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4 February 2008

M. Ruete
Director General
DG TREN
European Commission
DM28 08/41
Brussels

06 FEV. 2008

Dear Director General

REPORT BY THE UNITED KINGDOM ON ACHIEVEMENT OF THE INDICATIVE TARGET FOR ELECTRICITY GENERATION FROM RENEWABLE ENERGY SOURCES BY 2010 (Final Draft)

Directive 2001/77/EC on Promotion of Electricity produced from Renewable Energy Sources in the internal electricity market Under Article 3 of Directive 2001/77/EC of 27 September 2001 Member States are required to publish, for the first time not later than 27 October 2003 and thereafter every two years, a report which includes an analysis of success in meeting the national indicative targets for the promotion of electricity produced from renewable energy sources. The analysis must take account, in particular, of climatic factors likely to affect the achievement of those targets.

As required under Article 3.3, please find enclosed the UK assessment on progress towards meeting the national indicative renewables target, as set out in the Renewables Directive. If you require any further information in relation to this submission, please contact Bryan Payne at the UK's Department for Business, Enterprise and Regulatory Reform at bryan.payne@berr.gsi.gov.uk.

Yours sincerely

Bill Jones
First Secretary
Nuclear and Energy

DG TREN	CODE:
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BERR | Department for Business Enterprise & Regulatory Reform

REPORT BY THE UNITED KINGDOM ON ACHIEVEMENT OF THE INDICATIVE TARGET FOR ELECTRICITY GENERATION FROM RENEWABLE ENERGY SOURCES BY 2010

Report by the UK pursuant to Article 3 (3) of Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market.

"Member States shall publish, for the first time not later than 27 October 2003 and thereafter every two years, a report which includes an analysis of success in meeting the national indicative targets taking account, in particular, of climatic factors likely to affect the achievement of those targets and which indicates to what extent the measures taken are consistent with the national climate change commitment.

London, January 2008

I. Introduction

EU Directive 2001/77/EC required Member States to adopt national targets for renewables that are consistent with reaching the overall EU target of 12 per cent of energy (22.1 per cent of electricity) from renewables by 2010. This, the UK's Third Report, meets the requirement in the Article 3(3) of the Directive that Member States publish on a bi-annual basis a report analysing its success in meting their national indicative target and the measures taken to deliver it.

II. Summary of UK renewable generation policy

Achieving a sustainable, competitive and secure energy supply forms the backbone to the UK Government's policy approach to energy. Our primary objective is to protect our energy supply for the future, whilst ensuring that ecological integrity is maintained and economic growth is unhindered.

Under present policies, as set out in the UK's 2003 and 2007 Energy White Papers[1], the UK is on course to exceed its target under the first commitment period of the Kyoto Protocol, which is to cut greenhouse gas emissions by 12.5% on 1990 levels throughout the period 2008-2012. The welcome strong performance of the UK economy over the past nine years has, however, also led to growing energy consumption. This growth, combined with higher levels of electricity generation from coal, has led to higher carbon emissions in the UK. So we now need to take further action to help us move towards the over-arching goal of cutting carbon emissions by 60% by 2050.

Along with greater energy efficiency, a key part of our strategy to reduce carbon emissions and thereby tackle climate change is increasing the deployment of cleaner, low-carbon sources of energy, and in particular, maximising the use of renewable sources electricity generation. The UK has some of the richest renewable resources in Europe - particularly in terms of our wind and marine (wave and tidal stream) resources. If they can be captured effectively they can make a significant contribution to our long-term energy goals relating to climate change and security of supply. In 2001, the UK Government set itself a target that aims to see renewable sources grow as a proportion of our electricity generation mix to 10% by 2010, with an aspiration for this level to double to 20% by 2020.

Since February 2000, the United Kingdom's renewable generation policy has consisted of four key strands:

- A Renewables Obligation on all electricity suppliers in Great Britain to supply a specific proportion of electricity from eligible renewables, introduced in April 2002;
- Exemption of electricity from renewables from the Climate Change Levy, introduced from April 2001;
- An expanded support programme for new and renewable energy including capital grants and an expanded research and development programme; and
- Development of a regional strategic approach to planning and targets for renewables.

Recognising the potential benefits of renewables to the UK's energy objectives, in 2002 the Government introduced the Renewable Obligation (RO) as the main mechanism to drive and support the growth of renewables generation. The Obligation allows generally higher cost renewable electricity generation to compete directly with conventional, fossil fuel based electricity generation. As a result, UK renewable electricity generation has increased significantly since 2002. In 2006 electricity supplied from RO eligible sources stood at around 4% of the UK's total, up from 1.8% in 2002.

