

**National Renewable Energy Action Plan
(NREAP)**

IRELAND

Second Progress Report

Submitted under Article 22 of Directive 2009/28/EC

February 2014



Template for Member State progress reports under Directive 2009/28/EC.

1. Sectoral and overall shares and actual consumption of energy from renewable sources in the preceding 2 years (n-1; n-2 e.g. 2012 and 2011) (Article 22 (1) a of Directive 2009/28/EC)).

Table 1: The sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources¹

	2011	2012
RES-H&C ² (%)	4.7%	5.2%
RES-E ³ (%)	17.6%	19.6%
RES-T ⁴ (%)	3.7%	3.8%
Overall RES share ⁵ (%)	6.5%	7.1%
<i>Of which from cooperation mechanism⁶ (%)</i>	n/a	n/a
<i>Surplus for cooperation mechanism⁷ (%)</i>	n/a	n/a

Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)⁸

	2011	2012
(A) Gross final consumption of RES for heating and cooling	218	232
(B) Gross final consumption of electricity from RES	423	468
(C) Gross final consumption of energy from RES in transport	98	85
(D) Gross total RES consumption ⁹	739	785
(E) Transfer of RES <u>to</u> other Member States	n/a	n/a
(F) Transfer of RES <u>from</u> other Member States and 3rd countries	n/a	n/a
(G) RES consumption adjusted for target (D)-(E)+(F)	739	785

¹ Facilitates comparison with Table 3 and Table 4a of the NREAPs.

² Share of renewable energy in heating and cooling: gross final consumption of energy from renewable sources for heating and cooling (as defined in Articles 5(1)b) and 5(4) of Directive 2009/28/EC divided by gross final consumption of energy for heating and cooling. The same methodology as in Table 3 of NREAPs applies.

³ Share of renewable energy in electricity: gross final consumption of electricity from renewable sources for electricity (as defined in Articles 5(1)a) and 5(3) of Directive 2009/28/EC divided by total gross final consumption of electricity. The same methodology as in Table 3 of NREAPs applies.

⁴ Share of renewable energy in transport: final energy from renewable sources consumed in transport (cf. Article 5(1)c) and 5(5) of Directive 2009/28/EC divided by the consumption in transport of 1) petrol; 2) diesel; 3) biofuels used in road and rail transport and 4) electricity in land transport (as reflected in row 3 of Table 1). The same methodology as in Table 3 of NREAPs applies.

⁵ Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.

⁶ In percentage point of overall RES share.

⁷ In percentage point of overall RES share.

⁸ Facilitates comparison with Table 4a of the NREAPs

⁹ According to Art.5(1) of Directive 2009/28/EC gas, electricity and hydrogen from renewable energy sources shall only be considered once. No double counting is allowed.

Table 1.b: Total actual contribution (installed capacity, gross electricity generation) from each renewable energy technology in [Member State] to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity¹⁰

	2011		2012	
	MW	GWh	MW	GWh
Hydro ¹¹ :	529	752	529	971
non pumped	237	752	237	759
<1MW	20	63	20	65
1MW–10 MW	21	67	21	68
>10MW	196	622	196	627
pumped (*note pumped hydro is not counted as RES-E in the RES-E calculation methodology)	292	0*	292	212
mixed ¹²				
Geothermal				
Solar:				
photovoltaic	0.67	0.46	0.73	0.5
concentrated solar power				
Tide, wave, ocean				
Wind:	1631	3830	1763	4247
onshore	1606		1738	
offshore	25		25	
Biomass ¹³ :	39	339	60	441
solid biomass	5	137	20	242
biogas	34	202	40	199
bioliquids				
TOTAL	2200	4921	2353	5659
of which in CHP	10.9**	38	11.3	40

*Pumped storage offline for all of 2011 for maintenance.

**CHP capacity figures were for solid biomass only in the last cycle. Biogas included in this cycle

¹⁰ Facilitates comparison with Table 10a of the NREAPs.

¹¹ Normalised in accordance with Directive 2009/28/EC and Eurostat methodology.

¹² In accordance with new Eurostat methodology.

¹³ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

Table 1c: Total actual contribution (final energy consumption¹⁴) from each renewable energy technology in [Member State] to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe)¹⁵

	2011	2012
Geothermal (excluding low temperature geothermal heat in heat pump applications)	n/a	n/a
Solar	8.1	10.2
Biomass ¹⁶ :		
<i>solid biomass</i>	183	195
<i>biogas</i>	9.5	8.9
<i>bioliquids</i>	-	-
Renewable energy from heat pumps:	18	18
- of which aérothermal		
- of which geothermal	18	18
- of which hydrothermal		
TOTAL	218	232
<i>Of which DH¹⁷</i>		
<i>Of which biomass in households¹⁸</i>	22	27

Table 1d: Total actual contribution from each renewable energy technology in [Member State] to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe)^{19, 20}

	2011	2012
Bioethanol/ bio-ETBE	29	29
<i>Of which Biofuels²¹ Article 21.2</i>	29	29
<i>Of which imported²²</i>	29	29
Biodiesel	68	56
<i>Of which Biofuels²³ Article 21.2</i>	68	56
<i>Of which imported²⁴</i>	42	33
Hydrogen from renewables	-	-
Renewable electricity	0.53	0.58
<i>Of which road transport</i>		
<i>Of which non-road transport</i>	0.53	0.58
Others (as biogas, vegetable oils, etc.) – please specify	0.12	0.08
<i>Of which Biofuels²⁵ Article 21.2</i>	0.12	0.08
TOTAL	98	85

¹⁴ Direct use and district heat as defined in Article 5.4 of Directive 2009/28/EC.

¹⁵ Facilitates comparison with Table 11 of the NREAPs.

¹⁶ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

¹⁷ District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).

¹⁸ From the total renewable heating and cooling consumption.

¹⁹ For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.

²⁰ Facilitates comparison with Table 12 of the NREAPs.

²¹ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²² From the whole amount of bioethanol / bio-ETBE.

²³ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²⁴ From the whole amount of biodiesel.

²⁵ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

2. Measures taken in the preceding 2 years and/or planned at national level to promote the growth of energy from renewable sources taking into account the indicative trajectory for achieving the national RES targets as outlined in your National Renewable Energy Action Plan. (Article 22(1)a) of Directive 2009/28/EC))

Table 2: Overview of all policies and measures

New schemes, policies and measures introduced in 2011, 2012 and schemes, policies and measures that existed pre 2012 and continue

Name and reference of the measure	Type of measure*	Expected result**	Targeted group and or activity***	Existing or planned****	Start and end dates of the measure
1. REFIT 2	Financial	4000MW of new onshore wind, hydro and landfill gas sufficient to cover our 2020 RES-E target.	Generators and suppliers of electricity from renewable sources	Existing	The scheme was formally opened in Quarter 1, 2012.
2. REFIT 3	Financial	310MW of biomass technologies (anaerobic digestion, high efficiency CHP and biomass combustion and co-firing)	Generators and suppliers of electricity from renewable sources	Existing.	Scheme opened in February 2012.
3. GIS resources	Technical/Soft	Updated wind atlas available on the Sustainable Energy Authority of Ireland (SEAI) web site.	General Public, County Councils, Wind Energy Project Developers, Academic Researchers, Consultants and Government bodies.	Planned	Will be available in Q3, 2014.
4. LARES (Local Authority Renewable Energy Strategies)	Technical/Soft	This methodology aims to facilitate consistency of approach in the preparation of LARES, and to assist local authorities in developing robust, co-ordinated and sustainable strategies in accordance with national and European obligations.	Planning authorities and the Planning Appeals Board.(An Bord Pleanála	New	2013-2020
5. Marine energy Development Fund, aimed at supporting industry led development and deployment of ocean energy devices and systems.	Financial	Prototype wave energy converters and component technologies.	Wave energy developers	Existing	Opened in 2008
6. SFI, EI and HEA schemes	SFI research programmes	Research in the area of Energy is being and will be carried out, building	Researchers in Irish Higher Education Institutions	Planned & existing	Ongoing

		research capacity, scientific expertise, and collaborative relationships in the area.			
7. National Research Prioritisation process. Two energy themes prioritised for support: Marine Renewable Energy (wave, tidal, offshore wind) and Smart Grids and Smart Cities	Financial	To create an early stage industry and research cluster, allowing the sustainable commercialisation of our natural resources including the possibility of exporting electricity from these sources. Using a layer of technologies (including software, sensor hardware and control and interface systems) and design solutions to more effectively and efficiently manage complex infrastructure systems. A coordinated multiannual development and deployment of financial supports for priority topics, applied to delivery of research projects, infrastructure, skills development and commercialisation, leveraging inter alia the EU Horizon 2020 programme	Funding agencies, academic and industry researchers in marine renewable energy and in smart grid technologies, plus local authorities, utilities, enterprise agencies and policy makers	Existing, following publication of action plans in 2013.	Commenced in 2013
8. National Smart Metering Programme	Technical/Soft	The results of these trials were published in 2011. Based on the positive results of the trials, the smart metering programme has progressed to the next phase (Phase 2: Design, Requirements Definition and Procurement). In 2013 public consultations on the Core Design, Time of Use tariffs, the provision of Energy Usage Information and Pay-As-You-Go were undertaken. Following on from these consultations a set of decision papers is expected to be published in early 2014.	Electricity & Gas Consumers, policy makers	Existing	CER (regulator) has published a decision regarding the national rollout of electricity and gas smart meters (CER/12/008). The smart metering project is now in Phase 2 (Design, Requirements Definition and Procurement). Further updates can be viewed on the Smart Metering section of the CER's website (www.cer.ie).

9. Guidelines for Planning Authorities on Wind Energy Development (DEHLG) Focussed review of policy advice on noise and shadow flicker in the Guidelines took place in 2013	Soft	Facilitate a consistency of approach by planning authorities, both in identifying areas suitable for wind energy development and having regard to potential impacts, inter alia on nature and diversity	Planning authorities and the Planning Appeals Board. (An Bord Pleanála)	Existing. Guidelines have existed since 2006 and are currently under review.	2013-14 Draft for consultation issued end of 2013
10. Draft Geothermal legislation	Legislative / Regulatory	Geothermal Energy Development Bill 2010 published	Industry, policy makers	Existing	Bill published 2010. The bill must now make its way through the legislative process prior to enactment.
11. DS3 process (See point 28 below). Updated actions since 2011	Technical				
12. Social acceptance activities Engaging with IEA Wind Task 28 on Social Acceptance	Soft	Disseminated best practice on international social acceptance activities.	Wind energy practitioners and developers, utilities, communities and policy makers in Ireland	Existing	Ongoing
13. Social acceptance activities Commission policy oriented and public good research under National Energy R&D Programme	Soft	Provide reliable evidence and information on options and approaches to facilitate enhanced societal acceptance of renewable energy	Wind energy practitioners and developers, industry federations, academics and policy makers in Ireland	Existing	Ongoing since 2011
14. Ensuring a secure Reliable and Efficient Power System in a Changing Environment	Technical	This report augments the results of the Facilitation of Renewables report with additional analysis quantifying the level of change required over a range of key operational and plant portfolio metrics. It also considers the implications of the current levels of performance as of 2011.	TSO	Existing	June 2011
15. Intra-day Trading (IDT)	Regulatory/	Intra-Day Trading (IDT) was	SEMO, Regulators, Policy makers,	Existing	2012 and on-going

in the Single Electricity Market	Financial	introduced in SEM in 2012. The new system promotes more competition in the market by allowing electricity trading closer to real time and enabling the use of increasing amounts of variable renewable generation. The project was launched in July 2012 on time and within budget	Industry		
16. Bioenergy scheme for the production of non-food crops	Financial	Grant support for the planting of perennial biomass crops (willow and miscanthus) – contributes to biomass needs of renewable energy sector	Agriculture sector	Existing	Since 2007 (ongoing)
17. Relief for investment in renewable energy generation – Section 486B, Tax Consolidation Act (TCA) 1997	Financial (Tax relief)	The relief for investment applies to corporate equity investments in solar, wind, hydro or biomass technology generation projects. The relief is given in the form of a deduction from a company's profits for its direct investment in new ordinary shares in a qualifying renewable energy company.	Companies paying corporation tax, Generators of solar, wind, hydro and biomass generation	Existing. Commencement order required.	Introduced: 1999 Budget 2012 announced that the scheme will be extended to 31/12/14 –
18. Renewable Energy RD &D Programme	Financial Financial support is available in three categories: Category 1: Shared-cost Demonstration Category 2: Shared-cost R&D Category 3: Commissioned Public Good Activities	Programme focused on stimulating the deployment of renewable energy technologies that are close to market, and on assessing the development of technologies that have prospects for the future and on overcoming barriers to renewable energy deployment and informing national and local policies.	Developing solutions relevant to developers of renewable energy technologies, local authorities, spatial planners and government authorities.	Existing	July 2002 onwards
19. BES (Business Expansion Scheme)	Financial	A tax relief incentive scheme that provides tax relief for investment in certain corporate	Renewable Energy Developments meeting the qualifying	Existing	Ongoing

