

REPAP 2020

Renewable Energy Policy Action Paving
the Way towards 2020

Renewable Energy Industry Roadmap UK

April 2010

A template for the UK's Renewable Energy Action Plan



Intelligent Energy  Europe

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REA
RENEWABLE ENERGY ASSOCIATION

The voice of the UK Renewables Industry

REPAP 2020 – A template for the UK’s Renewable Energy Action Plan

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1. Introduction

The Renewable Energy Directive (RED) requires all Member States to submit a Renewable Energy Action plan to the European Commission by 30 June 2010. The UK Action Plan will set out how the Government plans to meet its 15% share of the overall EU target of 20% of total energy from renewables by 2020.

The Commission is funding REPAP 2020, a pan-European project that aims to assist and critique Member States' plans to meet the 2020 renewable energy targets. This work will also help the development of national action plans to facilitate the implementation of the RED.

This document has been prepared by the Renewable Energy Association, with advice from a steering group¹, and in consultation with industry through a stakeholder workshop and an industry-wide survey. It is not the UK's official National Action Plan but the Department of Energy and Climate Change has been consulted during the production of this document, and is encouraged to implement the suggestions it makes.

¹ Action Renewables, RenewableUK, Energy Saving Trust, Low Carbon Vehicle Partnership, Micropower Council, Renewable Energy Association, Scottish Renewables Forum, UK Business Council for Sustainable Energy, Zero Carbon Hub. The recommendations in this document should not be taken as the views of the steering group.

2. Current Situation

Existing legislative framework

To date the main focus for UK renewable policy has been in the electricity sector. In 2000 the UK set a target for 10% of electricity to come from renewable sources by 2010, and in 2006 the Government expressed an aspiration to double that level by 2020. The Renewable Transport Fuel Obligation was introduced in 2008, requiring 5% (by volume) of all fuel sold on UK forecourts to come from a renewable source by 2010. This was subsequently amended so that the 5% target would not have to be reached until April 2014. A policy is under consultation to support renewable heat and in April Feed-In Tariffs were introduced to support small scale renewable electricity generation.

Table 1 below sets out the UK's renewables policies and the main barriers to renewables in the UK. A detailed description of the policies and barriers is provided in the Appendix.

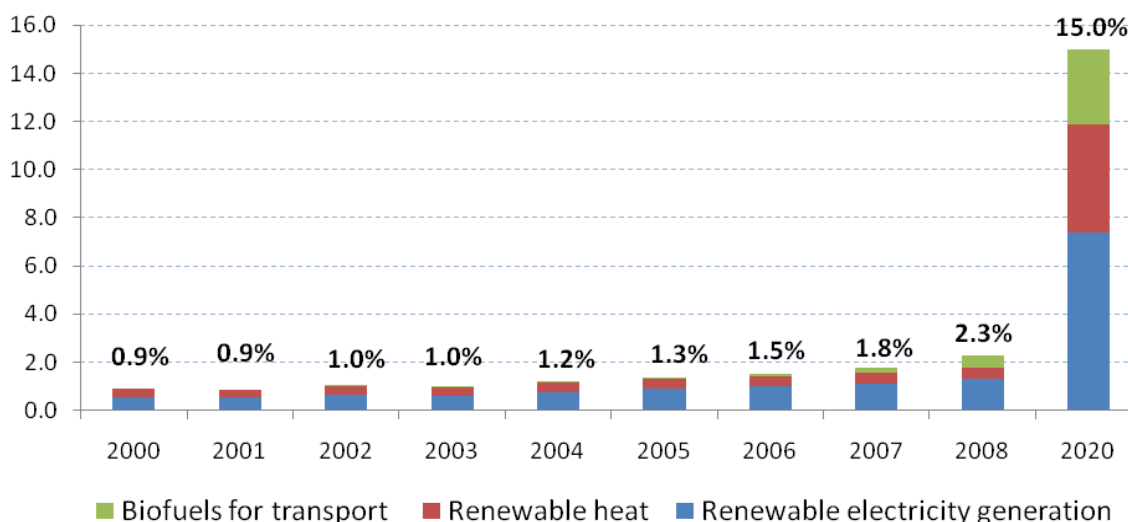
Table 1: UK policies and barriers

	Electricity	Transport	Heat
UK Policies	<ul style="list-style-type: none"> ▪ Non-Fossil Fuel Obligation ▪ Renewables Obligation ▪ Low Carbon Buildings Programme (LCBP) ▪ VAT reduction ▪ Feed in Tariffs for small scale electricity generation 	<ul style="list-style-type: none"> ▪ Fuel Duty Rebates ▪ Renewable Transport Fuel Obligation ▪ Promotion of electric cars 	<ul style="list-style-type: none"> ▪ Range of grant aid programmes (These are either limited by rationing or by competition) ▪ A Renewable Heat Incentive is currently being consulted upon
Barriers	<ul style="list-style-type: none"> ▪ Cost barriers ▪ Planning system ▪ Grid Connection ▪ Supply Chain Issues ▪ Lack of Skilled Workforce 	<ul style="list-style-type: none"> ▪ Sustainability concerns with some biofuels ▪ Electric technology and infrastructure ▪ Competing uses for biomass 	<ul style="list-style-type: none"> ▪ Underdeveloped fuel supply market ▪ Capital costs ▪ Concern over possible air emissions from wood fuel heat supply chain issues could potentially be a barrier.

Renewables in the UK

Figure 1 presents the total share of renewable energy in final energy consumption, by sector. Renewable energy sources have increased since 2000 and provided 2.4% of the UK's final energy consumption in 2008. The UK target is 15% by 2020.

Figure 1: Total share of renewable energy in final energy consumption (%)

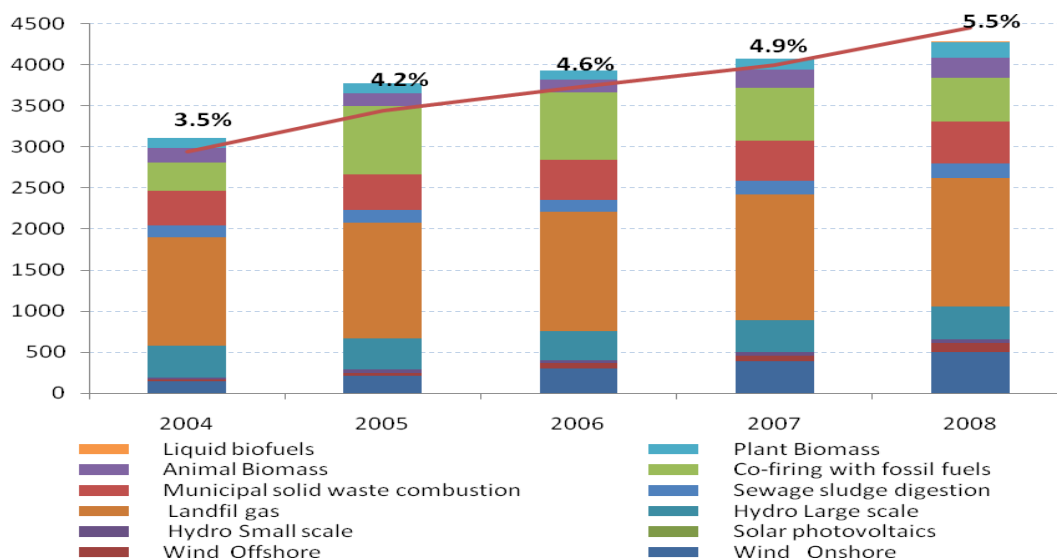


Source: Digest of UK Energy Statistics, 2009, table 7.7

Electricity

In 2008 5.5 % of the electricity generated came from renewable sources. This was a 10% increase on the previous year. There were large percentage increases in both onshore and offshore wind. Since 2002 the Renewables Obligation (RO) has been the main support mechanism for renewable electricity. Feed-in tariffs were introduced in April 2010 for small scale renewables.

Figure 2: Growth in renewable electricity generation (Ktoe)

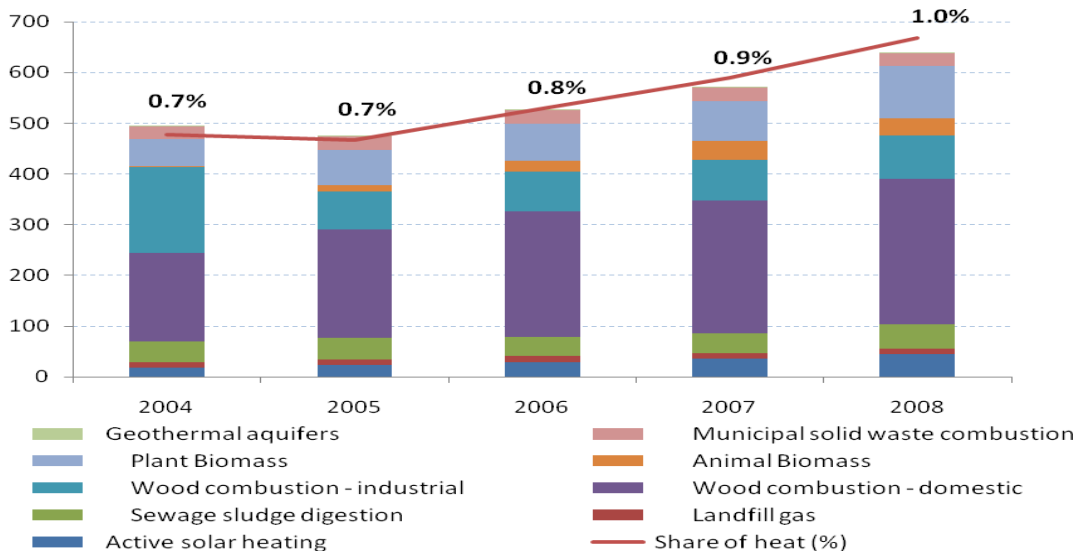


Source: Digest of UK Energy Statistics, 2009, table 7.7

Heating and Cooling

Heating accounts for half of UK's final energy consumption and 47% of carbon emissions. Less than 1% of heat is currently produced from renewable sources. Figure 2 illustrates the percentage of heat from renewable sources and the various sources from 2004- 2008.

