

July 2010

**Department of Communications, Energy
and Natural Resources (DCENR)**
- Compliance with Directive 2003/30/EC

***“Report on measures taken to promote the use of biofuels or other
renewable fuels to replace diesel or petrol.
Compliance with Directive 2003/30/EC (Article 4)”***

1. Introduction

DIRECTIVE 2003/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8th May 2003 on the promotion of the use of biofuels or other renewable fuels for transport, inter alia, requires Member States to report to the Commission before 1st July each year on specific measures to promote biofuels and biomass, indicative targets for market penetration and current market status of biofuels and biomass.

The seventh report following entry into force of this Directive is now due.

This seventh report sets out Ireland’s position as follows:

- § 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.

The information provided in this report is **additional** to information provided in Ireland’s 2004 to 2009 (inclusive) reports to the Commission.

2. Measures taken to promote the use of biofuels or other renewable fuels to replace diesel or petrol for transport purposes.

Fiscal Measures

Biofuels Mineral Oil Tax Relief Schemes

The Biofuels Mineral Oil Tax Relief (MOTR) Schemes (which were reported on previously) will come to an end on 31 December 2010. In terms of the penetration of biofuel in the transport sector, the MOTR schemes have seen the use of biofuels in Ireland grow from practically

zero to a figure of 2.2% in 2009 in terms of volume and have helped develop and support a number of indigenous companies producing biofuels. Now that the MOTR Schemes have achieved their goal Ireland is ready to implement the National Biofuel Obligation.

Vehicle Registration Tax (VRT) Relief for Hybrid Electric/Flexible Fuel Vehicles

The Government continues to encourage the increased use of environmentally friendly electric cars and the development of new technology in this field. There are already a number of incentives in place which demonstrate the Government's commitment to promoting electric vehicle use. The Vehicle Registration Tax (VRT) exemption for electric vehicles and the VRT reliefs of up to €2,500 for plug-in hybrid electric vehicles, which were due to end in December 2010, have been extended for a further two year period until end December 2012.

Biofuel Obligation

A National Biofuel Obligation is being introduced on 1st July 2010. Under the Obligation road transport fuel suppliers will be compelled to use biofuel in the fuel mix to ensure that they represent an initial penetration rate of 4% of their relevant disposals of road transport fuel. The National Oil Reserves Agency (NORA) will be administering the scheme in Ireland. Obligated Parties will be required to apply to the scheme Administrator for a Biofuel Obligation account and provide details of their fuel sales on a monthly basis. The percentage of biofuels penetration will be calculated on the basis of the fossil based component of the final blend. Both obligated parties and other suppliers of biofuels may apply for certificates in respect of the biofuels which they place on the Irish road transport fuels market. A Biofuels Obligation Certificate will be awarded for the supply of one litre of biofuel or the energy equivalent of other fuels, such as biogas. Biofuel Obligation Certificates may then be traded amongst account holders. This means that obligated parties who have not been able to fully meet their obligation by supplying biofuel themselves can purchase certificates from other obligated parties or from biofuels suppliers who have registered with the Administrator. An obligated party who has a shortfall in the number of certificates at the end of a defined period (calendar year) will be required to pay a non-compliance levy, calculated on the basis of the number of certificates short multiplied by the established amount per certificate.

The legislative basis for the obligation is provided for in the Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010 which was signed into Irish Law on 9th June 2010.

The National Biofuel Obligation will integrate the recently published EU Sustainability Criteria by means of secondary legislation which will be introduced later in 2010.

Agricultural Measures

The agri-food sector is a source of many of the raw materials for the production of biofuel. To encourage the cultivation of crops for energy purposes the Department of Agriculture, Fisheries and Food (DAFF) have implemented a number of incentives. These incentives are intended to complement the measures introduced by the Department of Communications, Energy and Natural Resources to stimulate demand for bioenergy.

EU Energy Crops Scheme

The EU Energy Crops Scheme ceased at the end of 2009. The main energy crops claimed for were Oilseed, Wheat, Willow and Miscanthus which can be used for production of biodiesel, ethanol and pellets respectively. To qualify for the aid, farmers required a contract with an end user in the appropriate processing industry, except where the farmer undertook the processing himself. In 2009 a total of 561 applicants availed of this grant aid.

