

European Energy Politics goes Bioenergy Friendly

AEBIOM promotes the Biomass to energy production paths and Applications throughout Europe. Therefore AEBIOM is acting as a liason body to improve cooperation of European countries and their commitments to the completion of the following actions:

- Establish favourable economic conditions through incentives for biomass and eco-taxation of fossil fuels
- work out an agricultural legislation which takes energy crops into account
- promote research, development and demonstration projects
- encourage information dissemination to decisionmakers and to the population

Welcome to the No 10 issue of AEBIOM newsletter Biomass News. It has been produced by Bioenergi Förlag www.bioenergyinternational.com. Editor Lennart Ljungblom

Now the European energy politics go in a bioenergy-friendly way. That is very satisfying when you look upon it wearing AEBIOM-glasses. We have three strategic decisions moving in the same direction, very important and basic for the development of the biomass market in Europe, namely:

- The EU's White Paper on Renewable Energy Sources (RES) states a trebling of biomass.
- The Kyoto agreement states a decrease of CO₂ emissions with 8%.
- The EU's Green Paper "Towards a European strategy for the security of energy supply" states that domestic energy sources should increase instead of imported.

A reduction of CO₂ emissions clearly requires a decrease of coal, oil and natural gas supply. This is only possible, if RES will replace them in an increased scale and/or if the energy consumption is reduced by rational use.

Due to the "White Paper on RES" the additional bioenergy comes from:

Biogas exploitation (Livestock production, sewage treatment, landfills)	15 Mtoe
Agriculture and Forest Residues	30 Mtoe
Energy Crops	45 Mtoe
Total	90 Mtoe

To make 45 Mtoe energy crops you need 10 Mha good arable land out of EU's total 77 Mha. Today we have 9,5 Mha set aside land in the 15 member states.

EU TOOLS

The EU uses different tools to speed up the implementation of RES,

On the 27th of October the *directive on electricity*



Crushed woodfuel feeds a boiler in a sawmill

from RES was presented in Official Journal. There you find indicative targets for every member state. I think it is very important to break down the EU targets into national ones. Now AEBIOM has to push for national targets on heat from RES. 50-55% of the final use of energy in the EU is used for heating purposes.

At the beginning of November a *draft directive on liquid biofuels* for the transportation sector from RES was presented. It says 2 percent already 2005 and an increase with 0,75 percent per year after that. Another draft directive was presented at the same time. This one deals with taxation of biofuel and it is rather confusing so AEBIOM is right now dealing with the matter.

Of course, nothing else than a development into sustainability is possible in the long term, but in order to have some control of the necessary change it is very important that we start turning now and that is why AEBIOM very much supports the efforts of the Commission.

But why doesn't the implementation go faster? Most of the technical solutions are already commercial and

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they are environmentally friendly.

I think that you must give the right kick to start the conversion procedure. You thus must know and implement the right steering instrument.

If steering instruments are made in order to get a prizing concerning added value of RES and "Polluter Pays Principle" (created at the UN's climate conference in Rio de Janeiro 1992) on fossil fuels, it is not hard to find the market for biomass in the short term:

- Co-firing of biomass (5-15 %) in coal power plants doesn't need any investments besides some handling systems. 10 % of the energy demand in the largest (more than 50 MW) power plants correspond to 50 Mtoe.
- 5 % of liquid biomass fuel into motor fuels doesn't need any measures to be taken at the motors. 5 % correspond to 15 Mtoe.
- The small-scale heat market should not be underestimated, as it is the most important potential for biomass (and for all RES as a consequence). The potential is more than 100 Mtoe.

Other tools that are being introduced right now are suggested by EC's DG Environment. The commission has recently presented three documents:

- A decision proposal that the member states shall ratify the Kyoto protocol.
- A draft directive on rules for a system of trade with emission quotas.

- A communication about a program of measures to decrease the emissions of carbon dioxide.

Trade with emission quotas will be the first harmonised, general steering instrument that will be implemented in the industry and energy sector all over the European Union. That is a big step towards a decreasing of carbon dioxide.

It is very encouraging that the commission has taken these initiatives. AEBIOM has for a long time discussed the question. And our opinion is that, if we like to curb the CO₂ emissions, economic steering instruments are necessary. We must create rules, which make the market act in a desirable direction.

AEBIOM compares in its position paper on "Steering Instruments for Decreasing CO₂ Emissions" the two cost-effective instruments available namely a *carbon dioxide fee system* and *trade with emission quotas*. Later in this Biomass News you can see a short version of the position paper. It shows a system that will decrease the CO₂ emissions, increase security supply of energy and stimulate the revival of the agriculture.



Kent Nyström, President

Report from Ireland COHERENT GOVERNMENT POLICY REQUIRED FOR BIOENERGY DEVELOPMENT

Ireland will not reach the 12% EU target for the production of energy from renewable sources by 2010 unless the Irish Government develops a coherent bioenergy strategy, the Irish Bioenergy Association warned at its National Bioenergy conference held on 26th October 2001 in Dublin.

Focusing on the areas of anaerobic digestion and short rotation coppice the papers presented during the day highlighted the distinct lack of support for the bioenergy sector in Ireland when compared to other countries such as the UK and Germany.

Vicky Heslop, PRO of IrBEA, and the operator of an anaerobic digester noted "With only 2 percent of energy consumed in Ireland produced by renewable energy sources, the EU objective is very ambitious. If we are to play our part in Europe and if we are to create an environment where there are meaningful opportunities for farmers in bioenergy, there must be a stronger Government commitment and increased investment in bioenergy as an alternative farm enterprise."