The 2007 Energy White Paper and the 2007 Planning White Paper, published alongside it, set out a package of reforms to enable the deployment of renewable generation more rapidly which are detailed in section II. Based on our projections, our proposals to strengthen and modify the RO, along with the other reforms set out will see electricity supplies from renewable sources tripling between

[1]The 2003 Energy White Paper is available at: http://www.berr.gov.uk/files/file10719.pdf and the 2007 Energy White Paper at: http://www.berr.gov.uk/files/file39387.pdf

now and 2015 to around 15% of the total electricity supplied, equivalent to 5% renewable energy (including renewable heat and transport). The RO and the Climate Change Levy exemption, combined, are projected to provide around £1billion of annual support for the deployment of renewable electricity in 2010, rising to around £2billion of annual support in 2020. A strengthened EU Emissions Trading Scheme (EU ETS) should also support investment in renewables. In addition to creating the right financial framework, we need to lower important practical barriers to renewables investment, namely those barriers relating to the planning system and to access to the electricity distribution and transmission grid.

However, in March 2007, the Spring European Council agreed to a common strategy for energy security and tackling climate change. An element of this was establishing a target of 20 per cent of EU's energy needs to come from renewable sources by 2020. The European Commission has been asked to bring forward detailed proposals, including each Member State's binding share of the EU target. Looking ahead, we shall need to take into account the implementation of the this new target and have committed to bring forward further reforms to enable its delivery once it is known.

The UK Government recognises that increasing the use of renewable sources for electricity generation can make a significant contribution to achieving our climate change objectives. Whilst reducing carbon dioxide emissions, the development of renewables can also strengthen energy security through increasing the diversity of energy mix and improve industrial competitiveness as cleaner technologies, products and processes are developed.

But this is also a challenging ambition to deliver. Against the backdrop of increasing global demand for energy and rocketing energy prices, the UK has also moved to being a net importer of energy. We will need to replace almost one third of our power stations by 2020 and we will increasingly import more of our oil and gas from a variety of countries. Evidence of the adverse impact of climate change has also continued to grow. While significant progress is being made against our ambitions laid down in the 2003 Energy White Paper, recognising the scale of the challenge in tackling climate change and energy security issues, it is clear we need to go further in reducing emissions to tackle global warming. But this must be, and can be balanced with secure and efficient energy supply and a competitive UK economy.

III. Progress to meeting target

Tables 1-3 below show the growth in the proportion of electricity produced from renewable sources under the Renewables Obligation, Directive 2001/77/EC and international definitions.

Table 1: Percentages of UK electricity generation derived from renewable sources (Digest of UK Energy Statistics 2007)

	2002	2003	2004	2005	2006
Overall renewables percentage (revised to the international basis)	2.87	2.65	3.58	4.55	4.55
Percentage on a Renewables Obligation basis	1.80	2.21	3.06	3.99	4.43
Percentage on a Renewables Directive basis	2.81	2.63	3.51	4.15	4.47

Table 2: Renewable generation on a Renewables Obligation basis (Digest of UK Energy Statistics 2007)

GWh

	2002	2003	2004	2005	2006
Wind:					
Onshore *(1)*	1,251	1,276	1,736	2,501r	3,574
Offshore *(2)*	5	10	199	403	651
Solar photovoltaics	3	3	4	8	7
Hydro:					
Small scale *(1)*	204	150r	283	444r	477
Other hydro including refurbished large scale	120	560r	1,353r	1,710	1,632
Biofuels:					
Landfill gas	2,679	3,276	4,004	4,290	4,424
Sewage sludge digestion	368	343	379	400	463
Co-firing with fossil fuels	286	602	1,022	2,533	2,528
Other *(3)*	840	937	927	849r	797
Total biofuels	4,173	5,158	6,331	8,072r	8,212
Total renewables generation on an obligation basis *(4)*	**5,755**	**7,156r**	**9,906r**	**13,138r**	**14,554**

