DCENR Department of Communications, Energy and Natural Resources

Strategy Document

Strategy for Renewable Energy: 2012 - 2020

Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha
Department of Communications, Energy and Natural Resources

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STRATEGY FOR RENEWABLE ENERGY 2012 – 2020

Department of Communications, Energy and Natural Resources

Foreword by the Minister for Communications, Energy & Natural Resources, Pat Rabbitte T.D.

The development of renewables is at the heart of this Government's energy policy. The availability of indigenous, sustainable power is a valuable national asset and it is essential that in developing it, we maximise its return to the State. This strategy outlines how we plan to do that. It has been agreed by Government after consideration by the Cabinet Committee on Climate Change and the Green Economy.

As the strategy says "*The development of renewable energy is central to overall energy policy in Ireland. Renewable energy reduces dependence on fossil fuels, improves security of supply, and reduces greenhouse gas emissions creating environmental benefits while delivering green jobs to the economy, thus contributing to national competitiveness and the jobs and growth agenda*."

This document sets out five strategic goals – increasing on and offshore wind, building a sustainable bioenergy sector, fostering R&D in renewables such as wave & tidal, growing sustainable transport and building out robust and efficient networks. In each case we set out how we propose to tackle the challenges involved.

It has become clear that Ireland's wind and ultimately ocean resources can deliver significantly greater volumes of energy than our domestic economy can absorb. There is great potential for Ireland to become a renewable energy exporter within the next few years. I am committed to implementing the actions outlined in this strategy so as to ensure that this export opportunity can be realised. The potential benefits of a wind and ocean power industry of scale are significant in terms of jobs, investment and revenue for the State at both Local Government and national level.

Like all other dimensions of energy policy, a long term perspective is key to the development of renewables. We must maintain and boost the momentum that already exists and is set out in, for example, the National Renewable Energy Action Plan (NREAP). We have agreed with the EU binding targets in terms of domestic consumption of renewable energy by 2020 and recognise the need for Europe to increasingly decarbonise its energy system over the coming decades. I am determined that we will meet these targets – not for their own sake but because of the benefits that will accrue to our economy.

Pat Rabbitte T.D.
Minister for Communications, Energy & Natural Resources

May 2012

SECTION ONE

Introduction/Policy Context

1.1 The Government's overriding energy policy objective is to ensure competitive, secure and sustainable energy for the economy and for society. This energy imperative is fundamental to economic recovery and wellbeing. Renewable energy, allied with energy efficiency, is crucial to our goals of secure sustainable and competitive energy supplies reducing dependency on expensive fossil imports and underpinning the move towards a low carbon economy. Energy Policy has a pivotal role to play in creating the conditions for job creation and a return to economic growth.

1.2 The development of renewable energy is central to overall energy policy in Ireland. Renewable energy reduces dependence on fossil fuels, improves security of supply, and reduces greenhouse gas emissions creating environmental benefits while delivering green jobs to the economy, thus contributing to national competitiveness and the jobs and growth agenda. Climate change, energy security and competitiveness are inter-related challenges that will be addressed through the transforming of Ireland's economy from one based on a predominantly import based fossil fuel dependence to a more indigenous low carbon economy based around energy efficiency, renewable energy and smart networks.

1.3 In implementing the policies set out in this Strategy, the renewable energy sector affords a major opportunity for growth and employment creation in Ireland. Employment opportunities in relation to renewable energy will also arise in the areas of manufacturing and assembly, services (including ICT) and the supply chain. Ireland can also become a global leader in research and development in renewable energy and related technologies, including Smart Grids.

1.4 Ireland has a number of strengths which it can use to leverage employment opportunities, including: Excellent renewable energy resources. Strengths in

key existing sectors such as engineering and ICT. A strong R&D base from a multitude of sources (e.g. Third Level Institutions, SEAI, EPA, SFI, Teagasc, Marine Institute, etc.). Other strengths - which apply across the whole of the economy - include our favourable corporate tax rate and a well educated, adaptable workforce.

1.5 In December the EU published an Energy 2050 roadmap which sets out a number of different scenarios for developing a decarbonised energy sector over the coming decades. It is clear under all of these scenarios that, subject to agreement between the Member States, there will be a significant increase required in renewable energy deployment in Europe well over and above the 2020 target levels. Alongside the Energy 2050 roadmap, DG Energy published a public consultation on renewable energy policy post 2020, with specific focus on potential scale of development by 2030, including any infrastructure and support requirements arising from such a strategy. The scenarios outline how electricity will be a growing sector in energy usage as it continues to be used more in the heating/cooling and transport sectors over time and how renewable electricity increases its contribution to overall electricity usage.

1.6 Renewable energy will therefore be a critical and growing component of Ireland's energy supply to 2020 and beyond. Under Directive 2009/28/EC, we are legally obliged to ensure that by 2020, at least 16% of all energy consumed in the state is from renewable sources, with a sub-target of 10% in the transport sector. We must ensure that between now and 2020, there is a steady, progressive and measurable increase in the amount of renewable energy consumed in the electricity, heat and transport sectors, commensurate with the achievement of the national target.

1.7 The Government's renewable energy strategy is set firmly in the global and European context. Our objectives accord with the policy ambitions for renewable energy set by the European Union and the International Energy Agency. These are grounded in the economic, environmental and supply security imperatives to decarbonise energy systems and diversify energy sources by fundamentally de-coupling energy from reliance on fossil fuels, which are increasing being sourced outside of the European Unions borders as

traditional sources such as the North Sea fields continue to decline. They also recognise the economic opportunity which the development of an electricity market of scale in renewable energy represents .