GIVE THE FLOOR TO THE FARMERS

The conference was also addressed by Mr Jean-Marc Jossart, Secretary of AEBIOM who highlighted the results of the 'Lets Give the Floor to Farmers' Project which was co-ordinated by AEBIOM and involved a range of national bioenergy associations. This project identified that while farmers see the benefits of bioenergy there must be an economic return in any investment and it must not be based on marginal costs e.g. including set-aside.

Other speakers from the event included Mr. Claudius da Costa Gomez of the German Biogas Association, and

Mr Keith Pitcher of First Renewable UK who both called on the Irish Government to review its bioenergy policy to reflect those of other European states.

NO DISTINCT SUPPORT PROGRAMME

There has been no distinct support programme for bioenergy in Ireland to date. A proposed pilot support scheme for AD has not been launched despite being talked about for 2 years.

Now that it seems it may be launched there are indications that the levels of support will be lower than expected. Short Rotation Coppice has had some more positive news in 2001 with the Forest Service, of the Department of Marine and Natural Resources, funding a pilot project which will see 100ha of willow planted over the next 2 years. 6 ha has already been planted this year. Yet there is still a need for an integrated programme which will not only support the production of willow but also assist the development of markets for the crop i.e. wood fuelled combined heat and power plants.

It is clear that Ireland has a long way to go to achieve any of the goals which have been set for it at European level. If farmers are to develop bioenergy as an alternative enterprise in its own right they must be given support from a range of Government Departments. The Irish Bioenergy Association has called on the Government to acknowledge this need to engage in a development programme which will see bioenergy contribute significantly to renewable energy production in Ireland in the future.

*Irish Bioenergy Association
Seamus Hoyne, Secretary*



The Irish Bioenergy Association was formed in 1998 to promote the use of bioenergy in Ireland as an environmentally, economically and socially sustainable indigenous energy resource.

Bioenergy is energy produced from biomass. Sources of biomass include agricultural slurries, agricultural by-products such as straw, wood and energy crops such as short rotation coppice.

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AEBIOM Position Paper

The European heat market and the Kyoto Protocol

In December 1997, in Kyoto, the European Union and its Member States agreed upon a Protocol and committed themselves to a 8 % reduction of greenhouse gas emissions in the period 2008-2012 as compared to 1990 levels. The ongoing discussion on policies and measures with respect to the Kyoto Protocol concentrates on energy saving, energy efficiency, renewable energy in the fields of industry, transport and households. As far as renewable energy sources are concerned a specific attention is given to the electricity production whereas the heat market often is underestimated. This underestimation concerns the quantity of energy used for heating purposes but also the potential of the heat sector to contribute to a substantial reduction of CO2 emissions.

HEAT MARKET IS ESSENTIAL

Heat is the most important energy form needed in the European Union. 46 % of primary energy consumption in the EU are used to produce heat. 61 % of this heat are used as low-temperature heat for space heating and warm water supply. Therefore private households and domestic users are the most important consumer group within the heat market.

Biomass is the renewable energy source with the biggest potential for growth. The heat market is the most important market for a rapid deployment of biomass. Without a rapid introduction of biomass into the heat market it will not be possible to comply with the Kyoto Protocol and the goals of the White Paper.

AEBIOM has investigated the ways of heating in 11 European countries with 93 millions dwellings. The ways of heating however are different from country to country (Figure 1). Therefore a individual strategy for each country is necessary to reach a rapid deployment of bio-energy in the low-temperature heat market. The technology to heat houses with biomass has improved over the last dec-

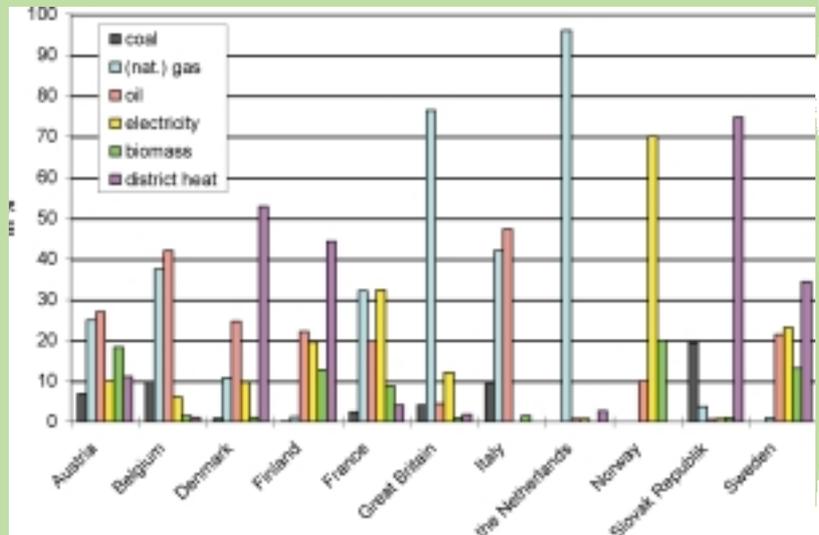


Figure 1: Heating systems in European States (Source: Austrian Biomass Association, 1997)

des significantly. Two different methods of using bio-energy for heating purposes developed over the time: individual heating systems (logwood systems, wood chip systems, pellet systems) and collective heating systems (district heating systems, small heat contracting systems).

PROGRAM "BIO-ENERGY FOR HEAT"

The main responsibility for the future development of renewable energy sources in the low-temperature heat market lies upon the ministers of energy and finance of the Member States. It is up to them to create framework conditions in their countries that favour the rapid development of individual and district heating with biomass. The policy makers in the regions and communities as well as the policy members in charge of agriculture, forestry, rural development and environment can support these efforts respectively.

