http://ec.europa.eu/energy/res/sectors/bioenergy_en.htm

Bioenergy : Objectives -Technology

WOOD ENERGY BAROMETER

The high price of petrol and its chronic tendency to rise is arousing more and more marked interest for wood energy. All the more so now that ever more innovative and efficient materials are found on the market, available for private individuals as well as collectivities or industries. Primary production of wood energy (in the large sense of the word including wood waste,black liqueurs and solid agricultural crop residues) in the European Union has clearly increased during 2004. 55.4 million tons oil equivalent (Mtoe) was produced, i.e.3 Mtoe more than the year before (+5.6%)(see table 1).

The share of wood energy in total EU primary energy consumption is now established at 3.2% in 2004 (3.0% in 2003). Use of wood and wood by-products to produce electricity is growing rapidly (+23.5% with respect to 2003, i.e.34.6 TWh in 2004) in particular due to development of combined heat and power (CHP) plants in certain EU countries.

The use of wood energy is logically greater in large forestry countries like Sweden, Finland and Austria where activity sectors linked to biomass are especially significant (slushing, furniture wood, building wood).In European countries of large size and with the largest populations like France,Germany and Spain, use of wood energy is especially localised in forestry regions. **1.**

Primary energy production from wood energy in the European Union (in millions of toe)
EurObserv'ER 2005

	2003	2004	Croissance/ growth (in %)
France	9.002	9.180	2.0%
Sweden	7.927	8.260	4.2%
Finland	6.903	7.232	4.8%
Germany	5.191	6.263	20.7%
Spain	4.062	4.107	1.1%
Poland	3.921	3.927	0.2%
Austria	3.222	3.499	8.6%
Portugal	2.652	2.666	0.5%
Latvia	1.240	1.300	4.8%
United Kingdom	1.084	1.231	13.6%
Denmark	1.071	1.113	3.9%
Italy	1.015	1.083	6.7%
Czech Rep.	0.895	1.007	12.5%
Greece	0.909	0.927	1.9%
Hungary	0.777	0.805	3.6%
Netherlands	0.561	0.720	28.2%
Lithuania	0.672	0.697	3.7%
Slovenia	0.422	0.422	0.0%
Belgium	0.346	0.382	10.4%
Slovak Rep.	0.300	0.303	1.1%
Estonia	0.150	0.150	0.0%
Ireland	0.145	0.144	- 0.6%
Luxemburg	0.015	0.015	0.0%
Cyprus	0.006	0.006	0.0%
Malta	0.000	0.000	-
Total E.U. 25	52.488	55.439	5.6%

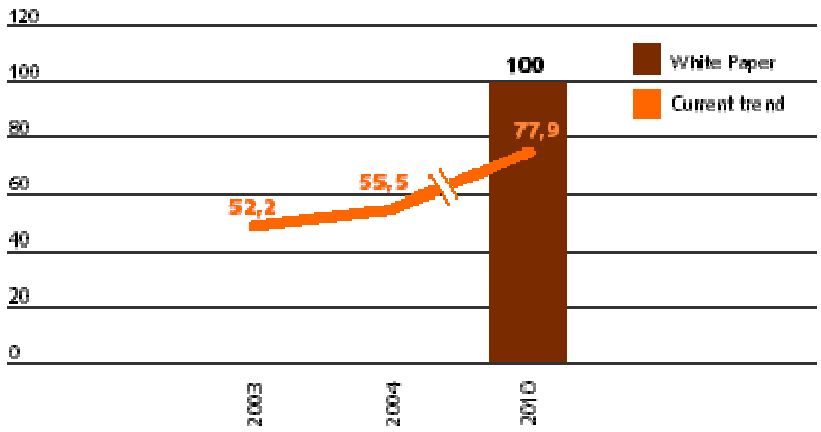
MORE EFFORTS NEEDED TO REACH 100 MILLION TOE IN 2010