1.8 While the deployment of renewable energy technologies has increased significantly in recent years, there remain a number of significant challenges inherent in successfully going beyond the current deployment levels of renewable energy in electricity, heat and transport to ensure delivery of our targets. These include

- the need for predictable and transparent support frameworks to attract investment at a cost which is competitive;
- the need for regulatory certainty which supports renewable energy development in the long term interest of consumers
- the need for cost effective timely investment in electricity transmission and distribution;
- ensuring best practice planning and permitting procedures and coherence between environmental and renewable energy objectives;
- the impact of large scale penetration of renewable technologies on the overall energy system with regard to overall cost efficiency and system reliability;
- winning public acceptance around environmental and other impacts and securing benefits for local communities.
- Balancing the supply and demand challenges inherent in the bioenergy sector and providing market certainty where possible
- tackling the barriers to developing renewable heat demand including CHP and District heating systems
- ensuring that the progressive increase in penetration of biofuels in transport is sustainable and in line with engine technology and wider EU policy developments.

1.9 In addition to its critical contribution to energy supply on the island and the meeting of our national targets in that context, Ireland's renewable energy resources have a rich potential (subject to an economically viable market being in place) for the development of an export industry to UK in the first instance and to North West Europe over time . Our renewable energy resources, both

onshore and offshore, are significantly greater than the national energy requirement and the Government is committed to working with the UK Government, under the auspices of the British Irish Council, and with the European Commission and Member States in the context of the North Seas Offshore Grid Initiative to create the framework and conditions for renewable energy export, using the co-operation mechanisms provided for in the Renewable Energy Directive. Ireland's onshore wind, offshore wind and ocean energy resources are an export opportunity therefore and that is the context in which the Government intends to create the conditions for its development . There are also market possibilities for onshore wind projects of significant scale which may in time offer the potential for the development of export to the UK market directly from the island of Ireland to UK market . The development of commercial large scale electricity storage to deliver on such an export opportunity merits clear attention – at a time when electricity storage is gaining a higher profile in the European Union and IEA . Electricity storage on the scale envisaged would require significant technological, logistical and environmental challenges to be met . If the challenges are met the potential opportunities , over time , could be very considerable for renewable energy export .

1.10 The Government firmly believes that the development and deployment of Ireland's abundant indigenous renewable energy resources, both onshore and offshore, clearly stands on its own merits in terms of the contribution to the economy, to the growth and jobs agenda , to environmental sustainability and to diversity of energy supply. In addition, and in support of the Government's own energy policy objectives, Ireland is committed to delivering on its obligations under European Union Energy Policy which include the binding national target for renewable energy by 2020.

1.11 Ireland's National Renewable Energy Action Plan to 2020, submitted to the EU Commission as legally required under the 2009 Renewable Energy Directive, is the Framework within which Ireland has set out the detailed schemes, policies and measures underway and planned to deliver the trajectory of growth from renewable sources. Ireland, together with all Member States, is obliged to report to the Commission on progress (as well as obstacles to progress). The first such Report (January 2012)outlines progress to date including updates on policy and regulatory changes and setting out the challenges still to be

addressed. There are many barriers still to be addressed, including the need for regulatory certainty and that regulatory decisions duly reflect overall EU and national renewable policy obligations and protect consumers.

1.12 This high level Strategy, underpinned by the detailed National Renewable Energy Action Plan, sets out the Government's Strategic Goals for Renewable Energy and the key Actions underway and planned in the short and medium term for each of the renewable energy sectors. The Key Actions are designed to address current challenges and support progressive delivery on our national ambitions for renewable electricity, heat and transport. The National Renewable Energy Action Plan sets out in considerable detail the range of actions underway.

1.13 Achievement of the strategic goals and delivery of the key actions on Renewable Energy must be a collective endeavour. It requires a fully integrated cohesive approach across many Departments, Agencies, the Commission for Energy Regulation, EirGrid, ESB Networks , the renewable energy sector and its representative organisations , the enterprise community , the research community, local authorities, consumers and local communities. Renewable energy policy is very closely interrelated with other policy areas including Agriculture, Transport, Environment and Climate Change, Local Government and Enterprise. The Government has already shown that we can deliver very effective inter Departmental working on energy matters (most recently on the Affordable Energy Strategy). We will continue to deliver the whole of Government approach to renewable energy issues overseen by the Cabinet Committee on Climate Change and the Green Economy and the Cabinet committee on Infrastructure, supported by the Senior Official Groups. We will align our ocean renewable energy policy with the associated national and EU initiatives such as 'Our Ocean Wealth' and the emerging EU Strategy for the Atlantic process.

1.14 An important forum for bringing together all stakeholders has been the Renewable Energy Development Group comprising all relevant Departments, Agencies, the Sustainable Energy Authority of Ireland, the wind, ocean and bio-energy sectors and their representative organisations, the Regulator, the utilities and EirGrid as well as the financial community. The Group played a key

consultative and advisory role in the drawing up of the National Renewable Energy Action Plan in 2010. It is intended to re-launch the Group in the coming months as a key advisory forum on renewable energy development.