Without targeted measures the use of biomass in its most important market, the low-temperature market, will decrease. Depending on the baseline situation expressed in figure 1, an individual program is needed for each country to foster the use of wood heating systems. The key points of such a program should be:

* higher taxes on fossil fuels and electricity;

* subsidies for investment;
* information of relevant actors and
* establishment of a market.

The credibility of the Union and its Member States in international negotiations on policies to protect the climate will depend upon the willingness of the governments of the Member States to launch a generous program "Bio-energy for heat" as soon as possible and as comprehensive as imaginable. Without such an initiative the targets of Kyoto will remain unreachable.

Horst Jauschnegg

AEBIOM Project Call Joint Implementation Projects EU countries and Czech Republic

EUROPEAN BIOMASS
ASSOCIATION
ASSOCIATION EUROPÉENNE
POUR LA BIOMASSE

This ALTENER project (4.1030/C/00/02) started on 1 April 2001 for 18 months aims at promoting joint implementation projects (JIP) between European Union countries and Czech Republic. Partners are AEBIOM, Irish Bioenergy Association (IrBEA), Austrian Biomass Association (ABA), Finnish Bioenergy Association (FINBIO), Agricultural University of Athens and Biomass Technology Group (BTG in NL) and as subcontractors the Czech Biomass Association (CZBIOM) and the Polish Biomass Association (POLBIOM)

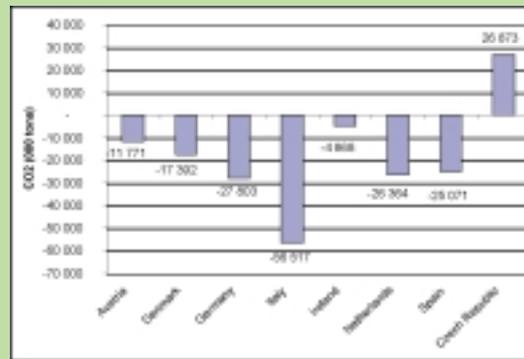


Figure 1 : CO2 emissions to save in some EU countries and emissions bonus in Czech republic (period 1999-2010) source : European Environmental Agency and AEBIOM calculations

The concept of **Joint Implementation Projects (JIP)** has been developed through the Kyoto process. It is a mechanism dealing with the transfer of emission reduction credits earned on the basis of emission abatement projects in other countries.

Figure 1 shows the efforts in terms of thousands tons of CO2 equivalent to be saved for several EU countries for the period 1999-2010, while at the same time Czech Republic has a bonus of about 27 000 tons than could be negotiated through JIP. Such scheme has already been implemented in The Netherlands

under the title Emission Reduction Unit Procurement Tender. The partners of this Altener project can accompany any initiative from private or public bodies towards the launching of new projects in Czech Republic. These new projects can take the form of feasibility studies, consultancy, elaboration of demonstration projects. Any interested person should contact the AEBIOM secretariat for further information.

In Hostetin, Czech Republic, a 732 kW wood fired boiler with district heating has been installed as a Joint Implementation demonstration project (source : BTG)

Call for partnership

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AEBIOM has developed a rational steering instrument for decreasing CO₂ emissions. In this article the system is presented by AEBIOM president Kent Nyström

Steering Instruments for Decreasing CO₂ Emissions

AEBIOM has for a long time discussed the question about steering instruments to curb green house gas emissions. And our opinion is that, if we like to curb the CO₂ emissions, economic steering instruments are necessary. We must create rules, which make the market act in a desirable direction.

AEBIOM shows in its Position Paper on "Steering Instruments for Decreasing CO₂ Emissions" that there are two cost-effective instruments available:

1. Carbon dioxide fee and
2. Trade with emission quotas

COMPARISON BETWEEN FEE AND TRADE

It could be interesting to compare them. Especially in the light of the new draft directive on trade with emission quotas from the Commission mentioned in the Editorial on page 2 and note the connections and the differences.

According to that we will here present a short version of the position paper:

1. A carbon dioxide fee can be used as a single steering instrument.
2. Trade with emission quotas needs a penalty system to punish those, who emit CO₂ without possessing enough emission quotas. The penalty system must be designed as a carbon dioxide fee, because we must not give industry in countries that implement steering instruments disadvantages in competition with industry from other countries.
3. That means that the carbon dioxide fee system could be implemented right now without disturbing any future development.
4. The structure of the carbon dioxide fee system is very important.
5. The level is not. It can easily be changed.

TRADE WITH EMISSION QUOTAS

If a system with trade of emission quotas is used it should be designed according to the following points:

- As many branches/activities as possible should

be included

- An "up-stream" approach should be used (for instance all consumers of oil, coal or natural gas will be reached indirectly because every importer or producer of fossil fuels will have to buy emission quotas according to provided volumes).

- The national emission limits will be decided through international climate agreements like in Kyoto.

- Emission quotas should be made available to the market through an auction procedure (and not by free quotas based on historic emissions). It is only fair to those who already have made great efforts.

- International trading should be open only for parties in the Kyoto agreement, and those countries, who later will join as parties.

- A mechanism preventing increased emissions in individual countries included in a trade system with emission quotas has to be designed in order to prevent any country just to buy quotas, without making any efforts in its own country.

CARBON DIOXIDE FEE

The carbon dioxide fee system can be enlarged to cover all energy resources. It is not limited to fuels and combustion.

As an example of a carbon dioxide fee system AEBIOM proposes the following one.

