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From: Danish Energy Agency

Date: 30 June 2009

Ref: 3008/1305-0002

Subject:

Danish annual report under the Biofuels Directive (Directive 2003/30/EC)

Article 4 of the Biofuels Directive states that

"1. Member States shall report to the Commission, before 1 July each year, on:

- the measures taken to promote the use of biofuels or other renewable fuels to replace diesel or petrol for transport purposes,
- the national resources allocated to the production of biomass for energy uses other than transport,
- the total sales of transport fuel and the share of biofuels, pure or blended, and other renewable fuels placed on the market for the preceding year. Where appropriate, Member States shall report on any exceptional conditions in the supply of crude oil or oil products that have affected the marketing of biofuels and other renewable fuels.

In their first report following the entry into force of this Directive, Member States shall indicate the level of their national indicative targets for the first phase. In the report covering the year 2006, Member States shall indicate their national indicative targets for the second phase.

In these reports, differentiation of the national targets, as compared to the reference values referred to in Article 3(1)(b), shall be motivated and could be based on the following elements:

- (a) objective factors such as the limited national potential for production of fuels from biomass;
- (b) the amount of resources allocated to the production of biomass for energy uses other than transport and the specific technical or climatic characteristics of the national market for transport fuels;
- (c) national policies allocating comparable resources to the production of other transport fuels based on renewable energy sources and consistent with the objectives of this Directive."

A. Measures to promote the use of biofuels in transport

With effect from 1 January 2005, the Danish Government exempted biofuels from the CO₂ tax imposed on the use of conventional petrol and diesel for transport. The Commission approved the Danish exemption from CO₂ tax in case No 59/2005. There is considerable doubt as to the actual effect of tax incentives on the demand for biofuels,

because of the widely fluctuating market prices of petrol, diesel and biofuels. In May 2006, the Statoil oil company began selling *bio95*, which is 95-octane petrol containing 5% bioethanol. On 29 May 2009, the Folketinget (Danish Parliament) adopted the Government's Sustainable Biofuels Bill. This law obliges oil companies to ensure that at least 5.75 % of total annual sales of fuel for land transport, measured as a proportion of energy content, consist of sustainable biofuels. The Act comes into force on 1 January 2010.

For a more detailed account of the Act on Sustainable Biofuels, and other forward looking initiatives, please see D. below.

B. Danish resources allocated for the production of biomass for energy uses other than transport

Some 14% of energy consumption in 2008 was biomass-based. Aid in this context amounted to an estimated DKK 2.7 billion. In the 2000–2008 period, over 0.5 % (5 PJ approx.) of the energy supply shifted annually from fossil fuels to bioenergy (see Table in Annex).

Some 17% of Danish energy consumption in 2008 was based on renewable energy sources. This is one reason why Denmark is more than self-sufficient in energy.

C. Total sales of transport fuels and share of biofuels, and market conditions.

In 2007, 2.3 billion litres of petrol and 3.0 billion litres of diesel were sold for transport in Denmark, equivalent to a total of 185 PJ. Cross-border trade gave a net export of 7 PJ, which means that 178 PJ of petrol and diesel was consumed within Denmark. Cross-border trade is traditionally highly variable in its patterns. The final data for 2008 are not yet available, so we refer here to 2007 data.

Sales of bioethanol-blended petrol in Denmark were 0.4 PJ for 2008, an increase from 0.3 PJ in 2007.

This means that biofuels for transport amounted to 0.2% of total sales of petrol and diesel for transport as of 31 December 2007, which thus exceeds Denmark's target of 0.1%.

D. Denmark's biofuel policy and other forward-looking initiatives

Following the energy policy agreement of 21 February 2008, the Government presented a Sustainable Biofuels Bill in March 2009 with the participation of all parties in the Folketinget with the exception of the Unity List. After debate in the Folketinget, the bill was passed on 29 May 2009¹ by all parties with the exception of the Unity List.