		trades. There is no tax advantage for the company in receipt of the BES, but securing this funding may enhance their ability to attract other external funding.	conditions		
20. Rollout of Grid 25 strategy	Infrastructural	Grid 25 provides the framework to improve grid which will facilitate the integration of increasing amounts of renewable generation and necessitate significant investment in the grid. An SEA is underway on the implementation programme for Grid25/	Generators of RES-E	Existing and planned (Grid 25 is in the implementation and rollout phase.)	Grid 25 was launched in 2008 and the programme is now being rolled out.
21. Part L of the Second Schedule of the Building Regulations 1997-2008. This has been updated in 2011.	Regulatory	In relation to Dwellings, Part L 3(b) requires that “a reasonable proportion of the energy consumption to meet the energy performance of the dwellings is provided by renewable energy sources”. This provision is expected to increase use of renewable energy in dwellings	Domestic (dwellings)	Existing. The Department of the Environment, Community and Local Government is developing a strategic framework or ‘roadmap’ to achieve a carbon neutral standard for dwellings. Increased use of onsite renewables will be a key element of the framework. Building Regulations Part L (Conservation of Fuel and Energy) for buildings other than dwellings is being reviewed in 2014.	2008. This has been amended by Statutory Instrument No. 259 of 2011.
22. SI 666 of 2006 Part 2 Alternative Energy Systems SI 243 of 2012 Part 2 Alternative Energy Systems	Regulatory	Ensure before work commences that consideration is given to the technical, environmental and economic feasibility of installing alternative energy systems: this measure should help increase renewables in large buildings	Owners / Designers of Large new buildings (over 1000m2)	Existing	2006 onwards. This has been revoked and replaced by Statutory Instrument No. 243 of 2012.
23. Statutory Instrument (SI) 83 of 2007 and SI 235 of 2008	Regulatory	Conditional planning exemptions for renewable technologies that	Domestic, business and agricultural sectors	Existing	2007 and 2008 onwards

		meet specified criteria – expected to encourage uptake of energy from renewable technologies			
24. Renewable Energy information service	Soft	This is an information service on renewable energy that provides the public with a service whereby they can easily obtain practical information on renewable energy, including a significant volume of web resources.	General public, industry, business	Existing	Ongoing. In 2012, SEAI in-sourced this function, which had been outsourced for a number of years.
25. Local energy agencies	Soft	The network of local energy agencies collective goal is to support the development and implementation of energy policy. Information, advice and skills provided through the local agencies can enhance knowledge on options for increased renewable energy at local level	General public, industry, business	Existing	Ongoing
26. Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010 and SI33/2012	Regulatory	Facilitated the introduction of the Biofuel Obligation Scheme to promote increased production and use of Biofuels on Irish transport fuels market	Biofuel Producers	Existing	Started 1/7/2010 – on-going. Means of demonstrating compliance with the Sustainability Criteria which were introduced in 2012 by SI33/2012
27. SI 147 of 2011 and S.I. 1548 of 2011 and 2010 Biofuel Obligation Act	Regulatory/Legislative	Legal Provisions that transpose Renewable Energy Directive 2009/28/EC in Ireland	Industry, policy makers	Existing	2010 and 2011
28. Electric Vehicles	Financial/infrastructure	Increased use of electric vehicles in Ireland. Installation of network of 1000 publicly available charging points Ireland is a partner in the following EU Commission funded FP7 projects,: <ul style="list-style-type: none"> • Green eMotion • MOBI Europe, • FINSENY, 	General Public	Existing	EV grant scheme commenced in 2011. Vehicle registration Scheme extended to 31/12/14.

		FINESCE.			
29. Electric Vehicles	Regulatory	Planning exemption for electric vehicle charging stations introduced in 2013	Installers of charging points and users of electric vehicles	New	Ongoing
30. Small, Renewable, Low carbon generation connecting to the grid outside the 'Gate' process	Soft /infrastructural	A policy that facilitates small scale renewables by providing for grid connections outside the gate process for certain small, renewable, low carbon generators	Small, renewable and low carbon generators such as small bio-energy, wave, tidal generators	Existing	Introduced in July 2009. Continues to remain open to certain small generators as a means to connect to the grid.
31. Revised simplified application procedures for authorisations to construct and licences to generate	Regulatory	CER/10/098 (energy regulator's decision) introduced a simplified procedure for generators with installed capacity up to 40MW to make obtaining authorisation to construct and licence to generate easier.	Those constructing generating stations with installed capacity not exceeding 40MW and generating electricity	Existing	New procedure came into effect in June 2010
32. Principles of Dispatch and the Design of the Market Schedule in the Trading & Settlement Code	Regulatory	The Single Electricity Market (SEM) Committee undertook a 2 year consultation (2009-2011) prior to reaching a decision. The policy has important implications for the treatment and dispatch of renewable generation in the SEM.	All participants in the SEM (mandatory pool for those generators over 10MW)	New	SEM Committee Decision published in 2011 (SEM 11-062)
33. Treatment of Price Taking Generation in Tie Breaks in Dispatch in the Single Electricity Market (SEM) & Associated Issues	Regulatory	The SEM committee is currently consulting with a view to reaching a decision on this. This policy will have important implications for the treatment and dispatch of renewable generation in the SEM.	All participants in the SEM (mandatory pool for those generators over 10MW)	New	SEM Committee Consultation SEM 11-063 published in August 2011. Decision SEM Committee decision published March 2013 (SEM-13-010)
34. Consent process for offshore renewable energy projects	Regulatory	The Minister for Environment intends to streamline and modernise the consent process for certain developments in the offshore environment, including offshore	Generators of RES-E operating in the offshore environment	Planned	Drafting of the Maritime Area and Foreshore (Amendment) Bill was approved by Government in July 2013 pursuant to the General Scheme submitted. Drafting of the Bill is being progressed by

		renewable energy projects such as wave, offshore wind and tidal technologies on a phased basis.			DECLG as a priority business task.
35. Planning & Development (Amendment) Act 2010	Legislative / Regulatory	The Act provides for changes to the planning system, some of which have implications for the renewable energy sector (e.g. projects over a certain size will now automatically be treated as strategic infrastructure under the Strategic Infrastructure Act. The time period relating to initial planning consent is now longer.)	Developers who have to go through the planning process	Now in place	The legislation was enacted in 2010. Renewable generators may now extend the duration of a planning permission for up to 10 years which is generally more satisfactory and projects over a certain size now automatically seek consent under the Strategic Infrastructure Act.
36. Accelerated Capital Allowances (ACA) for Energy Efficient Equipment (SI 393 of 2009)	Financial (Tax Relief)	Specifies certain technical standards to be met by renewable energy products to be eligible for the ACA tax relief. Technologies covered include wind turbines >5kw, solar PV, CHP, biomass boilers, electric vehicles.	Companies paying corporation tax	Existing	Existing from 2009 onwards
37. Ocean Energy	Financial / Soft	The Ocean Energy Prototype Development Fund (grants for industry) aimed at stimulating Ocean Energy (OE) devices and systems. A strategic environmental assessment (SEA) on offshore wind, wave & tidal development scenarios is underway.	Offshore renewable energy sector	Existing	SEA ongoing 2009-2011 Prototype Development Fund in operation since 2009.
38. Tree Felling Policy for Wind Farm Development	Soft	The Department of Agriculture, Food & the Marine in 2009 introduced a tree felling policy for wind farm development. Industry and DAFF are in discussion on the policy.	Wind Farm Developers / Forestry sector	Existing	2009 onwards
39. Completion of the rollout and implementation of Gate 3	Soft	Under Gate 3, 3900MW of new renewable generation have	Generators of RES-E	Existing. All Gate 3 grid connection offers have now issued to those	2009-2011 (rollout of offers.) Takeup of offers should be

renewable generation grid connection offers		received grid connection offers The rollout and implementation of Gate 3 by the regulator, TSO and DSO will ensure that Ireland can reach its 40% RES-E target.		included in the Gate 3 direction. Take up rates are expected to be known in the course of 2012.	known in 2012. At time of writing circa 2,900MW of Gate 3 renewable connection offers have been accepted.
40. Facilitation of Renewables Study	Technical	This publication was an important step towards providing a more complete picture of the operational implications of managing high levels of variable renewable generation on the power system.	TSO, regulator, policy makers, industry	Existing	Study published in 2010.
41. DS3: Delivering a Secure, Sustainable Power System	Technical	Follows on from Facilitation of Renewables study. The different aspects of this programme are fundamental to ensuring the continued security of supply on the island and are required to deliver on the 2020 renewable electricity targets. There are three major work areas within this programme: System Policies, System Tools and System Performance. [Eleven sets of actions]	TSO, regulator, policy makers, industry	Existing and on-going	2011-2013
42. East West Interconnector	Financial / Infrastructural	The East West Interconnector was built in 2012 and links the electricity transmission grids of Ireland and Great Britain and is the largest voltage sourced conversion High Voltage Direct Current scheme currently in operation in the world today	Transmission System Operator, Generators of RES-E	Existing	2009-2012 Operational since December 2012 Further information is available at: http://www.eirgrid.com/eastwest/
43. Offshore Grid	Technical	EirGrid published a study into the design	Transmission	Existing	2010-2011. The results of the ISLES

Research		and architecture of a future Offshore Energy Grid. The focus of offshore generation is mainly wind and tidal. The Irish Government has also been involved in the ISLES study examining issues around offshore grid between Ireland, Northern Ireland and Scotland.	System Operator. Governments. Generators of RES-E		feasibility study were published in November 2011. http://www.islesproject.eu/
----------	--	--	---	--	---

* Indicate if the measure is (predominantly) regulatory, financial or soft (i.e. information campaign).

**Is the expected result behavioural change, installed capacity (MW; t/year), energy generated (ktoe)?

***Who are the targeted persons: investors, end users, public administration, planners, architects, installers, etc? or what is the targeted activity / sector: biofuel production, energetic use of animal manure, etc)?

Schemes and measures that existed in 2010 to 2011 but have now closed

Name and reference of the measure	Type of measure*	Expected result**	Targeted group and or activity***	Existing or planned****	Start and end dates of the measure
44. Biofuels Mineral Oil Tax Relief (MOTR) Schemes	Fiscal Measure	Increased production and use of Biofuels on Irish transport fuels market	Biofuel Producers	Now closed.	2005 to 31/12/10
45. ReHeat	Financial	Increased deployment of renewable heating technologies in the commercial, industrial and public sectors. Provides financial assistance for boilers fuelled by wood chips and wood pellets, solar thermal collectors, and heat pumps.	Commercial, agricultural, industrial and service sectors, as well as energy supply companies.	Now closed for new applicants.	2006 to 31/12/10
46. CHP Deployment grant scheme (30% on equipment purchase and 40% for feasibility studies)	Financial	Aims to increase the deployment of small scale (<1MWe) biomass CHP systems across Ireland in accordance with requirements of EU Directive on CHP.	Commercial, agricultural, industrial and service sectors as well as energy supply companies (ESCOs).	Now closed for new applicants. It is expected that the new Biomass REFIT will stimulate CHP deployment.	2006 to 31/12/2010
47. Greener Homes Scheme	Financial	Facilitates the wider deployment of renewable-energy heating technologies in the residential sector and supports the development of a sustainable market, resulting in reduced dependence on fossil fuel and lower CO2 emissions.	Homeowners	Now closed for new applicants. Greener Homes was incorporated into Better Energy Homes and support limited to Solar Thermal.	2006 to 31/12/10
48. Alternative Energy Requirement (AER) Programmes I-VI	Financial	Increase in RES-E following six separate calls for tender. 532MW of renewable generation was built under AER. 322MW still in the scheme in 2011/2012. 219MW still in the scheme in 2013/2014.	Generators of electricity from renewable sources	Closed for new applicants in 2007. Those remaining in the scheme (332MW in AER is still in the scheme in the PSO period 2011/2012) 219MW in AER is still in the scheme in the PSO period 2013/2014)	There were 6 separate calls for tender beginning in the mid 1990s. The last call for tender was in 2003. Closed for new applications. Projects continue to be supported by the PSO levy.

49. Renewable Energy Feed-in Tariff scheme (REFIT 1)	Financial	Support an increase in RES-E via a feed-in tariff mechanism. In 2011/2012, there was 1242MW of renewable generation in receipt of REFIT. For the PSO period 2013/2014, there is 1365MW of renewable generation in receipt of REFIT 1.	Generators and suppliers of electricity from renewable sources	Closed for new applicants on 31/12/09. 1242MW in REFIT was included in the 2011/2012 PSO decision. 1365MW in REFIT 1 was included in the 2013/2014 PSO decision	2007-2009 (New developments accepted before the closing date that have been granted an extension of time continue to build out.) Closed for new applications. Projects continue to be supported by the PSO.
50. Small and Micro Scale Generation Pilot Programme (Grants).	Financial	Microgeneration pilot run by SEAI to inform on the technical, market and regulatory issues associated with the installation, network connection and operation of small and micro scale generation technologies.	Micro renewable generators	Closed for new applications – monitoring of installations in the pilot is underway.	Scheme launched in February 2009. 42 participating in the scheme. Monitoring continuing through 2011 with report on findings expected in 2012.
51. Charles Parsons Energy Research Awards	Financial / Soft	The objective of the awards (overseen by Science Foundation Ireland) is to stimulate and develop energy research in Ireland by providing funding for research groups to undertake energy research particularly in priority areas. A specific aim is to increase significantly overall research capacity and in particular attract more engineers into energy research.	Energy researchers, universities, industry, policy makers	Closed for new applications.	Closed for new applications in October 2006. http://www.sfi.ie/investments-achievements/investments/charles-parsons-energy-research-awards/

2.a Please describe the progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of renewable energy. (Article 22(1)e) of Directive 2009/28/EC).

