UK REPORT TO THE COMMISSION ON BIOFUELS 2005

Contents

Promotion and use of biofuels in the United Kingdom

This report fulfils the UK's obligation to report to the European Commission by 01 July 2005 on the preceding year, as required by Article 4 of Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport.

The report covers:

- the measures the UK has 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 UK sales of transport fuel and the share of biofuels, pure or blended, and other renewable fuels placed on the market.

1. UK Measures to Promote Renewable Transport Fuels

1.1 Fuel Duty

Fuel Duty differentials are currently the UK's primary means of support for biofuels. In addition to the 20 pence per litre duty incentive on biodiesel which has been in place since July 2002, a similar duty differential for Bioethanol (a petrol extender) was introduced on 1 January this year. Budget 2005 announced that these duty differentials will now continue until 2008, consistent with the UK Government's commitment under the Alternative Fuels Framework to provide 3 year rolling certainty on duty differentials.

The latest provisional figures indicate that biofuels sales are currently (May 2005) running at some 10.7 million litres a month. This is a major increase since the end of 2004, and a direct result of the 20 pence per litre fuel duty incentive that now applies for Bioethanol.

1.2 'Input based approach to Taxation' / 'Hydrogenation Process'

At present, biodiesel is in the main produced by putting biomass through a stabilising process called esterification. The biodiesel is then blended with conventional road fuel diesel. The current small-scale nature of this process gives rise to some inefficiencies in terms of manufacturing, storage and distribution, making the cost disadvantage of biofuel greater than it might otherwise be. There is however the possibility that biomass such as rape seed oils can be mixed with conventional hydrocarbons in a process call 'hydrogenation' with the end product virtually indistinguishable from conventional diesel , though this process has yet to be proven on any significant scale.

The UK Government is interested in examining this hydrogenation process, as we believe it could enable a significant shift in the scale of biofuel production and facilitates the mainstreaming of biofuel products. It may also, owing to economies of scale, provide a cheaper way of introducing biofuel into the oils market. Therefore, as announced in the 2004 Pre-Budget Report and confirmed at Budget 2005, the Government will undertake a pilot project to examine the potential for using fuel duty incentives for inputs-based production of road fuel as a means of encouraging the use of biomass in

conventional fuel production. The tendering process will be launched in the coming months, and the Government intends that the project should begin from 2006, subject to Commission approval.

1.3 Capital Grants

As outlined in last year's report, regional selective assistance grants are one of the few methods of direct support for industry allowable under the EU's single market rules. Options for use of this assistance are limited in the UK, because qualifying regions do not necessarily match up with the most suitable areas for production facilities.

However, the UK has taken advantage of the RSA system. In particular, the Argent plant in Scotland benefited from an RSA grant from the Scottish Executive of £1.2 million. It started operating in March, with full production expected to start shortly. It has capacity for some 50 million litres of biodiesel per year - nearly 5 per cent of Scotland's diesel needs.

The North East Regional Development Agency has also has also offered grant funding to prospective biofuels facilities.

1.4 Enhanced Capital Allowances

Last year's report indicated that the Government was looking at Capital Allowances as a measure to support investment in biofuels production facilities. Capital allowances allow the costs of capital assets to be written off against a business's taxable profits. One hundred percent first-year enhanced capital allowances (ECA) allow a business to write off the whole cost of qualifying capital assets against the taxable profits of the period during which the expenditure is incurred. The accelerated tax relief can provide a cash flow benefit for businesses in profit and a net present value benefit of about five percent.

Budget 2005 announced that the Government has been holding discussions with the biofuels industry on the merits of an enhanced capital allowance scheme for the cleanest biofuels processing plants, and considers that this may be a useful additional measure of support to the UK biofuels industry, subject to state aid approval and further work on the detail of the scheme.