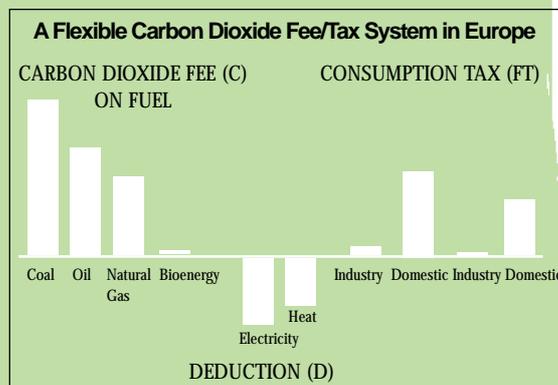


Figure 1. A graphic illustration of the different components in the proposed carbon dioxide fee/tax system.

To the left in figure 1 you have the fee proportionate to the carbon content. Therefore you have the highest fee on coal, less on oil, further less on natural gas and no fee on biomass.

In the middle a deduction proportionate to the electricity and heat production. A higher deduction on electricity than on heat.

Those two parts shall be internationally harmonised.

The total CO₂ fee is on a national basis equal to the total electricity and heat deduction like the Swedish NO_x fee, which has been practised for more than 10 years now. As you understand it is not a cost for the customers as a collective. And therefore it is not a tax.

The right part, the consumption tax, is a voluntary national tax for countries like Sweden, who want to tax the energy sector. This is not creating any troubles for the exporting industries if we as in Sweden leave their energy consumption tax free. You can't tax the industry if you don't get an international harmonised tax agreement, because you can't give your own industry competitive disadvantages to that from countries, which have no taxes.

TAXATION OF ROAD TRAFFIC

This suggestion mainly deals with the taxation of fuels for heat and power production. The proposed system could also be used for taxation of road traffic.

ADMINISTRATION OF THE SYSTEM

Finally, I will highlight an example of a declaration form. See figure 2.

All suppliers of fossil fuels are obliged to register for the fee/tax system (according to the up-stream principle).

At the top you register your used amount of different fuels and how much fee it will represent. In the middle how much electricity and heat you have produced. Those two parts could be administrated of the environmental authorities like in Sweden.

To the bottom you report the collected taxes from the customers. The tax authorities will administrate that part.

CONCLUSIONS

To speed up the implementation it is very important to have a proper, harmonised steering system like trade with emission quotas or a carbon dioxide fee. The market is already waiting.

AEBIOM proposes a very strong steering instrument for:

1. Decreasing the carbon dioxide emission by using biofuels in stead of fossil fuels.

2. Increasing security supply of energy by stimulating the demand for domestic energy resources in stead of imported and it creates saving forces by paying proportionate to used amount of fossil fuels and get money back proportionate to produced amount of electricity and heat. That will strongly support intelligent use of energy.

3. Stimulating the revitalisation of European farms by growing energy crops

And it can be implemented right now without disturbing any future development of the trade with emission quotas.

by Kent Nyström

Declaration form for registered taxpayers					
I Carbon dioxide fee on fuels					
Coal	.....ton	á	x 7,5 EUR	<input type="text" value="EUR"/>
Oil	.....m ³	á	x 10,5 EUR	<input type="text" value="EUR"/>
Natural gas	.....km ³	á	x 10,8 EUR	<input type="text" value="EUR"/>
Bioenergy	.....m ³	á	x 0 EUR	<input type="text" value="0 EUR"/>
Total carbon dioxide fee				<input type="text" value="EUR"/>	+ <input type="text" value="EUR"/>
Generated electricity and heat					
Electricity				<input type="text" value="MWh"/>	
Heat				<input type="text" value="MWh"/>	
II Consumption tax on delivered electricity and heat					
Electricity industry	.....MWh	á	0 EUR	<input type="text" value="0 EUR"/>
Electricity, others	.....MWh	á	EUR	<input type="text" value="EUR"/>
Heat for industry	.....MWh	á	0 EUR	<input type="text" value="0 EUR"/>
Heat for others	.....MWh	á	EUR	<input type="text" value="EUR"/>
Total consumption taxes				<input type="text" value="EUR"/>	+ <input type="text" value="EUR"/>

Figure 2 The declaration form

At the top you register your used amount of different fuels and how much fee it will represent. In the middle how much electricity and heat you have produced. To the bottom you report the collected taxes from the customers.

Presentation Biomass Assoc

MEMBERS 2001
BIOMASS NEWS dec 2001

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MEMBERS 2001
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Membercountries Updates

BIOMASS NEWS dec 2001

It is an enormous development going on throughout Europe. AEBIOM has a goal to assist with this market penetration. An important part of that is to help to spread good bioenergy information to the right people. Therefore we do have quite a large part of examples from our membercountries, but of course, the main bulk of projects and experiences is not included.



SWEDEN

The demand for biopellets goes skyhigh in Sweden. All consumer sectors, large users as well as small users earns good money leaving the old fossil fuels behind. This year around 15 000 pelletsburner for small houses has been sold. The pelletsproduction level will soon reach 1 000 000 t/y.

There is also good development in other bioenergy areas and new combined heat and power plants are built, e.g. cities of Härnösand and Östersund

Another area of interest is of course all the burnable material that no longer can be put for deposit.

To summarize - the bioenergy temperature is high in Sweden.

Lennart Ljungblom



Photo from Nordic & European Bioenergy Conference in Aarhus sept 2001

DENMARK

The country has now started the large conversion process from coal and fossil gas based heat and power to biofuels.

After negotiations between the government and the different business sectors an agreement has been reached.

Already 2002, the first big powerplant located outside Köpenhamn and fuelled with pellets will be taken on stream, 300 000 tonnes pellets/y.