CER (the energy regulator) in recent years has introduced several decisions that improve procedures. These include the following:

- Facilitation of transmission and distribution contestability;
- Development of and implementation of Least Cost Chargeable/ Least Cost Technically Acceptable charging;
- Transmission & Distribution standard charging policy;
- Facilitation of small low carbon non Group processing approach developments; (i.e. ability for certain small low carbon renewable generators to obtain a grid connection outside the gate process)
- Reduction of 8% in connection application fees in 2010;
- Distribution charter and fixed timeline for delivery of connection assets;
- Incentivisation of TSO and DSO to deliver connections;
- Development of the less onerous bonding requirements (CER/09/138);
- Facilitation of Gate 3 Liaison Group, a forum which provides industry with the opportunity for direct interaction with the system operators and the CER on connection matters.
- CER/10/098 was a decision introducing a simplified procedure for generators with installed capacity up to 40MW to make obtaining authorisation to construct and licence to generate easier.

A number of Single Electricity Market (SEM) decisions were taken in 2011 that are intended to provide a greater level of clarity to renewable generators on market operations as they affect renewable energy. These include recent decisions on ‘Treatment of Price Taking Generation in Tie Breaks in Dispatch in the Single Electricity Market and Associated Issues’ (SEM 11 -105) and ‘Principles of Dispatch and the Design of the Market Schedule in the Trading and Settlement Code’ (SEM 11-062.) A SEM Committee decision on this was published March 2013 (SEM-13-010)

Drafting of the Maritime Area and Foreshore (Amendment) Bill was approved by Government in July 2013 pursuant to the General Scheme submitted. Drafting of the Bill is being progressed by DECLG as a priority business task. The Bill has two overarching aims:

- to align the foreshore consent system with the planning system; and
- to provide a coherent mechanism to facilitate and manage development activity in the State’s exclusive economic zone (EEZ) beyond the territorial waters/foreshore and on the continental shelf, including in relation to strategic infrastructure projects, such as oil and gas, ports and offshore renewable energy.

The Offshore Renewable Energy Development Plan (ORDEP) was published in February 2014. The process of developing the OREDP began with the carrying out of a Strategic Environmental Assessment (SEA). Informed by the findings and recommendations of the SEA, the OREDP identifies how best to link action across the environmental, energy and economic development sectors to best facilitate the commercial development of Ireland’s abundant offshore energy potential – using both existing wind and emerging ocean and tidal technologies. The implementation of the OREDP will be based around a number of workstreams, such as:

- Environmental monitoring
- Infrastructure development (grid, ports)
- R&D programmes and market support for ocean energy

- Development of the renewable export market opportunity for offshore wind
- Development of the supply chain for the offshore renewable industry, and
- Attraction of national and international investment in the sector

In this way, the OREDP provides the tool to realise potential of the offshore energy sector and facilitate the contribution off offshore renewable energy to the green economy, as identified by the Government’s Action Plan for Jobs (2012).

The 2010 Planning & Development (Amendment) Act introduced reforms to planning legislation. Under the Act, developers including renewable project developers are now able to secure an extension of the duration of their planning permission grants for up to ten years, which is of considerable benefit in reducing administrative burden, given the time that it can take for projects to be brought to fruition.

The ongoing DS3 programme being undertaken by EirGrid²⁶ 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. An advisory council which includes industry representatives is overseeing the project.

2.b Please describe the measures in ensuring the transmission and distribution of electricity produced from renewable energy sources and in improving the framework or rules for bearing and sharing of costs related to grid connections and grid reinforcements. (Article 22(1)f of Directive 2009/28/EC)).

Several studies have been carried out over the past number of years to investigate the levels of renewable generation that can be securely accommodated on the power system of Ireland and Northern Ireland. These studies have considered the requirements in terms of infrastructure and also the operational implications of managing a power system with large amounts of variable generation sources.

All Island Grid Study

<http://www.eirgrid.com/renewables/all-islandgridstudy/>

Facilitation of Renewables Study

<http://www.eirgrid.com/renewables/facilitationofrenewables/>

Ensuring a Secure, Reliable and Efficient Power System in a Changing Environment

http://www.eirgrid.com/media/Ensuring_a_Secure_Reliable_and_Efficient_Power_System_Report.pdf

As a follow on from these studies, and to ensure that the necessary steps are put in place to deliver on our 2020 target, EirGrid and SONI have established a programme of work entitled “Delivering a Secure Sustainable Electricity System (DS3)”. Further information on the programme is available online²⁷.

²⁶ <http://www.eirgrid.com/operations/ds3/ds3programmeoffice/>

²⁷ <http://www.eirgrid.com/operations/ds3/ds3programmeoffice/>

The Transmission System Operator's Grid25 programme which was launched in 2008 will provide transmission capacity for large amounts of renewable generation in the years ahead, enabling the physical connection and transmission and distribution of electricity from renewable sources. Since the Grid25 strategy was developed, significant progress has been made in optimising the grid investment plans, in identifying new technical solutions, in building new transmission circuits and in up-rating existing circuits.

There has been significant development of the transmission system in the past year, with more networks put in place than has been built in the past 20 years. During the past year, 128 km of new transmission lines were completed, along with upgrades to 215 km of existing lines.

The energy regulator's (CER) direction on first stage payments for grid connections (CER/11/083) treats all developers seeking a connection in a fair and equal manner regardless of size, scale or ownership structure. The CER's 2009 decision (CER/09/138) which implemented the current First Stage Payments Scheme significantly reduced the level of financial commitment required from renewable generators at offer acceptance.

CER/09/138 outlined a revised approach to the bonding requirements and connection charging requirements for renewable developers, removing the requirement for large bonds to be paid upfront by developers at offer acceptance. This decision was also made following a significant period of discussion and consultation with the renewable industry.

In terms of cost, CER has in the past few years introduced many connection policy decisions designed to facilitate the industry and meet the needs of windfarm developers. These include the following:

- Facilitation of transmission and distribution contestability;
- Development of and implementation of Least Cost Chargeable/ Least Cost Technically Acceptable charging;
- Transmission & Distribution standard charging policy
- Reduction of 8% in connection application fees in 2010;
- Development of the less onerous bonding requirements (CER/09/138);

3. Please describe the support schemes and other measures currently in place that are applied to promote energy from renewable sources and report on any developments in the measures used with respect to those set out in your National Renewable Energy Action Plan. (Article 22(1)b) of Directive 2009/28/EC).

Further information on the evolution of the position in respect of the electricity, heating and transport sectors since publication of the NREAP in July 2010 can be found in the Annex to this document.

RES-E

REFIT (Renewable Energy Feed-In-Tariff) is the primary support scheme for RES-E in Ireland and there are three such schemes in place. The original version of the scheme (REFIT 1) got state aid clearance in 2007 and was open for new applications until 31/12/09. Currently 1645MW of renewable generation in REFIT 1 are eligible for payment under the 2013/2014 PSO Decision²⁸.

It is intended to continue to offer REFIT (including CHP) to support RES-E and ensure delivery of our 2020 renewable target. Support tariffs for biomass technologies ('REFIT 3') were introduced in February 2012 to assist the development of a sustainable biomass supply sector in Ireland.

²⁸ Available at: <http://www.cer.ie/en/renewables-decision-documents.aspx#PSODecisions>
<http://www.dcenr.gov.ie/Energy/Sustainable+and+Renewable+Energy+Division/REFIT.htm>

Technologies supported include Anaerobic Digestion, biomass combustion and co-firing of biomass with peat, opened in February 2012. The scheme also offers supports for Combined Heat and Power (CHP).

The REFIT 2 scheme covers onshore wind, small hydro and landfill gas. On 12 January 2012²⁹, the European Commission signaled its intention not to raise objections to the REFIT 2 scheme (i.e. state aid clearance to proceed had been received). In February 2012, the Government approved the introduction of the REFIT 2 scheme and the scheme opened in March 2012.

AER (Alternative Energy Requirement), a series of tender competitions that were run from the mid 1990s to the mid 2000s, were the RES-E schemes that preceded REFIT. The AER MW included in the 2013/2014 PSO decision has fallen from 306MW to 219MW as the earlier projects exit the scheme, having availed of the support for the period allowable.

The Accelerated Capital Allowances (ACA) scheme for energy efficient equipment specifies certain technical standards to be met by renewable energy products to be eligible for ACA tax relief. Technologies covered include wind turbines >5kw, solar PV and CHP, with biomass boilers being added in 2010 and electric vehicles being added in 2011.

On microgeneration, SEAI has been running a microgeneration pilot programme comprising 42 installations that received capital grants. Qualifying projects in the pilot have also been able to avail of a feed-in-tariff offered by a commercial company. A report on the monitoring of the installations and the findings on microgeneration in an Irish context was published by SEAI in 2013.

The Programme for Government states that a microgeneration feed-in-tariff will be introduced at a price not much higher than the SEM price. This matter is currently being evaluated.

Tax Relief

As described in the NREAP, section 486b of the 1997 Tax Consolidation Act (as amended) applies to corporate equity investments in certain renewable energy generation projects. The relief is given in the form of a deduction from a company's profits for its direct investment in new ordinary shares in a qualifying renewable energy company. This scheme was available to 31/12/2011. In Budget 2012, it was announced that the scheme would be continued for a further 3 years until 31 December 2014.

RES-H

The REFIT 3 scheme, although payable on exported electricity, through the encouragement of biomass high efficiency CHP technologies also incentivises renewable heat production. The Department of Agriculture continues to operate the bio-energy scheme for non food crops (willow and miscanthus) which encourages the production of biomass.

A number of support schemes run by SEAI that were described in the NREAP and that promoted RES-H namely ReHeat, CHP and Greener Homes ended 31/12/10 due to budgetary constraints. Greener Homes was incorporated into the Better Energy scheme with support limited to solar thermal. Those that had already been accepted into the SEAI schemes prior to closure continued to receive funding in 2011. The introduction of higher REFIT tariffs for biomass CHP (although specifically payable for RES-E) will also incentivise, through high efficiency cogeneration, a contribution to achieving Ireland's RES-H ambitions.

Newly built homes are required to comply with the renewable energy requirement in Part L of the Building Regulations and can also make a contribution to the renewable heat target. The Accelerated Capital Allowances (ACA) scheme for energy efficient equipment specifies certain technical standards

²⁹ SA.31236 available at http://ec.europa.eu/competition/elojade/isef/index.cfm?fuseaction=dsp_sa_by_date

to be met by renewable energy products to be eligible for ACA tax relief. Technologies covered include biomass boilers. A review of the RES-H sector will be required if there is evidence that insufficient take-up of RES-H technologies means that our target in the heat sector appears unlikely to be achieved.

Ireland is finalising a national bioenergy strategy which will set out the actions required to optimise the contribution that energy from biomass can make to achieving Ireland's 2020 renewable energy targets. Analysis underpinning the strategy suggests that additional bioenergy measures can have a significant impact in the heat sector.

RES-T

The Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010 became law on 1 July 2010 and is designed to ensure that Ireland can achieve a target of 10% biofuels in the fuel mix by 2020. This provides market players with long-term certainty to develop economically viable scale into their projects going forward. It facilitates industry in developing appropriate financing, planting, refining, storage, distribution and supply chain logistics.

Under the Biofuel Obligation provided for in the Act, road transport fuel suppliers must ensure that biofuels represent a certain percentage of the national annual fuel sales. The percentage will be increased periodically, taking account of the Fuel Quality Directive requirements and the future requirements in respect of ILUC.

Biofuels Obligation Certificates are awarded for the supply of one litre of sustainable biofuel. To incentivise the use of biofuels from wastes and residues, two certificates are awarded for each litre placed on the market. For other types of sustainable biofuel, one certificate is awarded for each litre. At the end of each year, fuel suppliers must have a certain percentage of certificates in proportion to the amount of petroleum based fuel placed on the market. In 2011 and 2012, the obligation was for 4 certificates per 96 litres of petroleum based fuels (or notionally 4% by volume). From 1 January 2013, the obligation rate was increased to 6% (or 6 certificates per 94 litres of petroleum based fuels).

Electric Vehicles

As set out in the NREAP, there is an ambition that 10% of all vehicles will be powered by electricity by 2020. In April 2011 the Minister opened the 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. These grants are in addition to the VRT reliefs of up to €5,000 which apply to BEVs and the VRT reliefs of up to €2,500 for PHEVs. The take-up, however, has been slower than originally anticipated which is largely consistent with the experience elsewhere in Europe. A number of reasons have affected the uptake of the vehicles: Firstly, the recession has meant that new-car sales generally have fallen significantly. EVs are more expensive than similar standard models and this is thought to also have contributed to the lower uptake, though signs are that prices are starting to come down. Manufacturers have also been slow to introduce models into the market which has meant a lack of available choice although this is also beginning to change.

Table 3: Support schemes for renewable energy

RES support schemes year n (e.g. 2011)		Per unit support	Total (M€)*
[(sub) category of specific technology or fuel]			
Instrument (provide data as relevant)	Obligation/quota (%)	4% by volume of transport fuel mix must be biofuels	n/a
	Penalty/Buy out option/ Buy out price (€/unit)	Purchase certificates for biofuels from others with surpluses or 45c per litre buy out price for the biofuel obligation scheme	n/a
	Average certificate price	Not known	Not known
	Tax exemption/refund	€1.59m in 2011 and €1.27m in 2012 (Total tax relief under section 486B of the Tax Consolidation Act.)	€1.27m
	Investment subsidies (capital grants or loans) (€/unit)	Aid is payable on 50% of the approved costs associated with establishing the crop, subject to a maximum payment rate of €1,300 per hectare	A total of €617,000 for the two years €358,000 was granted in 2011 and €259,000 in 2012
	Production incentives		
	Feed-in -tariff	2011 Rates From €68.08 MWh for large scale wind up to €153.9 per MWh for small AD CHP. Also a fixed payment of €9.9 MWh for all technologies	€44.5m in 2012 (PSO levy for REFIT) ***** (
	Feed-in premiums	n/a	n/a
Tendering	AER Rates vary according to the prices bid in.	€5.5m ***	
Total annual estimated support in the electricity sector		REFIT/AER/Tax Relief	€51.27m *** (see below re cost offset)
Total annual estimated support in the heating sector		Bioenergy Crops	€300, 000 on energy crops
Total annual estimated support in the transport sector		Biofuels Obligation	n/a

*** Note that total annual cost was achieved by averaging the estimated costs to the Public Service Obligation (PSO) from the AER and REFIT schemes during the PSO years 2010/2011 and 2011/2012. The PSO year runs from October to September.

