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The Market for Biomass Power Plants in Europe

Market Volumes – Projects – Strategies – Trends

Extract

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The Market for Biomass Power Plants in Europe

Generating heat from the incineration of biomass is spreading quickly in Europe. During the last five years, more than 350 biomass power plants with a capacity of more than 2,000 MW_{el} came into operation. A further growth by up to 3,000 MW_{el} can be expected for the next five years.

New plants are developed first and foremost because of the increased compensation for electricity fed into the grid for electricity from biomass. The EU member states have to drastically increase the proportion of electricity from renewable energies – due to the specifications of the Kyoto protocol and the EU Renewable Energy Directive. In contrast to water, wind and sunlight, biomass is the only energy source which does not depend on the weather and guarantees a stable energy production.

Considering this development, ecoprogram and Fraunhofer UMSICHT evaluated the European market for biomass power plants in detail. In developing the survey, the project partners did not only contribute their own knowledge of the market, but did also integrate administrations, associations and companies from the fields of forestry industry and plant construction.

On the basis of our market knowledge and specific evaluations we offer an up-to-date analysis of numbers, facts, estimations and trends in the European market of operators and plants for the conversion of biomass. This analysis is of interest for disposal companies, suppliers, operators, associations, research institutes and consultants.

The market study on biomass power plants in Europe includes the following specific information:

- A detailed analysis of the most important political, economical, managerial and technical trends in constructing and operating biomass power plants.
- A precise definition of current and future market volumes up to and including 2014 by countries – on the basis of a transparent and comprehensible methodology.
- A listing of more than 160 new construction projects – over 40 of them are under construction, more than 20 are approved and over 70 are planned or under discussion.
- The presentation of almost 600 operational biomass power plants, including essential technical data like information on capacities, producers, start of operation and contact details. These plants constitute almost 90 % of the installed electrical capacities in biomass power plants in Europe.
- An analysis and presentation of the most important operators and plant manufacturers of biomass power plants in Europe.

The study is available **in German and English from €2,900 plus V.A.T.**

Contact:

Mark Döing

ecoprogram GmbH

Tel. +49 221 788 03 88- 11

m.doeing@ecoprogram.com

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today, a part of the reforested tree population is cultivated for energy recovery. In doing so, types and cultures that produce as much biomass as possible in the shortest period of time possible are emphasised. In most of the cases, however, it is not possible to draw a distinct line between a forestry for energetic use and a forestry for other purposes.

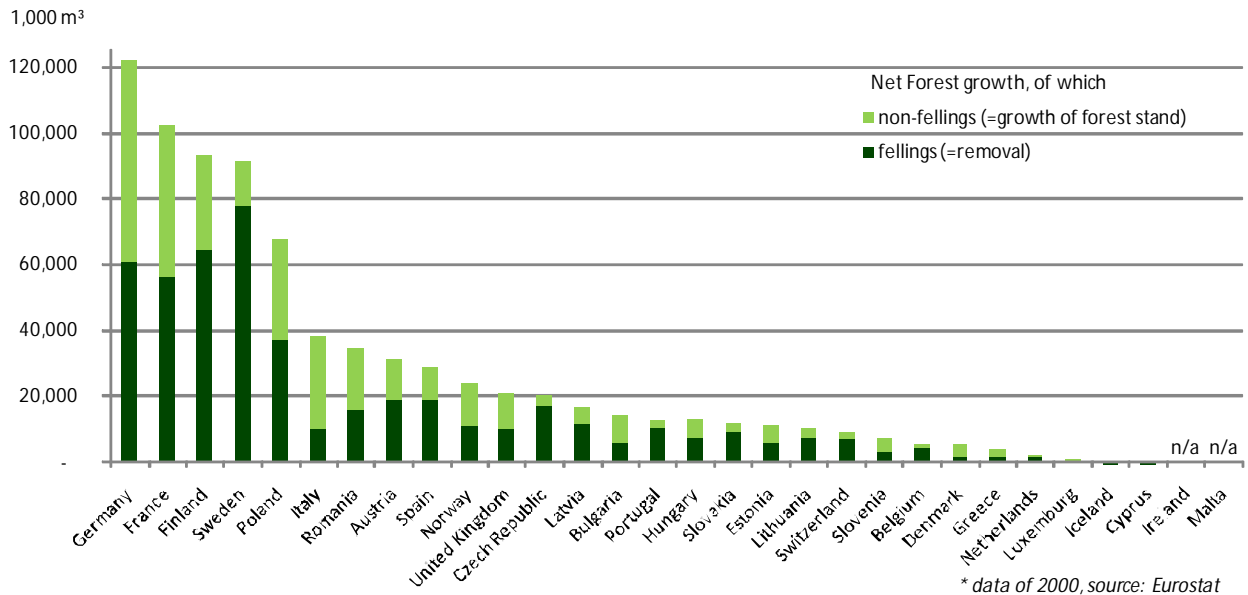
The utilisation of other fuel crops cultivated exclusively for the purpose of incineration does not play a considerable role so far. Up to now, there are only a few pilot projects in which the operation of biomass power plants depends on such a kind of biomass. One example is the cultivation of the fast growing “elephant grass” (*Miscanthus giganteus*). We do not expect a fundamental economic importance of such projects in the analysed period of time in this survey.