Lennart Ljungblom



SLOVENIEN

Slovenian Biomass Associating (SLOBIOM) arranged on 3.-4. September the International conference, Biomass and other Renewable Energy Sources for 21st Century in Ljubljana, Slovenia.

Around 150 delegates from 10 European countries, Agriculture and Environment ministers from Austria, Federation Bosnia and Herzegovina, Croatia and Slovenia, the President of AEBIOM, Charmin's of Biomass Association from, Austria, Italy, South Tirol, Denmark, Sweden, and Slovenia, Director of New Energy & Demand Management from EU, Regional Adviser on Environment, UN Economic Commission for Europe, and bioenergy experts attended the conference.

Due to the low share of bioenergy in Slovenia and South - Eastern neighborhood Countries SLOBIOM have formed together with Austrian Biomass Association and Ministry of Agriculture and Environment of the Republic of Austria the Declaration for South - Eastern European region.

The participants have adopted the Declaration and declare their intention to intensify the co-operation within their countries in the field of implementation of renewable sources, energy efficiency and energy saving by various activities such as common projects, common seminars and mutual exchange of experiences.

Ljubljana Declaration was signed by chairman's of Biomass Association and by the end of this year the Declaration will be signed by Agriculture and Environment ministers of Austria, Croatia, Bosnia and Herzegovina, Hungary and Slovenia follow by Memorandum, which will be executed by 4th International Slobiom conference in Ljubljana in September 2002.

*"Conference Board"-
Ministers of Agriculture
(from left to right):*

Josef Plank; Lower Austria, Behija Hadjihajdarevic; Bosnia and Herzegovina, Bozidar Pankretic; Croatia, Anton Hrovat (President of National Council of Slovenia), Franc But; Slovenia and Martina Sumenjsek (Chairman of SLOBIOM).

Member countries Updates BIOMASS NEWS dec 2001

THE NETHERLANDS

The Netherlands government has asked, the Netherlands Bio-Energy Association to define her wished and propose suggestions how the (re-)accelerate the growth of bio-energy in the Netherlands.

Five/six key industrial players (Essent, NUON, Electrabel, Shell (?), Siemens, Afvalzorg (a Dutch waste management company) in the field have been asked to give their view and write this down in a paper. On coming december 7 NL-BEA organises a workshop in which a discussion will take place upon this subject. From the company papers, the discussion and other reactions from members NL-BEA will write a position paper to the Dutch government in which she will do suggestions for accelerating the growth of bio-energy in The Netherlands.

*Michel Arninkhof,
secretary NL-BEA*



Photo from Sustain exhibition in Amsterdam 2001

GERMANY

At 30.6.2001 the so-called Biomass Ordinance was implemented in Germany. The Biomass Ordinance is a scope of Application of the Renewable Energy Sources Act, it regulates, which substances shall be considered biomass, what technical processes for generating biomass fall within the Act's scope of application and what environmental standards must be met in the generation of electricity from biomass.

The German Federal Initiative for Bioenergy (BBE) now expects a positive development by the usage of solid biomass and biogas. In dependency of the installed capacity biomass plants get fixed prices from 17 German Pence/kWh up to 20 German Pence/kWh. So the BBE expects a rapidly increase of biomass power generation by the Renewable Energy Sources Act in combination with the biomass Ordinance. This is the result of a market forecast of almost 80 projects in all regions of Germany. By establishing the Renewable Energy Sources Act and the Biomass Ordinance the political requests of the BBE were mainly integrated in the Renewable Energy Sources Act (increase of the capacity range from 5 MW to 20 MW and of the compensation from 14,3 German Pence to 17 til 20 German pence per kWh).

From the 25. til 28.10.2001 the BBE organized the first international fair and congress "Wood Energy 2001" in Germany. At the fair 8000 visitors informed themselves about the advantages and the use of wood energy, the congress was visited by 250 participants. BBE was very satisfied with the result and decided to organize again the international fair and congress "Wood Energy 2002" from 30.10.2002 til 1.11.2002 in Augsburg in the south of Germany. From 14.6.2002 til 16.6.2002, BBE organizes a Biofuel-Congress including an exhibition in Neumünster in the north of Germany.

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FINLAND

The bioenergy sector in Finland is hot. One of the more impressive projects is the

world largest biopower unit, Alholmen, located in the western part. The boiler burns on a yearly basis 3.5 TWh biofuel, around 3 500 000 kubik-

meters. The electricity power outlet is 240 MW. The project is presented in the Bioenergy International No 1 2002.

Lennart Ljungblom

ESTLAND

The main fields of activity by the Estonian Biomass Association (EBA) are:

- Promotion of R & D on biomass applications and of environmentally friendly technologies.
- Promotion of cooperation with other interested partners home and abroad
- Information dissemination on biomass.
- Elaboration of suggestions from grassroot to national level

The EBA undertakes the obligation to contribute to the dissemination of project results in every possible way, including seminars, exhibitions and also their web-site www.hot.ee/eby.

This year many boiler houses have been reconstructed to use wood chips and sawdust.

In November a new biogas boiler house in Tallinn for landfill gas (2 x 0,7 MW) is opened.

In December a new co-generation plant will be opened in Tallinn for the output of 836 kW of electrical power and 1MW of heat energy.

*Meeli Hüüs,
Manager of the EBA
greenergy@ibs.ee*

AEBIOM Report BIOMASS NEWS dec 2001

BIOMASS IN SPAIN

BIOENERGY IN SPAIN IS EXPANDING.

To the right You will find the spanish bioenergy program presented by Hugo Lucas, Secretario General ADABE. Below you will also find two examples from bioenergy development in Spain.