Development of the wood energy industry is far from being homogenous in the

European Union countries.Many are only just beginning to exploit their potential (like Poland, Czech Republic,Slovak Republic and the Baltic States)while others, like Finland and Sweden,have already developed a high-tech industry (especially by combined heat and power (CHP) installations) and have already largely made use of their potential.The 1997 White Paper does not provide a specific objective for wood energy for the year 2010. There is a 135 million toe objective that concerns biomass taken as a whole. By deducting the objectives of the other biomass sectors (biofuel and biogas), EurObserv'ER has determined that the wood energy share should amount to 100 Mtoe. Our projection of 77.9 Mtoe by the year 2010 (see graph 2)takes into consideration different national objectives, estimations made by experts and the growth observed in the various countries. The results show that we are not advancing at the right rate to reach this objective.
The stated objective of the European "Sustainable Energy Europe" is an additional 450 combined heat and power (CHP) installations and 13 000 new wood heating units (collective heating or district heating networks) by the year 2008. Even though it is very difficult to monitor the details of the number of installations in Europe, we can say that these objectives will be very difficult to keep because they set the mark particularly high. In this way,the figure of 450 combined heat and power (CHP) wood installations represents approximately ten times the present installed capacity of Finland which is the leader for this type of applications.
To develop the sector more, the European Commission has created a specific think tank on the role of wood energy.A work group stemming from the European Economic and Social Committee (EESC) is involved in the challenges of "wood as energy source for the 25 member European Union". Its objective is to evaluate current wood sector participation in the European energy mix and to pinpoint future technological choices that will permit wider use of the sector. A biomass action plan should also propose measures to boost this sector.

2. Comparison between current trend and White Paper objectives (in millions of toe)

EurObserv'ER 2005



THE BIOGAS BAROMETER

Over the past dozen years, energy exploitation of biogas has taken on a significant place in the countries of the European Union. The sector's economic,energetic and financial pertinence has now been developed in 20 European countries for a total biogas production (UE 25) that will be valorised of 4.117 million toe (ton oil equivalent) in 2004. United Kingdom is the leading European country for crude biogas production. UK production is estimated at 1.473 Mtoe for 2004. The largest part of this biogas is valorised in the form of electricity (4 TWh, i.e. the equivalent of 349.5 ktoe). It should be pointed out that it takes three thermal units to produce one electrical unit, which explains the difference between total crude biogas production and the amount of final electricity. Development of

this type of valorisation was greatly supported by the "Non Fossil Fuel Obligation"(NFFO) programmes during the second half of the 1990s.
Developed thanks to a support system different from that of the United Kingdom,Germany nonetheless remains a strong market for the biogas sector. Germany's overall production amounted to 1.291Mtoe in 2004 with valorisation principally turned toward electricity. The past year saw the number of Germany's biogas sites significantly increase due to the rise in final energy valorisation conditions contained in the EEG (Erneuerbare-Energien-Gesetz) Law.
With 210 ktoe production for 2004,France is ranked fourth in Europe. France differentiates itself from the two EU leaders by the fact that its biogas is principally valorised in the form of heat (56 ktoe vs. 42 for electricity). However,the evolution of figures tends to reveal a more sizeable progression of electricity with respect to thermal valorisation.
The other countries of the EU are found at levels markedly lower than those of the three countries presented above. Among the new member countries, we can cite the figures of the Czech Republic, which valorises a large part of its crude biogas production coming from engineered landfills and urban sewage purification plants.

1. Crude biogas production in the European Union (in thousands of toe)
EurObserv'ER 2005

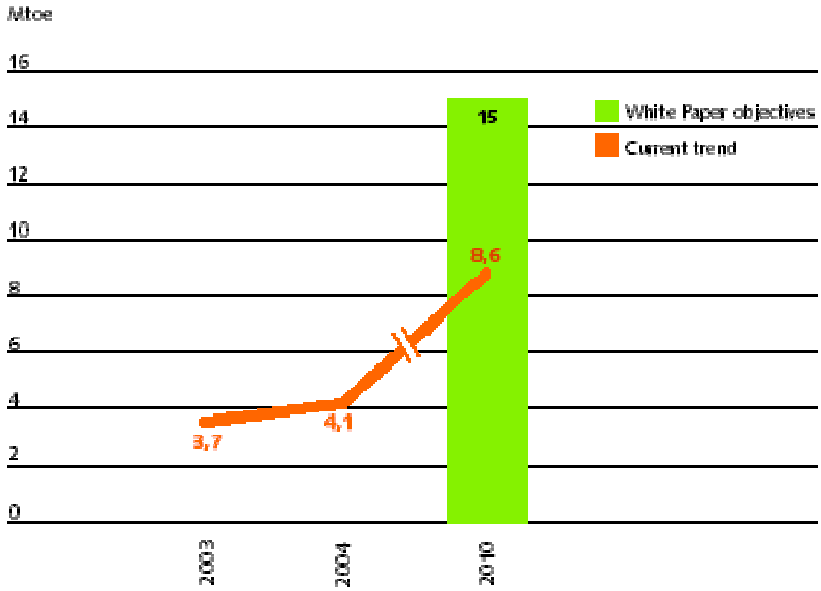
	2003	2004
United Kingdom	1 253	1 473
Germany	1 229	1 291
France	204	210
Spain	257	275
Italy	201	203
Sweden	119	120
Netherlands	109	110
Denmark	83	93
Portugal	76	76
Czech Rep.	41	50
Poland	35	43
Belgium	42	43
Austria	38	42
Greece	32	32
Ireland	19	19
Finland	16	17
Slovenia	6	7
Luxemburg	4	5
Slovak Rep.	3	3
Estonia	3	3
Hungary	2	2
Total E.U.	**3 772**	**4 117**