1.15 Underpinning Ireland's ability to deliver on strategies for renewable energy in a cost effective way is the principle of energy demand reduction. Ambitious energy efficiency measures are crucial in this regard. While energy demand has fallen as a result of the economic crisis, it is also the case that energy savings have been delivered through national energy efficiency measures. The forthcoming new National Energy Efficiency Action Plan will set out the Government's ambitions to deliver further energy savings over the period to 2020. Our energy efficiency measures will directly assist and complement the continued development of renewable energy. Our National Renewable Energy Action Plan is predicated on the targets in our National Energy Efficiency Plan being met – should we fall short on energy efficiency, we will have a legal obligation to do more to achieve our renewables targets.

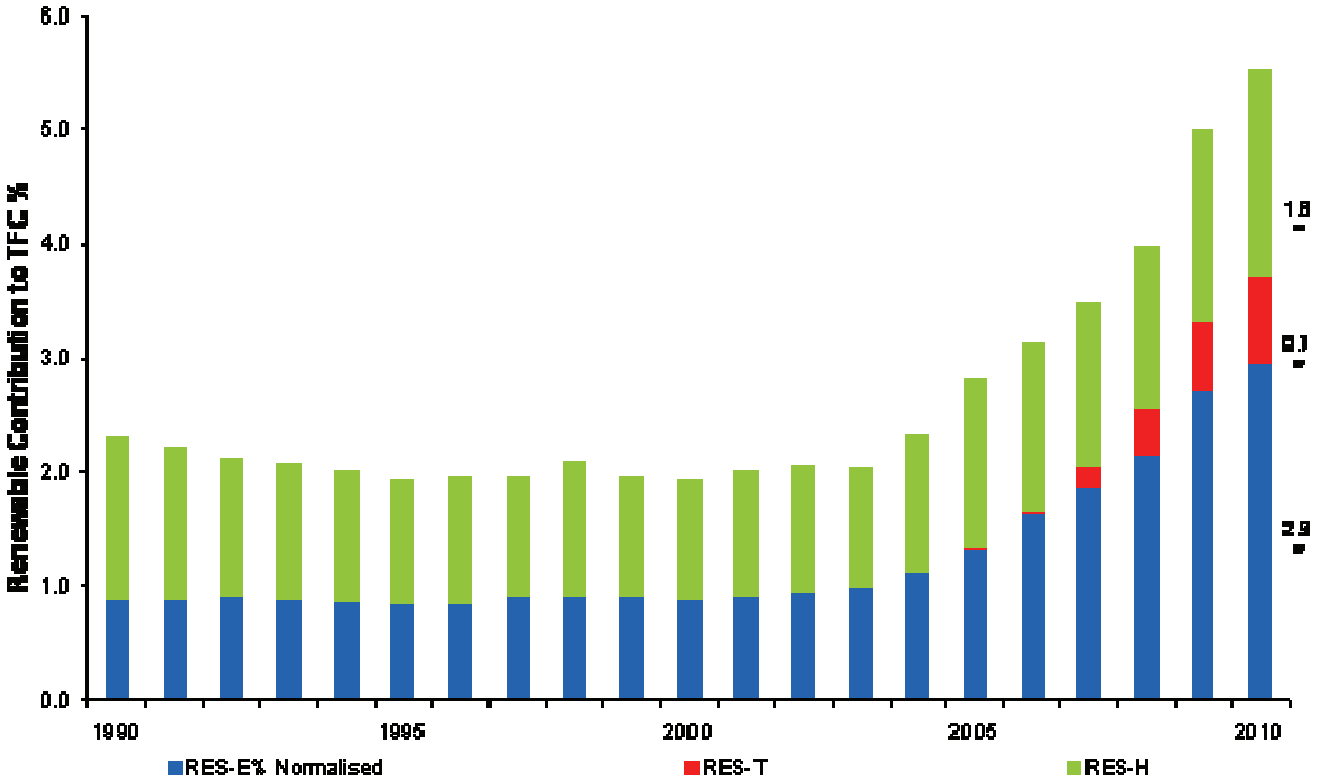
1.16 In 2010, gross final energy use from renewable energy was 5.5%, which represented a 10% increase over 2009. Ireland's target for 2020 under the renewable energy Directive 2009/28/EC is 16%.

Table 1

% of each target	**2009**	**2010**
RES-E (normalised)	13.7	14.8
RES-T	1.8	2.4
RES-H	4.3	4.4
% of renewables in consumption across the 3 sectors	5.0%	5.5%

1.17 Electricity generated from renewable energy (normalised) reached 14.8% of gross electricity consumption (RES-E) in 2010, renewable energy contribution to thermal energy (RES-H) was 4.4% in 2010 and renewable energy in transport (RES-T) reached 2.4% in 2010. The growth in renewable energy in Ireland over the last few years is clearly shown in Figure 1, which shows how deployment across the electricity, heat and transport sectors has progressed.

Figure 1 : In 2010, gross final energy use from renewable energy was 5.5%.



TFC= Total Final Consumption

1.18 Earlier this year, the Government published an 'Action Plan for Jobs' strategy which outlines the employment growth potential in the renewable energy sector. The report acknowledges that renewable energy, smart grid development, energy efficiency products and services are key sub sectors of the green economy. It identifies that the global clean tech market has been estimated at €3.5 trillion with the potential to grow by more than 4% per annum to 2015. The Expert Group on Future Skills Needs (EGFSN) indicated that there were 19,000 people employed directly in Ireland in 2010 in the key sub sectors of the green economy referenced above (excluding agri food production). It suggested that up to an additional 10,000 jobs could be created across the variety of sub sectors listed above by 2015 through the adoption of appropriate policies. The longer term job creation potential is even more significant, particularly in the area of renewable energy.