Table 3: Generation: Directive basis

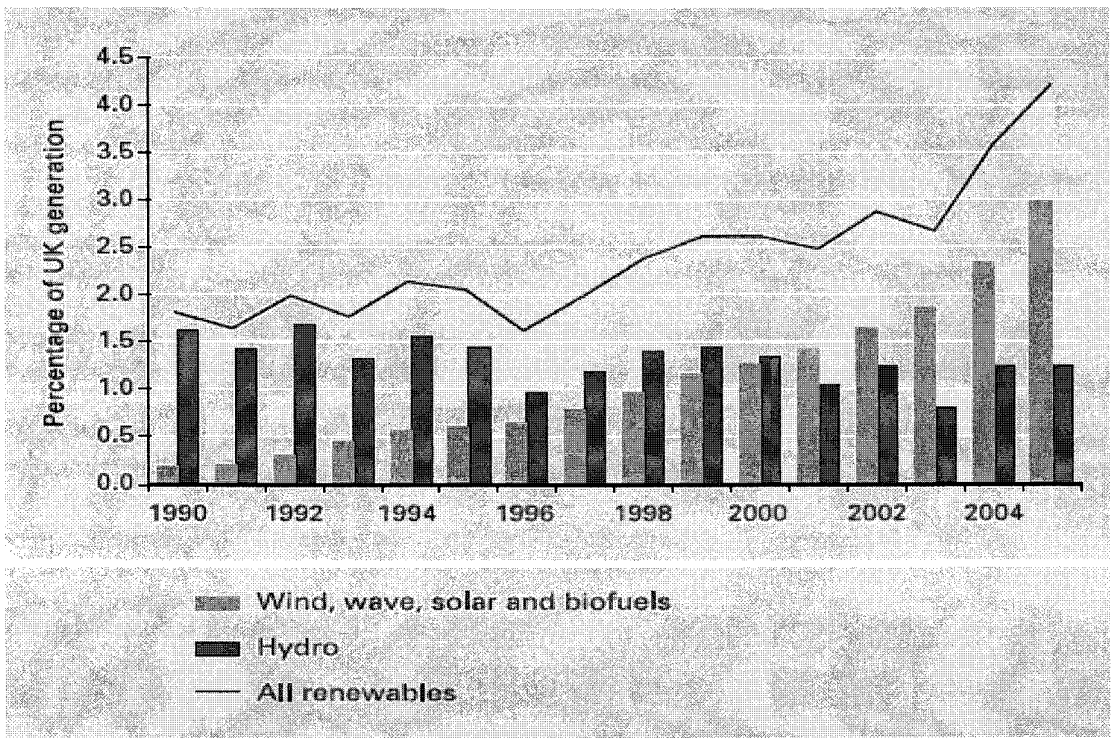
GWh

	2002	2003	2004	2005	2006
Wind:					
Onshore *(1)*	1,251	1,276	1,736	2,501r	3,574
Offshore *(2)*	5	10	199	403	651
Solar photovoltaics	3	3	4	8	7
Hydro:					
Small scale *(1)*	204	150r	283	444r	477
Large scale *(5)*	4,584	12,987r	4,561r	4,478r	4,128
Biofuels:					
Landfill gas	2,679	3,276	4,004	4,290	4,424
Sewage sludge digestion	368	343	379	400	463
Municipal solid waste combustion *(7)*	907	965	971	964	1,083
Co-firing with fossil fuels	286	602	1,022	2,533	2,528
Other *(3)*	840	937	927	849r	797
Total biofuels	5,080	6,122	7,302	9,036r	9,295
Total renewables generation on a directive basis *(4)*	**11,127**	**10,548r**	**14,085r**	**16,870r**	**18,133**
Imports of electricity certified as CCL exempt *(6)*	1,668	2,865	3,522	2,243	3,475

(1) Actual generation figures are given where available, but otherwise are estimated using a typical load factor or the design load factor, where known.
(2) Latest years include electricity from shoreline wave but this amounts to less than 0.05 GWh.
(3) Includes the use of farm waste digestion, poultry litter combustion, meat and bone combustion, straw and short rotation coppice.
(4) See paragraphs 7.7 and 7.8 for definitions. Note that the Renewables Directive definition was amended in the 2006 Digest - see footnote (6)
(5) Excluding pumped storage stations.
(6) Mainly hydro electricity exported to England from France. In the 2005 Digest these figures were included within .the Renewables Directive basis but, following clarification by the European Commission, they were removed and are included in this table for information
(7) Biodegradable part only

Electricity generated in the UK from renewable sources eligible under the Renewables Obligation in 2006 was 11 per cent greater than in 2005. This compares with growth of 33 per cent in 2005, 38 per cent in 2004 and 24 per cent in 2003. Electricity generated in the UK from renewable sources eligible under the Renewables Directive in 2006 was 7½ per cent greater than in 2005. This compares with year on year growth of 20 per cent in 2005, 34 per cent in 2004 and a 5 per cent fall in 2003. For comparison, Figure 1 illustrates the growth since 1990 in electricity generation from renewable sources.