Although the corresponding details are not available with respect to 2012, a RES-E: A study carried out by EirGrid/SEAI in 2011³⁰ shows that the costs of REFIT and AER in that year were offset by the reduction in wholesale electricity prices.

The broad conclusion of the study was that:

- The wind generation in 2011 reduced Ireland's wholesale market cost of electricity by around €74 million.
- This reduction in the wholesale market cost of electricity is approximately equivalent to the sum of Public Service Obligation (PSO) costs (including REFIT scheme and the predecessor of REFIT, known as AER), estimated as €50 million, and the increased dispatch constraint costs incurred due to wind in 2011.
- Thus the total cost did not increase with the inclusion of the 2011 wind capacity.

Generally Ireland notes that it is difficult to estimate costs. For example in the transport sector, the obligation is on suppliers, but one can assume they recoup their costs in some way e.g. through increased charges on consumers, however these are not necessarily transparent. Furthermore all schemes have administration, overhead, salary costs etc in state bodies and in private sector organisations and such costs are not always visible.

3.1. Please provide the information on how supported electricity is allocated to final customers for purposes of Article 3 (6) of Directive 2003/54/EC. (Article 22(1)b) of Directive 2009/28/EC).

Under the relevant energy regulator (CER) Decision CER 11/824, in accordance with Statutory Instrument 147 of 2011, any renewable generator that is covered by REFIT or AER and wishes to remain in receipt of support will not receive a Guarantee of Origin (GO). The renewable generator will have the attributes of their generation transferred directly to the fuel mix of the supplier with whom they have their Power Purchase Agreement (PPA) under the support scheme. Neither the generator nor the supplier will be able to transfer the attribute to any other party and it will be applied to the supplier's fuel mix for the disclosure period in which the generation occurred.

In accordance with S.I. 147 of 2011, a GO is therefore not issued in respect of PSO supported generation (both AER and REFIT are supported through the public service obligation (PSO) levy fund.) The renewable attribute of the generation is thus captured in the fuel mix in a manner that reflects suppliers' activities in the electricity market. This is consistent with the underlying purpose of fuel mix disclosure by providing customers with reliable information with which to distinguish between suppliers on the basis of their fuel mix.

Ireland is represented at the EU Concerted Action on the Renewable Energy Sources Directive (CA RES). One of the Core Themes here is that regarding Guarantees of Origin/Disclosure in the context of Article 15 of Directive 2009/28/EC. Important topics being covered here are the facilitation of a harmonized implementation of GOs by all Member States and of international exchange of information for disclosure purposes. A key aim here is the avoidance of double counting of GOs in the context of disclosure of fuel mix to final electricity customers.

In addition, Ireland participates in the RE_DISS project which has developed a set of best practice recommendations for implementing reliable electricity disclosure systems and which currently

30

http://www.seai.ie/Publications/Energy_Modelling_Group/Energy_Modelling_Group_Publications/Impact_of_Wind_Generation_on_Wholesale_Electricity_Costs_in_2011.pdf

performs the calculation of the EU residual fuel mix for the purposes of fuel mix disclosure by Member States to final customers. Further information on RE-DISS is available here: <http://www.reliable-disclosure.org/>.

4. Please provide information on how, where applicable, the support schemes have been structured to take into account RES applications that give additional benefits, but may also have higher costs, including biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material?) (Article 22 (1)c of Directive 2009/28/EC)).

To encourage the development and use of second generation biofuels, Ireland's Biofuel Obligation Scheme (provided for under the Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010), in line with the EU Renewable Energy Directive, awards double certificates for each litre of second generation biofuel placed on the market and produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material per article 22 of the Directive. Three categories of fuel qualify for double certificates: Tallow category 1, used cooking oil, and, since 2014, palm oil mill effluent.

The structure of the biomass REFIT tariffs also provides for higher tariffs depending on size and for different biomass technology categories, with significantly higher tariffs being awarded for high efficiency CHP and for anaerobic digestion when compared with biomass combustion and biomass co-firing. This ensures that additional benefits (particularly environmental benefits) are rewarded. Premium rate is also offered for electricity from combustion of purpose grown energy crops.

5. Please provide information on the functioning of the system of guarantees of origin for electricity and heating and cooling from RES, and the measures taken to ensure reliability and protection against fraud of the system. (Article 22(1)d of Directive 2009/28/EC)).

Guarantees of Origin (GOs) were provided for in legislation in S.I. 147 of 2011 which transposed the requirements relating to GOs in Renewable Energy Directive 2009/28/EC. GOs are provided for in the statutory instrument as regards the electricity sector. Article 15(2) of Directive 2009/28/EC provides that Member States may arrange for GOs to be issued in response to a request from producers of heating and cooling from renewable energy sources. A decision was taken not to introduce the optional GOs for the heating and cooling sector in Ireland at this time.

The energy regulator (CER) published the 'Supervisory Framework for the Administration of Guarantees of Origin' Decision (CER 11/824) on 17 November 2011³¹. This decision sets out how the GO system will function.

In line with S.I. 147 of 2011, SEMO (the Single Electricity Market Operator) is the body responsible for the administration of the scheme. SEMO have developed the business processes that will be followed in relation to registering, requesting, issuing, transferring, revoking and importing GOs. SEMO will maintain an electronic register holding all the GOs and related information. Each generator unit and supplier holding GOs will have an account on this register and will be required to provide SEMO with any information it requires in order to discharge its duties.

³¹ <http://www.dcenr.gov.ie/NR/rdonlyres/D020B24D-EC0A-437F-90E1-A596B4F91C26/0/SupervisoryFrameworkGOs.pdf>

In terms of reliability and fraud, measures have been developed by SEMO (in conjunction with the CER) to make the system as robust as possible. These measures include only communicating with authorised users from each participant and password protecting the certificates issued.

6. Please describe the developments in the preceding 2 years in the availability and use of biomass resources for energy purposes. (*Article 22(1)g of Directive 2009/28/EC*).

With regard to bioenergy crops, an additional 438 hectares of crops were established under the Department of Agriculture, Food and the Marine's Bioenergy Scheme, to bring the total area established under the Bioenergy Scheme since 2007 to a figure in excess of 3,200 hectares

The main development in the use of biomass was the commissioning of a waste to energy plant. The facility became operational late in 2011, managing 200,000 tonnes of residual waste per annum and with a capacity of 15 MW. In 2012, 57% of the waste used as fuel was classified as renewable (25 ktoe). Co firing of biomass continued at Edenderry. 197,000 energy tonnes of biomass were used in 2012, accounting for 19.3% of the output of the plant.

In early 2012 REFIT 3, supporting up to 310MW of biomass-powered electricity, was opened for applications and during 2012, seven applications for 87MW were received

Table 4: Biomass supply for energy use

	Amount of domestic raw material (*)		Primary energy in domestic raw material (ktoe)		Amount of imported raw material from EU (*)		Primary energy in amount of imported raw material from EU (ktoe)		Amount of imported raw material from non EU(*)		Primary energy in amount of imported raw material from non EU (ktoe)	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**	244,000	235,000	40	38	11,000	20,000	1.8	3.27	518	182	0.08	0.03
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**	572,000	611,000	98	105	Confidential ¹	Confidential ¹			0	0	0	0
Energy crops (grasses, etc.) and short rotation trees (please specify)	30,000 tonnes	32,500 tonnes	13.1 ktoe	14.0 ktoe	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Agricultural by-products / processed residues and fishery by-products **	52,680	38,053	41	33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biomass from waste (municipal, industrial etc.) **	244,500	268,881	68	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Others (please specify)												
Biomass supply for transport:												
Common arable crops for biofuels (please specify main types)	Confidential ¹	Confidential ¹										
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Others (please specify)	Confidential ¹	Confidential ¹										

* Amount of raw material if possible in m3 for biomass from forestry and in tonnes for biomass from agriculture and fishery and biomass from waste

** The definition of this biomass category should be understood in line with table 7 of part 4.6.1 of Commission Decision C (2009) 5174 final establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC

¹ Data is known in certain cases, but is not being published in this table for confidentiality reasons, due to restricted number of suppliers. The rule applied on confidentiality is as follows:

Primary confidentiality

A category is confidential if any one of the following conditions applies:

(i) there are less than three units

(ii) one unit accounts for more than 80% of the total (dominance rule 1)

(iii) two units account for more than 90% of the total (dominance rule 2)

We are in the process of contacting those companies that fall into this category to ask whether they can agree to publication of their data in this document, however at the time of submission to the EC, some responses are still awaited. Should the companies agree to publication, we will publish an updated table in due course.

Table 4a. Current domestic agricultural land use for production of crops dedicated to energy production (ha)

Land use	Surface (ha)	
	2011	2012
1. Land used for common arable crops (wheat, sugar beet etc.) and oilseeds (rapeseed, sunflower etc.) (Please specify main types)	297,000	315,000
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	689	839
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	2,349	2,413

Land use	Surface (ha)	
	2011	2012
1. Land used for common arable crops (wheat, sugar beet etc.) and oilseeds (rapeseed, sunflower etc.) (Please specify main types)	297,000	315,000
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	689	839
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	2,349	2,413

7. Please provide information on any changes in commodity prices and land use within your Member State in the preceding 2 years associated with increased use of biomass and other forms of energy from renewable sources? Please provide where available references to relevant documentation on these impacts in your country. (Article 22(1) h) of Directive 2009/28/EC).

Bioenergy accounted for 2.79% of Ireland's 2011 GFC, equivalent to 319 ktoe (3,710 GWh) with 3% of GFC coming from bioenergy in 2012. Forest-based biomass is the largest single contributor to total biomass for bio-energy supply in Ireland. The balance of biomass for bio-energy was provided by landfill gas, anaerobic digestion of sewage sludge, waste-to-energy plants and combustion of residues (tallow and solid recovered fuel), with a minor contribution from pure plant oil derived from oilseed rape. In 2012 99.75% of biofuels produced in Ireland and placed on the market were from waste materials

The total area of oilseed rape in 2012 was 17,500 hectares, with this crop primarily acting as a break-crop in a cereal growing regime. Just over 3,200 hectares was devoted to growing energy crops, miscanthus and willow. In 2011 and 2012, this range of biomass feedstocks has had no detectable/material influence on commodity prices or land-use.

8. Please describe the development and share of biofuels made from wastes, residues, non-food cellulosic material, and lingo cellulosic material. (Article 22(1) i) of Directive 2009/28/EC).

There is to date no production or consumption of biofuels derived from non-food cellulose material or lingo cellulosic material in Ireland. Biofuels that are produced and consumed in Ireland under Article 21(2) include those derived from used cooking oil (UCO) and category 1 tallow (to produce biodiesel) and whey (residue from dairy products production used for bio-ethanol production). As set out in the previous section, in 2012, 99.75% of all biofuels produced in Ireland and placed on the market were from these two categories of waste materials.

The Biofuels Obligation Scheme was initiated in July 2010. Under this scheme suppliers of petrol and diesel to the transport sector in Ireland are obligated to ensure that in any given year a set percentage of their supply is composed of biofuel that comply with the sustainability criteria set out in Article 17 of the Renewable Energy Directive 2009/28/EC. The percentage under the obligation was originally set at 4% by volume and in 2012 S.I. No. 562/2012 - National Oil Reserves Agency Act 2007 (Biofuel Obligation Rate) Order 2012 increased the obligation to 6% by volume with effect from 1 January 2013.

Table 5: Production and consumption of Art.21 (2) biofuels (ktoe)

Article 21(2) biofuels ³²	2011	2012
Production – Fuel type Biodiesel	24.0	24.5
Production – Fuel type Bioethanol	0	0
Consumption – Fuel type Biodiesel	68.2	56.3
Consumption– Fuel type Bioethanol	29.1	28.6
Total production Art.21.2.biofuels	23.5	24.1
Total consumption Art.21.2. biofuels	68.1	55.6
% share of 21.2. fuels from total RES-T	40.6%	65.5%

Note: Total biofuels used were 97 ktOE in 2011 and 85 ktOE in 2012.

9. Please provide information on the estimated impacts of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality within your country in the preceding 2 years. Please provide information on how these impacts were assessed, with references to relevant documentation on these impacts within your country. (*Article 22 (1) j) of Directive 2009/28/EC*).

The most significant feedstocks for domestic biofuel production over the two years have been waste and residues – i.e. used cooking oil and tallow. A small amount of oilseed rape has been used to produce pure plant oil (PPO) for transport. Less than 50,000 litres of PPO was produced for transport in 2012.

<http://www.nora.ie/fileupload/457-X0098%20-%202012%20Annual%20BOS%20Report%20Rev%202.pdf>

With this mix of feedstocks, domestic production of biofuels has produced no detectable impacts in terms of biodiversity, water resources, water quality or soil quality in Ireland in 2011 or 2012.

10. Please estimate the net greenhouse gas emission savings due to the use of energy from renewable sources (*Article 22 (1) k) of Directive 2009/28/EC*).