Figure 3: Growth in renewable heat (Ktoe)

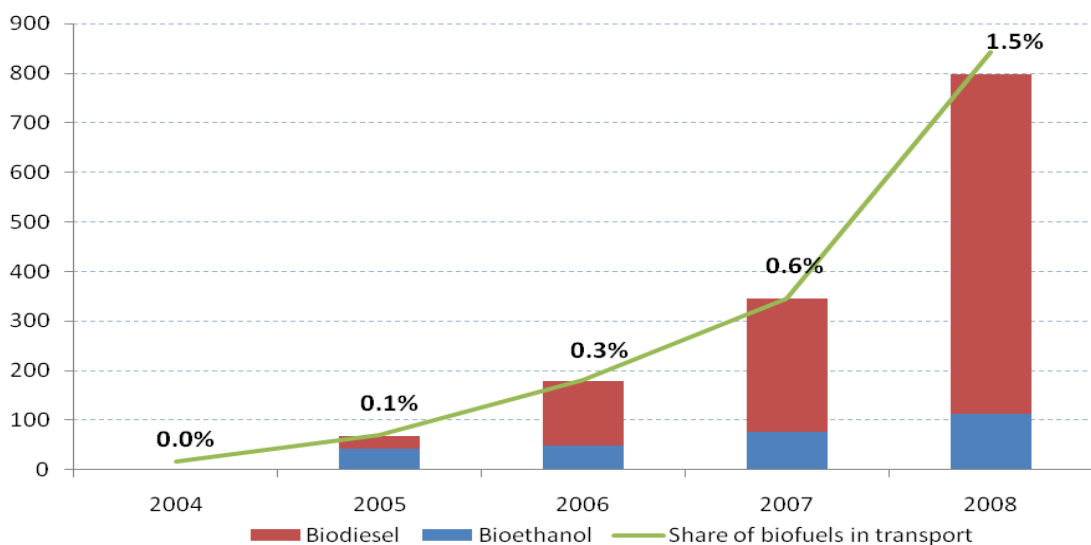


Source: Digest of UK Energy Statistics, 2009, table 7.6

Transport

In 2006, biofuels accounted for less than 1% of the UK's road transport fuel. However, the Renewable Transport Fuel Obligation, which was introduced in April 2008, requires fuel suppliers to ensure that their road transport fuel contains 3.5% by volume of biofuels in 2010/2011, rising 5% 2013/14.

Figure 4: Growth in biofuels in transport (Ktoe)



Source: Digest of UK Energy Statistics, 2009, table 7.6

3. Targets and trajectory

Overall Renewable Energy Targets and Trajectories

The UK has one of the most challenging targets under the RED. To ensure this is achieved it is vital industry and government have a vision as to how the targets will be reached. A clear trajectory and the expected contribution from each sector and technology should help inform the policy framework and measures that need to be in place, in order to make 15% renewables in the UK a reality.

The numbers used in the tables below are derived from the following sources

- The “proactive support” scenario from EREC scientific partners (EEG)², referred to in this document as the “scientific partners”.
- DECC (either the Renewable Energy Strategy July 2009 (the RES) or the RED forecast document January 2010), and Industry.

Ranges have been given for indicative targets. A straight line trajectory has been applied, unless it is clear that supply chain issues or policy development lead times suggests this is unrealistic.

Table 2: Overall share of renewable energy in final energy consumption in 2005, indicative trajectory & binding 2020 target (in % of final energy consumption)

2005	Average 2011-2012	Average 2013-2014	Average 2015-2016	Average 2017-2018	2020
1.3% ³	4%	5.4%	7.5%	10.2%	15%

Source: UK Forecast document (DECC, 2010)

Sectoral targets and trajectories

Final Energy Consumption

As the targets are a percentage of energy consumption, the forecasted consumption in 2020 will be a determining factor in achievement of the targets. The Renewable Energy Strategy's projection of energy demand to 2020 has been used in the table below. It assumes that DECC's energy efficiency target is met therefore energy consumption figures are lower than current levels.

Table 3: Energy Consumption for 2020 and indicative trajectory

Consumption in ktoe	2005 EEG	Average 2011-2012	Average 2013-2014	Average 2015-2016	Average 2017-2018	2020
Expected Gross Final energy consumption ³	157,512	141,946	141,111	139,704	138,214	136,741

Source: UK Forecast document (DECC, 2010)

² The project funded the production of scenarios of renewables deployment for the EU-27. This work was carried out by the scientific partners: the Economics and Environment Group of University of Vienna, and the Fraunhofer Institute.

³ Expected gross final energy consumption taken from the UK government forecast document.

Sectoral targets and trajectories

The UK government has indicated in the 2009 Renewable Energy Strategy (RES) the possible contribution from each sector towards the 15% target in 2020. This analysis indicated that 30% renewable electricity, 12% renewable heat, and 10% renewable transport would best achieve the overall target. The scientific partners' (EEG) proactive scenario predicts it would be possible for the UK to exceed the target and achieve between 18% and 20% renewable energy in 2020, depending on the energy demand. In table 4, below we have used a combination of the data sources to provide a very rough estimate of how the 2020 targets might be reached.

The data for 2005 in the table 4 is historic and the 2020 data are taken from the RES and the UK Forecast document. For the trajectories very broad ranges have been estimated based on the Renewable Energy Strategy (assuming a linear relationship) and the EEG figures. The contribution from each sector could change over the trajectory.

Table 4: Targets for 2020 and indicative trajectory for the share of energy from renewable sources in the electricity, heating and cooling and transport sectors

Ktoe/%	2005 ⁴	Av 2011 - 2012	Av 2013 - 2014	Av 2015 - 2016	Av 2017 - 2018	2020 Targets
Gross Final Consumption of electricity from RES	1,506	3,000– 5,000	4,800 - 6,900	6,500-9,600	8,300-13,000	10,255
Share of RES electricity in gross final electricity consumption	5%	10% -14%	15%-20%	20% -28%	25% -38%	30%
Gross final energy consumption from RES in heating and cooling	475	1,500– 1,700	2,300 - 2,700	3,000– 3,800	3,900 - 4,900	6194
Share of RES Heating and cooling in final Heating and Cooling consumption	Less than 1%	3% - 4%	4% - 5%	5% - 7%	8% - 10%	12%
Final energy from renewable sources consumed in transport ⁵	68.8	1,900	2,500	2,600 - 3,120	3,000 - 3,730	4,190
Share of RES in transport	Less than 1%	3%-4%	4%-5%	6%-7%	7%-8%	10%
Total share of RES in final energy consumption ⁶	1.3%	4%	5.3%	7.3%	10.2%	15%

⁴ Digest of UK Energy Statistics (2009)

⁵ Figures are not from the Renewable Energy Strategy but REA peer reviewed work see page 11. 2011/12 and 2013/14 estimates are very similar, from 2015/16 the EEG numbers are lower however this could be caused by different energy demand expectations, which would mean you need less renewable transport fuels to meet the 10% target in 2020.

⁶ Total share of renewables in final energy are from the UK government forecast document.

Contribution of renewables to electricity consumption

As described above, the scientific partners' "proactive support" scenario, RES and industry figures have been used to develop the capacity ranges presented in the table below. A straight line trajectory is assumed for the all the RES figures, except for the ocean technologies and offshore wind, which are based on a trajectory estimated by RenewableUK, which reflect supply chain constraints in the early years.

Table 5: Contribution expected of each technology to meet the binding 2020 target and the indicative trajectory for the share of RES in electricity (in terms of installed capacity). Two figures are provided for each year representing an upper and lower band.

Technology MW	2005 DUKES	Av 2011-2012 RES	Av 2011-2012 EEG	Av 2013-2014 RES	Av 2013-2014 EEG	Av 2015-2016 RES	Av 2015-2016 EEG	Av 2017-2018 RES	Av 2017-2018 EEG	2020 RES	2020 EEG
Total Bioenergy ⁷	1,458	2,053	3,978	2,363	4,569	2,672	5,168	2,982	5,729	3,291	6,685
Hydro	1,501	1,727	1,572	1,823	1,598	1,920	1,603	2,017	1,603	2,114	1,603
<10MW		158	197		207		207		207		207
Photo-voltaic**	11		666		1,643		3,598		7,710		17,767
Ocean*	0.5	5	465	20	639	175	869	650	1178	2000	1709
Wind Onshore	2,501	5,146	8,334	7,472	11,118	9,797	12,324	12,123	12,643	14,449	12,732
Wind Offshore*	213.5	3,542	1,919	4,956	4,742	8,895	11,033	16,142	20,607	24,030	32,672
Geothermal***		0		30		50		80		200	

* RenewableUK (formerly British Wind Energy Association) estimates have been used instead of the RES figures.

** The REPAP scientific partners' provided revised figures for photovoltaic in December 2009 which are much higher than those previously presented to industry and expectations in the RES. These numbers are included in the table for information.

*** Industry data from REA's geothermal group have been used instead of RES figures. The capacity in 2020 is consistent with the targeted installed capacity for deep geothermal as recommended by the European Geothermal Energy Council. The trajectory and growth rate has been agreed by the REA Deep geothermal sector group.

Load Factors

The electricity generation figures from the RES and scientists' data sets vary due to different load factors being applied. Consistent load factors should be applied to both sets of capacity data and following consultation with industry the load factors in the table below will be applied.

⁷ Some industry sources have commented the UK bioenergy figures are too high and think they should be between 2,168MW and 3,298MW based on scenarios in the SKM 2008 report (<http://www.berr.gov.uk/files/file46772.pdf>). Biomass can be used in all three sectors and in a number of technologies. Any number attributed to its contribution to a particular sector can only be a rough estimation.

Table 6: Load factors

Technology	Load Factor Used
Onshore Wind	30%
Offshore Wind	35%-40%
Hydro	33.7%
Wave	20-40%
Tidal Stream	35-60%
Tidal Range	20-40%
Solar PV	10%
Biomass and bioenergy	80%
Landfill Gas	63.7%
Sewage Gas	39.1%
Deep Geothermal	90%

The load factors for hydro, landfill gas, and sewage gas are those used to calculate the level Renewables Obligation (RO). A higher load factor for biomass and bioenergy (e.g. dedicated biomass, energy from waste, and anaerobic digestion) was agreed in consultation with industry. A range has been presented for the ocean technologies as this will depend on the device, the location and site. The Geothermal and PV load factors are based on industry estimates. Industry anticipates that the onshore wind load factor will be around 30% due to technological and technical improvements, and as development continues in Scotland. A range has been used for offshore wind, as Round Two developers are forecasting load factors in the region of 40% due to better winds further offshore, and improvements in availability as experience is gained in how to get the best from offshore machines. The load factors and installed capacities have been used to calculate the gross electricity generation in Table 7.