Figure 1: Growth in Electricity Generation from Renewable Sources since 1990



IV. Increasing the rate of renewables generation deployment

Progress in increasing the rate of deployment of renewables generation in the UK continues to be made and the rate of deployment is forecast to grow through 2007 and beyond:

- Construction has started on Europe's largest onshore (322MW) windfarm at Whitelee, in Scotland;
- Construction on a fresh round of offshore wind projects has started or will start shortly. These include Robin Rigg (180MW), Lynn (90MW), Inner Dowsing (90MW), and Gunfleet Sands (90MW). All of these projects are being supported under the Government's £97 million offshore wind demonstration programme;
- A further 2.5GW of offshore wind has been consented, including the London Array offshore wind farm, which at 1GW will be the world's largest offshore wind farm; and
- New biomass projects to be commissioned during 2007 will include the UK's largest dedicated biomass plant at Lockerbie (44MW) and a 30MW project at Wilton.

Despite good progress to date, however, there remain barriers slowing the rate of renewables deployment in the UK in both the short and long term:

- Firstly, the most competitive renewable technologies, such as onshore wind and hydropower, are either constrained by the scarcity of suitable sites or, in the case of co-firing of biomass

with coal generation, by caps on the total level of generation qualifying for support under the RO. In addition the maturing technologies, like offshore wind and biomass, that we will rely on for the next phase of renewable electricity deployment are proving more expensive than anticipated. As a result, in its current form, the RO will not deliver sufficient financial support to deploy these at the levels needed to keep us on track towards our 20% aspiration.

- Secondly, securing planning consent for renewables, and in particular onshore wind, can be an especially difficult process, with developers facing uncertainty and significant risk of delays. There is currently more than 11GW of renewables capacity awaiting consent under the planning system.

- Thirdly, there are significant challenges and delays in connecting renewables generation projects to the transmission and distribution network, affecting both onshore and offshore renewables.

In the following sections, we set out the actions we are taking to tackle each of these challenges of financing, planning and grid, as well as technology support and specific technology action.

The Renewables Obligation

The primary policy mechanism for delivering the UK's renewables target is the Renewables Obligation (RO). Since it came into force in 2002, the RO has been successful in stimulating investment in renewable energy projects. It does this by placing an Obligation on licensed electricity suppliers to source an increasing proportion of their electricity sales from renewable sources or to pay a penalty (the buy-out price). The RO's aim is to provide a framework of financial incentives to invest in renewables with the long-term goal of supporting the transition of renewables into the mainstream of the UK's competitive electricity market. The level of the Obligation is currently set to increase in annual steps from 7.9% in 2007/08 to 15.4% by 2015, and to remain at that level until 2027 when the mechanism will end. Generators receive an RO Certificate (ROC) for each 1MWh of renewable electricity they generate. These are sold to electricity suppliers, allowing them to demonstrate how much renewable generation they have sourced.

HM Government brought forward proposals as part of the 2007 Energy White Paper to reform the RO by introducing banding. This will increase the efficiency of the RO as well as bringing forward those technologies which are currently further from commercial deployment such as offshore wind, marine & tidal, and Advance Conversion Technologies. Modelling carried out by Oxera has indicated that these changes will help us to achieve our aspiration of 20% renewable generation by 2020. Details of the proposals and the modelling underlying it can be found at http://www.dti.gov.uk/energy/whitepaper/consultations/renewables-organisation/page39555.html

We have also decided to retain the link between the Retail Price Index (RPI) and the RO buyout price from 2015/16.We shall introduce banding of the RO to offer differentiated levels of support to different renewable technologies. This will encourage the increased development and deployment of a broader set of renewable technologies.

We launched a consultation document on the specific bands we propose to introduce and our other proposals to strengthen and modify the RO. Our intention is that the new bands will come into force in 2007.

In summary, we will be strengthening and modifying the Renewables Obligation by:

- Extending the Renewables Obligation (RO) up to 20% on a headroom basis;

- Retaining the buy-out price link to the RPI;

- Introducing banding of the RO to target support at the needs of groups of individual technologies and promote wider deployment;

- Lifting the current limits on the amount of co-firing generation that qualifies for support under the RO; and

- Putting in place appropriate grandfathering provisions, meaning that most existing projects will continue to receive the current number of Renewable Obligation Certificates for each MWh of electricity they produce, providing certainty for existing investments.

Planning

Planning is one of the most significant barriers to the deployment of renewables. For example, according to industry statistics, it takes an average period of 21 months for wind farms to secure planning consent under the Electricity Act 1989 regime.

In the May 2007 Planning White Paper[2] and via subsequent Planning Reform Bill introduced in Parliament in November 2007, we therefore have set out a series of initiatives and proposals aimed at reducing uncertainty and shortening the overall timescales from application to a final decision on consent. These were based on three underlying principles:

- Improving the strategic (i.e. national policy) context against which individual planning decisions should be made;

- Introducing more efficient inquiry procedures in the current consent regimes; and

- Exploring options for more timely decision-making.