Table 6: Estimated GHG emission savings from the use of renewable energy (t CO₂eq)

Environmental aspects	Year 2011	Year 2012
Total estimated net GHG emission saving from using renewable energy³³		
- Estimated net GHG saving from the use of renewable electricity	2,723,199	2,738,072
- Estimated net GHG saving from the use of renewable energy in heating and cooling	771,409	831,034
- Estimated net GHG saving from the use of renewable energy in transport	146,212	138,675

Notes on the calculation methodology on which the figures in Table 6 were based

Estimation of GHG emissions avoided due to the use of renewable electricity

For both wind and hydro generated electricity the primary energy equivalent (PPE) is first calculated. The PPE is the amount of primary energy that is required to generate the equivalent amount of electricity by conventional means.

The primary and final energy consumption for non-combustible renewable energy sources such as wind and hydro are very similar. For most fuels this is not the case, due to the energy conversion losses associated with electricity generation. Depending on the efficiency of electricity generation, typically between 25% and 55% of the energy content of the fuel input into power plants is output in the form of electricity.

The primary energy of fossil fuels and combustible renewables is defined as the calorific content of the fuel, according to internationally agreed methodologies for presenting energy statistics. For non-combustible renewable sources (wind and hydro) the primary energy is equated with the quantity of electricity generated. This follows the IEA principle that the primary energy should be the first energy form downstream in the production process for which multiple energy uses are practical. This allows for harmonised international comparisons, but it does not

³² Biofuels made from wastes, residues, non-food cellulosic material, and lignocellulosic material.

³³ The contribution of gas, electricity and hydrogen from renewable energy sources should be reported depending on the final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.

accurately represent how fossil fuels used for electricity generation are displaced by non-combustible renewable energy. This is because, in primary energy terms, the fuel input into a fossil fuel plant is currently equated with the electricity output from a non-combustible renewable energy plant, such as a wind farm or hydro-power plant. An alternative approach is to equate the primary energy of the renewable energy with the primary energy of the fuel that would have been required to produce the equivalent amount of electricity.

This is the principle behind the primary energy equivalent (PEE) based on the partial substitution method. It requires an assumption to be made about the efficiency of the fossil fuel-based electricity generation being substituted by the non-combustible renewable generated electricity. The contribution from the renewable energy source is, in this approach, equated to the fossil fuel energy input that it displaces. The PEE for non-combustible renewable energy essentially represents the thermal fossil fuel energy avoided through the generation of renewable-based electricity. By quantifying the fossil fuel displacement achieved by renewable energy, the environmental benefits and indeed the security of supply benefits may be quantified and used to inform policy decisions.

This raises a key question however – what electricity generation is being displaced by renewable energy-generated electricity? The calculation of PEE can be based on a theoretical displacement by each kWh from renewable energy of a kWh generated from the entire fossil fuel plant mix. The methodology used here draws on approaches that have been developed for use in baselining studies in credit-based emissions trading systems.

Renewable energy plants are not generally displacing electricity from either ‘must-run’ plants (peat) or from baseload plants (coal fired station at Moneypoint). Calculating the PEE based on the remaining plant provides a more accurate estimate than using the entire plant mix and the approach is known as the Operating Margin Approach. The assumption underpinning this approach is that the renewable plant is displacing the last plants to be dispatched to meet electricity demand, i.e. the marginal oil and gas plants. There are clear limitations in this analysis but it does provide useful indicative results.

The limitations and caveats associated with this methodology include that it ignores any plant used to meet the associated reserve requirements of renewables. These open cycle plants will typically have lower efficiency and generate increased CO₂ and NO_x emissions compared with CCGT and these emissions should be incorporated into the analysis. The purpose of presenting a simplified analysis here is to provide initial insights into the amount of fossil fuels that are displaced by renewables and the amount of emissions thereby avoided.

It is assumed the electricity from renewables (wind, hydro, landfill gas and the electricity portion of waste water biogas) avoids the amount of CO₂ produced by the weighted average electricity production from the same marginal plant considered above – i.e. oil and single cycle gas plant.

Estimation of GHG emissions avoided due to the use of renewable thermal energy (heat) and transport biofuels
It is assumed that the thermal energy from renewable energy (solid biomass, biogas, geothermal and solar and the thermal portion of waste water biogas) displaces thermal energy from oil-fired boilers. The CO₂ avoided from thermal renewable energy is equated with the CO₂ emissions that would have arisen from this oil consumption.

The avoided CO₂ emissions associated with biofuels usage in transport assumes 100% displacement of emissions from conventional fuels. The emissions from biofuels production are accounted for in this analysis in accordance with the UNFCCC reporting guidelines. Thus the CO₂ avoided from bio-ethanol in transport is equated with CO₂ emissions that would have arisen from petrol consumption and CO₂ avoided from biodiesel and pure plant oil is equated with diesel consumption.

11. Please report on (for the preceding 2 years) and estimate (for the following years up to 2020) the excess/deficit production of energy from renewable sources compared to the indicative trajectory which could be transferred to/imported from other Member States and/or third countries, as well as estimated potential for joint projects until 2020. (Article 22 (1) l, m) of Directive 2009/28/EC).

Table 7: Actual and estimated excess and/or deficit (-) production of renewable energy compared to the indicative trajectory which could be transferred to/from other Member States and/or third countries in [Member State] (ktoe)^{34, 35}

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total GFC (incl Aviation adj as per Article 5)	11,438	11,073	11,722	11,723	11,713	11,668	11,670	11,683	11,663	11,701
Of Which										
GFC Electricity	2,405	2,391	2,451	2,481	2,502	2,520	2,543	2,570	2,603	2,665
GFC Heat	4,589	4,491	4,825	4,724	4,630	4,501	4,419	4,337	4,230	4,126
TFC Transport (as per Article 3(4))	3,748	3,609	3,564	3,633	3,694	3,758	3,818	3,880	3,935	4,006
Total Renewable Energy	782	768	1,088	1,207	1,357	1,457	1,552	1,655	1,744	1,872
Of Which										
Renewable Electricity	467	452	628	695	791	840	883	934	975	1,059
Renewable Heat	218	232	309	336	363	386	411	436	456	468
Renewable Transport	98	85	151	177	204	231	258	285	313	345
Renewable Transport for RES-T	137	140	154	182	211	239	270	302	334	392
RES %	6.5%	7.1%	9%	10%	12%	12%	13%	14%	15%	16%
Indicative Trajectory	n/a	671	817	817	1,043	1,039	1,340	1,342	1,603	1,872
Actual/estimated excess	n/a	270	271	390	314	418	212	313	141	0

GFC – Gross final consumption of energy; TFC – total final consumption

11.1. Please provide details of statistical transfers, joint projects and joint support scheme decision rules.

Expert advice has identified Ireland’s potential to produce renewable electricity significantly beyond the level required by the 2020 target, along with the capacity to meet that 2020 target from onshore renewable generation alone. The 2009 EU Renewable Energy Directive (2009/28/EC), outlined targets for Member States for renewable energy penetration, but also provided the option of co-operation mechanisms to enable a Member State to contribute to another Member State’s targets.

Ireland has the capability to achieve its national targets for renewable electricity from onshore renewable generation alone, with capacity to spare. This means that there is potential for projects of scale onshore that are aimed at export markets. It also means that our offshore wind resource can be developed as an export opportunity. It is in this context that the opportunity to harness Ireland’s onshore, and offshore, renewable energy resources for the export market, and realise their potential for investment, job creation and economic growth, has been identified and is being pursued with the UK Government.

³⁴ Please use actual figures to report on the excess production in the two years preceding submission of the report, and estimates for the following years up to 2020. In each report Member State may correct the data of the previous reports.

³⁵ When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. –x ktoe).

A memorandum of Understanding was signed by Minister for Communications, Energy and Natural Resources, Pat Rabbitte, and UK Secretary for Energy and Climate Change, Edward Davey, on 24th January 2013.

Work is progressing with a view to entering an Inter-Governmental Agreement (IGA) with the UK in early 2014. Regarding the development of the IGA, significant workstreams are on-going in the areas of project management; the IGA itself; European Union (EU) liaison, communications and stakeholder engagement; economic analysis; policy on renewables export, grid issues; regulation, legislation; and land and planning.

The amount of energy to be procured by the UK and the mechanisms for sharing the resultant economic benefits, including an appropriate return to the Exchequer, are among the matters to be addressed ahead of signing any Inter-Governmental Agreement.

12. Please provide information on how the share for biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates. (Article 22 (1) n of Directive 2009/28/EC).

CEN has published a technical standard that deals with the determination of biomass content in solid recovered fuels. The CEN/TS 15440 standard is used to estimate the biodegradable share of waste in cement plants in Ireland.

The recognised CEN standard for the calculation of the biomass content in the case of waste-to-energy is BS EN 15440:2011 - Solid Recovered Fuel, Methods for the Determination of Biomass Content. This standard specifies a number of methodologies namely, the selective dissolution method, the manual sorting method and the carbon 14 method.

The CER, as administrator of the PSO in Ireland, is currently drafting proposals on a number of potential methodologies for calculating the renewable energy fraction of waste for electricity production in the context of the above standard. Once these options are finalised, they will be reflected in the terms and conditions of the relevant support schemes. Once an approach is adopted this will be used to calculate the biodegradable fraction of waste where waste is used in the production of electricity covered by the REFIT scheme.

Response to 22 3(a-c) of Directive 2009/28/EC

Do you intend to

- (a) establish a single body for authorisation, certification and licensing and providing assistance to applicants**

In theory, the establishment of a single body for authorisation, certification and licensing of renewable installations is appealing. However, by law, functions are assigned to specific bodies and setting up another body through which applications are channelled will not change the legal obligations on specified bodies in respect of these functions.

An example would be the planning system. The physical planning system in Ireland is operated on the ground by 88 local planning authorities. In the exercise of their planning functions, the day-to-day operation of the planning system is a matter for the planning authorities, and under planning legislation, the decision as to whether to grant a planning application, with or without conditions, is a matter for the relevant planning authority in the first instance.

Decisions of the planning authorities can, for the most part, be appealed to An Bord Pleanála, an independent third party planning appeals system. An Bord Pleanála reaches its own decision on each case, in line with the proper planning and sustainable development of the area. Under the relevant legislation, the Minister for Environment is specifically precluded from exercising any power or control in relation to any particular case, with which a planning authority or An Bord Pleanála is or may be concerned.

Hence the setting up of a one stop shop, which among other tasks, would be responsible for planning decisions, is not compatible with the current system.

However, on the planning side, under the 2006 Strategic Infrastructure Act, significant advancements have been made in recent years in terms of streamlining planning processes for strategic infrastructure, including significant new renewable energy infrastructure. For major developments, the Strategic Infrastructure consent process which has been in operation since the 31st January 2007 provides for An Bord Pleanála to make a decision in respect of certain types of project subject to certain criteria being met, that the development:-

- would be of strategic, economic or social importance to the State or the region in which it would be situate.
- would have a significant effect on the area of more that one planning Authority.
- would contribute substantially to the fulfilment of any of the objectives in the National Spatial Strategy or in any regional planning guidelines in force in respect of the area or areas in which it would be situated.

It also provides specifically for certain types of energy infrastructure which would be subject to the streamlined process including: An installation for the harnessing of wind power for energy production (a wind farm) with more than 25 turbines or having a total output greater than 50 megawatts.

The licence to generate electricity for example must be issued by the Commission for Energy Regulation (CER). The CER also has the statutory function relating to determining grid connection policy while applications for grid connection must be made to the appropriate network operator – EirGrid or ESB Networks. Projects involving development on the foreshore will require permission under the Foreshore Act from the Minister for the Environment, Community and Local Government. Applications for the REFIT scheme are processed by the Department of Communications, Energy & Natural Resources.

Essentially setting up another body or so called ‘one stop shop’ would not change the statutory functions of the different bodies. It would simply add an extra administrative layer to the processes and require additional state resources to fund and run. Rather than setting up additional state bodies, an example of where information on the requirements is set out in a comprehensible way is SEAI’s handbook of guidelines for connecting renewable projects – this kind of resource can prove very useful for developers of new projects.

Do you intend to

(b) provide for automatic approval of planning and permit applications for renewable energy installations where the authorising body has not responded within set time limits

There are no proposals currently to change planning legislation to provide for automatic approval of planning and permit applications for renewable energy installations where the authorising body has not responded within set time limits.

The provisions in section 23 of the 2010 Planning & Development Act exclude default permissions for applications where either an environmental impact assessment or a determination as regards whether an environmental impact assessment is required or where appropriate assessment is required.

These provisions were included to ensure we complied fully with our obligations under the Environmental Impact Assessment Directive and the Habitats Directives. There are no proposals currently to change these provisions, as it would raise significant issues in terms of compliance with both Directives. We have various objectives statutorily provided for to ensure projects are dealt with as expeditiously as possible, but would not propose to provide for automatic approval for renewable energy projects where set time limits have not been met.

Do you intend to

(c) indicate geographic locations suitable for exploitation of energy from renewable sources in land use planning and for the establishment of district heating and cooling

SEAI has developed a series of geographical information system (GIS) maps covering wind, bio-energy and geothermal energy. These can be viewed on the SEAI website www.seai.ie under each of the identified renewable energy sources. The maps provide initial resource data for developers, allowing them to do preliminary assessments of the feasibility of projects. SEAI is considering further development of GIS, subject to budget availability, to enhance its utility and to facilitate accelerated deployment of renewable energy technologies in Ireland.

