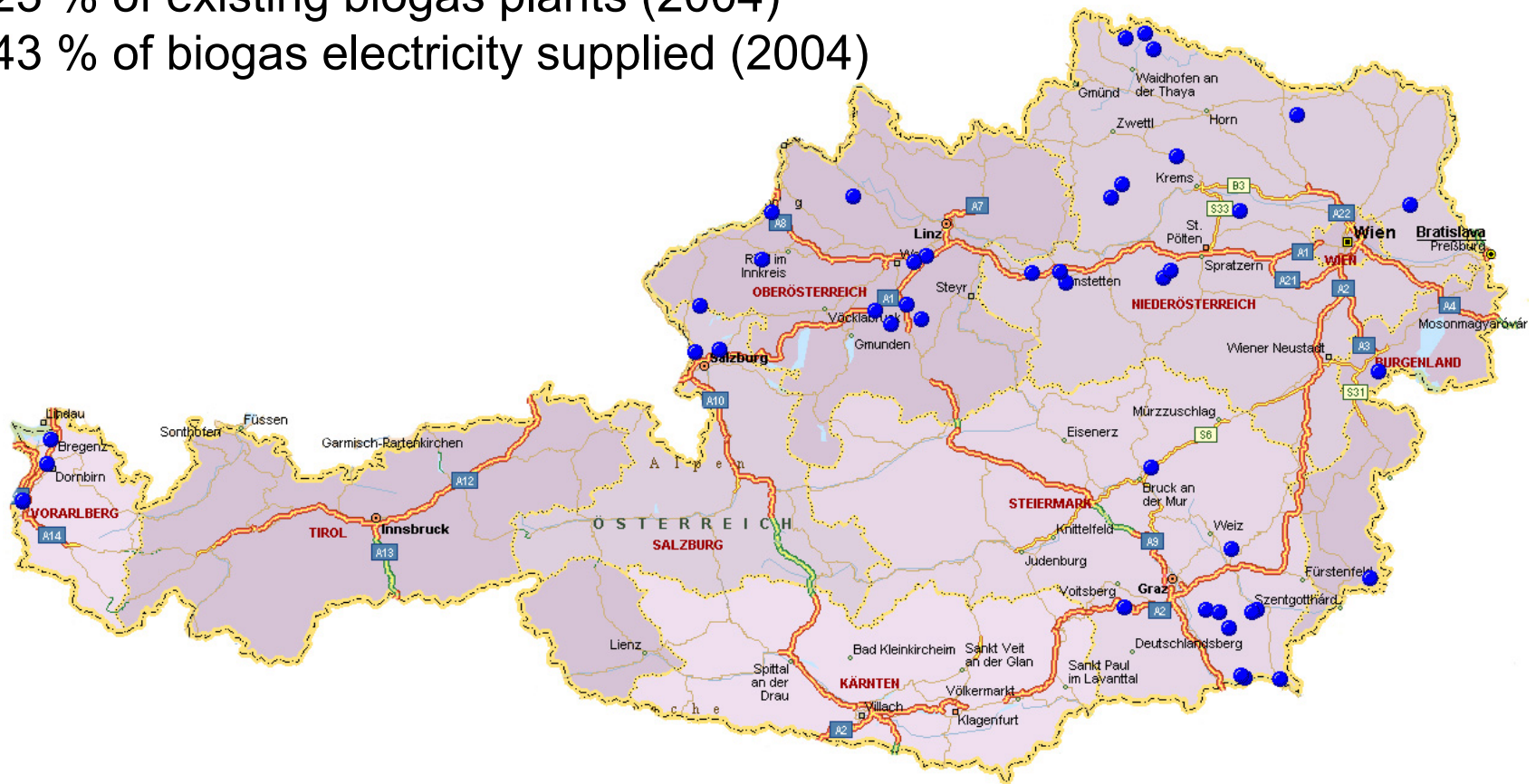
Geoinformation im ländlichen Raum

Country	Location	Feedstock	System	Scale [tpa]	Date	Country total	Type
Austria	Böheimkirchen	Biowaste, manure	Ing. Bauer GmbH	7.000	1996		wet
Austria	Lustenau	Biowaste	Kompogas	10.000	1996		dry
Austria	Roppen	Biowaste	Kompogas	10.000	2001		dry
Austria	Siggerwiesen	Biowaste	Dranco	20.000	1993		dry
Austria	Wels	Biowaste	Linde BRV	15.000	1997		wet
Austria	Amstetten	Biowaste, Catering Waste	BST	10.000	2005		wet
Austria	Antiesenhofen	Biowaste, Catering Waste	BST	2.000	2002		wet
Austria	Bruck a. d Leitha	Catering Waste, EC	Eigenbau	20.000	2004		wet
Austria	Habersdorf	Biowaste, Catering Waste	BST	5.000	2005		wet
Austria	Hagenbrunn	Catering Waste	Entec	20.000	2004		wet
Austria	Heiligenkreuz am Wasen	Catering Waste, EC	Nahtec / Koller	12.000	2002		wet
Austria	Herzogdorf	Biowaste, Catering Waste	BST	10.000	2005		wet
Austria	Immendorf	Vegetables, Manure, EC	Führer, Schweitzer	4.000	2003		wet
Austria	Markgrafneusiedel	Biowaste, Catering Waste	Komptech	15.000	2005		wet
Austria	Michaelbeuern	Catering Waste, Manure, EC	Wolf	3.800	2002		wet
Austria	Nußbach	Catering Waste, Manure, EC	Scheitzer	6.600	2001		wet
Austria	Ottngang	Biowaste, Manure, EC*	Bioenergetica	5.000	2003		wet
Austria	Penz	Slaughterhouse Waste, Manur	AAT, Wolf	20.000	2005		wet
Austria	Pettenbach	Slaughterhouse Waste, Manur	Führer	5.700	2003		wet
Austria	Rankweil	Catering Waste, Manure, EC	Entec	2.500	2004		wet
Austria	Rechnitz	Biowaste, Catering Waste	BST	15.000	2004		wet
Austria	Ruprechtshofen	Biowaste, Catering Waste	BST	2.000	2002		wet
Austria	St. Martin/I	Slaughterhouse Waste	Scheitzer	10.000	2002		wet
Austria	St. Pankraz	Catering Waste	Waltenberger	10.000	2003		wet
Austria	St. Stefan i.R	Slaughterhouse Waste, Manur	AAT	13.000	2003		wet
Austria	Wels	Whey	AAT	45.000	2006		UASB

Investigation of “Energy Crop” - Digestion Status in Austria by means of monitoring of a representative sample of 41 biogas plants

23 % of existing biogas plants (2004)

43 % of biogas electricity supplied (2004)



Performance figures of the technical monitoring

Parameter	Unit	Median ¹	Reidling 500 kW	Reidling 1000 kW	Strem
				F1/F2 ²	