1.5 Renewable Transport Fuel Obligation

The UK Government has conducted a feasibility study and consultative process to explore the prospects for a Renewable Transport Fuels Obligation (RTFO) as a possible mechanism to promote renewable fuels into the long term. It would be limited to the road transport sector, at least initially. An RTFO would place a legal obligation on specified transport fuel suppliers to supply a specified proportion of their road fuel supplies to their customers in the UK from renewable energy sources. DfT held a series of stakeholder workshops to discuss how an RTFO might operate, and also commissioned two pieces of research on some of the detailed design aspects. The study is due to conclude shortly and Ministers will consider the findings in the context of developing the UK's revised Climate Change Programme, due for publication before the end of the year.

1.6 Sponsoring Research & Development

The Government's New and Renewable Energy Research and Development Programme has funded a number of projects specifically on the development of advanced production methods for biomass transport fuels in the past year. These include: -

- *'Technology Status review and carbon Abatement Potential for Renewable Transport Fuels in the UK'* - carried out by Imperial College of Science, Technology and Medicine. The study has been published.
- 'Hyperthermophilic Proteolytic Fermentation to Generate Ethanol as a Transport Fuel', is being carried out by BLC Leather Technology Centre Ltd.
- 'Lipase Alcoholysis of Triglycerides to Produce Biodiesel' is also being carried out by BLC Leather Technology Centre Ltd.
- 'Biofuel production from plant biomass derived sugar', by TMO Biotec Ltd
- A strategic framework for Hydrogen Energy in the UK, by E4Tech, Eoin Less Energy and element energy, December 2004.

In addition, the Government and industry-sponsored Low Carbon Vehicle Partnership recently sponsored a study into the prospects of Carbon and Sustainability Assurance for renewable road fuels. This was conducted as part of the broader Feasibility work on a possible RTFO mechanism. It will be publicly available in due course.

All of these studies are made publicly available on Government websites

1.7 Bringing forward the Hydrogen Economy

Hydrogen stands alongside biofuels as the other major potential low-carbon transport fuel and could provide both ultra-low carbon and zero-pollution road transport.

Two key policy strategy documents - the Powering Future Vehicles Strategy and 2003 Energy White Paper - acknowledged renewable hydrogen and biofuels as the two most prominent options for a future ultra-low carbon transport economy and committed the Government to producing an assessment of the overall energy implications of their use on a significant scale. This assessment, *'Liquid biofuels and hydrogen from renewable resources in the UK to 2050: a technical analyses,'* was published in July 2004. The report suggests that it will not be possible for the Government to achieve its target to reduce carbon emissions by 60% by 2050 while relying on conventional fossil fuel-based vehicles and that hydrogen and biofuels are certainly two of the main alternatives. The UK could produce enough renewable hydrogen for road transport, but at the expense of energy resource for other sectors. The report concluded that the large scale use of either fuel would have numerous local environment, social and economic impacts (positive and negative), all of which would benefit from greater study.

Following this, the Department for Trade and Industry commissioned a consortium of consultants to produce a strategy for the development of hydrogen technologies in the UK. In December the consortium, led by E4Tech, published *A strategic framework for Hydrogen Energy in the UK*. The report contends that the transport sector might be the most suitable candidate for early use of

hydrogen and that hydrogen may provide cost effective carbon savings in the future if the price of oil continues to rise. The study found that six transport hydrogen energy chains show the potential for cost-competitive CO2 reductions and increased energy security by 2030: biomass, renewables, nuclear, natural gas with carbon capture and storage (CCS), coal with CCS, and novel hydrogen production methods. E4Tech have also made a set of recommendations for how the UK Government should develop its hydrogen strategy. The Government response to these recommendations was published on 14 June 2005, and included some new funding for hydrogen fuel demonstration projects.

The UK Government has also supported activities such as the Clean Urban Transport for Europe (CUTE) Bus Trials. Three hydrogen fuel cell buses operated on a public bus route in central London in order to build technical experience, to collect valuable date and also to help raise public awareness of these technologies.