Many counties in Ireland have developed wind energy strategies identifying areas that are suitable for wind energy development. Under planning legislation, planning authorities and An Bord Pleanála are obliged to have regard to any guidelines that are issued by the Minister for the Environment, Community and Local Government, including the Wind Energy Development Guidelines published by the Department of Environment in 2006. These guidelines recommend that planning authorities prepare a Wind Energy Strategy to identify geographic areas which are suitable or otherwise for the development of wind energy and to include such strategies in the development plan for the area. These guidelines are currently being updated.

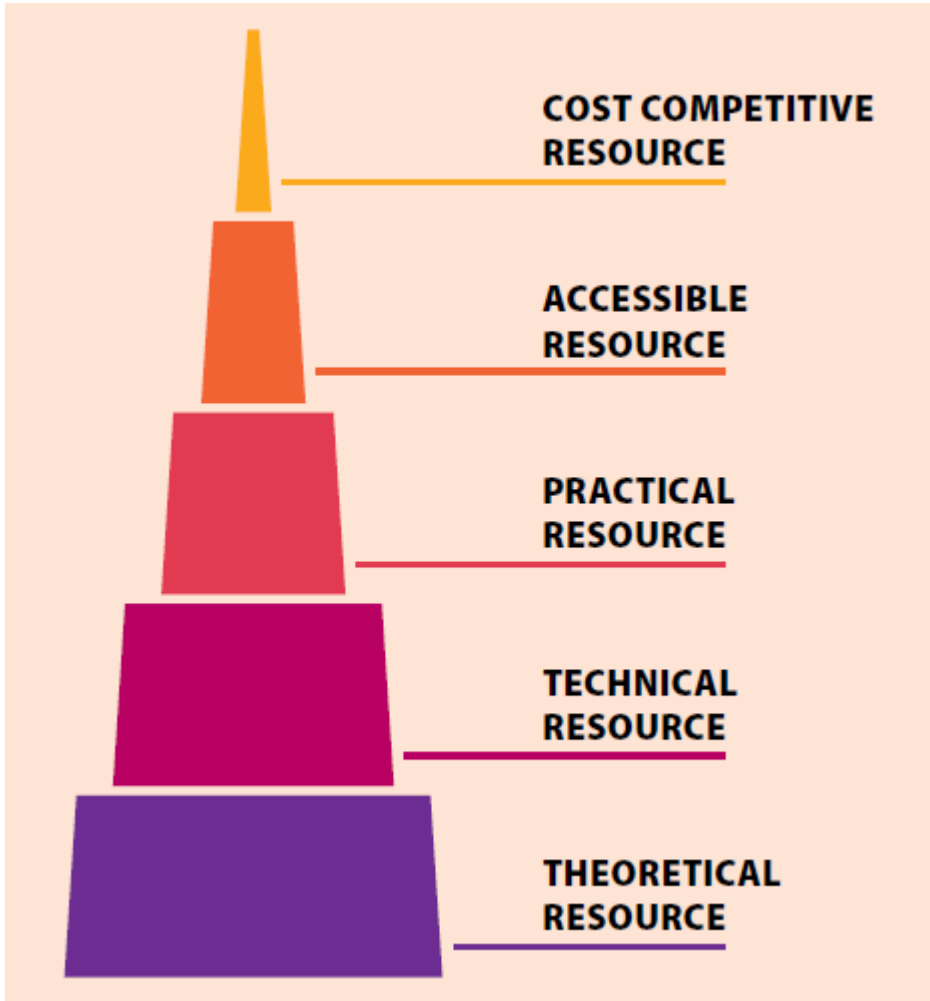
Local authorities, and in particular the planning function within these, will, by identifying and zoning areas suitable for renewable energy projects and infrastructure and implementing appropriate project permitting processes, play a key role in achieving Ireland's renewable energy targets. Local authorities now deliver wind energy development plans in response to the statutory requirement to identify areas suitable for wind farm development and some authorities are engaging in developing holistic RE strategies encompassing all available renewable energy resources.

Local authority planning representatives indicated that they would welcome guidance and assistance in the preparation of comprehensive Local Authority Renewable Energy Strategies (LARES) for their areas. In this regard, SEAI convened a steering group to oversee the preparation a methodology and template to act as a guide for local authorities in the preparation of their LARES. A draft methodology was issued for consultation in 2012 and a final methodology taking account of consultation responses was published in 2013.

This methodology aims to facilitate consistency of approach in the preparation of RES, and to assist local authorities in developing robust, co-ordinated and sustainable strategies in accordance with national and European obligations. The methodology also aims to address the most common issues regarding RE technologies and projects. The final published methodology may be downloaded using this link:

http://www.seai.ie/Publications/Renewables_Publications/Wind_Power/Methodology_for_Local_Authority_RE_Strategies/Methodology-for-Local-Authority-Renewable-Energy-Strategies.pdf .

Below is a graphical representation of the “sieve” analysis approach to resources assessment set out in the report:



The potential for developing district heating will be considered in the context of implementing Directive 2012/27/EU, in particular the comprehensive assessment required by Article 14.

Annex

Evolution in the position since Ireland’s National Renewable Energy Action Plan (NREAP) was submitted to the European Commission in July 2010

Energy use in Ireland has fallen since 2010 and was 19% lower in 2012 compared with 2010. Heat and transport have historically made up most of gross final consumption (GFC) in Ireland while electricity has had the smallest share. In 2012, electricity accounted for less than one fifth (19%) of final energy demand. Ireland’s energy import dependency stood at 85% in 2012.

In 2012, gross final energy use from renewable energy was 7.1%. Ireland’s target under Directive 2009/28/EC is 16%. Electricity generated from renewable energy (normalised in accordance with Directive 2009/28/EC methodology) reached 19.6% of gross electricity consumption (RES-E) in 2012. Renewable energy contribution to thermal energy (RES-H) was 5.2% in 2012. Renewable energy in transport (RES-T) reached 3.8% in 2012. All sectors require considerable effort to achieve the three fold increase in renewable energy that is required to meet the legally binding target of 16% under Directive 2009/28/EC. Much of the data (figures/tables) in this annex is drawn from two SEAI documents published in December 2013: Energy in Ireland 1990-2012 (2013 report) and Energy Forecasts for Ireland to 2020 (2011 report). Both of these publications are available at www.seai.ie

Table 1

% of each target	2009	2010	2011	2012
RES-E (normalised)	13.7	14.9	17.6	19.6
RES-T	1.9	2.4	2.4	2.4
RES-H	4.2	4.3	4.7	5.2
% of renewables in consumption across the 3 sectors	5.1%	5.6%	6.5	7.1

TFC= Total Final Consumption

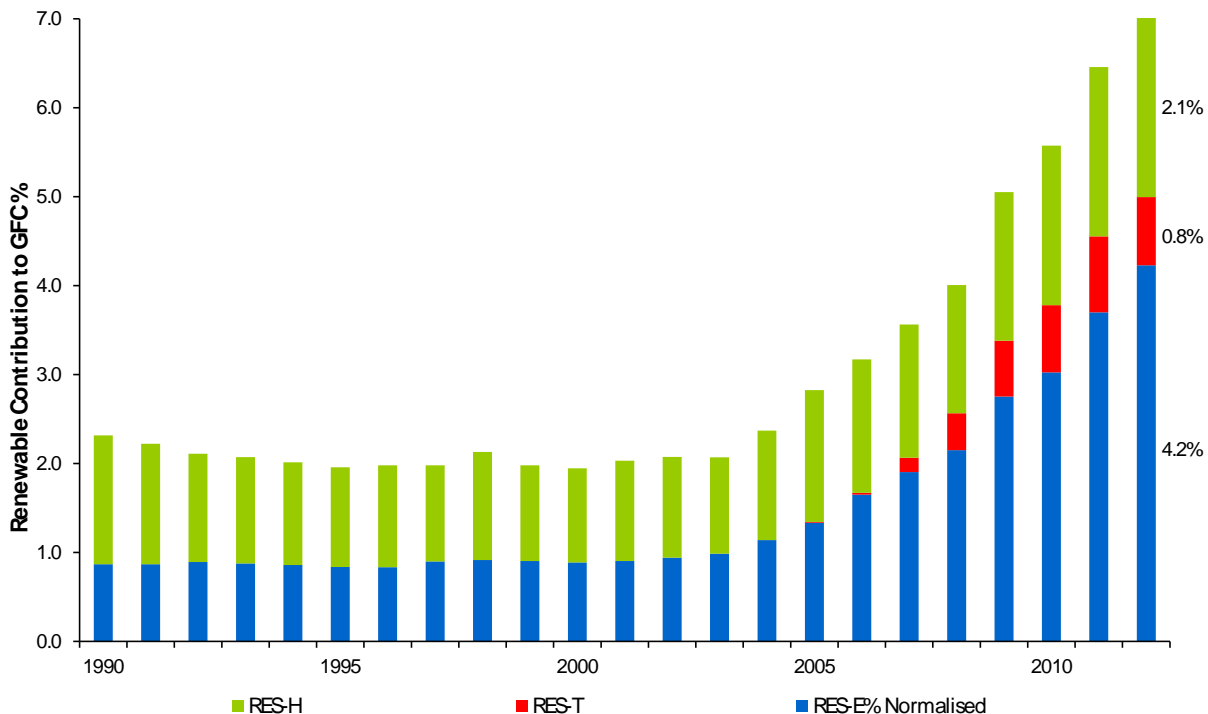


Figure 1: In 2012, gross final energy use from renewable energy was 7.1%.