INSUFFICIENT VALORISATION FOR WHITE PAPER OBJECTIVES
If the growth rate observed last year is maintained until 2010, valorised crude production of biogas should be in the region of 8.6 million toe. This figure is very far below the ambitions of the European Commission White Paper that set an objective of 15 million toe for this date.The "Sustainable Energy Europe" programme wants to install 6 000 new installations between 2005 and 2008 (all types of deposits considered together). This objective signifies doubling present capacity,which is not feasible at the present rate in only 4 years time.
The situation remains very open, however,for biogas development. Reinforcement of European regulations concerning limitation and taxation of dumping is pushing decision-makers to find solutions to treat organic waste as

soon as it is collected. In the face of this need, methanisation of organic waste is one of the most pertinent answers. At the same time, biogas production can make waste treatment centres autonomous and economically valorise energy surpluses.

2. Comparison between current trend and White Paper objectives (in millions of toe)

EurObserv'ER 2005



BIOFUEL BAROMETER

In 2004, 2 447 138 tons of biofuels were produced in the European Union vs. 1 933 611tons in 2003 (including new member countries),i.e. 26.6% growth.

BIODIESEL SECTOR

The European Union counted 11 producer countries in 2004 (see table 1) due to the arrival of three countries among the new member States (Czech Republic, Slovak Republic and Lithuania). Production was close to 2 million tons in 2004 vs. 1.5 million tons in 2003 (including new member countries) i.e. 29.6% growth in a single year.Germany remained the leading EU biodiesel producer in 2004, with production above one million tons for the first time (1 035 000tons). This can be explained by very favourable legislation that permits a total tax exemption for biofuels whether they be pure or mixed with fossil fuels. France, which is in second place, has seen its production continually decrease since 2001. In the future,the situation should evolve much more favourably with the announcement made last September by the Prime Minister of a plan targeting an 800 000 ton increase in approvals for biofuels (biodiesel and bioethanol)by the year 2007. Italy had a production of 320 000 tons (+17.2% with respect to 2003).More than 90% of this production is consecrated to the biofuels market, with the remainder being allocated for building heating applications (in particular in the Vatican).Among the new member countries, the Czech Republic is the biggest biodiesel producer.

1. Biodiesel production in European Union (in tons)

EurObserv'ER -EEB 2005

	2003	2004	Croissance/growth (in %)
Germany	*715 000*	*1 035 000*	*44.8%*
France	*357 000*	*348 000*	*-2.5%*
Italy	*273 000*	*320 000*	*17.2%*
Czech Rep.	*74 861*	*82 698*	*10.5%*
Denmark	*41 000*	*70 000*	*70.7%*
Austria	*32 000*	*57 000*	*78.1%*
Slovak Rep.	*0*	*15 000*	
Spain	*6 000*	*13 000*	*116.7%*
United Kingdom	*9 000*	*9 000*	*0.0%*
Lithuania	*0*	*5 000*	
Sweden	*1 000*	*1 400*	*40.0%*
Total E.U. 25	**1 508 861**	**1 956 098**	**29.6%**

BIOETHANOL SECTOR

Bioethanol production intended for automobile fuel amounted to 491 040 tons in 2004 vs. 424 750 tons (including new member countries) in 2003, i.e. 15.6% growth (table 2). Spain is the leading EU country for bioethanol, with a production of 194 000 tons in 2004 (160 000 tons in 2003). The success of this production can be explained to a large part by Spain's choice to not collect tax on ethanol. Bioethanol production amounted to 102 000 tons in France in 2004.Like biodiesel, this sector is going to benefit from the French Biofuels Plan with an additional approval of 320 000 tons by the year 2007. In Italy, the sector should be encouraged to valorise wine industry surpluses.Among the other countries, Sweden can be cited, whose 2004 figures are stable with respect to 2003 and Poland which is waiting for a law on biofuels that was voted in November 2003 but which has still not been ratified to relaunch its sector.