Table 7: Contribution expected of each technology to meet the binding 2020 target and the indicative trajectory for the share of RES in electricity (in terms of gross electricity generation).⁸

Two figures are provided for each year representing an upper and lower band.

Technology GWh	2005 DUKES	Av 2011-2012 RES	Av 2011-2012 EEG	Av 2013-2014 RES	Av 2013-2014 EEG	Av 2015-2016 RES	Av 2015-2016 EEG	Av 2017-2018 RES	Av 2017-2018 EEG	2020 RES	2020 EEG
Total Bioenergy	10,218	14,387	27,878	16,560	32,020	18,725	36,217	20,898	40,149	23,063	46,848
Hydro	4,431	5,098	4,641	5,382	4,717	5,668	4,732	5,954	4,732	6,241	4,732
<10MW	0	466	582	0	611	0	611	0	611	0	611
Photovoltaic	10	0	583	0	1,439	0	3,152	0	6,754	0	15,564
Ocean*	2	15	1,426	61	1,959	537	2,664	1,993	3,612	6,132	5,240
Wind Onshore	6,573	13,524	21,902	19,636	29,218	25,747	32,387	31,859	33,226	37,972	33,460
Wind Offshore*	655	9,452	5,884	17,553	14,539	31,568	33,827	49,120	63,181	72,422	100,172
Geothermal		0		237		394		631		1,577	

* A load factor of 35% has been used for offshore wind, wave, and tidal technologies.

⁸ Generation has been calculated based on capacities in table 5, an assumption of 8760 hours in a year, and load factors in table 6,

Contribution of renewables to heating & cooling

The scientists' ACT scenario and RES figures have been used to develop the ranges for the heat generation by technology, given in the table below table. A straight line trajectory is assumed for the RES data as figures were only provided for 2020. The RES does not provide data for solar thermal and geothermal, and therefore EEG data have been used.

Table 8: Contribution expected of each technology to meet the binding 2020 target and the indicative trajectory for the share of RES in electricity (in terms of installed capacity and final heating& cooling consumption)

Two figures are provided for each year (where available) representing an upper and lower bound.

Technology Ktoe	2005 DUKES	Av 2011-2012 RES	Av 2011-2012 EEG	Av 2013-2014 RES	Av 2013-2014 EEG	Av 2015-2016 RES	Av 2015-2016 EEG	Av 2017-2018 RES	Av 2017-2018 EEG	2020 RES	2020 EEG
Deep geothermal*	1.9	4.1	3.8	20.7	5.8	33.1	8.6	47.3	12.4	78.7	18.7
Solar Thermal	29		105		206		314		465		743
Solid Biomass	570	991	975	1,412	1,384	1,832	1,798	2,253	2,183	2,674	2,995
Biogas ⁹	59	107	67	156	72	204	80	253	93	301	115
Bioliquids											
Heat Pumps	1.3	374	160	736	297	1,099	515	14,61	869	1,823	1,562

*Industry data from REA's geothermal group have been used instead of RES figures. In the Scientific Partners scenarios geothermal only makes a minor contribution by 2020, with more significant market penetration occurring mostly beyond 2020.

Contribution of renewables to transport fuel consumption

The numbers in the table below relate to road transport only and assume a 0.25% growth in overall energy use in road transport to 2020. Work by the REA on biofuel feedstock availability to 2020, as peer reviewed by Imperial College London in September 2009, suggests that there will be a growing deficit of EU and UK-grown vegetable oil for all uses, including fuel for biodiesel.

Vegetable oil feedstock will be increasingly imported. By contrast, there is significant potential for EU and UK sourced or grown feedstock (mainly wheat or sugar beet) for

⁹ Industry representatives feel that both the RES and EEG numbers underestimate the potential of biogas. National Grid has identified that 28 TWh could potentially come from Anaerobic Digestion (not including any contribution from gasification).

bioethanol to meet the target. The numbers below assume a blend for biodiesel at no higher than B7.

Table 9: Contribution expected of each technology to meet the binding 2020 target and the indicative interim trajectory for the share of energy from RES in the transport sector

Consumption in ktoe	2005	Av. 2011- 2012	Av. 2013- 2014	Av.- 2015- 2016	Av. 2017- 2018	2020 Targets
Bioethanol		430	1,000	1,585	2,180	2,620
Of which imported*						
Biodiesel		1,490	1,515	1,535	1,550	1,570
Of which imported*						
Biofuels from wastes, residues, non-food cellulosic material, and ligno-cellulosic material – still requires a definition to be agreed						
Of which imported						
Hydrogen from RES		0	0	0	0	0
Renewable Electricity**						1.7%

* International trade would indicate there will be imports of both finished biofuels and feedstocks but the precise levels will depend on prevailing prices, so no estimates have been given.

** This figure is expressed as a share of the 10% target comes from the RES

4. Measures for achieving the targets

The UK government sets out a number of proposals in the Renewable Energy Strategy (RES). In this roadmap we make brief reference to these, but focus mainly on recommendations where the RES does not go far enough (summarised in blue boxes) or the industry disagrees with the approach proposed by government.

Measures on administrative procedures, regulations and codes

Who are the administrative bodies responsible for authorization, certification and licensing procedures on national/or regional and local level?

National

The Department of Energy and Climate Change (DECC) was created in October 2008 bringing together energy and climate change policy into one government department. The Office of Renewable Energy Deployment (ORED) is responsible for taking forward the commitments in the RES.

Ofgem (Office of the Gas and Electricity Markets) is the regulator for gas and electricity markets, it licences generation (over 50MW) and carries out the administration of a number of the environmental schemes including the Renewables Obligation, the Feed-in Tariff, and issues Climate Change Levy Exemption Certificates and REGOs.

The Renewables Fuel Agency (RFA) is the regulator for the transport biofuels market. It administers the Renewable Transport Fuels Obligation (RTFO) and issues Renewables Transport Fuel Certificates (see page 26).

Regional

The Environment Agency authorises thermal generation plant over 50MW in England and Wales (SEPA in Scotland). The Secretary of State authorises the construction of electricity plant over 50MW although this will be determined by the Infrastructure Planning Commission (IPC) in the future. In Scotland, Scottish Ministers decide on applications over 50MW. In Northern Ireland all planning consents are the responsibility of The Planning Service. There are some differences for hydro.

The Crown Estate (TCE) controls access to the sea bed around the UK and developers cannot install anything without the grant of a lease by TCE. The legislated objective of TCE is primarily to make money and both regulation and direction of TCE is limited.

Devolved Administration

The UK Parliament transferred a range of powers to the national parliaments or assemblies. The Scottish Parliament, the National Assembly for Wales and the Northern Ireland Assembly were established, and took control in 1999.

Scotland

The Scottish Government (formerly known as the Scottish Executive) is the devolved government for Scotland. It develops and implements policy, and is accountable to the Scottish Parliament. These can mean different targets and regimes apply, in Scotland has a higher interim target of 42% reduction in emissions for 2020, with the power for this to be varied based on expert advice, and an 80% reduction target for 2050. It also has a target to generate 50% of Scotland's electricity from renewable sources, with an interim target of 31% by 2011 and 20% of Scotland's total energy use to come from renewables by 2020. Planning is also a devolved responsibility.

Wales

The Welsh Assembly Government is the devolved government for Wales. It develops and implements policy, and is answerable to the National Assembly. It is responsible for many issues, including health, education, economic development, culture, the environment and transport. The National Assembly for Wales is the representative body, with law-making powers on devolved matters. It debates and approves legislation. The role of the Assembly is to scrutinise and monitor the Welsh Assembly Government.

The Assembly Government has set an ambitious target to reduce greenhouse gas emissions by 3% per year in areas of devolved competence. The Assembly has stated that Wales should be able to produce at least 33 TWh per year of electricity from renewable technologies by 2025.

Northern Ireland

The Northern Ireland Executive is the devolved government for Northern Ireland. The Executive Committee meets to agree on significant issues, and puts forward proposals for new laws for the Assembly to consider. The Northern Ireland Assembly debates and makes laws, and scrutinises and makes decisions on the work of the Northern Ireland government departments.

Local

Local Authorities authorise electricity and thermal plant of capacities of under 50MW.

How should the competences be best defined and coordinated?

There are a number of issues regarding planning consent and construction authorisation.

Main Renewable Energy Strategy (RES) proposals

The RES document sets out how regions will be expected to quantify the resources in their areas, a process which it is hoped will lead to greater expertise on renewables at a local level ultimately leading to a greater success rate.

Each of the Devolved Administrations is setting out its own plan to increase renewable energy use. The UK Government and the Devolved Administrations are working together to ensure that plans are aligned

Greater uniformity should be achieved at local level. Industries' further suggestions include:

- There needs to be clear leadership from Government, with the delivery body given adequate powers and strength.
- Regional potentials and trajectories towards meeting a proportion of the UK target should be plotted. Targets cannot be meaningfully cascaded down to local authority level, but statistics on approval rates should be gathered and relative performance levels assessed.
- Local authorities should follow national guidance prepared for the IPC and restrict their consideration to site-specific issues. Developers should have a process to seek redress if they find local decision makers are spending time debating issues which have been decided upon nationally.
- The IPC's guidance should be widened to encompass all technologies, even those not likely to present at over 50MW, the threshold above which the IPC determines projects. At present it only covers onshore and offshore wind, biomass and energy from waste.
- A proportion of Business Rates paid by renewable plant should be channelled to the local authority. If this proposal is not adopted, an alternative approach could be to give a Planning Reward Grant to reward local authorities once they have reached a specified percentage of renewable electricity generation within their areas.