National Energy Crop Premium

The national energy crops payment of €80 per hectare was made available as a further incentive for farmers to grow energy crops. This additional payment was paid to applicants of the EU Energy Crops Scheme and covered areas sown under energy crops provided they were intended for use in the production of biofuels. Payment of the premium ended in 2009 following the EU decision to end the EU Energy Crops Scheme. However a budget of €0.5m was allocated to this premium in 2010 to fund liabilities carried over from 2008 and 2009. In 2009 the number of applicants was 496. The difference in 2009 between the number of National Energy Crop Premium (NEP) applicants (496) and the number of EU Energy Crop Scheme applicants (561) is due to oilseed equivalence, which is not eligible for the NEP.

Bioenergy Scheme

The Bioenergy Scheme (BES) was introduced on a pilot basis in 2007 to run over 3 years to the end of 2009 to establish an agricultural sector involved in the growing of miscanthus and willow specifically to produce biomass suitable for use as a clean and renewable source of energy. The BES made available grant aid to help towards the high cost of establishment associated with miscanthus and willow in order to encourage increased production. Nearly 2,500ha were grant aided during the pilot phase of the Scheme (2007 – 2009).

Following a comprehensive review of the pilot BES in mid 2009 it was recognised that a new Bioenergy Scheme was required to consolidate progress made during the pilot phase. Accordingly €1.6m is provided for the new Bioenergy Scheme which was launched in February 2010. The Scheme continues to provide establishment grants to farmers to plant miscanthus and willow. These grants cover 50% of establishment costs up

to a maximum of €1,300/ha. Funding to plant a further 1,000 hectares in 2010 was made available and 91 farmers submitted applications for 867 hectares. The last of the pre-planting approvals are currently issuing.

AGRI/Energy Research

DAFF supports bioenergy research through its Research Stimulus Fund Programme which facilitates research that supports sustainable and competitive agricultural production practices and policies and contributes to a scientific research capability in the agriculture sector. Of the 12 research projects focusing specifically on the agri-energy research theme, final reports are currently due for four projects, while the other eight projects are still ongoing.

Transport Measures

In relation to the Government's *Smarter Travel* policy, launched in February 2009 and which we reported on in our 2009 Report to the Commission, updated information on this policy can be obtained through the following link <http://www.smartertravel.ie/>

The Department of Transport carried out research of international practice relating to sustainable bus fleets and a report has been completed which will be shared with the public transport providers. The trial is still ongoing by Dublin Bus on a hybrid electric double-deck bus for which the Department of Transport provided funding.

Electric Vehicles

The progressive introduction of electric vehicles into the road transport fleet is being promoted and supported in a number of ways in line with the Irish Government's target of 10% of all vehicles to be powered by electricity by 2020.

Progress has been made in discussions with major motor manufacturers to make early production vehicles available to the Irish market.

It has also been announced (subject to approval of the Minister for Finance) that a grant scheme will be introduced for up to 6,000 vehicles over a two year period from January 2011, which will provide grants of up to €5,000 for full battery electric vehicles and up to €2,500 for plug in hybrid electric vehicles. The grant scheme will be administered by the Sustainable Energy Authority of Ireland (SEAI) and full details will be published well in advance of the scheme commencement date of Jan 2011. The support schemes are non exclusive and will be open to any vehicle from any manufacturer, which meets the qualifying criteria.

The rollout of up to 1,500 charge points nationwide by December 2011 has

already begun and there are plans to install up to 30 fast charge points across Ireland by the end of 2011, with nine expected to be set up by the end of this year.

Research and Development

Bioenergy GIS

Sustainable Energy Authority of Ireland (SEAI) has developed a Bioenergy Geographic Information System (GIS). The bioenergy GIS provides spatially visualised access to bioenergy supply and demand information in Ireland, as well as some tools for assessing actual bioenergy supply in a user specified area; and assessing the potential for energy crop development in a user specified area. It is intended to develop this GIS into a far more powerful tool for bioenergy over time. The eGov address for this system is <http://169.254.34.39/bioenergy>.