2. Ethanol and ETBE production in European Union in 2003 and 2004(in tons)
EurObserv'ER-UEPA 2005

	2003		2004	
	Ethanol	**ETBE**	**Ethanol**	**ETBE**
Spain	*160 000*	*340 800*	*194 000*	*413 200*
France	*82 000*	*164 250*	*102 000*	*170 600*
Sweden	*52 000*	*0*	*52 000*	*0*
Poland	*60 430*	*67 000*	*35 840*	*n.a.*
Germany			*20 000*	*42 500*
Europ. Commission	*70 320*		*87 200*	*n.a.*
Total E.U. 25	**424 750**	**572 050**	**491 040**	**626 300**

19 MTOE OBJECTIVE FOR 2010 NEEDS MORE POLITICAL WILLPOWER

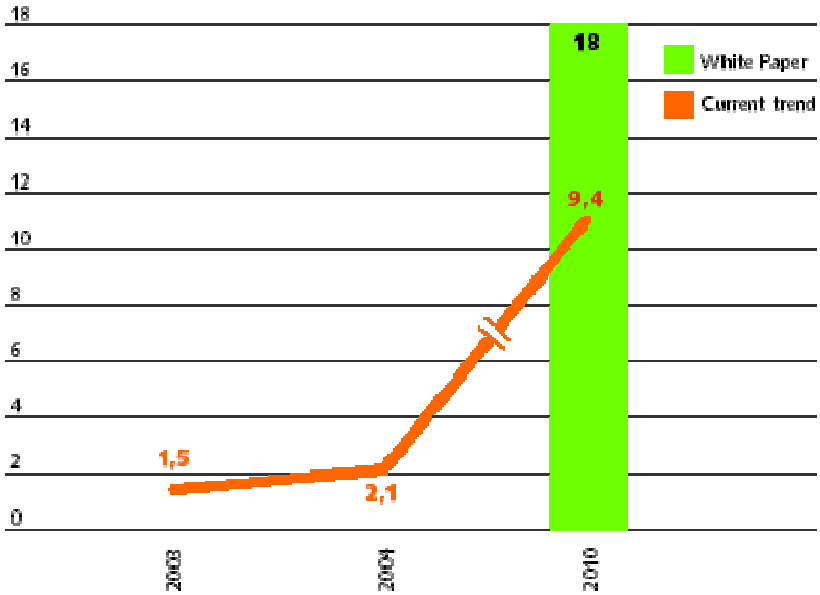
The biofuels market is not a market like the others because its development is closely tied to its total or partial exemption from the tax on petroleum products. Moreover, numerous member countries have not yet indicated what means they are going to implement to abide by the directive on biofuels. If the current trend is compared with European Commission objectives, it would seem that the objective of 5.75% biofuels in the transport sector by the year 2010 will not be reached.In order to respect the directive, the Joint Research Centre of the European Commission estimates biofuel consumption at 5.9 million toe in 2005 and 18.2 million toe in 2010, i.e.very close to White Paper objectives for 2010 (18 Mtoe). Taking current development into consideration, we estimate biofuel production at 2.8 million toe in 2005 and 9.4 million toe in 2010.The same can be said for the objectives of the "Sustainable Energy Europe" programme that targets multiplying ethanol

production by five and biodiesel production by three for the end of 2008, figures that are too ambitious with respect to current efforts.

Our statistics integrate bioethanol fuel production purchased and sold on the European market by the European Commission in the framework of community market regulations for wines.In the framework of the CAP (Common Agricultural Policy), the Commission is held to purchase and store wine overproduction. It then makes the decision to have part of this wine alcohol transformed into ethanol that it then sells on the biofuels market.

2. Comparison between current trend and White Paper objectives (in millions of tons)

EurObserv'ER 2005



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last update: 15-01-2007