Are there unnecessary obstacles or non-proportionate requirements detected related to authorisation, certification and licensing procedures applied to plants and associated transmission and distribution network infrastructure for the production of electricity, heating or cooling from renewable sources, and to the process of transformation of biomass into biofuels or other energy products? If so, what are they?

Main Renewable Energy Strategy proposals

- Government is looking to extending the permitted development rights (PDR) to business and public services.
- Increasing flexibility for planning permissions if developers make minor alterations they are required to go back to the start of the application process.

The industry recommends:

- Permitted development rights (PDR) should be extended to encompass small-scale and micro wind, air source heat pumps, and other microgeneration technologies.
- The planning process for repowering of wind farms should be made more streamlined.
- The process for abstraction and impounding licences for hydrogenerators should be streamlined.
- The regulation of biogas plants should be streamlined and made more user-friendly.
- Farm-based plants should be subject to light touch standard permits.

- A substantial amount of the UK's wind and ocean energy resource is located in Scotland, it will be important that Scottish planning law¹⁰ is not a barrier to renewables deployment.
- Any future leasing round must be complementary with grant programmes, other support initiatives, and must take into account resource, grid capacity and other competing sea bed objectives.
- To avoid a further potential obstacle the principle of "Equivalence" should be permitted to allow local biomass sources to be used, where appropriate.

Is comprehensive information on the processing of authorization, certification and licensing applications for RES installations available?

Guidance documents on licensing, and procedures for generators (and suppliers) involved in the Renewables Obligation (RO) can be found on the Ofgem website. The RFA website supplies technical guidance for compliance with the RTFO.

Main renewable energy strategy proposals

- Information needs to be in one place, government is mapping the existing advice landscape, identifying key gaps and options for signposting, seeking out partners and potential for coordinated provision and joint activity.

Industry agrees with the RES proposal that information should be in one place, providing a road map of the end-to-end processes, information on relevant technologies, what people need to know about regulation, what financing options are available, and from whom people can get further advice and support. This must be implemented across the three sectors heating, power and transport.

Should authorization procedure take into account the specificities of different renewable energy technologies?

The registration and authorisation process for the RO is very complex and it can take a considerable time for a generator to actually start receiving ROCs. Installations up to 5MW are eligible for Feed-in tariffs. However, generators of this size will need to apply for accreditation through the "ROO-FIT" process. This is a similar accreditation process to the RO.

Industry recommends:

- The registration and authorisation process for the RO and ROO-FIT must be simplified and the processes must be transparent, well understood and effectively administered.
- The development of any certification scheme for renewable energy must be adequately funded, and industry should be not expected to provide this.
- The eligibility requirements and procedures should be consistent and seamless between the different support schemes, for example the RO, FITs, RHI and RTFO. At present a numerous discrepancies exist.

¹⁰ It is important to note that planning is a devolved issue

Should the renewable energy potential be taken into account in spatial planning?

Main renewable energy strategy proposals

- The Local Democracy, Economic Development and Construction Bill will put in place the necessary legislation to introduce regional strategies (RS) for all English regions outside London, covering both economic and spatial planning.
- The Regional Strategies will contain policies designed to contribute to the mitigation of, and adaptation to, climate change and will need to contain ambitious regional targets for renewables, as well as some forms of low-carbon energy, and will be key to the delivery of national targets.

Industry recommends:

- Planning should be criteria-based and not based on areas of search. Regions and local authorities should not be encouraged to zone areas on maps with respect to their potential for wind energy deployment. However, it is helpful to indicate opportunities for connection to heat networks, or areas of high heat demand on maps.
- Experience has shown that where a zoning approach has been taken for wind, the results have been unhelpful for the following reasons:
 - The population living within a zone marked as suitable for wind development can be sensitized.
 - The population living outside such a zone may believe that a project can never be built there.
 - Land values can be distorted as a result of the map.
 - Projects proposed in areas within a zone marked as suitable for development still have to get planning permission, and the zoning process does not necessarily make this any easier.
 - Projects proposed in areas outside such a zone may well find it harder to get consent.
 - Planners' time is taken up in the process of zoning, when already many planning departments are under-resourced. Also planners do not have the expertise that project developers have, in seeking good sites.
- Marine Spatial Plans should be guided by the objective of Sustainable Development. Defra's first consultation on Marine Plan Areas strongly implies that the intention is to centre Marine Planning around environmental concerns, whereas the three pillars of sustainable development – economic, social and environmental – should be equally considered.

How many steps should be needed to obtain the final authorization? Should there be a one-stop shop for coordinating all the steps? Should a timetable for processing applications be communicated in advance?

Yes. Developers need to know minimum standards of performance they should expect.

Main RES proposals

- The independent Infrastructure Planning Commission to take decisions on nationally significant projects, providing clear guidance for planners that recognises the national need for renewables, and streamlining the planning process
- Encouraging the wider use of Planning Performance Agreements (PPAs)
- Produce National Policy Statements (NPS) which will set out the Government's policy on energy infrastructure
- Regions to set targets for renewable energy capacity in line with national targets, or better where possible
- Update PPS1 and PPS22 to ensure they set a clear and challenging framework for delivering energy infrastructure and cutting carbon emissions consistent with national ambitions.

Industry recommends:

- Statutory timescales for Judicial Reviews should be introduced, challenges should be heard in Court and there should be an incentive for the Treasury Solicitor to respond in a timely way.
- Local Development Orders (LDOs) should be used to allow local planning authorities the freedom to allow new renewable energy developments without the need for individual planning applications.
- All offshore projects over 10MW should go through the IPC.
- In the revision of PPS 22, the proximity suggestions for energy crops (see page 88 of companion guide) should be revisited. At present there is an unhelpful reference to the "ideal maximum transport distance for fuel is therefore about 40 km". Support measures themselves should deal with the carbon emissions from fuel transport, rather than the planning authority.

For which small scale projects should there be simplified and less burdensome authorization procedures?

- Projects benefiting from the FIT should have simplified procedures.

Measures concerning Buildings

What measures should be introduced into the building codes to ensure the share of renewable energy used in the building sector will increase?

Residential and non-residential buildings

Main renewable energy strategy proposals

- A review of Part J of the Building Regulations is currently underway to help overcome the potential barriers to the deployment of biomass boilers.
- Amendments to the Building Regulations to reduce carbon emissions from new homes are being consulted on
- The Standard Assessment Procedure (SAP) is used to assess the energy performance of dwellings and determine compliance against the minimum standards set out in Building Regulations. This methodology is being reviewed.
- The Government will take forward the ambition for new non-domestic buildings to be zero carbon.

Industry recommends:

- Decision makers in England, Wales Scotland and Northern Ireland should focus on as much alignment as possible between building codes, as divergence creates diseconomies of scale.
- The SAP and other applicable calculation methodologies should be updated in light of the need to achieve the transition to a zero carbon built environment.
- The addition of new carbon saving technologies to the SAP should be centrally funded, rather than commercially funded via Appendix Q, as this is proving a financial disincentive to innovation by small companies. Calculations for cooking and electrical appliances should be added to the SAP.
- Zero carbon homes/buildings and code for sustainable homes policy proposals should be remodelled to include the income stream from FITs. This would demonstrate that the cost to the developer of meeting requirements through on-site renewables is significantly lower than previously modelled.
- The Zero Carbon Homes definition (and the definition that is being worked on for non-domestic buildings) should set high levels of energy efficiency and should encourage a significant contribution from on-site renewables.
- A building's "as built" energy performance should match that intended in its design. This will require rigorous checks to be put into place to ensure that builders actually comply with the regulations.
- Government should ensure that there is no slippage in the trajectory toward zero carbon buildings.
- Ensure policy across all Government Departments (especially DECC, Defra, BIS and Treasury) is aligned to deliver zero carbon homes to the agreed timescale.
- Consideration should be given on how to ensure the deployment of renewable technologies in leased buildings.

What measures should be taken to ensure that public buildings fulfil an exemplary role by 2012?

Main renewable energy strategy proposals

- Government Departments have been set a target of a 30% reduction in their own estate and operations emissions by 2020 from 1990 levels.
- The UK's legally-binding carbon budgets and ambition for all new public sector buildings to be zero carbon by 2018 likely to encourage the public sector to adopt renewable technologies where these are cost effective.
- All Government Departments encouraged to review the potential for on-site renewable generation, as part of the development of their climate change strategies.

Industry recommends:

- Government departments should have an explicit onsite or nearsite renewable energy target of 15%, in addition to the target of a 30% carbon emissions reduction by 2020 from 1990 levels in their own estate and operations

- Government should strive for all new public sector buildings to be zero carbon by 2018, or earlier.
- There should be an initial 10 year programme to retrofit renewable technology into Council and Housing Association properties using the same approach as the Decent Homes programme. This could most effectively be done by co-ordinating with the cycle of heating or roof replacement programmes. The implementation should prioritise the homes of the fuel poor, and all cost-effective energy efficiency measures should be undertaken beforehand.
- There should be no increase in rateable values to apply in relation to the installation of renewables or energy efficiency equipment.
- Lower rated homes (F & G) should be brought up to minimum energy efficiency standards prior to sale, after 2015, with historic or listed buildings being exempted.

Measures on Information

How should specific information be targeted at different groups, such as end consumers, builders, property managers, property agents, installers, architects, farmers, suppliers of equipment using renewable energy sources, public administration?

Main renewable energy strategy proposals

- ORED will communicate facts about, and benefits of, renewable energy technologies to all stakeholders, and engage with communities and business.
- Providing an extra £1 million a year funding to the Energy Saving Trust to increase the support its help line and advice centre staff can give people on how to generate their own energy.
- Carbon Trust provides businesses with expert advice,
- Providing new funding to develop an online 'How to' guide for community energy.

Industry recommends:

- Government should produce or commission an online 'How to' guide for community energy development, for the benefit of Local Authorities, community groups, developers, energy suppliers and service providers, businesses, and anyone looking to install renewable and low-carbon energy generating technologies at community scale.
- Additional funding (to the £1m a year for the EST) should be provided for public communications. Better information could avoid a large number of complaints, which can be costly to deal with.
- There should be a requirement for Energy Performance Certificates to be regularly updated and made available for all non-residential buildings whenever they are sold or rented.
- The assessment of renewable energy potential for all new buildings should be made mandatory.
- Financial assistance towards feasibility studies for Community-led projects, as was available under the Community Renewables Initiative should be made available.
- The Government should establish a one-stop shop for micro generation complaints. This small unit could be jointly resourced by Microgeneration certification Scheme (MCS), Energy Savings Trust (EST), Renewable Energy

Assurance Listed (REAL) and DECC and its equivalents in the devolved administrations. In this way consumers and companies would receive a seamless resolution to their complaints, drawing on the expertise and capabilities of all four organisations. The objective is to provide assistance to consumers, this should not put any bureaucratic burden on the industry.