SECTION TWO

Strategic Goals for Renewable Energy

2.1 The Government's overarching strategic objective is to make renewable energy an increasingly significant component of Ireland's energy supply by 2020, so that at a minimum we achieve our legally binding 2020 target in the most cost efficient manner for consumers. Of critical importance is the role which the renewable energy sector plays in job creation and economic activity as part of the Government's action plan for jobs.

2.2 Underpinning the Government's energy and economic policy objectives are the following five Strategic Goals reflecting the key dimensions of the renewable energy challenge to 2020.

2.3 **Strategic Goal 1**

Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets.

Strategic Goal 2

A sustainable bioenergy sector supporting renewable heat, transport and power generation.

Strategic Goal 3

Green growth through research and development of renewable technologies including the preparation for market of ocean technologies.

Strategic Goal 4

Increase sustainable energy use in the Transport sector through biofuels and electrification.

Strategic Goal 5

An intelligent, robust and cost efficient energy networks system.

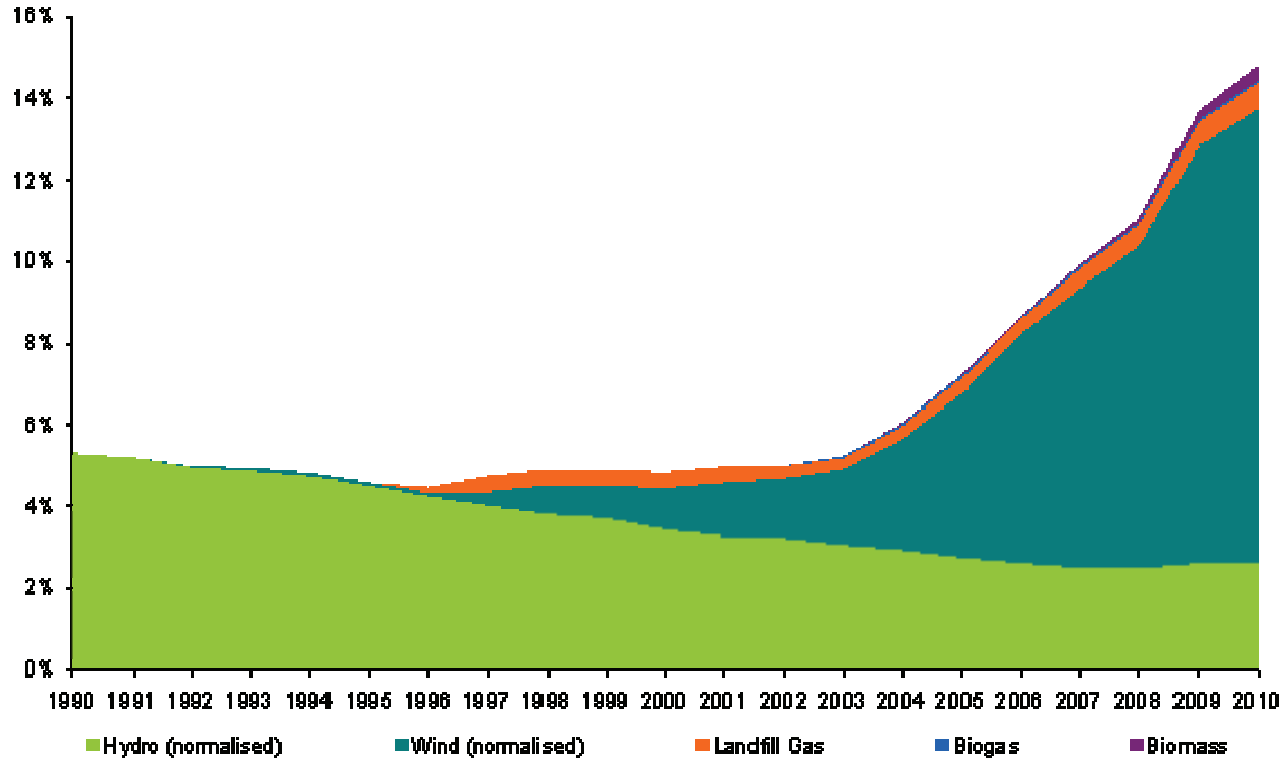
SECTION THREE

Strategic Goal 1:

Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets.

3.1 The Government is confident that Ireland has the capability to achieve its 2020 national targets for renewable electricity from onshore renewable generation and primarily from wind. The Government has reinforced its commitment to the sector by introducing the second REFIT Programme for onshore renewable energy. While there has been good progress made in the last number of years, there are acknowledged challenges and barriers to be overcome as we move to the next stages of deployment. Figure 2 shows the growth in renewable technologies in the electricity market over the past number of years.

Figure 2: Renewable electricity growth to 2010



Our Offshore wind resource will be developed as an export opportunity to UK and North West Europe, provided this is economically beneficial to the state . The potential for projects of scale onshore (including storage) to also deliver and facilitate the export opportunity is also being explored subject to regulatory decisions and cost benefit analysis with technological and logistical challenges to be addressed.

Further strategic deployment of onshore wind projects will develop a base of indigenous and foreign companies and create employment in the short-term in wind farm construction, possible turbine component manufacturing and servicing, the opportunity to capture international supply chain opportunities and the manufacture of niche onshore renewable energy generating equipment. In addition to exporting electricity from renewables to the UK and continental Europe, Ireland has the opportunity to become a recognised world leader in the testing of next generation offshore renewable energy equipment.