BIOPOWER FROM STRAW

In the beginning of the year a new power plant in Sangüesa (Navarra) will start. Whith an investment of 48 millions Euro, it will produce around 200 millions kWh/year, burning 150'000 tonnes of cereal straw.

BIOGAS FROM LANDFILL

The largest landfill in Spain, Valdemingómez Madrid (110 ha), will became soon the biggest biogas power plant, it is expected that the plant will start to operate in 2002, with an investment of 75 millions Euro, it will burn the biogas produced from 21 millions tonnes of urban waste. Total bioenergy production from 2002 to 2019 will be 1'145 millions kWh.

1. BIOMASS CONSUMPTION IN SPAIN

In the 90's the use of biomass for energy purposes has increase in 80%. At present, biomass represents 50.8% of the total renewable energy consumption. Considering the two different applications, 4.6 percent of the consumed biomass is for power production and 95.4 percent for heat production. **Table 1** from the I.D.A.E. (Institute for Energy Saving and Diversification) shows the biomass consumption by sectors in Spain.

Only 30 percent of the biomass used for energy purposes is traded, the rest is auto-consumed inside the industries and for domestic heating in rural areas.

Table 1. Biomass consumption by sectors. Source: I.D.A.E, 2001

	Consumption (ktep)		%
	1999	2000	
Household	1992	1992	52,5
Pulp an paper	686	686	19,1
Wood, furniture, cork	423	439	11,6
Food, beregages, tobacco	277	281	7,4
Ceramics, cement, gypsum	130	130	3,4
Chemistry	13	64	1,7
Others	178	198	5,2
TOTAL	3702	3792	100

Considering the different sorts of biofuels used, in the first place we find the firewood and chips (50%) and after black liquors (15%), shaving and sawdust (12%), oil industry residues (8%), bark (7%), peat (3%).

2. BIOMASS IN THE NATIONAL PLAN FOR PROMOTING RENEWABLE ENERGY SOURCES.

Following the guidelines established in the White Paper from the Commission, the Spanish government introduced in the Electricity Sector Law the compromise to cover in 2010 the 12 percent of the primary energy consumption with renewable energy sources. To reach this goal the 31st of December 1999 the Plan for Promoting Renewable Energy Sources (PPRES) was approved by the Gouvernement. The goal is to reach 16'639 Mtep of primary energy consumption from RES in the year 2010 with an increase of 9'526 Mtep compared with the 1998

consumption. 74.4% (7'086 Mtep) of this increment will come from biomass, **table 2** gives the different uses of this biomass .

	1998		2010		Increase	
	ktep	%	ktep	%	ktep	%
Electricity	169	4,3	5269	48	5100	72
Heat	3476	89,3	4376	39,9	900	12,7
Bioethanol			500	1,4	500	7
Biogas			150	6,2	150	2,1
Urban Waste	247	6,4	683	4,5	436	6,2
TOTAL	3892	100	10978	100	7086	100

Table 2. Forecasted biomass increase for different uses.

2.1. SOLID BIOFUELS

The main part from the forecasted increase in biomass consumption will correspond to power production 5100 ktep, followed by heat production 900 ktep as showed in **table 2**. Electricity and heat (6000 ktep) will come from solid biofuels obtained from different biomass sources. **Table 3** shows the contribution of the different biomass sources.

SOURCE	ktep	%
Forestry residues (150'000 ha x 3 tep/ha)	450	7,5
Wood agricultural residues (850'000 ha x 0.39 tep/ha)	350	5,8
Herbaceous agricultural residues (1'350'000 ha x 2.88 tep/ha)	1350	22,5
Agroindustries residues	500	8,3
Energy crops (1'000'000 ha)	3350	55,8
	6000	100

Table 3. Contribution of different biomass source to the forecasted increase in power and heat production.

2.1.1 ENERGY CROPS

The PPRES estimate that energy crops can contribute in 2010 whit 3'350 ktep of renewable energy.

A realistic potential of the surface available in Spain for growing energy crops is estimated in the PPRES in 1 Million ha without disturbing the present agriculture activity. Since 1986 the number of non-irrigated ha has decrease in 1.6 Million, energy crops can be an important alternative activity for the agriculture sector.

Between the lignocellulosic herbaceous species for biomass production the cardoon (*Cynara cardunculus* L.) seems to be the better herbaceous crops for biomass

DEVELOPMENTS OF BIOENERGY IN AUSTRIA

HEATING WITH BIO-ENERGY:

In Austria almost 50 percent of energy is used as heat. Heat is also the most important market for biomass. There are 3 new developments in the field of "heat from biomass", namely

- a) district heating with biomass
- b) heat contracting with biomass
- c) modern single house systems

A) DISTRICT HEATING

Biomass fired district heating networks have been developed and built in rural areas since the mid eighties; this market has seen a considerable upturn.

In many cases the heating plants are built and operated by small cooperatives founded by farmers. The construction of the plants is subsidized, mainly by funds of the department of agriculture and the regional governments. In the last 15 years 501 district heating plants and networks with a total capacity of 650 MW have been built. The size varies between 0,5 MW to 20 MW. They sell their heat to about 25.000 costumers.

B) HEAT CONTRACTING

Under the scheme of heat contracting a private company or a group of farmers build the heating system of a big building or a group of buildings. They normally rent a cellar and install the heating central in the cellar of the building, operate the installations and sell the heat to the user of the building. This installation varies in size between 100 and 300 kW. The operators normally use wood chips to produce heat and also get a financial support of 30 to 40 % for the construction of the heating central.