What should be the role of regional and local actors in the design and management of programmes for information, awareness raising and training programmes for citizens on the benefits and practicalities of renewable energy sources?

We have no suggestions beyond measures proposed in the Renewable Energy Strategy.

Main renewable energy strategy proposals

- The development of a comprehensive Renewables Skills Strategy
- Training to address supply chain issues
- A national skills academy for power

Measures on certification of installers

Main renewable energy strategy proposals

- Government are proposing the development of an Accreditation Scheme for professionals providing advice and installation services.

Are such certification schemes / qualifications already available? Please, describe them.

The Microgeneration Certification Scheme (MCS) is a set of standards for products and installers, administered by a Panel of industry, Government and other stakeholders. Its purpose is to certify small-scale on-site low-carbon and renewable products and installers.

The REAL Assurance Scheme has been set up by the Renewable Energy Association. It aims to guarantee a high quality experience for consumers wishing to buy or lease small generation units for their home. REAL membership is a sign that the supplier has agreed to abide by the high standards as set out in our Consumer Code.

Specific measures at regional / local levels (where relevant)

Industry recommends:

- Currently there is a lack of training available to those in the construction industry wishing to learn how to effectively integrate renewable energy generation technologies into buildings. Therefore Government needs to work with the renewables industry, Regional Development Agencies (RDAs) and other relevant bodies to ensure that adequate training is available to ensure training does not become a barrier to effective deployment.
- Schemes should be consistent across all regions. This will also benefit consumers as they will have one trusted symbol to look for.
- Government should introduce emission standards for biomass heating boilers under 20MW size which are not currently covered by other legislation.

Is information publicly available on these schemes? Are lists of certified or qualified installers published? If yes, where? Are other schemes accepted as equivalent to the national/ regional scheme?

A list of MCS certified installers and product is available from the website, searchable via region¹¹.

<http://www.microgenerationcertification.org/Home+and+Business+Owners>

Information on the REAL Assurance Scheme is available on

<http://www.realassurance.org.uk>

Measures on electricity infrastructure development

Main renewable energy strategy proposals

- More strategic investment in the grid.
- Investment in a new offshore grid.
- Quicker and fair connection to the grid.
- A smarter grid.

How should transmission and distribution grids be developed to integrate renewable electricity while maintaining the secure operation of the electricity system? How is this requirement included in the transmission and distribution operators' periodical network planning?

Industry recommends:

- Government should encourage a strategic approach to transmission system planning. The newly proposed competitive arrangements for offshore would seem to preclude strategic development. Efforts have been made to incorporate some co-ordination of offshore development within the arrangements, however its remains to be proven whether these will be sufficient to connect offshore developments in a timely and efficient way.
- Government should encourage the speedy completion of the fundamental review of the Standards of Quality and Security of Supply.

How will the development of intelligent networks and storage facilities be ensured?

We propose nothing beyond measures already in train, i.e. DECC's forthcoming vision document on Smart Grids due before the end of 2010, the new Low Carbon Investment Fund (£6 million for capital grants for smart grid projects being implemented before March 2011) and the £500m to be allowed under the next Distribution Price Control Review (DPCR) for DNO low carbon network investments.

How should the interconnection capacity with neighbouring countries be reinforced?

Industry recommends:

- A more strategic approach should be taken to the large-scale upgrading needed to accommodate offshore generation and to build interconnector links between Great Britain Ireland and continental Europe. Whilst merchant

¹¹

interconnectors have a role it is likely that issues such as sharing short term reserve between the various synchronous networks in the region can only be worked through by the Transmission System Operator (TSOs) and Regulators, so new “regulated” interconnectors should not be ruled out.

How should the grid infrastructure authorisation procedures be accelerated?

It is hoped that in England and Wales for circuits of 132kv and above the new Infrastructure Planning Commission should speed up the decision making process.

Should there be priority connection rights or reserved connection capacities provided for new installations producing electricity from renewable energy sources?

Industry recommends:

- We need to await the implementation of measures for improving the access to the transmission network before evaluating the need for priority connection rights or reserved capacities. If implemented properly, giving all generators the right to access within a reasonable period, we cannot envisage a need for these provisions.

How should it be ensured that transmission and distribution system operators provide new producers wishing to be connected with the necessary information on costs, precise timetable for processing their requests and an indicative timetable for their grid connection?

Industry recommends:

- The mandatory requirement for publication of tariffs, good connection locations and time limits for responding to requests to connect by system operators in GB should also be implemented in Northern Ireland.
- Grid connection timelines should be included within the offer and should be compatible with the length of time taken to develop the generation project.

Are there rules for sharing the costs between initially and subsequently connected producers? If not, how are the benefits for subsequently connected producers taken into account?”

The issue is dealt with by the Electricity Connection Charges Regulations SI 93 (2002). This provides for a refund to be provided to a party who has paid connection charges if, within 5 years of that payment, another party starts to use the same connection assets. The refund to the initial party is paid for by the subsequently connecting party. As the explanatory note says:

“These Regulations revoke and re-enact the Electricity (Connection Charges) Regulations 1990 with amendments. They provide for an electricity distributor to recover from subsequent users of electric lines and electrical plant first provided for the purpose of giving a connection to the premises or distribution system of another person an amount in respect of the expenses incurred in first providing the line or plant. In the case of connections to further domestic premises they also provide for amounts so recovered to be applied in making refunds to persons who have previously been required to pay amounts in respect of such expenses.”

A problem with the regulations has been identified as part of the review of the connection / infrastructure boundary in that as these regulations are drafted, if a connection asset is constructed by an independent connection provider and then given to the DNO, if another party subsequently shares the connection, no refund can be given to the original party as the original cost of provision of the assets was not paid to the DNO. The ENA has recommended that the regulations be reviewed.

All of the above apply to distribution systems. For transmission the connection boundary is so shallow that the possibility of connections becoming shared does not really exist.

Priority/Guaranteed Access to the grid

Should priority or guaranteed access be ensured? Explain.

The UK has been slow to address grid issues. In the UK the issue is the ability to get a connection in the first instance, rather than the ability to export power once connected. The provisions on priority access in the 2002 Directive did not result in sufficient pressure to resolve the situation with respect to connection. There has been a process reviewing the transmission access arrangements for several years, and the issue is finally being resolved.

Priority access is something that the Commission only interprets as having relevance to connected generators. "Priority access to the grid provides an assurance given to connected generators of electricity from renewable energy sources that they will be able to sell and transmit the electricity from renewable energy sources in accordance with connection rules at all times, whenever the source becomes available..." From recital 60.

Generators in the UK do not suffer from discrimination with respect to dispatch, but should this change it would be necessary to implement priority access.

Industry recommends:

- Access to Distribution Network connections requires urgent action if the Feed In Tariff is to be effective.
- It is important that distribution-connected generation benefits from the enduring transmission access arrangements and is not disadvantaged relative to transmission connected generation.

How should it be ensured that transmission system operators, when dispatching electricity generating installations give priority to those using renewable energy sources?

The nature of the UK electricity market, and the Renewables Obligation, means that there is generally no problem in renewable generators contracting with suppliers for all their output. They are then able to despatch themselves and in the rare situation when they are restricted by the transmission network from generating they are compensated financially.

How should the transmission and distribution of electricity from renewable energy sources be guaranteed by the transmission and distribution system operators?

The system of self despatch combined with financially firm access to the transmission network delivers the necessary guarantee for transmission connected generation.

- Financial firmness for parties connected to the distribution network should be introduced.

What grid and market related operational measures should be taken to minimise curtailment of electricity from renewable energy sources?

To the extent that renewable generators receive a subsidy that is related to units generated and many of them have zero or near zero marginal costs they ought generally to be curtailed less than other forms of generation.

- Transmission use of system charging for distribution-connected generators should not be charged to generators and demand on a gross basis, as favoured by National Grid but cost reflectively on the basis of the net flow on to or off the transmission system¹².

Biogas integration into the natural gas network

Main renewable energy strategy proposals

- Biogas is supported under the Renewables Obligation and government is consulting on how best to support its use to generate heat under the forthcoming Renewable Heat Incentive(RHI).
- Intention to support biomethane injection to the grid through the Renewable Heat Incentive

How should one ensure that charging of transmission and distribution tariffs is not discriminating against gas from renewable energy sources?

All gas entering the gas network needs to be processed to the point that it meets standards set out in the Gas Safety Management Regulations (GSMR) legislation. There are a number of ways to do this enrichment, depending on the quality and volume of the source gas. This cost is currently borne by the source gas producer and is reflected in the price at which the producer offers the gas to the market.

- The RHI needs to provide sufficient incentives to overcome costs associated with biomethane injection.

Should any assessment be carried out at national or regional level on the need to extend gas network infrastructure to facilitate the integration of gas from renewable sources?

- What is required is a new framework that incentivises the gas distribution companies to support the injection of biomethane. Some of this is straightforward, like new 'fit for purpose' specifications for renewable gas and standards to measure the small energy flows arising from biomethane. Clarity is also required on asset ownership and funding requirements. Networks could be required to take the gas (as in Germany), if necessary by utilising reinforcement and/or compression to higher pressures
- A new framework is required that incentivises the gas distribution companies to support the injection of biomethane.
- The type of biomethane connection regime in Germany should be replicated as far as possible in the UK.

¹² National Grid does not agree with this position.

District heating and cooling infrastructure development

What are the needs for new district heating and cooling infrastructure using renewable energy sources and contributing to the 2020 target? How should these plans be promoted?