The objective of the Sustainable Biofuels Act is to promote the use of biofuels as replacements for mineral petroleum and diesel oil. Undertakings producing or importing petrol or diesel oil are obliged to ensure that biofuels make up at least 5.75 % of total annual sales of petrol and diesel oil for land transport by 2010. Like the RES Directive, the Act contains provisions allowing companies to count the contribution of second generation biofuels twice towards their obligations.

The phasing in of biofuels was discussed in great detail with the oil companies' sector organisation during the drafting of the Sustainable Biofuels Bill and during the consultation process. It has transpired that it will take longer than was first envisaged to build up the infrastructure required for the blending and distribution of biofuels in petrol and diesel. This has been independently confirmed by the Danish Technological Institute. Phase-in will therefore take place gradually, and it will not be possible to reach the target of 5.75% biofuel until 2012.

¹ Act No 468 of 12 June 2009 on sustainable biofuels.

Phase-in is expected to take place as follows:

0.75% in 2010
3.35% in 2011 and
5.75% in 2012.

An additional requirement is that the biofuels used by the undertakings must be sustainable. The sustainability criteria will be set out in detail in an order transposing the established EU criteria in this respect, see the RES Directive, 2009/29/EC (sic). The sustainability requirement is clearly set out in the energy policy agreement. The Bill was therefore delayed pending the adoption of the EU biofuel sustainability criteria, which were established in December 2008.

The Sustainable Biofuels Act is a step towards achieving 10% RES in transport by 2020. Denmark will thus move from the current biofuel share of approximately 0.2%, to 5.75% in 2012. The Government will submit a national action plan to the Commission by June 2010, in accordance with the RES Directive, setting out how Denmark plans to achieve 10% RES in transport by 2020. Tools in this context may include more biofuels, electric cars, plug-in hybrids, etc.

The Sustainable Biofuels Act makes a significant contribution towards meeting Denmark's international climate obligations and implements an initiative in the National Allocation Plan for 2008–2012, which has been approved by the European Commission.

The energy policy agreement also implements a tax exemption for hydrogen cars and extends the tax exemption for hybrid cars until 2012. A pilot project involving electric cars has also been initiated.

Another noteworthy market-oriented initiative of importance for the use of renewable energy in the transport sector is that large-scale electric car use is increasingly seen by private capital and business as an interesting area for research and development. In a practical example of this, DONG Energy and "Better Place Denmark" have concluded a DKK 70 million agreement to introduce electric cars into Denmark and invest in associated infrastructure (recharging stations, battery swapping stations and intelligent interfacing with the electricity system).

Apart from the abovementioned purely market-oriented initiatives, the Danish Government decided in 2006 to boost its efforts to develop new second generation fuel technologies by earmarking a special fund of DKK 200 million until 2010 as a public subsidy primarily to large-scale demonstration projects carried out by private sector actors. In 2009, implementation of the fund was brought forward a year to 2009. Total private and public development enabled by the special fund will be 3–4 times the size of the fund. Grants from the fund are allocated by the independent Energy Technology Development and Demonstration Programme (EUDP).

Denmark can now inform the Commission that the whole of this fund was allocated in the spring of 2009, with the final overall outcome for the fund shown below. The projects cover research into, and demonstration of, new technology.

Title (year of grant)	Applicant	Grant in DKK '000
Demonstration of 2nd generation bioethanol production, WP1 : Design and engineering (2007)	DONG Energy	22 500
BornBioFuel 1 : A fully integrated 2nd generation demonstration plant on the island of Bornholm based on the Maxi-Fuel concept (2007)	BioOasol ApS	27 500
Yeast strains for 2nd generation bioethanol production (2008)	TerranolA/S	11 250
Demonstration of 2nd generation bioethanol production, WP2: Construction and erection of demonstration 1 plant (2008)	InbiconA/S (subsidiary of DONG Energy)	54 200
BornBioFuel 2: A fully integrated 2nd generation demonstration plant on the island of Bornholm based on the Maxi-Fuel concept (2009)	BioGasol ApS	78 190
Optimisation of the BornBioFuels' 2nd generation bioethanol concept (2009)	University of Aalborg	6 810
Total granted 2007–2009		200 450