The **British Irish Council** Energy work stream was established following a paper drafted by the Scottish Government for consideration at the British-Irish Council's 12th Summit meeting in Cardiff during February 2009. There are two sub-groups established, one on electricity grid and market development and a second one on marine (wave and tidal technologies) renewable energy development. The objectives are to develop a more joined up approach to market and grid development, covering planning, regulation, research and development activity, and to work together to potentially exert greater influence on emerging EU policy to facilitate greater renewable energy development, particularly in the cross border and ocean areas. Government Departments and Agencies will work together to ensure a fully integrated government approach to the development of the offshore wind, wave and tidal energy opportunities spanning the spheres of offshore licensing; environmental stewardship; prototype design , test and demonstration; system deployment; (smart)grid– connectivity and O&M services.

Electricity Market Coupling The Regional Initiatives were set up in spring 2006 by the European Regulators' Group for Electricity and Gas (ERGEG), at the request of the European Commission, as an interim step in moving from

national electricity and gas markets to a single energy market. Seven electricity regions and three gas regions were created. France, UK and Ireland (FUI) together form one of these Regions. Annual electricity consumption in this FUI region is about 780 TWh, around 25% of the EU-27 electricity market.

In February 2011, the European Council gave added momentum when it concluded that "the EU needs a fully functioning, interconnected and integrated internal energy market". Two of the main challenges for market integration in the FUI regional electricity market relate to market fundamentals and transmission capacity. The Single Electricity Market Committee and the two Departments North and South, together with EirGrid and System Operator Northern Ireland (SONI) are collectively working to ensure that the policy and regulatory challenges inherent in the transition of the SEM market towards regional markets and the new European electricity target model are systematically addressed to deliver a model that works for the island of Ireland.

North Seas Offshore Grid Initiative is an agreement entered into by Ireland and 9 other States, the EU Commission, ACER (the EU regulators representative association) and ENTSO-E (the Transmission System Operators EU representative association) to maximize the potential of the renewable energy resources of the Northern Seas (North Sea, English Channel, Irish Sea and Atlantic area). The region covers 55% of total EU electricity demand and in time, provides an enormous market potential for renewable generators providing the appropriate market, regulatory and infrastructure aspects can be developed.

The Commission recognise the value provided by this regional initiative and in their infrastructure package proposals specifically identified the North Seas area as one of their electricity highways of the future and identified the Initiative as being the relevant body to select regional 'projects of European significance' which may receive preferential planning treatment and possible access to European funding in the EU 2014 – 2020 'Connecting Europe' financial programme.

In order to realise the respective complementary potential of both offshore and onshore wind we are taking the following actions:

Key Actions:

- Support delivery of the 40% target for renewable electricity through the existing GATE processes. A further targeted Gate may be developed, if necessary, following a review of the take-up of Gate 3 offers. while developing a next phase plan led approach for additional onshore capacity in future;

- Work to overcome the existing obstacles and delays in the GATE processes including the environmental and permitting and any emerging regulatory barriers;

- Review with the Department of Environment and CER the scope for further streamlining authorisation and planning processes for renewable energy projects.

- Take forward the Local Authority Renewable Energy Strategies template being developed by SEAI through working with and local authorities to assist in developing Local Authority Renewable Energy Strategies for renewable energy development commensurate with spatial planning and environmental needs;

- SEAI to complete and publish a fully updated National Wind Atlas in 2012;

- Implement REFIT 2 for onshore renewable energy and maintain a predictable and transparent REFIT support framework for onshore wind which is cost competitive. REFIT (Renewable Energy Feed in Tariff) is a feed-in-tariff support scheme for new renewable generation. The original scheme (REFIT 1) was put in place to ensure delivery of our 2010 renewable electricity target, a goal in which it was successful.

- Following on from this, REFIT 2 is designed to accommodate new renewable generation built to the end of 2015 and its aim is to ensure sufficient new renewable electricity is built to make a significant contribution to our legally binding 2020 target under Directive 2009/28/EC.

- Ensure that the regulatory environment for renewable energy projects in the electricity market is appropriate , predictable and in line with EU requirements, having regard also for the needs of conventional generation;

- As we progressively move towards achieving the target , work towards ensuring that the market structures fully integrate renewable generation, so that ultimately renewable generation should at a future point be able to function in the market as a fully cost competitive technology.

- Ensure the cost effective and timely delivery of investment in the key strategic transmission projects under Grid 25 by Eirgrid and in the distribution network by ESB Networks, so that on average at least 200MW of new renewable generation is being connected per annum to ensure we can deliver our 2020 target.

- Continue the ground breaking 'Delivering a Secure and Sustainable Electricity System' programme to achieve high levels of integration of wind on the energy system having regard to cost efficiency and system reliability and in line with ensuring the ability to deliver on Ireland's EU target.

- Member States have different renewable energy potentials and operate different national support schemes to encourage new renewable energy production. The costs of developing renewable energy projects can vary from one area to another, and other issues such as electricity grid capacity, planning and permitting timelines and market and regulatory issues can all influence the ability of a Member State to develop sufficient renewable projects in time to achieve its binding 2020 national target.

- Provided the cost benefit analysis is positive, put in place the necessary legal and planning and infrastructure framework to support the development of onshore and offshore wind as an export opportunity without cost for the Irish consumer and to the benefit of the economy, in the context of the co-operation mechanisms under the Directive.

- Work with UK to deliver an intergovernmental agreement under the EU framework , which will underpin, to mutual economic benefit , cross border trade in renewable energy ;

- Work with our partners in the North Seas Offshore Grid Initiative to deliver the framework and infrastructure to support the development of the North Seas trade in offshore wind

- Commission the East West Interconnector in 2012 and continue the necessary analysis to inform decisions on next interconnection priorities with UK and France.