Main renewable energy strategy proposals

- Using Local Development Orders (LDO)

Industry recommends:

- Local and regional authorities, where appropriate in partnership with the private sector, should be required to promote the delivery of heat loads, by bringing heat demand and supply together, through mapping of heat loads and master planning.
- Planning policies should support the delivery of heat loads to potential networks, by giving planning authorities the power to require developers of premises to connect to nearby existing or planned networks where practical.
- There should be an uplift available under the RHI for the installation of heat infrastructure.
- A 'light touch' regulatory regime should be implemented to protect consumers and promote competition. Initially at least, where regulation is needed, the preference should be to provide it by means of industry codes, rather than external regulation which risks placing barriers in the path of a developing industry.

Biofuels and bioliquids – sustainability criteria and verification of compliance

Main renewable energy strategy proposals

- Taking constructive steps to ensure that the biomass used in heat, electricity and transport are sustainably produced.
- Mandatory sustainability criteria for large-scale users/suppliers of biomass for heat and electricity are essential.
- A Biomass Sustainability Working Group.

How will the sustainability criteria for biofuels and bioliquids be implemented at national level?

The Renewable Fuels Agency, set up under the Energy Act 2004, performs the administration functions under the Renewable Transport Fuel Obligation, including vetting carbon and sustainability requirements and issuing certificates. Biofuels subject to UK fuel duties should be subject to the RED carbon and sustainability requirements from December 2010. This will be achieved by amendments to the current Renewable Transport Fuel Obligations Order. The RFA intends to have the current sustainability criteria under the RTFO amended as far as possible in the light of the RED requirements by April 2010.

- For the future it is essential that renewable transport solutions (including biofuels and biomethane) are rewarded according to the carbon savings

they deliver, based on verified data. The extent to which this can be achieved in the RED is limited. The implementation of the Fuel Quality Directive provides a better opportunity to introduce such “carbon linkage”. Stretching annual targets for carbon savings should be set within the Fuel Quality Directive (FQD) that would deliver higher savings than will be possible under the RED.

How should it be ensured that biofuels and bioliquids that are counted towards the national renewable target, towards national renewable energy obligations and/or are eligible for financial support, comply with the sustainability criteria of Article 17.2-5?

The Renewable Fuels Agency should have responsibility for these functions under the overall requirements of the RTFO as amended.

As far as protected areas are concerned, under which national or international protection regime should they be classified?

- This refers specifically to the protected areas as specified under Article 17. The Government should decide, with input from statutory environment bodies like the Environment Agency and Natural England.

In addition the Government has established a new UK-wide high-level board, the Renewable Energy Deployment Environmental Issues Project Board, to bring together representatives from the main consenting bodies and statutory consultees. Its remit is to deliver strategic solutions to environmental issues encountered during the consenting process for renewable energy projects.

What should be the procedure for changing the status of land? With what frequency should changes in land status be registered?

Land classification in the UK is very tightly controlled and any procedure will have to follow current law.

How should the national verification of compliance with good agro-environmental practices and other cross-compliance requirements (required by Article 17.6) be ensured?

The Renewable Fuels Agency will have ultimate responsibility here, taking advice from the Rural Payments Agency which has responsibility for the implementation of the GAEC scheme and cross-compliance.

- Requirements for verification should not go further on a statutory basis than cross-compliance, lest UK industry is left at a competitive disadvantage compared with other Member States.

Should there be a voluntary "certification" scheme(s) for biofuel and bioliquid sustainability as described in Article 18(4)?

- The Renewable Fuels Agency has already benchmarked the UK's voluntary Assured Combinable Crops and Sugar Beet Scheme (ACCS) as being compliant with the environmental requirements of the RTFO meta-standard. The ACCS should remain a voluntary scheme within the UK, with cross-compliance being the basic legal requirement.

- If the Commission wishes to recognise schemes which cover specific commodities used as biofuels feedstocks (such as the Roundtable on Sustainable Palm Oil and the Better Sugarcane Initiative) this should be done in a transparent manner.

The UK government has taken the view that biomass used for power and heat should be subject to sustainability requirements. As the Commission has now decided that it will not make proposals on a pan-EU basis, the UK will go ahead on a unilateral basis. A biomass sustainability working group has been set up and will proceed to set a UK scheme in due course.

5. Financial Support

Support schemes for renewable electricity - operational aid

Main renewable energy strategy proposals

- Expand and extend the Renewables Obligation, to allow it to deliver close to 30% renewable electricity or more; at the same time they are considering changes to improve further the efficiency of the RO and ensure value for money for consumers.
- Introduce new incentives for households, businesses and communities to use renewable heat at all scales and small-scale clean electricity generation.

What further improvements could be implemented to ensure reaching the target in the electricity sector?

Renewables Obligation

The Renewables Obligation (RO), the Renewables Obligation Scotland (ROS) and the Northern Ireland Renewables Obligation (NIRO) will continue to be the main support scheme for large-scale renewable electricity projects.

Industry recommends:

- Keep definitions of eligible renewable resources / technologies consistent across the Renewables Obligation, Feed in Tariffs, Renewable Heat Incentive and Renewable Transport Fuel Obligation. (The different treatment of biodiesel and glycerol being a prime example of failure in this respect.)
- The rules for authorization of thermal renewables plants as eligible for the RO are too onerous and complicated, and give rise to perverse incentives.
- Ensure grandfathering arrangements (currently being consulted upon) result in the resumption of lending.
- Reinstate grandfathering for bioliquids.
- Measurement and sampling requirements under the RO should be made consistent, and a mass balance approach should be taken wherever possible, to avoid costly separate batch processing for particular biomass or energy crop streams.
- Ensure that the commercial sector is incentivised to participate in onsite power generation, due to the wealth of sites available. These sites should have access to both ROCs or FITs and the CRC Energy Efficiency Scheme or Climate Change Agreements.

- Ensure that the RO provides adequate remuneration levels for both wave and tidal energy, and is consistent across all parts of the UK. For England and Wales, this should be pursued through the normal RO banding review timetable, rather than emergency review, but should take into account the expected RO banding review in Scotland.
- Extend the RO to 2040, rather than 2037.
- Do not implement the revenue stabilisation proposal in the 2009 consultation.
- Treat thermal technologies in a more pragmatic manner by removing the restrictions on what fossil fuel can be used for. Allow 10% of fossil fuel use for any purpose in thermal renewable plant (not just specified uses). As long as fossil fuel is not awarded ROCs it should not matter whether it is used for specified purposes or not. This is unnecessarily restrictive.
- Make the RO neutral to all waste, such that if waste is combusted with biomass, this does not make the biomass ineligible for ROCs.
- Encourage consistency of approach in fuel measurement and sampling procedures and allow more pragmatism in approaches taken.
- Allow fuel producers to be accredited as producing a fuel of a certain [minimum] biomass content, so that if this fuel is used at a generating station the generator automatically qualifies for ROCs.
- Clarify the definition of generating station, so that it does not inhibit the construction of new plant at existing sites.
- Make provisions for landfill gas and gas from anaerobic digestion to be co-fired together.
- Limit support to renewable electricity generated outside the UK to generating stations with an exclusive direct connection, with metering carried out on UK soil.
- Do not introduce restrictions for particular sources of biomass on basis of the impact of energy use on other markets, e.g. tallow as an oleo chemical feedstock.

Fixed feed-in tariffs

Fixed feed in tariffs (FITS) for smaller generation (under 5MW) were introduced in April 2010 in England, Scotland and Wales. The scheme guarantees a minimum payment for all electricity generated from PV, wind, hydro, and anaerobic digestion under 5MW. Micro CHP will be included as an initial trial. There is a separate payment for anything exported to the grid. Northern Ireland would need to introduce primary legislation in order to introduce FITS. Northern Ireland has introduced an interim change to the NIRO to increase the support for small scale generation to replicate the support levels being proposed under the FIT.

Industry recommends:

- Introduce adequate feed-in tariffs (FITs) for biogas and hydro, allow refurbished hydro and deep geothermal to qualify and include biomass and bioenergy related technologies at earliest opportunity.
- All existing small-scale generators should have access to FITs.
- Zero carbon homes/buildings and code for sustainable homes policy proposals should be remodelled to include the income stream from FITs. This

would demonstrate that the cost to the developer of meeting requirements through on-site renewables is significantly lower than previously modelled.

- The beneficiaries of FIT income should be able to count the emissions from their renewable energy installations as renewable under the CRC and Climate Change Agreements. This may incentivise large commercial business to deploy renewables at current levels of FIT income that would otherwise be unattractive.
- Government should develop a communication strategy for the FIT.

Marine technologies

The UK has significant wave and tidal resources. In order to harness this potential, industry recommends:

- Government should implement a national strategy for marine energy. The recommendations set out in the summary of the Marine Action Plan, published in March 2010, should be implemented as a matter of priority. The majority of the industry supports the RO banding review taking place in 2013, rather than sooner, via an emergency review.
- Strategic Environmental Assessment for wave and tidal energy should be undertaken in England as a matter of urgency, as at present only demonstration projects (up to a maximum 10 MW) can be licensed for deployment by the Crown Estate.
- Marine Spatial Plans should be guided by the objective of Sustainable Development. Defra's first consultation on Marine Plan Areas strongly implies that the intention is to centre Marine Planning around environmental concerns, whereas the three pillars of sustainable development – economic, social and environmental – should be equally considered.
- Cap environmental monitoring costs. All areas of high tidal stream energy are also areas of high biodiversity and therefore likely to be designated as Marine Conservation Zones (MCZs). There is an agreement between the Renewable Energy Association and Natural England that marine renewable energy generators may be deployed in MCZs, however the cost of monitoring threatens to cripple the industry. The maximum budget for monitoring must be reasonable and proportional to the cost of the development. If the environmental sector demands additional monitoring, the cost should be provided by government since the provision of clean, green electricity is strategic for the UK's climate change targets and for security of energy supply.
- The Marine Management Organisation should be required to appoint an Engineering Advisor, in addition to a scientific advisor. (There is a misconception within government that science and engineering are the same discipline. This is not the case and an Engineering Advisor is needed to advise the MMO on aspects related to marine renewable energy developments.)

Deep geothermal energy

The UK has significant deep geothermal resources. In order to harness this potential, industry recommends:

- That comprehensive mapping of the geological structures of the UK be undertaken to identify suitable locations for geothermal development
- A drilling risk insurance scheme similar to schemes operated in Europe be put in place to stimulate deep geothermal development in the UK.