Taken together, we believe this package of proposals will increase the speed and quality of decision-making on existing and future renewable projects reducing costs and risks for developers and uncertainty for local communities. In summary, we will be improving the planning consenting process for on and offshore renewables by:

- Delivering on the broader planning proposals set out in the 2006 Energy Review Report and in the 2007 Planning White Paper;

- Publishing a statement of need for renewables. This emphasises the importance of renewables in helping us to meet the UK's climate change and energy policy goals, and is a material consideration in all planning inquiries;

- Building on this statement of need, and the existing Planning Policy Statement (PPS)22 on renewables, by putting renewables generation at the centre of the proposed Planning Policy Statement (PPS) on Climate Change;

- Consulting on proposals to improve the resilience of overhead power networks. These are designed to strike a better balance between a flexible approach for minor upgrades and the need for a new consent for major upgrades, a particularly important issue for the development of renewables; and

- Working on strategic assessments which will underpin future development rounds for offshore wind.

Grid

To reach our aspiration of 20% of electricity supplied from renewable generation by 2020, approximately 20GW of renewable capacity would need to be connected to the GB transmission system. Our aim is to connect new renewable generating capacity to the electricity network as

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quickly and as cost-effectively as possible. The majority of the new renewable generation is likely to be variable onshore and offshore wind. In the longer term, this implies the need for an electricity transmission system that does not attempt to accommodate all generation simultaneously, but where transmission access is shared amongst different forms of generation. Such a system would mean that the transmission system could accommodate an increased amount of generating capacity for a given amount of transmission capacity. The current technical, commercial and regulatory framework for transmission access will need to change to facilitate the cost-effective integration of more diverse generation technologies into the electricity system.

The energy generated from wind is more variable than conventional generation and can only make a limited contribution to overall system security. However, even at relatively high degrees of renewable penetration (e.g. 20%) analysis suggests that the additional system balancing and system margin costs associated with this variability are relatively low.

We are making progress in connecting new renewables projects. Between January 2006 and May 2007, around 630MW of renewable generation capacity has been connected to the grid helping to reduce carbon emissions.

Investment in essential infrastructure is underway with further significant investment already agreed. For example:

- Ofgem has agreed £560 million for essential transmission network investment to allow low carbon generation in Scotland and Northern England to connect to the grid. This investment programme is already underway and is expected to be completed, subject to planning consent, by around 2012.

- Ofgem and the Great Britain transmission licensees have agreed a five-year Transmission Price Control, commencing on 1 April 2007 that allows for a doubling in real terms of electricity transmission network capital expenditure compared to the previous five-year price control period. This is additional investment of some £4billion at 2006/07 prices GB wide, with the real increase in Scotland equivalent to around 250%.

The price control proposals also allow the transmission companies flexibility under certain conditions to make further investments automatically without the need to reopen the entire price control review. This mechanism will be of particular benefit to renewable generation.

Although recent progress is encouraging, a number of key challenges to speeding up the rate of connection of renewable generation remain. These are:

- The need to manage more efficiently the queue of developers waiting for grid connection;

- The need for reform to the arrangements for access of renewable generation to the transmission grid;

- Ensuring the technical standards for the grid do not disproportionately burden renewable generators; and

- Ensuring that in the longer-term we have a framework that continues to meet the grid-related challenges associated with an increasing proportion of renewable generation.

Two programmes of work will be taken forward: the first to meet the immediate challenges of managing the connection queue, access reform and reviewing technical standards; and the second to set a longer-term strategic direction. In summary, we will be improving Renewables Grid Connection onshore and offshore by:

- Working intensively with NGET, Ofgem and industry to implement changes that will help bring forward connection opportunities for the most viable renewable projects;

- Working with Ofgem and NGET to consider, and where appropriate implement, reforms to the rules relating to grid access in order to improve the opportunities for more renewable projects to connect earlier; and