- Encourage more, and cost effective, take-up of microgeneration informed by comprehensive analysis by SEAI and European and international experience and having regard to the costs and benefits.

Strategic Goal 2:

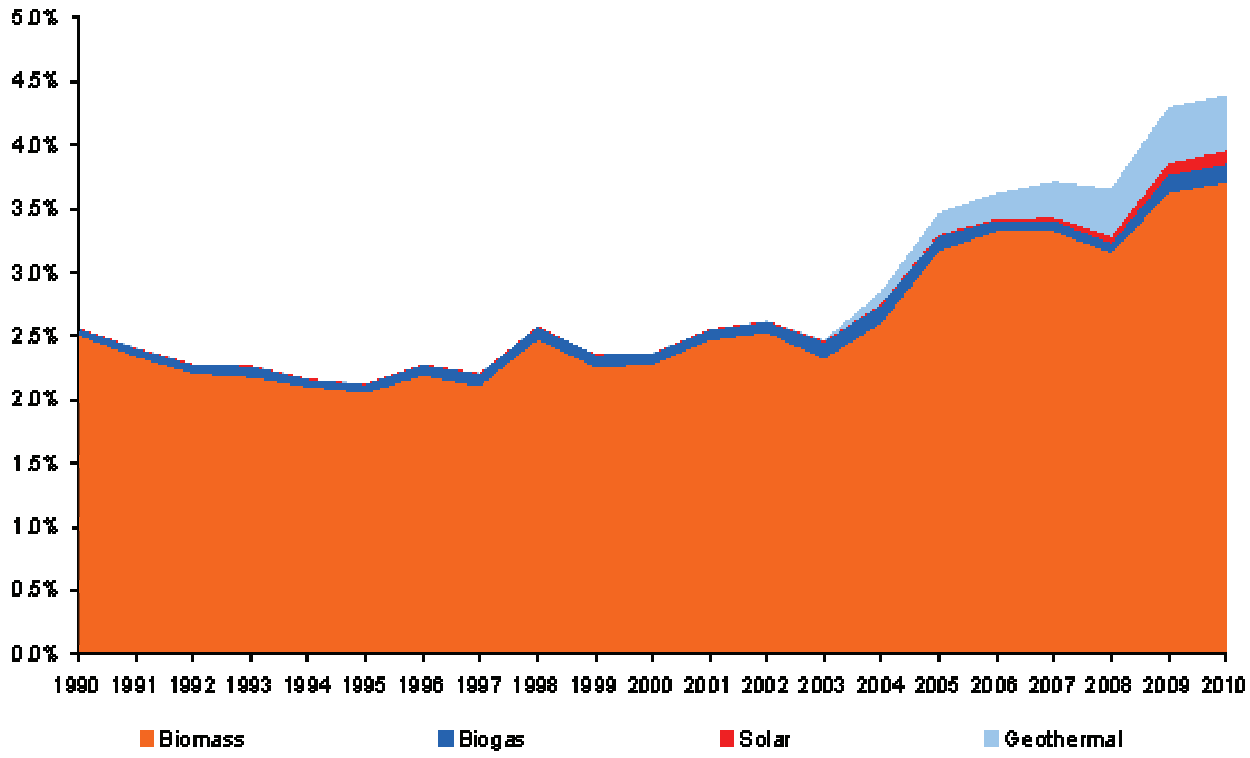
A sustainable Bioenergy sector supporting renewable heat and power generation

3.2 Our national bioenergy resources (including forestry, energy crops and biofuels) need to be developed and supported through a cohesive approach which addresses the supply side as well as the demand side issues. The recently announced REFIT 3 scheme for biomass technologies marks an important step in providing certainty for the sector. The Sustainable growth of biomass/biofuel use in the heat sector as well as in power generation and transport will be underpinned by a comprehensive National Bioenergy Strategy this year. The REFIT scheme also recognises the importance of more sustainable management of waste, including municipal waste, through a range of treatments including AD and Waste to Energy and the inherent potential this source has to contribute to meeting Ireland's renewable energy targets. Bioenergy electricity generation offers the additional advantage of being dispatchable, i.e. it is available on demand and not intermittent.

The development of biomass energy will encourage the establishment of new rural enterprises and support job creation in the regions , using our existing and potential indigenous resources. Forest harvesting residues and thinnings, as well as dedicated energy crops such as miscanthus and willow, and farm wastes, all provide additional opportunities, while wastes such as used cooking oil, and meat and bone meal, which previously incurred disposal costs, can now be converted into biofuels for transport or used to generate renewable electricity and heat.

REFIT will underpin the development of a robust and sustainable biomass supply sector in Ireland as it will provide a stable demand for biomass. The Department of Agriculture runs a number of measures such as the Afforestation Grant Scheme (to encourage new forests), the Forest Roading Scheme (to encourage early harvesting) and the Bioenergy Schemes (to incentivise the growth of miscanthus and willow). While the Department of agriculture schemes serve to encourage and develop the supply side of the bioenergy industry, this is complemented by REFIT 3 developing a solid and predictable demand side.

Figure 4: Renewable heat growth to 2010



REFIT for biomass technologies, (REFIT III), is designed to support, for the first time, a range of technologies including Combined Heat and Power (CHP) and Anaerobic Digestion (AD) as well as for co-firing of biomass in peat power plants. REFIT can also be claimed by a Generator using biogas derived from an Anaerobic Digester, where both sites are physically separated, if that biogas is injected into the gas grid.