Potential of Marine Algae/Seaweed

As reported on last year SEAI, in concert with Enterprise Ireland and the Marine Institute, continues to keep the area of research towards the development of biofuels from marine algae under review and provide support as appropriate to achieve meaningful progress in this area.

ERA-Net Bioenergy

SEAI remains part of the European network ERA-Net Bioenergy (www.eranetbioenergy.net). The joint call held last year on clean biomass combustion has resulted in 3 successful projects, one of which involves an Irish research organisation that is funded by SEAI. The project, **FUTURE LOW EMISSION BIOMASS COMBUSTION SYSTEMS (FutureBioTec)**, will investigate and develop primary and secondary measures for biomass combustion systems in order to significantly reduce emissions and will run to end November 2012.

Other areas for joint calls that are being considered by ERA-Net Bioenergy are

- biomass pre-treatment to deliver outputs of relevance to the realisation of 2nd generation biofuels and
- biorefineries.

A joint call is being prepared in conjunction with the Wood Wisdom ERA Net and will include a topic covering biofuels and biorefineries. This call is expected to be launched in September 2010.

3. The national resources allocated to the production of biomass for energy uses other than transport

Sustainable Energy Authority of Ireland (SEAI) Miscanthus Pilot Programme

On 30th April 2010 a new Miscanthus Pilot Demonstration Programme was launched which provides support for the deployment of renewable heating systems fuelled by miscanthus in the commercial, industrial, services and public sectors. The Programme is being administered by SEAI.

The use of miscanthus as a fuel has been low in Ireland, due not least to limited experience with its use as a boiler fuel. The Miscanthus Pilot Demonstration Programme is intended to support the establishment of a number of exemplar boiler sites. These exemplar sites will serve to provide critical information on the supply chain logistics and the technical suitability of miscanthus as a boiler fuel in an Irish context. Details of the Programme can be found on the following website http://www.seai.ie/Grants/Renewable_Energy_RD_D/

Renewable Energy Grant Aid Package

The high-profile programmes to support the deployment of renewable heat technologies, which were introduced by the Irish Government in the last number of years, continue to be very successful.

The programmes - ReHeat, Combined Heat and Power (CHP) and the Greener Homes Scheme – which were reported on previously, provide grants for the installation of renewable heat technologies across a wide range of sectors including the domestic, community, voluntary, public sector, commercial and business sectors.

There have been a total of 40,305 applications approved under the Greener Homes Scheme (GHS) since its launch in March 2006, of these 30,633 are valid applications which are either still open or are already installed. Biomass technologies represented 20% by volume and 28% by value of these valid applications – the relative uptake of biomass and heat pump technologies in the programme is decreasing due to the shift towards solar installations, and other changes to the structure of the programme which limit the grant scheme to existing homes only. Total annual CO₂ savings for the valid GHS grants is estimated as 57,822 tons.

There have been 816 ReHeat applications received to date, 719 of which are for capital investment and 97 of which are for feasibility studies. Of the 486 approved applications for capital investment, the technologies applied for are biomass boilers (184), solar thermal installations (219) and heat pumps (83). A total of 403 projects have been completed to date, 164 biomass boiler projects, 174 solar thermal and 65 heat pumps. The total installed boiler capacity is 72,520kw (Thermal) – with a further 4,750kw of capacity approved. A total of 2,779m² of solar panels have been installed, with a further 937m² approved. Finally, the 83 heat pump projects have an

installed capacity of 3,023kw, with a further 851kw approved. The total estimated CO₂ savings from the installed projects is 61,825 tonnes pa, with a potential further 23,848 tonnes savings arising if all approved projects are built. A total of €6,836,460 has been paid to date, for an average grant of €18,245, with an average cost of installation of €77,612.

There have been 168 applications under the CHP programme (the fossil fuel CHP Deployment Programme is now closed), which provides capital assistance (95% of the amount paid) for small scale fossil CHP, and for Biomass/Anerobic Digestion CHP, along with grants for feasibility studies (5% of the amount paid). A total of 72 projects have been completed to date, 56 of which are capital investment and 16 of which are feasibility studies. Installed capacity to date is 13.7 MW_e. There are 27 applications approved, with 17 being capital investment and 10 being feasibility studies. If all of these approved capital projects are built, the installed capacity will be 18,078 kW_e and 24,300 kW_{th}.