Accordingly, in the public (and sometimes political) perception, the incineration of solid material clearly differs from anaerobic fermentation (biogas) and synthesizing (biodiesel) – both using fuel crops to a considerably larger extent. The incineration of solid material benefits from the fact that the discussion of “electricity vs. plate”, which argues that food prices go up with the increased cultivation of fuel crops, did barely affect this technology so far.

1.1 The potential of biomass in Europe

The technical potential – and, consequently, the theoretical market – for the energy recovery of biomass in Europe clearly exceeds the existing activities in most of the countries.

Figure 4: Potential of scrap wood by countries

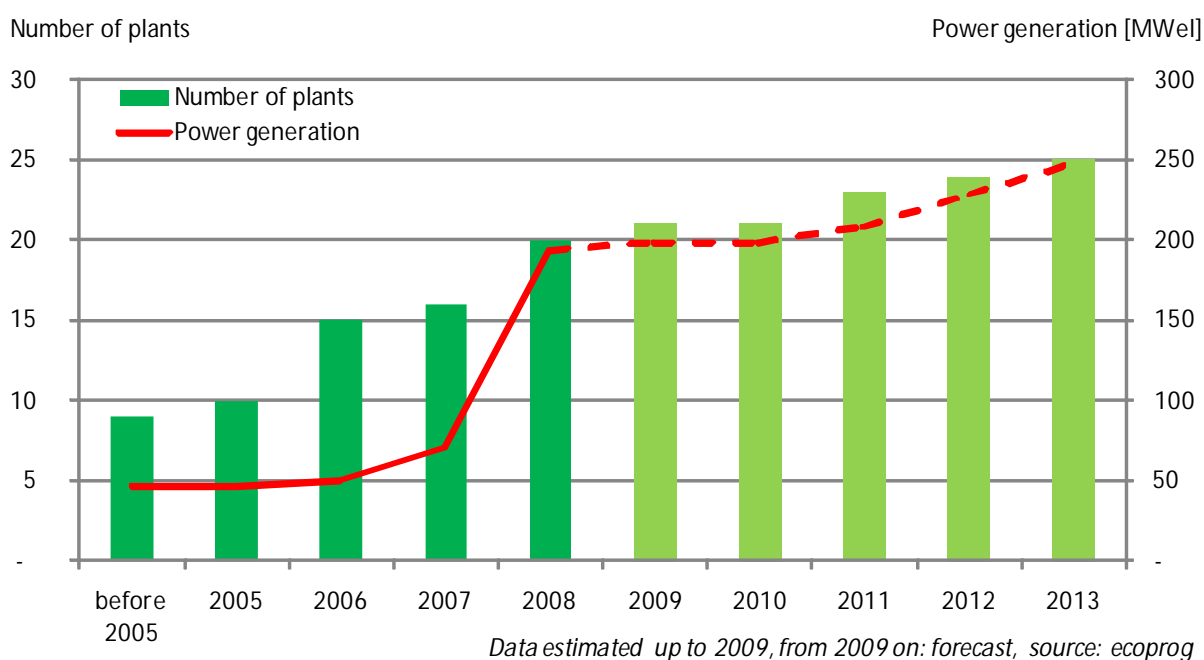


Netherlands

Inhabitants	16,493,156	Number of biomass power plants	20
Net forest growth (1,000 m ³)	2,230	Electrical power from BMPP (MW)	190
Thereof proportion of felling (%)	70	Share of biomass at power generation (%)	1.87
Share of RE at final energy consumption 2005 (%)	2.4	EU-Goal: Share of RE 2020 (%)	14.0

In the Netherlands, prospects for biomass projects are good – especially since the new promotion scheme SDE was implemented in 2008. The Dutch government decided a support of renewable energies in 2003 already. The scheme at that time, called MEP, promoted the generation of electricity from renewable energy sources and the use of combined heat and power with subsidised feed-in tariffs for a guaranteed period of 10 years. However, this