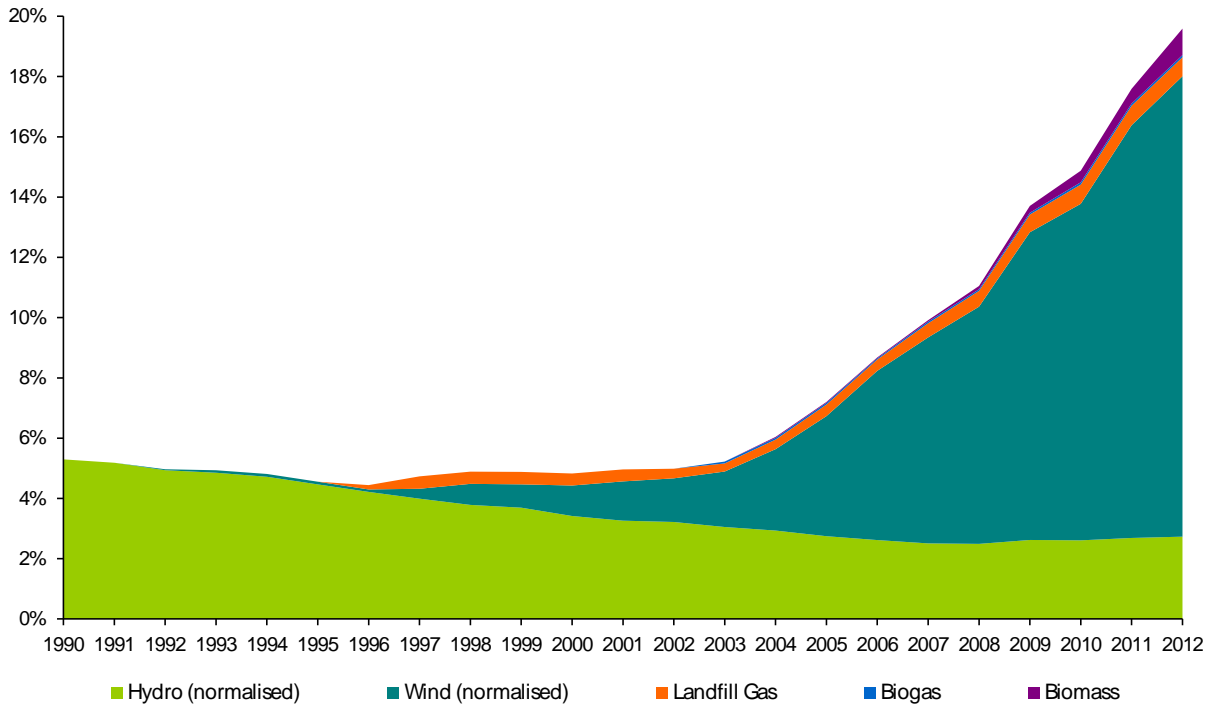


Figure 2: RES-E – Electricity sector: 19.6% in 2012

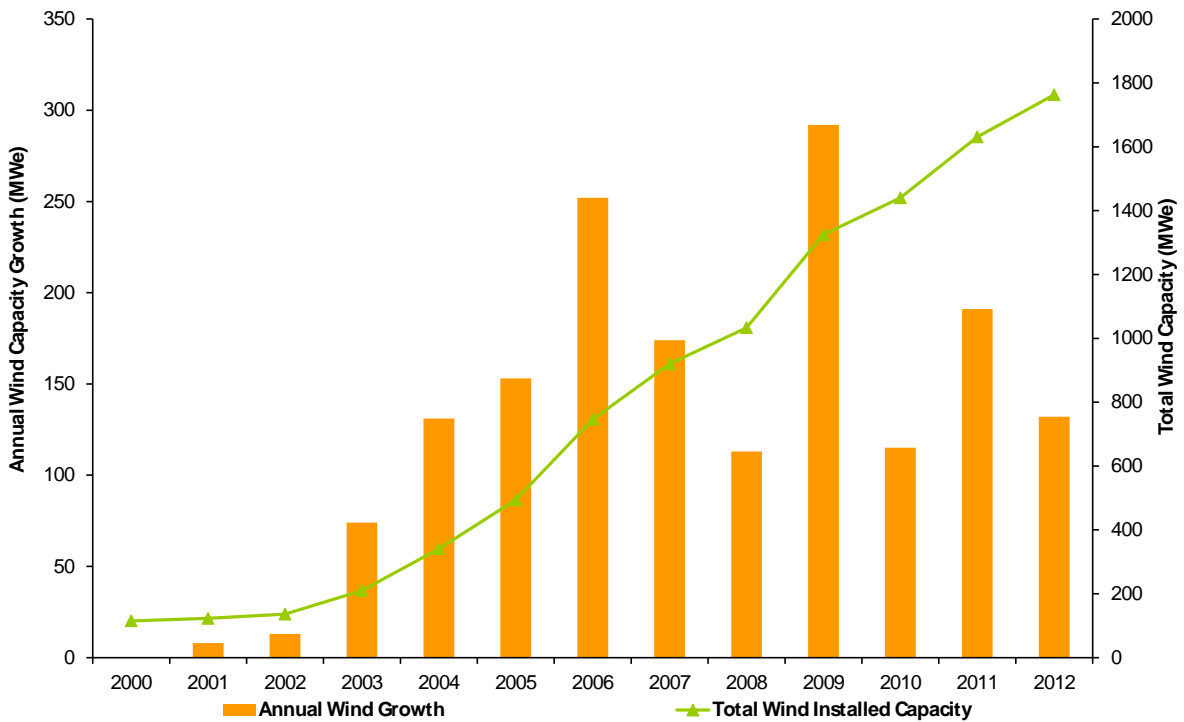


Figure 3: Evolution of wind generating capacity to 2012

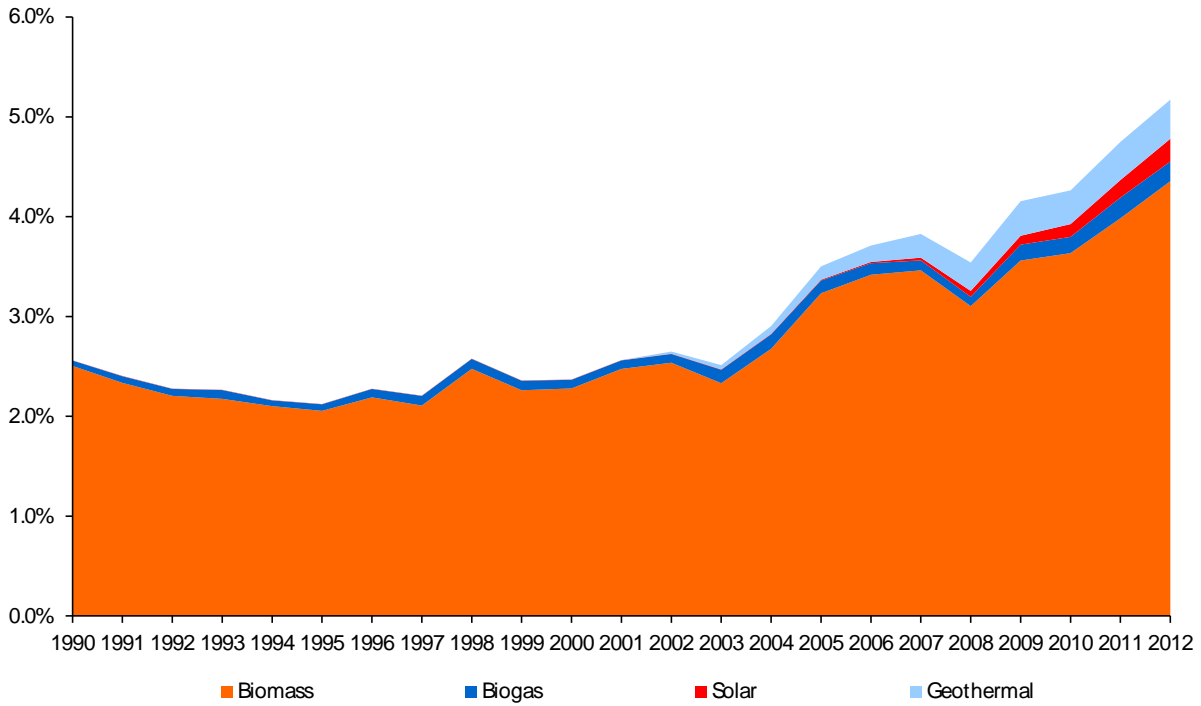


Figure 4: RES-H (Heat Sector) - 5.2% in 2012

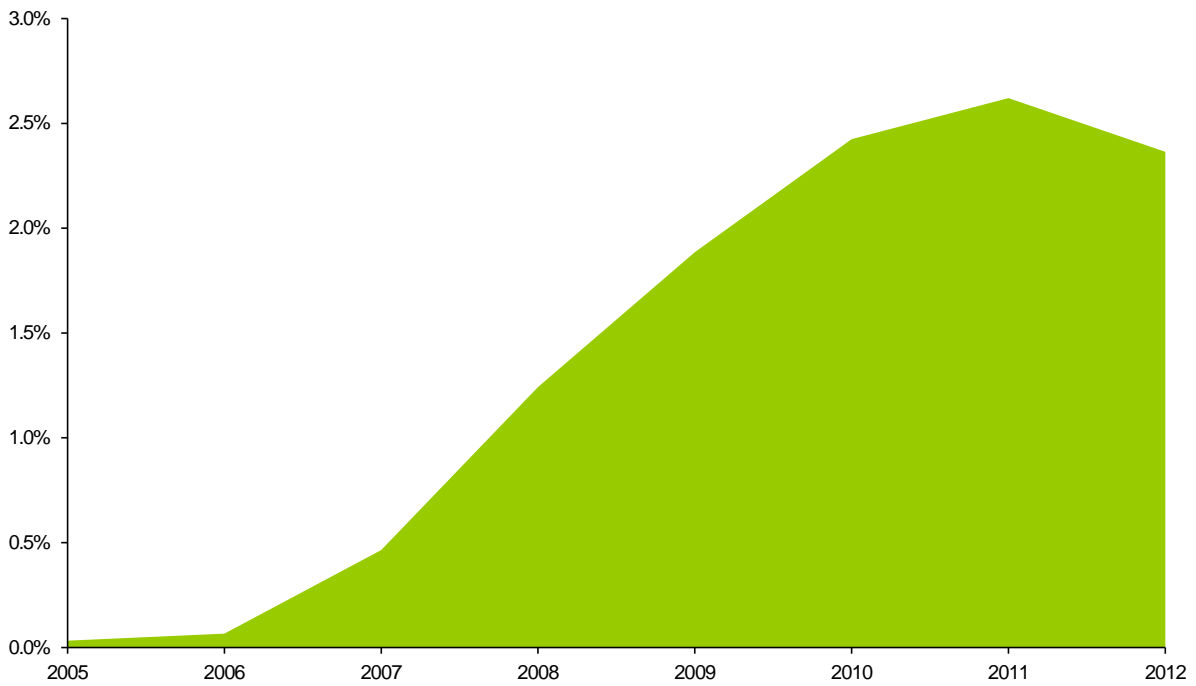


Figure 5: RES-T (Transport sector) – renewable energy (biofuels) as a proportion of petrol and diesel: 3.8% in 2012

Renewables trajectory to meet the 2020 target under Directive 2009/28/EC

The NEEAP (National Energy Efficiency Action Plan)/NREAP (National Renewable Energy Action Plan) scenario modelled by SEAI, requires by 2020, a full implementation of all measures contained in the NEEAP; 4000MW of renewable electricity; 200,000 electric vehicles; around 400 million litres of biofuel sales, and the delivery of 313 ktoe of renewable heat. A reduction of 24% is estimated in energy-related CO2 emissions through the achievement of the NEEAP/NREAP scenario targets.

All sectors require considerable effort to achieve the three-fold increase in renewable energy (from 5.5% in 2010) that is required to meet our 16% target under Directive 2009/28/EC. The planned trajectory towards the 2020 target is as follows:

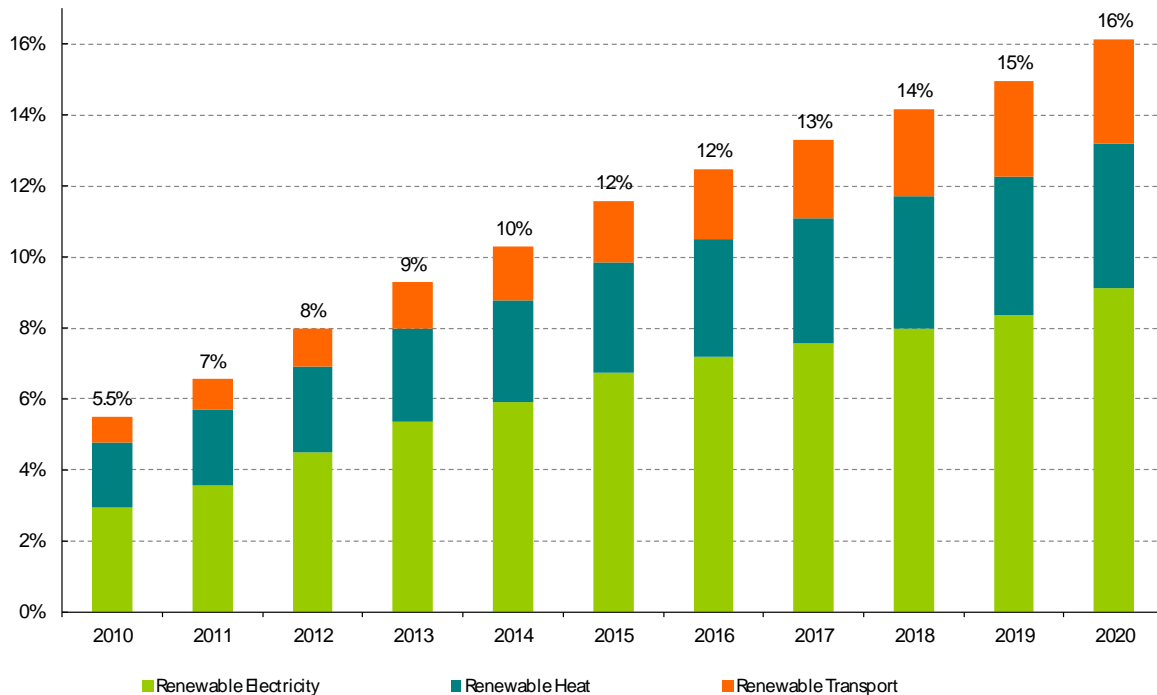


Figure 6: Renewables trajectory to 2020

The forecasted drop in energy demand results in the requirement for the electricity sector falling from 42.5% (as set out in the original NREAP submitted to the EC in July 2010) to 40%, with a continued requirement for 12% RES-H and 10% RES-T. Together these three sectoral contributions add up to the 16% required under Directive 2009/28/EC.

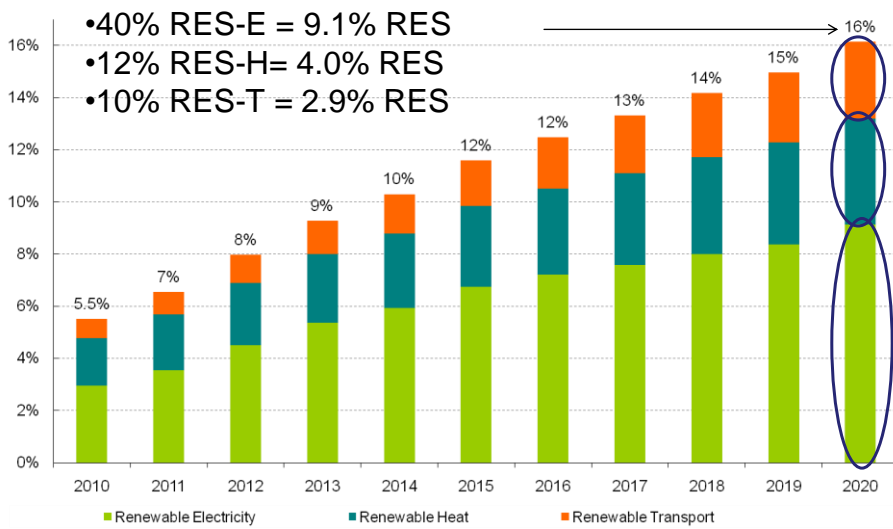


Figure 7: RES-E - Actual versus 2020 target in the electricity sector

Renewable electricity is now the largest contributor to renewable energy consumption and is expected to contribute most to our 2020 target. The largest contribution in the electricity sector is expected to be made through generation from wind technologies, followed by biomass technologies. More biomass generation is expected to contribute to our RES-E target than was set out in the NREAP as REFIT 3, dedicated specifically to RES-E (and cogeneration) from biomass from a range of sources was opened in early 2012. The REFIT scheme for electricity generation supports the increase in renewable electricity from a number of different technologies (onshore wind, small hydro and various biomass technologies, including anaerobic digestion and high efficiency CHP.)