1.8 Government Leading by Example

The UK Government has been leading by example in promoting and using biofuels. The Government Car and Despatch Agency (GCDA) uses a 5% biodiesel blend in its London-based delivery vehicles. At local Government level, many local authorities (LA's) and police authorities are using biodiesel in their fleets. Examples include Dorset County Council and Dorset Police, Easington District Council, Tayside Contracts (covering part of 3 Scottish Councils) and Tayside Police as well as London's Metropolitan Police.

Government Ministers continue to attend events to promote biofuels. For example, the Minister of State for Transport, Dr Stephen Ladyman, is due to attend a major conference in Cambridge on 20 July looking at the prospects for the UK biofuels industry.

1.9 Biofuel Production Capacity in the UK

UK policies have helped stimulate capital investment in major biofuel production plants. A major biodiesel production facility, the Argent plant in Scotland, has just come on stream. This pioneering project produces a particularly environmentally friendly form of biodiesel fuel from products previously regarded as waste. There are several other large plants at the planning and development stage.

In addition, a mobile refinery, the first in the world, has been built by Cambridge University in order to support UK farmers by helping them to turn rape oil into bio-diesel.

1.10 Information Provision

As required by the Directive, the UK introduced new labelling regulations at the beginning of 2005, requiring biofuel blends in excess of 5 percent to be clearly labelled at the point of sale (i.e. dispensers on petrol forecourts).

The Government continues to provide funding for the TransportEnergy website (www.transportenergy.org.uk) to include information about the UK filling stations where biofuels are available. Biofuels are currently available at well over 200 filling stations in the UK, generally as a 5% blend.

2. Biomass for electricity power generation

The UK Government announced in January 2000 a target that 10% of the electricity supplied in the UK be generated from renewable energy sources by 2010. This target has been embodied in the Government's Energy White Paper published in February 2003, which also introduced an aspiration to achieve a renewable electricity penetration of 20% of all electricity power generation by 2020.

The Renewables Obligation ("RO") is the key policy mechanism by which the UK Government is encouraging the growth in renewables electricity generation capacity necessary to reach these levels. The details of the Obligation are contained in separate Renewables Obligation Orders made from 2002 onwards in England and Wales, in Scotland and in Northern Ireland. Taken together these Orders require all licensed electricity suppliers in Great Britain to provide the Gas and Electricity Markets Authority (Ofgem) with certificates, issued under any Order, demonstrating the supply of a specified quantity of renewables electricity to customers.

In the second year of operation of the RO April 2002-March 2003, the GB produced about 2.4% of its electricity from eligible renewable sources. RO eligible biomass produced about 0.51% of current electricity supply - some 20% of ROCs issued were for biomass (with about 10% of ROCs from co-firing). Figures for 2004 are not yet released, but will be available shortly through DTI statistical publications (available on the DTI website).

The deployment of biomass fuelled heat and electricity projects in the UK is also supported by the £66m Bioenergy Capital Grants scheme, jointly-funded by the Department of Trade and Industry and the National Lottery's New Opportunities Fund. Support is targeted in four areas, smaller heat and CHP, medium scale CHP and electricity generation, large-scale electricity generation and CHP, and advanced electricity generation.

The first medium scale project, a CHP plant linked to wood pellet fuel production, has just been commissioned in Enniskillen, Northern Ireland. Located at the largest sawmill in Ireland this installation produces 2.7 MW of electricity with waste heat used to dry wood by-products that are subsequently converted into 40k tonnes per annum of high quality wood pellet fuel. Poorer quality mill residues are used to fire the power generation boiler.

A large scale installation that will generate 31.5MW of electricity has started construction at Wilton on Teeside NE England, operation is expected to start in 18 months. This project will use 20% energy crop in its fuel mix. A further 8 projects across the UK are in the permitting process. The Bioenergy Capital Scheme has also facilitated the installation of 67 biomass heating boilers in commercial premises across the UK with the prospect of more in the near future.