As already described in the 2007 report, the Danish Government has allocated DKK 60 billion for the 2007–2009 period for pilot projects involving the use of biodiesel in limited "fleets" of vehicles. Around the end of 2007/beginning of 2008, final selection of four projects took place and contracts were signed with the individual projects. The projects commenced in the spring of 2008. The projects are:

- Pilot project involving supply in the Mid-Jylland Region (Århus municipality) at Daka Bio-industries.
- Pilot project regarding animal biodiesel blends, at the Danish Technological Institute.
- Pilot project regarding vegetable biodiesel blends – Niras Consulting Engineers.
- Pilot project involving cold-pressed rapeseed oil, at Odense Municipality.

The first vehicles became operational in the autumn of 2008. These are buses and lorries running on high-blend animal and vegetable diesel.

ANNEX to the Danish annual report under the Biofuels Directive (Directive 2003/30/EF)

TABLE: Availability and use of biomass for energy purposes, 1980–2008

PJ	1980	199	1995	2000	200	2002	2003	2004	2005	2006	2007	2008
Production												
- straw	4.8	12.5	13.1	12.2	13.7	15.7	16.9	17.9	18.5	18.6	18.3	15.8
- woodchips	0.0	1.7	2.3	2.7	3.2	3.7	6.3	6.9	6.9	7.4	7.3	7.4
- wood pellets	0.0	1.6	2.1	3.0	3.1	2.9	3.1	3.3	3.3	2.3	2.6	4.6
- wood waste	3.7	6.2	5.7	6.9	6.7	6.0	6.3	6.4	6.5	6.6	6.2	6.4
- fuel wood	7.6	8.8	11.5	12.4	13.2	13.0	14.9	15.7	17.7	19.1	25.0	25
- biomass waste	7.6	11.1	17.5	23.6	25.0	26.3	28.4	28.9	29.3	29.8	30.0	30
- biogas	0.2	0.8	1.8	2.9	3.1	3.4	3.6	3.7	3.8	3.9	3.9	4.1
- biodiesel	0.0	0.0	0.0	0.0	0.9	1.5	1.7	2.4	2.7	3.7	3.7	3.6
- bioethanol									0.0	0.0	0.0	0
- fish oil	0.0	0.7	0.3	0,0	0,2	0.1	0.4	0.6	0.8	1.0	0.8	0.8
Total production	24.0	43.3	54.2	63.8	69.1	72.7	81.6	85.8	89.5	92.4	97.8	97.7
Net import												
- woodchips	0.0	0.0	0.0	0.3	0.4	0.4	0.7	0.8	0.8	0.8	1.8	1.8
- wood pellets	0.0	0.0	0.2	2.2	4.1	4.9	6.7	9.5	12.8	13.3	14.8	15.5
- fuel wood	0.0	0.0	0.0	0.0	0.3	0.5	0.9	1.4	2.0	2.0	2.2	2.2
- biodiesel	0.0	0.0	0.0	0.0	-0.9	-1.5	-1.7	-2.4	-2.7	-3.7	-3.7	-3.6
- bioethanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4
Total net import	0.0	0.0	0.2	2.5	3.7	4.4	6.7	9.2	12.8	12.4	15.4	16.3
Total availability = use	24.0	43.3	54.4	66.3	72.8	77.1	88.3	95.0	102.3	104.8	113.2	114.0
of which used in												
- electricity/heating production	7.9	20.0	30.0	39.4	43.2	47.7	55.5	61.0	63.7	63.8	63.9	62.9
- other industry	5.7	9.3	8.6	9.2	9.3	8.5	9.1	8.8	9.3	10.0	10.0	10
- homes	10.4	14.0	15.8	17.7	20.3	20.9	23.7	25.2	29.3	30.8	39.0	40.7
- transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4

•No final data for 2008 are available. The 2008 data are therefore rough estimates based on provisional composition data.

Source: Danish Energy Agency *Energy Statistics for 2007* and provisional composition data for 2008.