Amount of processed substrate	$t_{\text{Substrate}}/\text{d}$	12.5	29.2	25.9/24.4	27,3
Hydraulic retention time	$\text{m}^3_{\text{RV}}/(t_{\text{Substrate}}/\text{d})$	139	131	187/80	90
Organic load (dry substance)	$\text{kg}_{\text{VSS}}/(\text{m}^3_{\text{RV}}\cdot\text{d})$	3.39	3.99	2.55/5.87	5,78
COD load	$\text{kg}_{\text{COD}}/(\text{m}^3_{\text{RV}}\cdot\text{d})$	5.09	5.85	3.58/7.12	8,56
Amount of VSS	t_{VSS}/d	2.33	8.02	5.14/9.97	7,66
Biogas generation	$\text{Nm}^3_{\text{biogas}}/\text{d}$	1461	5469	9834	5527
Biogas productivity	$\text{Nm}^3_{\text{biogas}}/(\text{m}^3_{\text{RV}}\cdot\text{d})$	0.89	1.42	1.66	2.09
Degradation of VSS	%	81.3	88.7	81.17	87.6
Average biogas yield	$\text{Nm}^3_{\text{biogas}}/\text{kg}_{\text{VSS}}$	0.67	0.68	0.65	0.68
Methane content in biogas	%	53.01	55.3	53.0	53.0
Electrical efficiency	%	31.8	35.5	35.3	37.9
Degree of heat utilisation (end use)	% (rel. to total output)	14.7	18.2	10.6	15.1
Degree of utilisation of the energy contained in biogas (H_u)	%	46.9	53.7	45.9	53.0
Plant utilization	%	78.5	95.3	81.6	93.4

RV: Reactor volume; H_u : Net calorific value; VSS: Organic dry substance

¹⁾ Instead of average values the median was calculated

²⁾ In Reidling one part of the substrate is fed into digester 1 (F1), which runs over into digester 2 (F2). F2 is additionally fed with substrate, which is expressed by two values for some performance figures. The effluent of F2 flows into a closed storage tank.

General activities in Austria 2007

- Several new project proposals for biogas upgrading and feed into the gas grid (Vienna, Lower Austria, Upper Austria, Salzburg, Styria)
- Project proposals for energy self sufficient regions (e.g. Güssing, Tulln)
- Vienna Biogas plant (food leftovers, biowastes) before start up tests
- First Austrian Bio-ethanol plant Pischelsdorf (200,000 m³) to be opened in 2007
- Merging of Austrian Bioenergy Center (ABC) and Renewable Energy Network (ReNet) to create the Austrian Biofuel Center Güssing (K1 center, Comet programme) in 2008
- Contract signed between Boku University of Natl. Res. & Appl. Life Sci., Austrian Res. Center Seibersdorf and Local Government Lower Austria for the Renewable Biomass Reserach Center Tulln