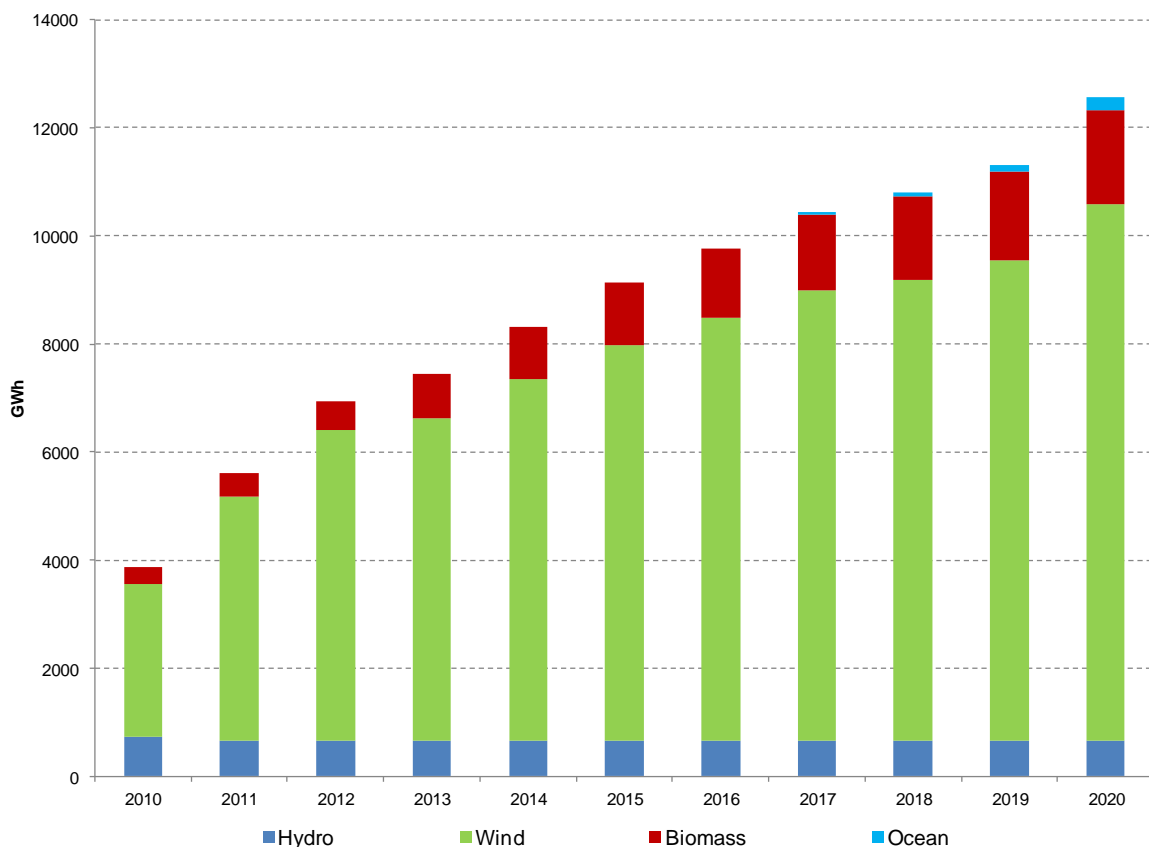


Figure 8: Renewable RES-E Technology Trajectory to 2020

Table 2: Trajectory of grid connected renewable electricity generation capacity MW

Grid Connected Generation Capacity MW											
Generation Type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Renewables	1,467	1,776	2,268	2,358	2,633	2,902	3,009	3,213	3,339	3,496	3,968
<i>of which:</i>											
Wind	1,421	1,700	2,170	2,239	2,472	2,605	2,697	2,867	2,959	3,083	3,521
Wave	0	0	0	0	0	0	0	19	38	56	75
Hydro	234	234	234	234	234	234	234	234	234	234	234
Biomass	47	77	98	119	141	198	213	228	244	259	274

The change in the contribution in biomass (now expected to be 274MW, up from 153MW in the original NREAP) is due to the inclusion of additional high efficiency biomass CHP, in view of the introduction of a new REFIT scheme for biomass technologies.

As set out in the NREAP, the development of ocean energy devices is being supported in Ireland at present through the Ocean Energy Prototype Research and Development Programme.³⁶ Commercially viable devices must be available before 2020 in order to reach 75 MW in that year.

Wind generation will provide the bulk of Ireland’s renewable energy in 2020. To meet the RES-E target, it is expected that between 3,000 MW and 4,000 MW of wind needs to be connected. This is down from the 4,649MW of wind generation envisaged to be required in the original NREAP.

³⁶ http://www.seai.ie/Renewables/Ocean_Energy/

At the end of 2013, EirGrid³⁷ indicates 2,005 MW of installed wind capacity connected to the national grid with total renewable generation connected at just over 2,300 MW. The average annual capacity added must increase to over 250MW so that the required 2020 target is reached (approximately 240MW was connected in 2013). The growth in wind in the trajectory set out follows published data on those that have contracted with the system operator and are scheduled for connection up to 2014. Following that the profile is based on published data on those projects due to receive a grid connection under Gate 3 in the period to 2020, scaled for each year.

The National Renewable Energy Action Plan (NREAP) indicated a particular expected breakdown in the trajectory between onshore and offshore wind. In the current economic circumstances and in light of advice from various sources, including the Economic and Social Research Institute³⁸, the Government has decided that in meeting our legal obligation to deliver the 2020 renewables target, onshore rather than offshore wind should be pursued in the first instance, in order to minimise any support scheme costs borne by electricity consumers. This is a change from what was indicated in the original NREAP.

The explanation of the Gate 3 and Grid 25 programmes are set out in the original NREAP. EirGrid's Incremental Capacity Transfer (ITC) programme links the Gate 3 process and Grid 25 investment and plans to deliver the required increase in annual construction. The Programme for Government has also committed that should any further Gate be required to deliver increased renewable generation, then other conditions apart from date of application should be taken into consideration in terms of the allocation of grid connections. It is noted that the energy regulator (CER) has the statutory function in relation to grid connections and introduced the Gate process.

All Gate 3 offers have now issued to those included in the CER Gate 3 direction, and there is now enough contracted wind generation to meet the 40% renewable electricity target. Even allowing for attrition in the planned connection rate there is still a fair amount of leeway in the overall figures to allow for the national target to be delivered. There is also the scope to put in place at an appropriate time a follow on a plan led onshore connection programme in the event of any necessary further capacity required to meet the 2020 target.

Renewable Transport (RES-T)

The biofuels obligation introduced in 2010 under the Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010 requires transport fuel suppliers to provide a specified amount of their sales in the form of biofuels. The obligation currently stands at 4% by volume which is equivalent to 3% in energy terms depending on the diesel/petrol mix and the blending strategies of the road transport fuel companies. Increases in the biofuel obligation will be the primary means through which Ireland expects to meet the RES-T target of 10% in 2020. This increase is shown in the trajectory modelled by SEAI as gradual, but it is likely it will take the form of step changes as the technical aspects of using increasing blends under the Fuel Quality Directive are incorporated into the supply chain. The 345 ktoe of biofuel required in 2020 is equivalent to around 400 million litres. This equates to the average passenger car in Ireland covering 2,300 km powered by biofuels in 2020. The first increase took effect from 1 January 2013. Certainty as to the outcome with respect to the Commission's proposal to address Indirect Land-Use Change (COM 595/2012), the capacity of the Irish fuel retailer to accommodate the sale of high-biofuel blends and the capacity of the Irish car fleet to run on such

³⁷ <http://www.eirgrid.com/customers/connectedandcontractedgenerators/>

³⁸ www.esri.ie

blends, and the availability of advanced biofuels in sufficient volumes at an E.U. level and more specifically for obligated parties in Ireland are among the issues that will affect how the trajectory for future increases in the obligation rate will be determined.

Electric Vehicles (EVs) and Plug-in hybrid vehicles (PHEVs) are currently available for purchase from many of the major car manufactures. The deployment of EV is supported by an upfront grant and VRT relief for consumers.³⁹ Uptake has been slower than anticipated but largely consistent with the experience elsewhere in Europe. A number of reasons appear to have affected uptake: the lack of economic growth in recent years has resulted in a significant fall in overall new car sales; the relatively high price of the electric vehicles as well as a relatively small range of choice of electric vehicles (although this is now beginning to change).

The deployment of publicly accessible charging infrastructure continues with over 800 points installed. The ESB plans to have 1,000 publicly accessible charge points to be in place by early 2014 including 70 fast chargers along all major inter urban routes. It also, through its ecar programme, is a partner in a number of EU Commission funded projects to the value of circa €4.5m. The EU projects cover various aspects of the overall EV programme including charging behaviour, standards, Grid Impact Studies, ICT, Interoperability, Charging Technologies and their impacts.

The RES-T target of 10% by 2020 is set out as a minimum binding target in the transport sector in the Renewable Energy Directive. A separate calculation methodology is specified to calculate this target in the directive. Total transport energy consumption is calculated differently for the denominator in the overall (16%) RES target compared with the 10% RES-T target, in accordance with the EU Directive.⁴⁰ When calculating the overall RES target, total gross final consumption includes aviation as well as domestic road & rail and inland marine. When calculating the RES-T target, only road & rail consumption are included in the denominator, with electricity and second generation biofuels receiving a weighting in the calculation.

³⁹ http://www.seai.ie/Grants/Electric_Vehicle_Grant_Scheme/

⁴⁰ See article (3) of the directive 2009/28/EC

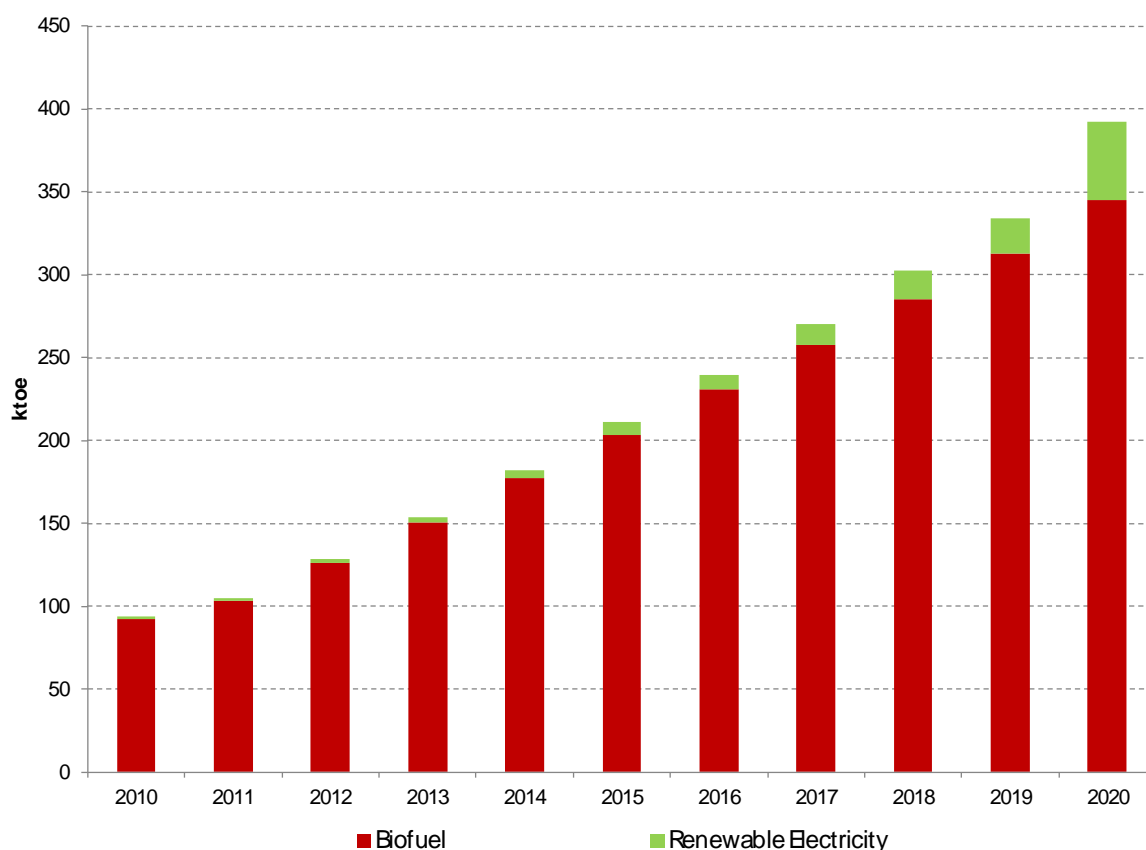


Figure 9: Renewable transport trajectory to 2020

Renewable Heat (RES-H)

Due to the cost of transport, heat is generally consumed at the point of generation to maximise efficiency. Transportation costs have typically limited the use of biomass resources for heat. RES-H has remained largely static in Ireland from 1990 to the mid 2000s. Policy action has changed this somewhat in recent years with growth in biomass usage, solar thermal and heat pump technology.

Policy instruments to end 2010 have focused on grants for renewable energy installations through schemes such as the Greener Homes scheme for households and the ReHeat scheme for businesses⁴¹. These were designed to build market capacity for various renewable heating technologies. REFIT 3 provides incentives for up to 150 MW of new biomass Combined Heat and Power (CHP) to be constructed.

The use of renewable heat must grow by nearly 7% (RES-H in 2012 was 5.2%) to reach a RES-H of 12% by 2020. Renewable heat use in the industrial sector predominates over the period to 2020 – accounting for 8% of RES-H by 2020. The residential sector sees growth projected at 4% per year driven by newly built homes complying with the renewable energy requirement in Part L of the 2008 Building Regulations. REFIT 3, through its support of high efficiency cogeneration is also expected to contribute to achieving the RES-H 12%

⁴¹ Both of these schemes were closed to new applicants at the end of 2010. GHS was incorporated into Better Energy Homes and support limited to Solar Thermal.

Ireland is finalising a national bioenergy strategy, to be published in 2014, which will set out the actions required to optimise the contribution that energy from biomass can make to achieving Ireland's 2020 renewable energy targets. Analysis underpinning the strategy suggests that targeted, additional bioenergy measures can have a significant impact in the heat sector