C) SINGLE HOUSE SYSTEMS

Yet, single house systems without access to a heat network are by far the biggest market for heating with biomass. Usually the houses have a water pipe heat distributing system and a central furnace to produce the heat. Different types of boilers are in operation.

NEW LOG-WOOD BOILERS

In the last years new logwood burners have been developed with less emissions and more convenience.

These new burners play an increasing role in some rural areas of Austria but this regional development does not offset the general decline in the use of logwood.

Normally they are installed in combination with a 1.000 or 2.000 litre hot water boiler

WOOD CHIP BOILERS

In the last 20 years the use of wood chips was developed as new wood burning system. The main advantage is the higher comfort and the possibility to automate the whole procedure. Single house wood chip systems mainly prevail in small wood processing firms or farms. They did not succeed in being accepted as heating system in typical family houses in suburban regions, because the investment costs are rather high, the storage space have to be big and therefore the convenience is not as good as in the case of oil or gas.

PELLETS SYSTEMS

In Austria the use of pellets heating systems is relatively new. In 1997 the first pellets boilers were installed. In the last years the pellets industry was rapidly growing. The pellets are generally manufactured from wood waste by the wood processing industry. They have the advantage - compared with wood chips - of very low water content and high density easing the problems of storage and transportation frequently associated with biomass fuel. The production capacity for wood pellets in Austria is about 120.000 tons per year, actually there are 7 producers of pellets and 25 producers of pellet burners.

In Austria pellets are mostly used by private house owners, not for district heating as in Sweden. They are transported by bulk truck in a closed system. Pellets are delivered to an airtight storeroom and blown in by means of compressed air.

In the last year the growth rate of pellets installations was more than 50 % per year. At present about 8.000 systems are being in operation.

All together in the year 2000 about 4.000 pellets systems, 2.000 wood chip systems and 6.000 logwood systems have been installed.

Beside the central heating systems also tiledstoves are very common in Austria. About 400.000 stoves are

being installed, they use log wood. They are mainly used as second energy system as a supplement to central heating.

BIOMASS FOR ELECTRICITY

In the year 2000 Austria got a modern legislation (EIWOG) to foster the development of electricity production from wind, biomass, PV and small hydro, which has now to be transferred by the regional governments into their legislation. According to this new legislation in the year 2007 4 % of the electricity produced will have to come from biomass, wind or photovoltaic. To reach these targets feed in tariffs exists that have to be paid to the independent producer of electricity.

We expect a rapid development of electricity from biomass in the next years. So far in Austria exist about 100 biogas installations, 10 large installations in the paper industry using black liquor, 2 cofiring plants at existing coal power stations and several wood-gasification-units and other new technologies.

Horst Jauschnegg

Report from Greece BIOMASS NEWS dec 2001

ANO LIOSIA-BIOGAS PLANT, 14,3 MW ELECTRICITY

A cogeneration power station has been constructed recently, in the area of Ano Liossia to exploit the majority of the LFG in the Athens' landfill. The area is stressed with a lot of industrial and construction activity; hence the operation of the project is a step towards lowering the overall environmental burden. The net output from the power station is 14,94 MW. The cogeneration station is among the largest ones of its kind for Greece.

OBJECTIVES

The main objective of the project has been the collection and exploitation of the landfill gas (LFG) produced by the deposited waste at the Athens landfill, which is the main landfill that serves the greater Athens area and one of the larger in the EU. Prior to this project, LFG was released to the atmosphere.

LFG's release in the atmosphere creates a series of environmental problems (greenhouse effect, danger of explosions and fires, negative impacts on flora). The operation of the power station aims at the protection of the environment through the collection and combustion of LFG, whereas aims at the substitution of a significant quantity of fossil fuels for electricity and heat generation.

The project comprises the construction of a cogeneration power station to exploit the majority of the LFG in the Ano Liossia landfill. The installed generation capacity of the power station is 14,94MW, while the net output is 14,3MW. The station is capable of generating 128.700MWh of electricity annually.

At present, all of the production is sold to the Public Power Corporation (PPC – the State utility), which will be substituted by the Grid Administrator in the immediate future (according to the Law 2773/99). The interconnection with PPC is effected through a double underground HV (20kV) line and the net electricity generated is sufficient to cover the demand for about 14.000 households.

- *Efficient use of biogas in a CHP plant*
- *Significant reduction of CH₄ emissions*
- *Generation of 14 MW of electricity and avoidance of fossil fuels use*
- *Potential heat produced 109,000 MWh annually*
- *Use of otherwise wasted energy to cover demand for 14,000 households*

This project proves that, beyond the wind and solar potential that is abundant in Greece, there is still a significant but yet untapped potential in the biomass sector. This project, being the first large-scale project in this sector, shows the road for the wider utilization of this energy source.



Project title :

Power station for the utilisation of biogas produced in the landfill of Ano Liossia

Location : Ano Liossia Municipality, Attiki, Greece

Energy auditing: Center for Renewable Energy Sources (CRES)

Total investment: 19,395,451

Own contribution: 10,644,387 (54,8%)

Public funding: 8,751,063 (45,11%)

Hellenic Operational Programme for Energy (Community Support Framework II for Greece 1994-1999).

The heat produced is 109.000MWh annually and is partly recovered from the hot exhaust gases of the internal combustion engine and from the water cooling circuit of the engine. The heat from those sources if not recovered is rejected to the environment. The heat generated could be utilized in the near future at the nearby Municipal Solid Waste Mechanical Recycling Facility (currently erected), at the Clinical Waste Incinerator, as well as in a number of greenhouses.