Grants to plant short rotation coppice (SRC) and miscanthus, and to set up producer groups to supply SRC for electricity and heat generation, are available in England under the £29m Energy Crops Scheme run by the Department for Environment, Food and Rural Affairs (Defra). Grants to plant SRC in the rest of the UK are available through the Woodland Grant Scheme run by the Forestry Commission (Wales) and Forest Service (Northern Ireland), and through the Scottish Forestry Grants Scheme run by the Forestry Commission (Scotland). The UK-wide £3.5m Bio-energy Infrastructure

Scheme was launched in October 2004 and is run by Defra (England, Wales and Northern Ireland) and the Forestry Commission (Scotland). The scheme provides grants to develop the supply chain for energy crops and woodfuel, from harvest through to delivery to electricity and heat end-users.

The Department of Trade and Industry also supports fundamental research and development over the whole range of renewable energy technologies (solar, wave, tidal, wind, fuel cells and biomass) through a ~£19m pa programme. In the area of biomass the programme has already supported important work in expanding our knowledge on energy crops and advanced conversion technologies like gasification and pyrolysis. In addition to biomass heat/electricity generation the scheme will also support work on next generation biofuels.

3. UK Sales Levels for 2004/2005

The total sales of biofuels in the UK in 2004 were some 20,990,000 litres, whilst total road fuel sales were approximately 48 billion litres. As a percentage of total road fuel sales, biofuels contributed about 0.04%.

Biofuels sales by month for 2004 and the first few months of 2005 are set out below.

Biodiesel

Month	**Quantity (litres)**
January - 2004	1,037,000
February	1,893,000
March	1,308,000
April	1,441,000
May	1,929,000
June	2,372,000
July	2,353,000
August	1,902,000
September	2,155,000
October	1,794,000
November	1,449,000
December	1,357,000
January - 2005	1,257,000
February	1,706,000
March	1,751,000
April	2,311,000
May	2,894,000

Bioethanol

Month	**Quantity (litres)**
January - 2005	4,683,000
February	5,467,000
March	4,241,000
April	6,509,000
May	7,814,000

Negligible quantities of bioethanol were used in road transport until the introduction of a duty incentive in January 2005.

Feedstocks for UK biofuel production include re-cycled cooking oils, agricultural by-products (e.g. tallow and possibly straw) and mainstream agricultural crops (e.g. cereals and root crops for bioethanol and oilseed crops for biodiesel). Imports could include straight bioethanol and biodiesel as well as biodiesel feedstocks including tropical products such as palm oil.

Most biofuels were sold in blends, the vast majority at or below the 5% level which is in line with European road fuel standards EN590 and EN228.

4. Progress towards the UK Target for 2005

The UK Government set a realistic target of 0.3% of total UK fuel sales by the end of 2005. We are pleased to report that the UK is well on course to meet the target, which would represent a 10 fold increase on 2004 sales.

Sales are currently running at some 0.25% of total fuels sales. This is thought to be largely from imports of Brazilian bioethanol, but increases are expected from domestic sources once the new Argent plant reaches full capacity.

5. UK Target for 2010

Although the Directive does not require Member States to set a target for 2010 until July 2007, responses to the UK's public consultation indicated a strong preference to set a target as soon as possible. In light of this response, we are considering a possible target for 2010 which we hope to announce well ahead of the Directive's requirements. The Government have been considering policy measures that would enable the UK to meet any target it sets under the Directive, and in particular, the possibility of an RTFO (referred to in section 1.5).

6. Conclusion

The UK Government remains committed to the promotion and development of renewable transport fuels for the long term. We have made excellent progress towards our target for 2005 with the measures already in place, and are confident of meeting or even exceeding this target. We have also taken important steps toward developing a strategic framework to support our long term objectives.