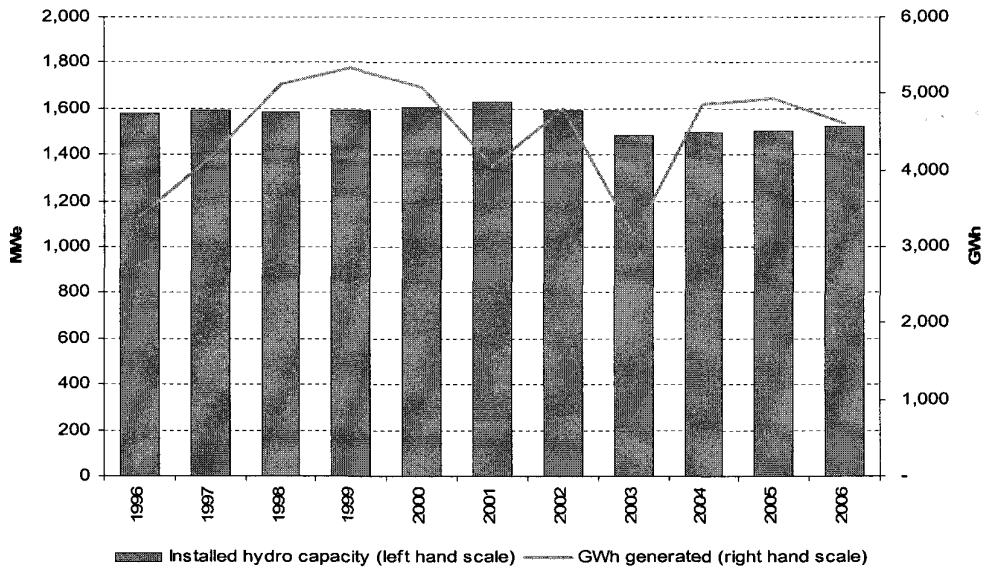
- Establishing an offshore transmission regime that enables offshore generators to connect to the onshore grid in an economical, efficient and timely manner. This regime includes interim arrangements enabling projects to proceed before new offshore Transmission Owners are licensed to operate offshore.

Hydropower

In 2006, 1.16% of the UK's electricity supply came from hydropower, which represents just over a quarter of the total electricity produced from renewable sources of energy. 4,128GWh came from large scale hydro and 447GWh came from small scale hydro.

Whilst the Government recognises the potential from small scale hydro schemes going forward, the prospect for significant further expansion of large scale projects (because of environmental concerns and commercial viability) is limited. The comparatively static movement in the proportion of electricity generated from hydro is illustrated in Figure 2 below. However, build is well under way of a new 100MW hydroelectric power station at Glendoe in Scotland, which is scheduled to start generating in March 2009. In addition to support under the RO, some support is available for small scale hydro as part of the wider "Low-Carbon Buildings Programme" launched in April 2006.

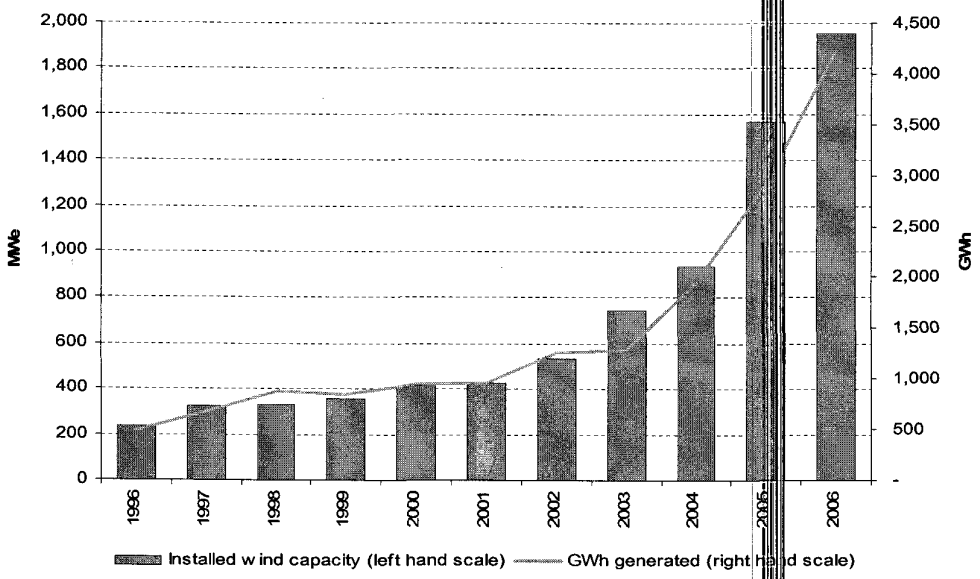
Figure 2: Hydro generating capacity and volume of electricity generated, 1996-2006



Wind Power

As at 31st December 2006, the UK had an installed wind power generating capacity of 1,955 MW, being made up of 1,651 MW onshore and 304 MW offshore. Looking forward, development activity continues at a high rate with 1164MW currently under construction and 4817MW of new generating capacity consented and 10079MW in the planning system. Since January 2007, more than 2GW of wind generation is now connected to the grid in the UK - with the first GW taking around 14 years to become operational and the second only 20 months. This rapid rate of growth in generating capacity is illustrated in Figure 3 below.