Christos Zafiris and Myrsini Christou

HELLABIOM

Calender BIOMASS NEWS dec 2001

Calender 2002

17 - 19 jan
Biogas International 2002
Messe Berlin
www.biogas-international.com

2-4 feb
Second International Slovak
Biomass Forum
Bratislava
www.ecobratislava.sk

6-8 mars
World Sustainable Energy Day,
Energisparmesse
Wels, Austria
www.esv.or.at

13-15 mars
Globe 2002
Vancouver, Canada
www.globe2002.com

20-23 mars
Eco-Technologies Exhibitiobn
Padova Italy
+39-049 840 111

4-7 april
Bois Energie 2002
Lons-Le-Saunier, France
www.itebe.org

2 - 4 may
Technibois Energie 2002
www.technibois.com

17 - 21 juni
12 th European Conference and
Technology Exhibition on Biomass
for Energy and Industry
Amsterdam RAI
www.etaflorence.it

26 juni - 5 juli
World Renewable Energy
Congress VII
Julich-Germany
www.fzjulich.de/wrec2002

3-5 sept
Miljö och Energiteknik,
Swedish Fair, Göteborg
www.swefair.se

2-6 sept pellets 2002
(Changed date!!)
Stockholm
www.pellets2002.com

28-31 okt
World fuel ethanol congress
Beijing, china
www.fuelethanolcongress.com

Biomass from Spain cont. from p 12

production it is a typical species from the

Continued Spain from page 12

Mediterranean area and it is well adapted to the climatology of the Iberian Peninsula. Lately the Provenza cane (*Arundo donax*) already used in the paper industry, has shown promising results for biomass production.

2.1.2 AGRICULTURAL RESIDUES

The potential energy from agricultural residues in Spain is about 8.8 Mtep. At present the use of this waste for energy purposes is negligible because there are not any utilities demanding this biomass resource. There is a realistic potential of 3 Mtep from agricultural residues if promoting power plants placed in rural areas and consuming agricultural residues and energy crops.

2.2. LIQUID BIOFUELS

The history of biofuels in Spain is recent. Two main routes had been chosen for introducing liquid biofuel in the Spanish transportation fuel system, bioethanol as ETBE to be blend with gasoline as an additive and biodiesel for substituting fossil diesel.

There is only one bioethanol fuel plant (Cartagena, 100'000 m³/year of capacity), and two more projected (La Coruña and Salamanca, 250'000 m³/year of total capacity).

The capacity for production isobutilen in the Spanish refineries is another bottleneck for developing ETBE production route.

There is a total exoneration of taxes for bioethanol produced in the existing plant, but with the present European normative there is uncertainty about tax exoneration for the bioethanol produced in the new plants.

At present, there is not any plant producing biodiesel in Spain, there are some



initiatives to produce biodiesel from used oil, sunflower oil and residues from olive oil industries.

The estimations from the I.D.A.E. for the year 2010 are 1.4% - 1.8% of biofuels from the total transportation fuel consumption. These calculation had been done considering for the bioethanol route the use of national cereal, paid at the guarantee price and the total exoneration of taxes for both routes, bioethanol and biodiesel.

Considering the present automotive fuel consumption in Spain around 10 Mt of gasoline and 20 Mt of diesel, the substitution of 5% of fossil fuels will represent 0.5 Mt of bioethanol and 1 Mt of biodiesel.

(Footnotes)

¹ Includes the bioethanol production.



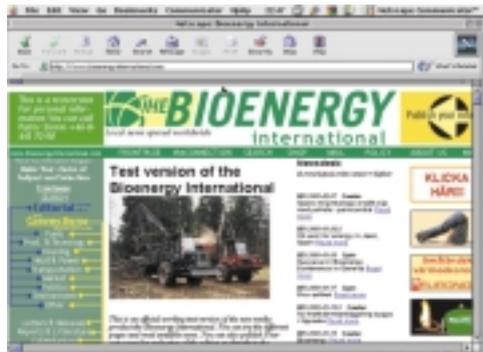
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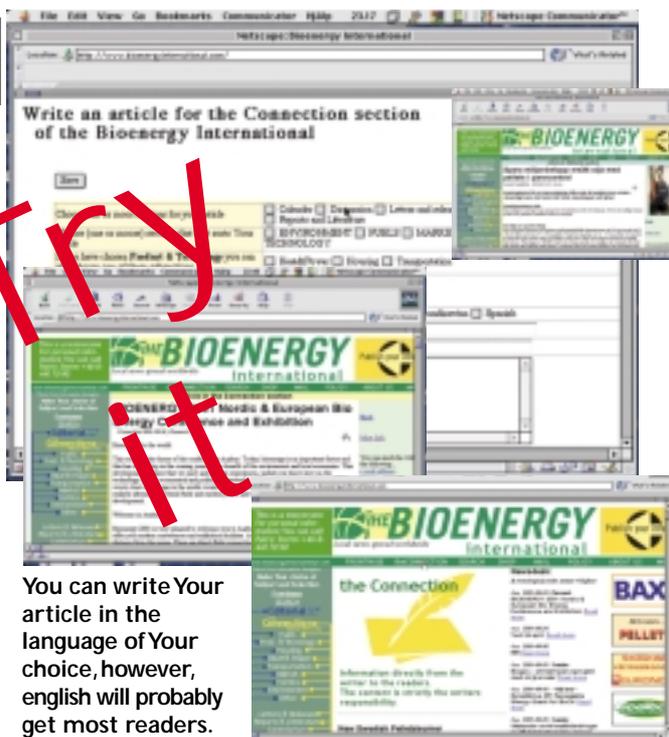
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