promotion was stopped in August 2006 – due to the large success of the scheme. The 10 approved projects did already achieve the national aim: a 9 per cent share of renewable energies of the total power generation until 2010. Consequently, no subsidies were left for the not yet approved projects.

Figure 1: Market forecast Netherlands

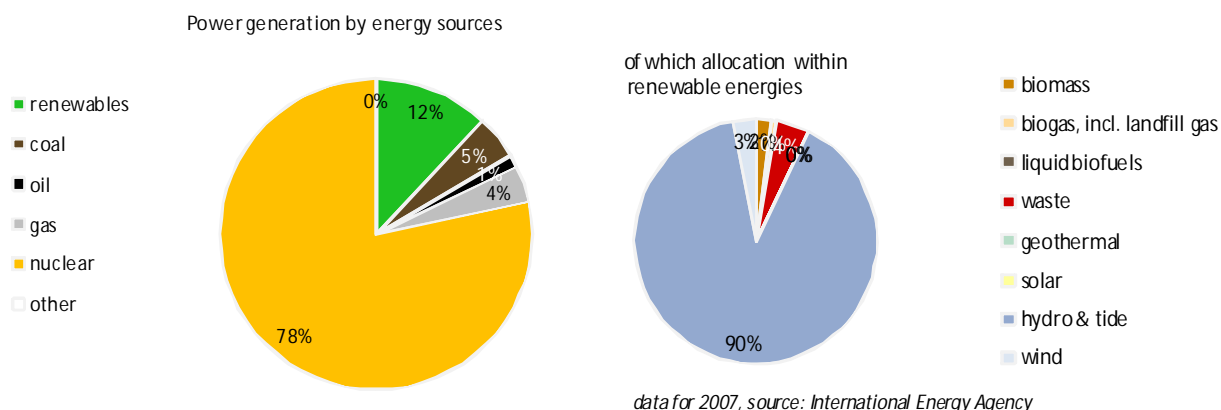


A subsequent scheme was not created until the end of 2007, when SDE (“stimuleren duurzame energie” – “stimulation of sustainable energy”) was decided. The reason was the goal of a 30 per cent reduction of CO₂ until 2020. The promotion of renewable energies seemed to be a promising way to achieve this objective, as the positive experiences with the MEP scheme had shown.

Electricity from biomass is currently subsidised with the additional amount of 6.2 cents per kWh. The Dutch energy agency SenterNovem pays this promotion for 15 years after the commissioning of the plant. SenterNovem is obligated to approve the applications, provided they meet the statutory renewable energies requirements. Hence, this is a case of conventional subsidies, there

Only the three plants in Saint-Gaudens, Tarascon and Grand-Couronne were actually implemented. All of the projects are located on timber industry sites with comparatively advantageous conditions for generating electricity from biomass. Additionally, they produce the fuel by themselves. The project in Marcillac is officially still in the planning process, however, it was not implemented yet.