Figure 3: Wind generating capacity and volume of electricity generated, 1996-2006



Of all the renewable sources of electricity generation, wind power, particularly offshore wind, has the greatest medium term potential for expansion in the electricity sector in the UK. In December 2007, the UK Government announced the commencement of a Strategic Environmental Assessment (SEA) on the draft plan for up to 25GW of new offshore wind generation in UK waters.

Wave and Tidal Power

Looking into the longer term, wave and tidal energy could play a significant role in UK power generation.

A new initiative the Energy Technologies Institute (ETI) brings together public and private sector R&D in the UK to set strategic direction and fund its delivery. It aims to provide the UK with a world-class means for delivering applied energy technology research to underpin eventual deployment. The ETI is bringing together some of the world's biggest companies - BP, Caterpillar, EDF Energy, E.ON UK, Rolls-Royce and Shell. Their funding contribution, along with Government, provides the Institute with a potential budget of over £600 million over a lifetime of a minimum of 10 years. The ETI will be the primary delivery mechanism for R&D into marine energy.

The reforms to the Renewables Obligation are aimed at providing more targeted support for wave and tidal and these technologies will now attract greater levels of support than previously provided under the RO market mechanism. Separately, the Scottish Executive introduced a Marine Supply Obligation (MSO). The MSO was introduced under the Renewables Obligation Scotland (ROS) with effect from April 2007. Similarly, the MSO provides targeted support at a higher level for wave and tidal-stream technologies.

A recent review of the UK's marine sector was carried out by the Renewables Advisory Board in 2007 to look at how progress towards the commercialisation of these technologies might be accelerated and will be published early in 2008.

The UK Government also announced that it would be undertaking a Feasibility Study on the potential for tidal power development in Severn Estuary, that could potentially provide around 5% of the UK's electricity demand.

In 2007 the Welsh Assembly Government began work on a £1 million 3-year project to develop a Welsh Marine Renewable Energy Strategic Framework (MRESF) that will ensure the sustainable development of the marine renewable energy resource contained within the Welsh Seas.

Biomass

The UK Government published the UK Biomass Strategy in May 2007[3]. The strategy draws on detailed work to evaluate the role biomass can play in helping to meet our future energy needs in a sustainable way. Biomass has the potential to make a valuable contribution in a number of areas such as heat and electricity generation and in the development of greener fuels for transport and sustainable industrial products. In many of these areas biomass can be used as a low carbon, sustainable replacement for fossil fuels. The Government's strategy for biomass is intended to:

- Realise a major expansion in the supply and use of biomass in the UK;
- Facilitate the development of a competitive and sustainable market and supply chain;
- Promote innovation and low-carbon technology development so biomass can deliver relatively higher energy yields;
- Contribute to overall environmental benefits and the health of ecosystems through the achievement of multiple benefits from land use;
- Facilitate a shift towards a viable bio-economy through sustainable growth and development of biomass use for fuels and renewable materials; and
- Maximise the potential of biomass to contribute to the delivery of our climate change and energy policy goals: to reduce CO2 emissions, and achieve a secure, competitive and affordable supply of fuel.

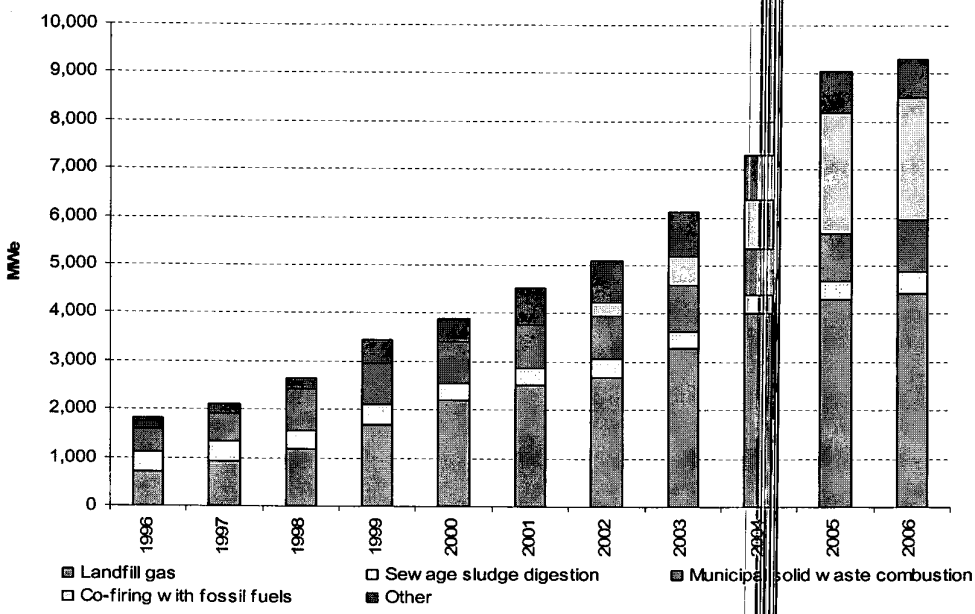
The Strategy recognises that biomass has an important role to play in achieving our electricity generation targets, both through co-firing and the use of dedicated biomass. Currently around 4.6% of our electricity comes from renewable energy sources with biomass providing around half of that supply. In addition support under the RO, Government and the Big Lottery Fund have provided support through the Bioenergy Capital Grants Scheme for the establishment of dedicated biomass power stations, such as those at Lockerbie and Wilton.