To date 10 grant applications for Biomass CHP / AD CHP have been received under the call. Of these, 1 has been installed and is operating in Co. Cork, although the operational report phase is not yet complete. Two projects have been rejected, one of which did not have complete information while the other did not meet the eligibility criteria. Two projects have passed the evaluation phase and are awaiting budget clearance prior to issuing a contract and the balance of 5 projects are at various stages of the evaluation process.

Renewable Energy Feed In Tariffs (REFIT)

In April 2010 Ireland announced new REFIT for biomass technologies which will range from 8.5 cent per kilowatt hour to 15 cent per kilowatt hour depending on the technology deployed.

These new support tariffs will assist the development of a sustainable biomass supply sector in Ireland. They will ensure that there is a ready demand for biomass and will build on the measures already in place including the REHEAT programme and the Energy Crop grant schemes run by the DAFF. The support tariffs will require State Aid clearance from the European Commission before they can be implemented and this issue is being progressed.

Charles Parsons Energy Research Awards

The Charles Parsons Awards Scheme continues to fund research in the area of biofuels and/or biomass. Complete research teams are now in place and all groups are now very actively engaged in research.

Within the **BioGen Group** (Biologically Mediated Sustainable Energy Generation) at National University College, Galway research significant progress has been made on optimization of the low-temperature anaerobic

biogas production from dairy residues and perennial ryegrass. This research has centred around the operation of novel smallscale plants and microbial ecology studies. The team have also commenced work on the design and commissioning of a larger, pilot-scale facility. The group has continued to work on determination of the factors influencing the efficiency and capacity of biological fuel cells operated with and without redox mediators. Specifically the work focused on the design of biocatalytic electrodes and the assembly of prototype biofuel cells. Research on the microbial fuel cell component of the research also commenced.

At the **Bioresources Research Centre (BRC)** based in University College Dublin the research has been structured around three themes. The *bioresource assessment* research activity has centred around quantifying the types of biomasses and energy sources that could be use in Ireland for sustainable energy systems. The team has also been assessing the potential production of algal biodiesel and algal biomass under laboratory growth conditions. Within the *technology conversion* research strand the team has undertaken **gasification trials** on a range of feedstocks to assess gas quality, yield, energy balances, residues, etc. Evaluation of the use of **anaerobic digestion (AD)** for the co-digestion of animal slurries with grass and/or maize is also ongoing. The *Environmental Impact Assessment* strand has focused on the development of real-time sensing technologies for biomass quality assessment. The team has also begun a series of experiments to determine **carbon sequestration rates in microalgae**. Another element of the research has been the assessment of **land use changes** from agricultural crops to energy crops and, in particular, the ability of **cereal crop diseases to transfer to miscanthus crops**.

Within the *Chemical Technologies for Biomass and Biofuels* theme of the **Charles Parsons Initiative** in University of Limerick (UL) a key output has been the design, construction and commissioning of a pilot scale (10 kg/h) fluidised bed biomass gasification plant. Significant progress has also been made on optimisation of the pyrolysis processes, for bio-oil production from crops such as Miscanthus, and upgrading of the bio-oil to fuel product quality. Within the *hydrogen from biomass* component, research has focused on determination of the optimal conditions for hydrogen production and hydrogenation by formic acid, and development of low-cost, active, selective and stable catalysts for H₂ production. With the objective of minimizing the energy requirements of autothermal thermophilic aerobic digestion (ATAD), a model has also been developed and validated for an existing autothermal thermophilic aerobic digestion system to allow identification of the optimum operating conditions.

All research groups have published its findings in leading international journals, presented at major national and international meetings and also interacted strongly with Irish and international industry to support the emerging bioenergy sector in Ireland.