Figure 2: Power generation by energy source in France



A second allocation round was carried out in 2007 – despite the disillusioning experiences in the first one. Essential mistakes made in the previous projects were supposed to be corrected. Accordingly, the project management organisations had to verify contractual commitments for at least 50 per cent of their fuel demand. In June 2008, the choice of 22 projects with a total capacity of about 320 MW_{el} was announced. These projects are described in the project outlook. All facilities are combined heat and power plants with a capacity between 5 and 18.4 MW_{el}. The feed-in tariff amounts to an average of 12.8 cents per kWh and is considerably higher than the one in the first allocation round. So far, we do not know about any abandoned project from the second round.

Figure 3: Project outlook France

Plant	Capacity (MW _{el})	Start	Status	Remarks
Marcillac	12.5	2010	planned	Winner of tender 2005
Golbey (Vosges)	9.0	2011	planned	Operator: GDF Suez
Arcis sur Aube	11.5	2010/2011	planned	Winner of tender 2007
Bazancourt	18.4	2010/2011	planned	Winner of tender 2007
Biganos	69.6	2010/2011	planned	Winner of tender 2007
Champdeniers	6.9	2010/2011	planned	Winner of tender 2007
Cleppé	7.0	2010/2011	planned	Winner of tender 2007
Corbenay	7.2	2010/2011	planned	Winner of tender 2007
Grand Couronne	9.0	2010/2011	planned	Winner of tender 2007
La Machine	5.7	2010/2011	planned	Winner of tender 2007

Biomass power plants in Sweden:

Älvsbyn

Status: active
Power production capacity (MW_{el}): 3,00
Operator: *Älvsbyns Energi*

Arvika

Status: active

Start of operation: 2009

Nordic paper Åmotfors
670 40 Åmotfors
Tel.: +46 (0)571 128 00
Fax: +46 (0)571 310 10
Owner: 37.5% Amotfors Bruk (100% Nordic Paper), 22% Keppel Integrated Engineering. The remaining shares are owned in equal parts by three financial institutions.

Aspabruk

Status: active

Start of operation: 2008
Power production capacity (MW_{el}): 25,20
Incineration: back-pressure turbine

Munksjö Aspa Bruk AB
696 80 Aspabruk
Tel.: +46 583 815 00
Fax: +46 583 503 35
+46 583 503 35
<http://www.munksjo.se>

Återbruket

Status: active
Power production capacity (MW_{el}): 4,50
Operator: *Kraftringen Produktion AB*

Billingsfors

Status: active

Start of operation: 2008
Power production capacity (MW_{el}): 4,50
Incineration: back-pressure turbine

Munksjö Paper AB
Strandvägen 7
660 11 Billingsfors
Tel.: +46 531 376 00
Fax: +46 531 305 17
info.spx@se.munksjo.com
<http://www.munksjo.se>

Boden

Status: active

Power production capacity (MW_{el}): 5,00

Bodens Energi
Slipvägen 7
961 38 Boden
Tel.: 0921-624 50
info@bodensenergi.se
<http://bodensenergi.se>

Bollnäs

Status: planned

Start of operation: 2011/12

Bollnäs Energi AB
Aseavägen 4
821 80 Bollnäs
Tel.: 0278-251 13
Fax: 0278-251 95
info@bollnasenergi.se
<http://www.bollnasenergi.se/>

Borås

Status: planned

Power production capacity (MW_{el}): 45,00
Fuel: wood

Borås Energi och Miljö
501 17 Borås
Tel.: 033 35 81 00
Fax: 033 35 71 61
kund@borasenergimiljo.se
<http://www.borasenergimiljo.se/>

Start of operation: 2010
 Fuel: residual wood

Bad Saffelstein

Status: active

Start of operation: 2006
 Power production capacity (MW_{el}): 0,55
 Heat production capacity (MW_{th}): 3
 Fuel: biomass materials
 Manufacturer Incineration: Gammel Engineering GmbH
 Power generation: additional power generation by ORC

Biomasse Heizanlage Bad Staffelstein GmbH
 Mr. Robert Haselberger
 Tel.: +49 9573 9619 11