Investment aid

- The Low Carbon Buildings Programme was scheduled to end when the Renewable Heat Incentive started. However the funding will expire this summer, leaving a gap between this programme and April 2011. This gap needs to be plugged.
- In addition some technologies still need R&D – for example wave and tidal energy. Enhanced Capital Allowances is a form of investment aid, which should continue, and be opened to the full range of renewable technologies.
- In the past there has been discussion on whether there should be a moratorium on sites sterilised by NFFO contracts. Since it is over 10 years since the last NFFO contracts were awarded and the remaining ones are now certain not to be built, is it now uncontroversial to allow any developer to have access to sites which relate to undeveloped NFFO contracts. Any restrictions relating to NFFO contracts should be removed from the Renewables Obligation.
- In addition to revenue based support, grant funding has a role for support of marine and tidal. There should be a review of the existing capital grant funding programmes, with the objective of streamlining the transition from single device prototypes through to multiple device demonstration projects
- There needs to a clear interface for research and development support mechanisms.
- A Green Investment Bank that supports large private investment needs must be sufficiently capitalised to around £40bn and be able to take innovative actions like issue green bonds, provide cornerstone funding and partner with private investors to help reduce the costs of risk.

Manufacturing

The growth in cleantech manufacturing sector presents a valuable opportunity for low carbon jobs and industrial competitiveness in the UK. There needs to be a framework of sustainable long term incentives to establish cleantech manufacturing in the UK.

Industry agrees with the briefing document prepared by climatechangematters limited for Friends of the Earth¹³, which recommends:

- Allowances for companies expanding, converting or refurbishing manufacturing facilities for renewables.

¹³ Cleantech manufacturing : the budget opportunity

- A 50 per cent tax reduction on profits for the first 5 years.
- Providing cash back facility for SME's and other businesses.
- New or retained employees in cleantech businesses are exempt from national insurance contribution for 2 years.
- A 5 year exemption on tax royalties for patents of renewable technologies where manufacture takes place in the UK.
- Providing £100m annual R&D funding.
- A £6,000 green ISA allowance to provide at least £1billion annual investment.
- A tax exempt bond that provides £2-£3billion of funding for community based schemes.
- Provide loan guarantees to projects using emerging technologies not covered by conventional financing schemes.

Support schemes for renewable heating and cooling

What measures could be best to ensure development of heating and cooling renewable energy sources?

Renewable Heat Incentive

The UK government is currently consulting on a Renewable heat incentive, which is scheduled for introduction in 2011. The incentive is designed to provide financial support that encourages individuals, communities and businesses to switch from using fossil fuel for heating, to renewables. It is proposed that eligible technologies will include air, water and ground source heat pumps, solar thermal, biomass boilers, renewable CHP, biogas, and methane injection to the grid.

Industry recommends:

- The RHI must be workable, clear and simple for the end user.
- It must support a wide range of technologies and scales with separate tariffs for technologies and banded by capacity.
- It should not discourage the uptake of fossil fired CHP, and the funds to pay for the scheme should fall equitably across all forms of fossil fuels used for heating.
- The incentive needs to be high enough to drive widespread deployment and should be commensurate with the returns available from the Renewables Obligation.
- The scheme must be stable to encourage long term confidence in users and the supply chain. Therefore future reviews must not be so frequent as to undermine confidence; any future reductions in tariff rates must only apply to new entrants and the capacity / volume of heat benefitting from the incentive should not be capped.
- Existing biomass installations should be eligible for the RHI. As an absolute minimum, new uses of waste heat from existing CHP / power generation schemes should be eligible.
- The eligibility and administrative arrangements (eg Fuel Measurement and Supply procedures) must be seamless between the RO, FITs and RHI, to cater for CHP plant.
- The RHI should recognise renewable cooling.

What support schemes could best encourage the use of district heating and cooling using renewable energy sources?

- The RHI should provide an incentive for the building of district heating and cooling infrastructure. Funds raised from the Community Infrastructure Levy should be used to assist with the funding requirements.
- Local Planning Authorities should be encouraged to provide information on heat demand, and have powers to ensure that new users connect to any existing networks.

Support schemes for renewable resources in transport

Main renewable energy strategy proposals

Amend or replace the Renewable Transport Fuel Obligation to impose an obligation designed to deliver 10% renewable energy consumed in transport by 2020.

What should be the concrete obligations / targets per year (per fuel or technology)?

- There should be a linear target trajectory from 2010 to 2020 covering all renewable technologies which can be deployed in the transport sector.

Should there be a differentiation of the support according to fuel types (biodiesel, bioethanol) and technologies (second generation biofuels, renewable electricity)?

- The only differentiation should relate to those referred to in the RED – i.e. made by biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material whose contribution shall be considered to be twice that made by other biofuels. However, the definitions of these materials still need to be clarified by the Commission.
- Carbon linkage (by which the use of biofuels is reward according to carbon saved) should be introduced in the implementation of the Fuel Quality Directive.
- Electric vehicles. The UK lags far behind many Member States in the share of renewable electricity in the overall power sector. The UK should therefore use its own share to calculate the contribution from electricity produced from renewable sources and not the average share in the Community (Article 3 (4) (c) of the RED). If the average share is used by the UK, it will grossly overstate the contribution in transport of renewable electricity.

6. Increasing biomass availability

The suggested table analysed biomass availability by major sector of origin (forestry, agriculture, waste). An alternative approach is to estimate the projected demand for biomass feedstocks of all kinds in 2020, and then to determine whether the market is capable of supplying this quantity from a range of resources, domestic and imported.

Based on the UK Renewable Energy Strategy, lead scenario, the total biomass feedstock demand ranges from about 30 to 45 million tonnes in 2020. This will however be dependent upon moisture content. The tonnage for transport and logistics depends upon the physical condition of the fuel at the time. Table 10 illustrates the amount of biomass required and the domestic production goal.

Table 10: Biomass demand: domestic potential and import¹⁴

		Total required	Domestic production goal	Imports	Domestic land area required
Forestry and woodland	Forestry Commission	2.5 Mt (0% MC)	2.5 Mt		0 (net)
	Private sector large estates Undermanaged small woodlands				
Energy crops from farmland	Perennial energy crops (SRC and miscanthus)	3.5 Mt (0% MC)	3.5 Mt		350,000 ha
	Silage crops for AD	4.5 Mt (60% MC)	4.5 Mt	0	125,000 ha
	Diverted feed crops for biofuel				
Agricultural residues and co-products	Straw (mostly wheat straw)	4 Mt (20% MC)	4 Mt	0	0
	Manure/slurry for AD	18 Mt (95% MC)	18 Mt	0	0
Waste	Wood diverted from landfill	6 Mt (0% MC)	6 Mt		0
	Non-wood biodegradable fraction of MSW				0
	Non-wood biodegradable fraction of industrial waste				0
	Sewage sludge				0

Although more expensive in the short term, domestic feedstocks would provide a hedge for energy users against currency movements, while increasing consumer and regulator confidence in sustainability. In the longer term (2030-2050), internationally traded prices for biomass feedstocks are expected to rise, underlining the importance of developing profitable domestic supply chains. Table 11 provides estimates for the agricultural land use for dedicated energy production.

¹⁴ Tonnages are expressed in terms of moisture content. For a more in-depth analysis several figures might be needed in each case, giving net energy content, tonnage as arising for logistical purposes, and equivalent dry matter tonnage for estimation of yield/land area and displacement of alternative feedstocks.

Table 11: Current agricultural land use for dedicated energy production in 2006

Agricultural land use for dedicated energy production	Surface in ha
Land used for short rotation trees (willows, poplars)	1500
Land used for energy other energy crops such as grasses (red canary grass, switch grass, Miscanthus), sorghum	4000

Source: NFU (2009)

What measures could best encourage the use for energy purposes of unused arable land, degraded land, etc. planned?

- Energy crop establishment grants should revert to paying a specified amount per hectare (rather than a percentage of actual costs).
- By ensuring that support schemes (e.g. the Feed-In Tariff) provide an adequate financial incentive for deployment.
- In the transport sector carbon linkage would help to ensure higher productivity.

How could the impact of energy use of biomass on other sectors based on agriculture and forest be detected?

The interplay of the use of biomass in the three sectors - electricity, heating and cooling, and transport is delicate. Industry supports the proposal that DECC should review the overall biomass strategy to take this interplay into account. This should include rigorous analysis of biomass usage in the sectors and the market conditions specific to each sector. It is important that subjective judgements are not taken as the basis of policy development.

What kind of development is expected in other sectors based on agriculture and forest that could have an impact to the energy use? (Are there possible positive impacts, like more efficiency might result in more biomass available for energy, or negative impacts, like more efficiency, might also result in fewer by-products available for energy?)

Industry recommends:

- Investigate innovative means of covering the funding gap for perennial energy crops. Growers have to wait up to 5 years to get any revenue from their crop, which is a major disincentive to investment.
- Appropriate regulation should be in place for clean forestry / wood residues. None should be subject to regulation as a "waste".
- Pilot projects should be produced to demonstrate the effect pyrolysis of wood to produce liquid fuel and gas.
- Grants for landowners to bring forestry back into management - machinery in particular. Research into short-rotation crops.

Industry also recommends there should be a ban on the landfilling of wood. Waste management should strive to increase the contribution of biomass to renewable energy targets. Policy drivers are more effective if output based (e.g. payments for renewable energy generation) than input based (i.e. gate fee). This will incentivise greater overall efficiency in conversion. There should be RD&D for advanced

thermal gasification of dry waste and wood, and its subsequent conversion to biomethane, as this has significant potential.

7. Flexibility Mechanisms

The UK government in the Renewable Energy Strategy set out to meet the 15% target domestically, and the lead scenario reflects this by not assuming a contribution from trading towards meeting the target

The view from industry view is:

- The UK should strive to meet its 15% target domestically. As far as the renewable electricity resources within the EU are concerned, although the potential for trading exists, it must not allow the Government's focus to shift from achieving domestic delivery.
- We would not rule out physical trading of renewable electricity if it is more cost effective at the margin, and indeed might wish to use this capability for surplus production.
- The targets will be demanding for all Member States and therefore trading seems unlikely to offer significant potential. Our relatively underdeveloped market and our exceptional renewable resources, the UK should be considered (if anything) a potential exporter, rather than importer.
- The UK must plan for large-scale interconnection with neighbouring countries. Such interconnection will facilitate larger penetrations of variable renewable generation, through allowing surpluses and deficits to be traded with these countries.
- However including too much flexibility in meeting the UK renewable energy target through action abroad will introduce a very unwelcome element of uncertainty to the market and deter investors. Should the government use any of the flexibility mechanisms they must ensure these do not undermine the RO.