The scheme will critically underpin the Bioenergy (crops grant programme) operated by the Department of Agriculture, Fisheries and Food and the development of Anaerobic Digestion will in particular assist in usefully disposing of agricultural waste products. The private forestry sector can also benefit significantly as REFIT offers the opportunity to expand the market for forest based biomass, particularly in light of projected increases in private forestry supply.

The scheme aims to incentivise the addition of 310MW of renewable electricity biomass capacity to the Irish grid, with a total of 200MW of this being new capacity in the Anaerobic Digestion and solid Biomass areas. Of this, 150MW will be High Efficiency Combined Heat and Power (CHP), using both Anerobic Digestion and the Thermochemical conversion of solid Biomass. REFIT III will also provide supports for the co-firing of biomass with peat at the peat plant at Edenderry and potentially in future, subject to technical acceptance, at Lanesborough and Shannonbridge.

Key Actions:

- Work on a cross-departmental and agency basis to finalise and publish the national bioenergy strategy during 2012 which will set out in detail the strategies and actions required to deliver an integrated plan-led approach to developing and utilising the resources and systematically addressing the supply and demand side issues to optimise the sector's contribution to meeting the electricity, heat and transport targets and to job creation , economic growth and regional development

- Work with the Department of Agriculture and relevant state Agencies on policies and measures related to bioenergy development, and the impact of proposed actions and regulation on bioenergy development.

- Liaise with Northern Ireland agencies to develop an all-island approach to developing bioenergy resources.

- Liaise with regional and local energy authorities to ensure consistency of implementation at local level.

- Oversee implementation of REFIT 3 for biomass technologies to encourage more biomass electricity and biomass heat.

- Implement the sustainability criteria required to underpin the national Biofuels Obligation and consult with all stakeholders this year on the optimum timing and quantum for increasing the biofuels obligation

Strategic Goal 3:

Green growth through research and development of renewable technologies including the preparation for market of ocean technologies.

3.3 The Government is committed to realising the long term economic potential of Ireland's wave and tidal resources with the objective of introducing ocean energy into the renewables portfolio over time and to develop an indigenous ocean energy sector ,maximising the wider economic impact associated with the future commercialisation and deployment of these technologies. The commercial and technical feasibility of wave technology still requires a considerable level of research, development and demonstration . Building on the achievements to date (and Irish developers have developed some very promising wave technology devices), we will continue to support and facilitate the development of the sector through the Ocean Energy Development Unit in SEAI, working with the Marine Institute, IDA, Enterprise Ireland, the Marine Energy Research Centre at UCC and the sector itself . In common with offshore wind, the ocean energy sector requires a planning framework underpinned by a comprehensive resource assessment and continued support for research and Development and test sites. Ongoing support for commercialisation of key ocean energy projects could lead to significant employment in the medium

term. In addition, advanced technology sensor and data management systems supporting the ocean energy sector also offers significant opportunities for Irish-based SMEs and Multi-National Companies.

The forthcoming Offshore Renewable Energy Development Plan and the related Strategic Environmental Assessment and Natura Impact Statement, together with a new fit for purpose planning regime for offshore development will critically support future development set also in the context of the overall national marine Strategy. This has been recognised as a priority area by Government with the inclusion of marine renewable energy research in the report of the Research Prioritisation Steering Group published in 2012.

Key Actions:

- Publish the final Offshore Renewable Energy Development Plan during 2012.

- Department of Environment, Community and Local Government to introduce planned foreshore legislation to provide for new offshore licensing and permitting regime in 2012

- Build on the work of the ISLES study and the European Ocean technology plan and the developing EU Energy Infrastructure Package to address infrastructural and research imperatives in a European framework

- Continue the Ocean Energy Programme in conjunction with SEAI, IDA, Marine Institute, SFI and EI including support for the Prototype Fund, the Galway Bay/SmartBay incubator and the Marine Energy Research Centre

- Review and decide on how best to support development of the proposed grid connected wave testing site off Annagh Point in Co Mayo including the potential for EU funding support

Strategic Goal 4:

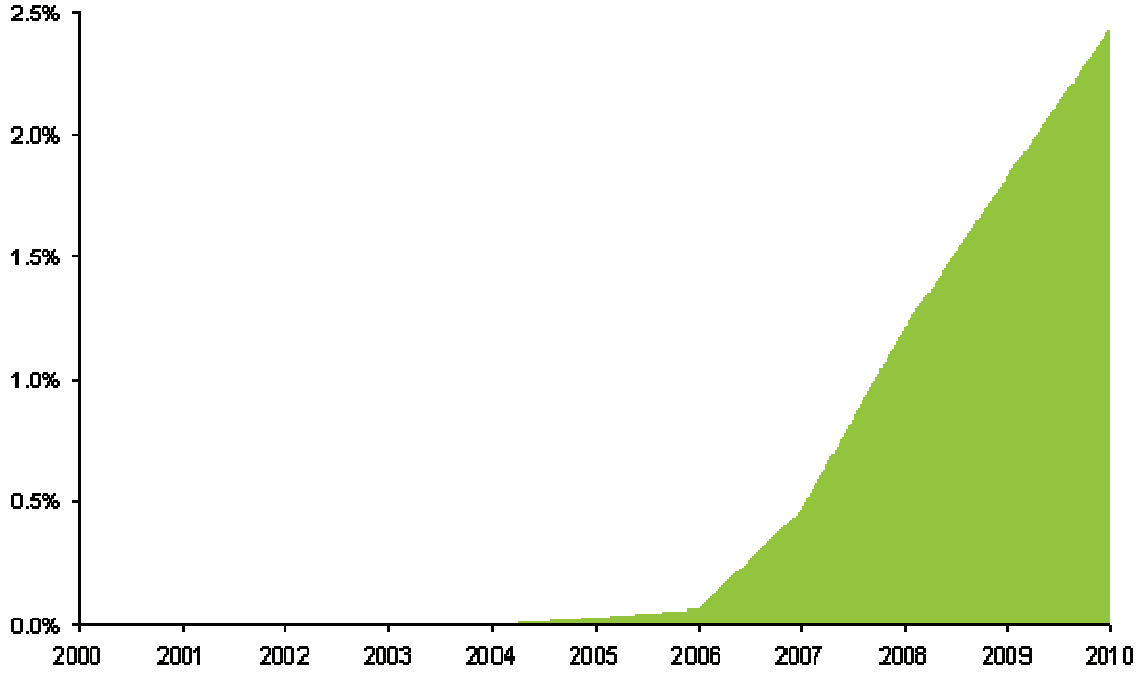
A more sustainable Transport Sector through biofuels and electrification