Bad Tölz

Status: active

Start of operation: 2007
 Power production capacity (MW_{el}): 0,36
 Heat production capacity (MW_{th}): 2,2
 Fuel: biomass materials
 Manufacturer Incineration: V.A.S. Verfahrenstechnik und Anlagensysteme Gesellschaft m.b.H.
 Power generation: additional power generation by ORC

Stadtwerke Bad Tölz GmbH
 Mr. Michael Hofmann, Stadtwerksleiter
 General Plattern Strasse
 83646 Bad Tölz
 Tel.: +49 8041 797 200
 www.stw-toelz.de

Baden-Baden

Status: active

Start of operation: 2005
 Power production capacity (MW_{el}): 4,4
 Heat production capacity (MW_{th}): 3,5
 Fuel: biomass materials
 Incineration: rotating grate
 Manufacturer Incineration: Wärtsilä Biopower

Stadtwerke Baden-Baden
 Waldseestraße 24
 76530 Baden-Baden

Baruth

Status: active

Start of operation: 2009
 Power production capacity (MW_{el}): 8,365
 Fuel: bark
 Manufacturer Incineration: Urbas Energietechnik GmbH

Klenk Holz AG
 Mr. Dr. Günter Hegemann, Vorstandsvorsitzender
 Birkenpühlheide 1
 15837 Baruth
 Tel.: +49 7977 72 0
 Fax: +49 7977 1577
 info@klenk.de
 www.klenk.de

Baruth/Mark

Status: active

Start of operation: 2002
 Power production capacity (MW_{el}): 18,565
 Fuel: wood
 Manufacturer Incineration: Standardkessel Lentjes GmbH

Unitherm Baruth GmbH
 An der Birkenpühlheide 3
 15837 Baruth/Mark
 Tel.: +49 33704 70700
 Fax: +49 33704 70707

Bayreuth

Status: active

Power production capacity (MW_{el}): 0,32
 Heat production capacity (MW_{th}): 2,66
 Fuel: forest wood chips, saw mill residue
 Power generation: additional power generation by ORC

BHB Biomasse Heizwerk Bayreuth GmbH
 Mr. Johannes Scherm
 Adolf-Wächter-Straße 1a
 95447 Bayreuth
 Tel.: +49 921 640 11

Beeskow

Register of plants

Aachen	132	Aveiro	215
Äänekoski	114	Bad Arolsen	133
Abbiategrosso	181	Bad Köstritz	133
Abtenau	73	Bad Mergentheim	133
Achern	132	Bad Saffelstein	134
Admont	73	Bad St. Leonhard	74
Admont 2	73	Bad Tölz	134
Aichach	132	Baden	75
Ajka	171	Baden-Baden	134
Aleanena	215	Baena	229
Alemere Poort	200	Bando d'Argenta	181
Alfeld	132	Baruth	134
Alingsås	230	Baruth/Mark	134
Alkmaar	200	Basel	258
Allensteig	73	Bayreuth	134
Almeria	229	Bazancourt	124
Alperstedt	132	Beeskow	135
Altenmarkt	73	Beetgum	200
Altenstadt	132	Bergkamen	135
Althofen	74	Berlikum	200
Althofen 2	74	Berlikum	200
Altötting	132	Berlin	135
Aluksne	189	Berlin-Lichtenberg/Rummelsburg I	135
Älvsbyn	235	Berlin-Lichtenberg/Rummelsburg II	135
Amagervaerket	100	Berlin-Märkisches Viertel	135
Amel	89	Berlin-Rudow	135
Amstetten	74	Bière	258
Arcis sur Aube	124	Biganos	124
Arneburg	132	Bilgorajski	210
Arta Terme	181	Billingsfors	235
Arvika	235	Bischofferode/Holungen	136
Aschach	74	Bischofshofen	75
Aschaffenburg	133	Bischofszell	258
Asiago	181	Böblingen	136
Aspabruk	235	Boden	235
Assens	100	Bollnäs	235
Assling	74	Borås	235
Aubugg	258	Borken	136
Auerbach/Rebesgrün	133	Borken 2	136
Augsburg	133	Borlänge 1	236
Avedøre 2	100		

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