Table 12: Estimated excess and deficit production of renewable energy compared to the indicative trajectory

Ktoe	2010	Average 2011-2012	Average 2013-2014	Average 2015-2016	Average 2017-2018	2020
Estimated excess					40	
Estimated Deficit		119	210	254		1

Source: UK Forecast document (January 2010)

8. Estimated costs & benefits of the renewable energy policy support measures

The exact estimation of the costs and benefits of the renewable energy policy support measures will be dependent on a number of variables. The approach to this section is to present the estimates from the UK government and the scientific partners, in order to illustrate the range the costs and benefits could amount to.

What is the expected renewable energy use in ktoe?

Table 13: Expected energy use in (Ktoe)

	2010	Average 2011-2012	Average 2013-2014	Average 2015-2016	Average 2017-2018	2020
UK Govt.	4,304	5,616	7,424	10,175	14,105	20,511
EEG Proactive scenario	4,304	8,568	11,686	15,397	20,241	27,472

Source: Figures from UK forecast document (DECC, 2010) and EEG modelling

What are the expected costs (in euros) of achieving the 2020 target?

The impact assessment¹⁵ published with the Renewable Energy Strategy estimates the average annual resource cost is £4.2bn (€4.7bn), with the cumulative resource cost to 2030 being estimated at £60bn (€68.1bn). Costs not included are costs of other policy measures to meet the target; including costs of removing barriers in the electricity sector (other than grid costs); indirect costs to the economy of increased energy prices, all of which could be significant. The table below presents the costs from the proactive EEG scenarios when there is low and moderate demand. The costs are the estimated capital, consumer and generation costs.

Table 14: Expected costs (estimated capital, consumer and generation costs) in monetary terms (€M)

	2010	2015	2020	Cumulative	Yearly Average
EEG Proactive scenario (moderate demand)	7,562	20,590	47,271	278,109	18,540
EEG Proactive scenario (low demand)	7,562	20,467	48,214	280,831	18,722

¹⁵ Overall Impact Assessment (RES), Figures are in £b Discounted, 2008 prices. Based on Central Fossil fuel price assumptions
(http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/res/res.aspx)

What is the Expected GHG reduction (Mt/year)?

The Renewable Energy Strategy estimates that the proposed policies on renewables will lead to savings of 755 MtCO₂ by 2030. Renewable electricity should contribute savings of around 33 MtCO₂ a year in 2020. The table below presents the avoided carbon emissions from the proactive EEG scenarios when there low and moderate demand

Table 15: Avoided CO₂ emissions (Mt[CO₂] / a)

	2010	2015	2020	Cumulative	Yearly Average
EEG Proactive scenario (moderate demand)	20.0	57.3	116.2	723.4	48.2
EEG Proactive scenario (low demand)	20.5	68.7	124.5	806.7	53.8

What is the expected job creation?

The Renewable Energy Strategy estimates based on the Innovas projections and Labour Force Survey data, that combined with a growing market for renewable energy across Europe and globally, UK employment in the renewable energy sector would increase by up to 500,000 people by 2020.

What is the avoided fossil fuel imports?

Table 16: Avoided fossil fuels in energy terms (Ktoe)

	2010	2015	2020	Cumulative	Yearly Average
EEG Proactive scenario (moderate demand)	6,458	20,665	44,133	262,567	17,504
EEG Proactive scenario (low demand)	6,495	22,006	44,954	271,845	18,123

What are the avoided benefits?

The impact assessment¹⁶ published with the Renewable Energy Strategy estimates the average annual benefit (carbon benefits) at £0.3bn (€0.34bn), with the total benefit estimated at £5bn (€5.7bn). Non-monetised benefits include diversifying the energy mix; reducing dependence on fossil fuels; business and employment opportunities; reducing future Climate Change mitigation costs by bringing forward renewable technologies. Non-monetised costs include air quality, landscape and biodiversity.

¹⁶ Overall Impact Assessment (RES)

[http://www.decc.gov.uk/en/content/cms/what we do/uk supply/energy mix/renewable/res/res.aspx](http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/res/res.aspx)

The table below presents the benefits from the proactive EEG scenarios under low and moderate demand. The benefits are the estimated avoided carbon emissions and avoided fossil fuels in monetary terms.

Table 17: Avoided carbon emissions and fossil fuels in monetary terms (€M)

	2010	2015	2020	Cumulative	Yearly Average
EEG Proactive scenario (moderate demand)	2,022	8,778	22,290	115,204	7,680
EEG Proactive scenario (low demand)	1,981	8,168	21,569	109,348	7,290

9. Conclusion

The Renewable Energy Strategy is helpful; however it is clear that in certain areas policy needs to go further. The UK has a challenging target for 2020 and is starting from a very low starting point. Industry's view is that achieving the target, and potentially going beyond it, is not impossible if the right long term framework is in place.

Forecasting the exact contribution from different sectors and technologies is very difficult, particularly with bioenergy which could contribute to all three sectors. The UK government needs to ensure barriers are removed and the right policies are in place and then allow the industry to deliver.

Appendix

UK policies and barriers explained

This appendix sets out a detailed description of the UK's renewables policies and main barriers, which were briefly outlined in Table 1.

Electricity

Policies

Non-Fossil Fuel Obligation

This was a competitive tendering scheme, 826MW of renewable capacity currently generating is operating under contracts let under the previous policy – the NFFO.

Renewables Obligation

The RO is the main support scheme for renewable electricity projects in the UK. The Renewables Obligation (RO) was introduced in April 2002, as was the RO Order (Scotland). The Northern Ireland equivalent came into effect in April 2005. The RO places an obligation on UK suppliers of electricity to source an increasing proportion of their electricity from renewable sources. Suppliers meet their obligations by presenting sufficient Renewables Obligation Certificates (ROCs) or buying out where they do not have sufficient ROCs to meet their obligations. The funds raised by buying out are paid back on a pro-rated basis to those suppliers that have presented ROCs.

Energy Efficiency Commitment (EEC)/Carbon Emissions Reduction Target (CERT)

EEC was a domestic energy efficiency policy. In 2008 it was replaced by the CERT and its scope widened allowing 2% of the suppliers spending to be allocated to microgeneration.

Low Carbon Buildings Programme (LCBP)

The LCBP was government's key tool for the delivery of the Microgeneration Strategy launched in April 2006. It provided grants for the installation of microgeneration technology. The scheme closed for renewable electricity when the final decisions on the Feed-In Tariffs (FITs) were published. They will be phased out for renewable heat when the Renewable Heat Incentive (RHI) comes into place.

VAT reduction

A 5% reduced rate of VAT applies to microgeneration equipment.

Barriers

Cost barriers

Financial cost is a major barrier to renewable energy deployment at small and community scale. RO policy effective for the merchant electricity market may not be suitable for householders and on-site generation.

Planning system

The planning system takes too long, costs too much and, in some cases, does not consistently reflect national policy. This can block new generation and the conditions in which communities are able to see local benefits in renewables developments. This is being addressed for large plant by a new Planning Act, and for under 50MW plant by a new approach to spatial planning, currently being consulted upon.

Grid Connection

Access to connect to the grid has been a significant problem, which should largely be addressed following the Transmission Access Review. This will replace the "invest and connect" approach with one based on the "connect and manage" principle.

Under the current proposals there could still be a delay caused by the time taken to realise the "local" transmission works, particularly for those projects remote from the existing network. It is hoped that the new national infrastructure planning process, which will apply to transmission or distribution lines rated at 132kv or above, should reduce such delays.

Lack of Skilled Workforce

There is a lack of information and advice.

Heating and Cooling

Policies

Grants

Heat and cooling has been supported by a range of stop-start grant aid programmes which has made investment planning difficult for many businesses involved in supply chains and installation. (Bioenergy Capital Grant Scheme, Bioenergy Infrastructure Grant Scheme, payments under Pillar 2 of the Common Agricultural Policy Rural Development Programme for England (and similarly in Wales) the Wales Wood Energy Business Scheme and Low Carbon Buildings Programme.)

These are either limited by rationing (first come first served until the funds run out) or by competition (bids for a limited cash fund on a project by project basis).

Renewable Heat Incentive

A Renewable Heat Incentive is currently being developed and the UK Government will be consulting on this at the end of 2009.

Barriers

Finance

Underdeveloped market and capital costs

Air quality

Concern over possible air emissions from wood fuel heat supply chain issues

Transport

Policies

Renewable Transport Fuel Obligation

In 2007, biofuels accounted for less than 1% of the UK's road transport fuel. However, the Renewable Transport Fuel Obligation, which was introduced in April 2008, now requires fuel suppliers to ensure that their road transport fuel contains 3.5% of biofuels 2010/11 by volume of biofuels, rising to 5% in 2013/14.

Electric Cars

Electric cars are being discussed and promoted by Government, but penetration by 2020 is assumed to be very small.

Barriers

Biofuels – Sustainability

Concerns about the environmental and social sustainability of some biofuels have been addressed in the UK's Renewable Transport Fuel Obligation. Mandatory sustainability criteria, including minimum GHG emission reduction targets, will apply when the EU RED comes into force in December 2010.

The current specifications for road transport fuel will limit the up-take of biofuels such that the targets will not be reachable. Either the blend limits for biodiesel and bioethanol will have to be raised or additional incentives will be required for the up-take of high blend biofuels, or both.

Electric cars – technical and cost issues

There are still technical and resource cost issues to be overcome, in particular on battery technology. An efficient charging infrastructure has also to be developed, initially in urban areas.

Biomethane – limited resources

Competition from the other sectors may limit the amount of biomethane available in practice for transport. However were policy to change biomethane could make a substantial impact on urban public transport fuel supply (as it does in other EU MSs) securing air quality and carbon saving benefits.