3.4 Ireland together with all Member States is required to achieve a target of 10% renewable energy in transport by 2020. The National Biofuels Obligation which currently requires 4% of biofuels in the road transport fuel mix, is the key mechanism for delivering on the target. Following on from a previous mineral oil tax relief scheme which ended in 2010, the biofuels obligation scheme was introduced in July 2010. The scheme obliges companies that sell road transport fuels to have an average of 4% biofuels in their annual fuel sales. The introduction of the scheme represented almost a doubling of size of the previous biofuel market in Ireland and in 2011 this biofuel market required in excess of 200 million litres of biofuel. The biofuel obligation scheme is designed to conform fully with the European Union biofuel Sustainability Criteria, ensuring that all future biofuels included in the BOS will meet stringent, and binding, EU recognised sustainability requirements.

In addition the Government's current initiatives to promote the introduction of electric vehicles represent a clear opportunity for Ireland to be an early mover in the electrification of transport. To date over 550 electric vehicle charge-points have been installed nationally. Of these 202 are in public locations including 24 DC fast chargers. Additionally there are 358 domestic/commercial installations in place. Another 19 public AC charge-point installations are being completed.

The Government currently offers reliefs of up to €5,000 against the Vehicle Registration Tax (VRT) payable for a full Battery Electric Vehicle (BEV) and reliefs of up to €2,500 against the VRT payable for a plug-in hybrid vehicle (PHEV). Since April 2011, Sustainable Energy Authority of Ireland operate an Electric Vehicle grant scheme to assist in the purchase of electric vehicles. Those purchasing a full battery electric vehicle (BEV) or plug in hybrid electric vehicles (PHEV) will be grant aided by up to €5,000, depending on the price of the vehicle.

Figure 5: Renewable transport growth to 2010



Key Actions:

- Progressively increase the percentage level of biofuels in the transport fuel mix in line with the general biofuel limits outlined in the fuel quality directive and the EN standards for vehicle fuels, and EU market developments generally and in consultation with all stakeholders ;

- Continue current incentives for electric vehicles in 2012 and review thereafter;

- Ensure the continued national roll out by ESB of Electric Vehicle recharging Infrastructure in this pilot R and D phase as well as ensuring an appropriate regulatory and cost recovery framework is put in place for the long term

- Pursue in Europe the introduction of the necessary EU wide regulation and standards to underpin the roll out of vehicle recharging infrastructure throughout the EU

Strategic Goal 5

Develop an intelligent, robust and cost efficient energy networks system.

3.5 The growth of renewable energy and wind, in particular, requires the modernisation and expansion of the electricity grid. Ireland, in common with many Member States, is undertaking significant investment in the transmission system in support of renewable energy as well as in support of regional economic development. In addition to investing in infrastructure it is necessary to adapt the grid to operate in a 'smarter' manner, to enable the integration of high volumes of electricity from renewable sources into the system. Ireland is at the forefront globally through the work of EirGrid of identifying and overcoming the operational challenges inherent in managing high levels of intermittent wind.

Key Actions:

- Maintain on an ongoing basis the cost effective delivery by Eirgrid and ESB Networks of their investment programmes in transmission and distribution networks

- Continue to make Ireland a world leader in intermittent renewable energy integration and smart grid technology through the work of EirGrid and ongoing support, through SFI and PRTLI, for the partnership work of industry, UCD and others in the research community.

- The DS3 programme being undertaken by EirGrid is designed to manage the achievement of our renewable electricity target from a grid perspective over the coming years. EirGrid and SONI have established a programme of work entitled "Delivering a Secure Sustainable Electricity System (DS3)". This work programme includes enhancing generation portfolio performance, developing new operational policies and system tools to efficiently use the generation portfolio to the best of its capabilities, and regularly reviewing the needs of the system as the portfolio capability evolves. **:** The requirement to integrate high levels of renewable energy onto the grid is a major objective for many countries and requires advanced smart grid technologies. Ireland has all the ingredients to realise first mover

advantage in the development of exportable technologies related to smarter transmission and distribution of electricity, leading to employment opportunities in this area.

- Ensure that Ireland develops competitive advantage in Europe as a world centre for energy and ICT research and innovation through alliances between research institutions, multinational companies , SMEs and start –up companies.