The reforms to the RO are aimed at providing more targeted support for the use of biomass, for electricity generation. This includes reducing support for non-energy crop co-firing, maintaining support for energy crop co-firing, and providing additional support to dedicated biomass projects, including a higher level for biomass CHP. The consultation also contains proposals to make the Obligation work more effectively for waste biomass, e.g. to remove the disincentive for co-firing non-waste biomass with waste derived fuels, without extending eligibility in this area; and measures to enable the biomass energy content of mixed waste streams to be determined in a cost effective manner.

We are also continuing to work towards achieving the maximum possible installed Good Quality CHP capacity by 2010. This aspiration was introduced in 2001 in recognition of the carbon savings CHP can deliver in comparison with conventional forms of power generation. To support this, we have introduced a number of support measures, such as the eligibility of energy from waste schemes that utilise CHP to claim ROCs on the biomass element of their fuel. A further measure, the target to source at least 15% of electricity for use on the Government Estate from Good Quality CHP by 2010, can also provide opportunities for the use of biomass.

Figure 4: Volume of electricity generated from biofuels, 1996-2006

[3] http://www.defra.gov.uk/environment/climatechange/uk/energy/renewablefuel/pdf/ukbiomassstrategy-0507.pdf



Research & Development and Demonstration

The UK Government's strategy for the innovation chain was set out in the 2007 Energy White Paper, with Governments primary role to ensure that each part works effectively with the whole and bringing together participants to set common goals; to set the level of public funding to leverage the investment from the private sector; and to work to expand research and industrial capacity.

The key sources of public sector funding for renewables generation are:

- The **Research Councils' Energy Programme** - which brings together within one framework all the Research Council activities on energy R & D and postgraduate training. The programme is led by EPSRC (funded via DIUS) and supports a full spectrum of energy research to help meet the UK's energy policy objectives, working to expand international collaboration and UK research capacity in energy-related areas. Research Council spend is planned to rise to over £70M p.a. by 2007 - 09.

- The **Technology Strategy Board** (which became an executive non-departmental public body in July 2007) provides Government funding for innovative business-led R&D which will promote UK wealth creation. The TSB expects to continue to fund energy-related innovation as part of its portfolio through mechanisms such as collaborative R&D and innovation platforms.

- The **Energy Technologies Institute** is a new public/private partnership focussing specifically on low carbon energy. It plans to support a small number of highly focussed programmes to accelerate new technologies to commercial deployment and is a means to leverage increased private sector funding for low carbon energy innovation. It is also expected to fund a big increase in international collaboration, to support the UK's global climate change aims.

- The **Environmental Transformation Fund** will encompass a range of Government activities aimed at bringing together cross-Government activity to develop low carbon economies. This will include BERR's Energy Group activities aimed at getting technologies to market (e.g. Government capital grants for demonstration and pre-commercial deployment such as support for microgeneration) which are the next stages after TSB and ETI activity. It will also be used by Defra to engage with householders, business and the public sector on carbon reduction, and DfID for environmental development internationally.

Other funding organisations include:

- The Carbon Trust, an independent company funded by Government which funds activities across the full spectrum of the innovation system including grants for R&D; strategic and business development advice to start up companies; funding to overcome barriers to commercialisation and technical expertise and venture capital investment for low carbon businesses.

- The Regional Development Agencies prioritise their support for Energy R,D&D on the basis of regional strengths, capacities and economic priorities. The RDAs will be identifying their priorities in this area for the next 10 years to give greater confidence to business and would-be investors. Examples of RDA support include support for the Wave Hub by SWRDA and One North East's investment in New and Renewable Energy Centre (NaREC).

- In the Devolved Administrations, the ITI in Scotland set up by Scottish Enterprise is the most significant single investor and is responsible for identify and commercialising valuable technology-based intellectual assets in Scotland. ITI Energy identifies technologies required to address future global markets opportunities then funds and manages R & D programmes and the subsequent commercial exploitation of new IP.