Competence Centre for Biorefining and Bioenergy

In its Strategy for Science, Technology and Innovation (2006-2013), the Irish Government proposed the establishment of competence centres to address the 'key issue of building and reinforcing areas of strength within both industry and the academic sphere and ensuring that these are highly networked with each other'. The Competence Centre for Biorefining and Bioenergy is one of a number of these centres established and led by industry, and initially funded by Enterprise Ireland and the IDA. It began its operations in January 2010.

The Vision of the Centre is to provide cutting edge research and development outputs to support a sustainable and competitive Irish biomass (bioenergy and bioproducts) industry.

The initial research phase of work proposed by the industry group consists of two key areas

a) Next generation feedstock analysis -To investigate high potential next generation feedstocks such as grass and algae that do not compete with food, can achieve a higher energy balance and a greater potential to reduce greenhouse gas emissions relative to current bioenergy and biorefinery feedstocks, and

b) Conversion process technology - To examine the options for various conversion technologies to unlock the energy and co-product potential from feedstock's which have a particular relevance to Ireland.

The centres development and research work is being overseen by a board with representatives from industry and academia.

Bioenergy Working Group

The Department of Communications, Energy and Natural Resources has, through the Bioenergy Working Group, been coordinating the development of a Biomass Energy Road Map, looking at the bioenergy sector in its entirety, including co-firing, biomass CHP, Anaerobic Digestion and renewable heating, and will be making a series of recommendations on that basis. This work involves substantial analysis and modelling of the economic, resource and environmental considerations involved which will inform the development of indigenous renewable resources across the electricity, heat and transport sectors. A report is expected to be published shortly.

National Renewable Energy Action Plan (NREAP)

Ireland, in line with other Member States, is producing a National Renewable Energy Action Plan which sets out the Government's strategic approach and concrete measures to deliver on Ireland's 16% target under Directive 2009/28/EC.

A Draft of the plan which was issued for consultation is available through the following link:

<http://www.dcenr.gov.ie/NR/rdonlyres/403096FC-C7BF-4A3D-98C0-1DE0CDEB1C9B/0/DraftNREAPwebversion11June2010.pdf>

Agricultural Measures

On-farm waste to energy projects

The Department of Agriculture, Fisheries and Food is committed to supporting the development of on-farm anaerobic digestion facilities and, under the Scheme of Investment Aid for Demonstration On-Farm Waste Processing Facilities, grant-aid of €4 million was made available to ten such projects in 2007. The environmental benefits of the technology will be assessed under the scheme including a full life cycle analysis of the potential of the technology to abate greenhouse gas emissions. While this scheme has closed for new applications, all projects are still ongoing.

Wood Biomass Harvesting Machinery

The Wood Biomass Harvesting Machinery Grant Scheme was designed to help realise the potential for wood energy that currently exists in Irish forests, to supply the growing woodchip market and to stimulate the establishment of small local enterprises. Under this scheme €500,000 in grant aid was previously approved and this stimulated associated investment of some €1.5 million. A further €600,000 was made available under Phase II of the Scheme, which ran until the end of 2008. €77,500 was paid out in 2008 with a further €191,000 paid out in 2009. The grants for the final machines were not availed of within the timeframe specified in the terms of the scheme. The scheme has now closed.

4. 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.

The following table illustrates the latest statistics available on transport energy and volume consumption by fuel which shows that in energy terms 1.7% of total road transport fuel consumption is biofuel which accounts for a 2.2% share in volume terms.

ROAD TRANSPORT - BIOFUEL SHARES PROVISIONAL 2009

<i>ktoe</i>	<i>Biofuel total</i>	<i>DERV total</i>	<i>Gasoline total</i>	<i>Total Road Fuel</i>	<i>Biofuel % Share in energy terms</i>	<i>DERV share of road fuel</i>	<i>Gasoline share of road fuel</i>
2009 P	74	2493	1742	4309	1.7%	57.9%	40.4%

Provisional
Figures

<i>000 tonnes</i>	<i>Biofuel total</i>	<i>DERV total</i>	<i>Gasoline total</i>	<i>Total Road Fuel</i>	<i>Biofuel % Share in volume terms</i>	<i>DERV share of road fuel</i>	<i>Gasoline share of road fuel</i>
2009 P	91.9	2410	1639	4140.9	2.2%	58.2%	39.6%

Provisional
Figures