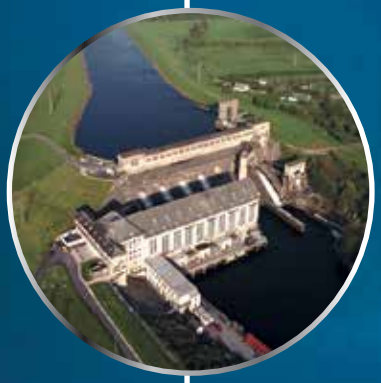


EIRGRID GROUP

ANNUAL RENEWABLE REPORT 2013

Towards a Smart, Sustainable Energy Future

EIRGRID

semo Single Electricity Market Operator

SONI System Operator for Northern Ireland

EirGrid Group

ANNUAL RENEWABLE REPORT 2013

Towards a Smart, Sustainable Energy Future

FOREWORD

Government energy policy is defined by the objective of ensuring secure and sustainable supplies of energy are reliably, and competitively, supplied to all consumers. In close All-Island cooperation, policy actions to achieve this objective range from incentivising the market to deliver on E.U. 2020 renewable energy targets, to ensuring the Single Electricity Market is properly placed to realise the benefits of an emerging integrated E.U. electricity market for all consumers on the island.

However, our energy policy objectives can only be realised if the infrastructure necessary to transport renewable electricity from site of generation to site of demand is delivered in a timely and cost-effective manner. For this reason, the fourth annual Renewable Report of the EirGrid Group is both a key reference for the monitoring of progress on renewable electricity deployment, and a critical input to on-going policy formation as we move closer to meeting our respective 2020 targets, and look ahead to a new 2030 energy and climate framework, which in turn, will form the basis for the E.U. contribution to global climate action.

Delivering the necessary renewal and expansion of the electricity transmission system is not only critical to achieving the goal of increasing the sustainability of the power system, it is also a prerequisite for economic growth and job creation. Furthermore, EirGrid's development of the power system, and its capacity to safely accommodate the renewable electricity required by 2020 and beyond, is a critical enabler for the renewable sector to contribute to growth in the 'green economy' and become a source of sustainable employment.

The way electricity is generated and transported is changing and will continue to change. This also means a change in the way electricity infrastructure impacts on our landscape. There is a direct connection between the building of this infrastructure, fully in line with the highest international standards for health and safety, and the expectation that enough electricity will be always be available when, and where, we need it. The social, economic and environmental benefits to be gained from developing a power system fit for purpose in the 21st century are benefits for every energy consumer. This is a message we must continue to strive to communicate in order to address the legitimate public concerns regarding the building of vital energy infrastructure.

Pat Rabbitte T.D.

Minister for Communications, Energy and Natural Resources

EirGrid Group **Annual Renewable Report 2013**

CONTENTS

INTRODUCTION

The prospects for renewable energy in the electricity sector over the next decade can be summarised in a single word: growth. The emerging policy consensus in Europe is now pointing towards a situation where it is not simply about meeting a small percentage of our energy from renewable sources, but moving to a situation where renewables will be a signficant part of our electricity generation portfolio.

In order to meet the 40% renewable electricity targets it is projected that the amount of wind generation across the island of Ireland will reach an installed capacity of between 4,800 Megawatts (MW) and 5,300 MW by 2020.[1] At this level, Ireland and Northern Ireland will have one of the highest penetrations of renewable generation, as a percentage of system size, in the world. Even today, we are managing instantaneous penetration levels of variable wind generation up to 50% more often than ever before, putting us in a world-leading position for managing high levels of wind generation on a synchronous power system.

In 2012 renewable generation supplied 17% of electricity demand on an all-island basis and installed wind generating capacity in Ireland and Northern Ireland reached 2,252 MW.[2] An additional 182 MW has connected in the first nine months of 2013. This brings the current level of total renewable generation capacity on the island to 2,771 MW - 2,188 MW in the South and 583 MW in the North.

This increased use of renewable energy on the island can help to stabilise overall energy costs over the long-term and reduce carbon dioxide (CO_2) emissions in the power sector. On top of this, the integration of renewable energy has the potential to foster technological innovation and employment, which can help promote economic growth on the island in a more sustainable manner. Enabling this low-carbon transition while maintaining a secure electricity supply is essential for economic development and society, and is at the heart of EirGrid and SONI's role as Transmission System Operators (TSOs).

The last twelve months have been a period of continuity and change for EirGrid Group.[3] We have continued to build new grid infrastructure and upgrade existing lines; facilitated the integration of Smart Grid technologies into the power system; continued to develop our Smart Grid Innovation Hub and further developed the operational capabilities of the power system (the DS3 programme) in order to operate the power system securely with increasing amounts of variable renewable generation.

We have also continued our efforts to identify and solve the operational challenges associated with integrating other renewable sources and technologies, such as ocean energy, biomass and waste-to-energy plants; signed a Memorandum of Understanding with RTE (Réseau de Transport d'Électricité) to begin

1 To meet the targets it is estimated that 3,500 MW - 4,000 MW of wind generation is needed in Ireland and 1,300 MW of wind generation is needed in Northern Ireland.

2 Please note that the renewable energy figures throughout this report are non-normalised.

3 The EirGrid Group comprises EirGrid TSO, SONI TSO, the Single Electricity Market Operator (SEMO) and the East-West Interconnector (EWIC). Hereafter, EirGrid will be used to refer to all elements of the Group.

preliminary studies on the feasibility of building a submarine electricity interconnector between Ireland and France; and maintained our support for the delivery of the necessary actions arising from the Ireland-United Kingdom (U.K.) Memorandum of Understanding on renewable energy exports which was signed in January 2013.

In keeping with our commitment to engage with local communities, EirGrid has developed a "Project Development and Consultation Roadmap" to help inform the general public on the steps we take in building new transmission lines. This roadmap is designed to communicate the opportunities for public consultation as a grid development project is brought through the planning process.

In the last few months we have undertaken a strategic review of the company's objectives, which has reaffirmed our commitment to be a world leader in renewable energy integration and Smart Grid development and positioned us to influence and shape the future direction of the energy industry on the island. EirGrid understands that meeting the island's electricity needs in the twenty-first century will require the development of a smart electricity supply infrastructure that is capable of integrating increasing amounts of variable renewable generation and increasing consumer participation, while maintaining a secure and efficient energy supply.

For further information on EirGrid and SONI's role and the various initiatives underway, I would encourage you to visit our website at **www.eirgrid.com**.

Fintan Slye
Chief Executive
EirGrid

EXECUTIVE SUMMARY

The electricity system on the island is undergoing a transformation as a result of the growing integration of renewable energy and the implementation of broader technological innovation. The electricity sector will play a key role in shaping a sustainable energy future for Ireland and Northern Ireland. EirGrid Group is developing many of the necessary infrastructural and operational requirements to facilitate this shift across the island and in the last year we have made considerable progress in all aspects of this work. As the TSOs, EirGrid and SONI are responsible for managing electricity supply and demand in real-time and controlling flows of power on the island's transmission systems.

The integration of more variable renewable forms of generation on the power system means transmission operators must consider an additional complex range of demand and supply issues. These include the operational challenges of switching to more variable non-synchronous generation sources, security of supply in terms of managing an increasing variety of generation technology types and the integration and use of Smart Grid technologies allowing greater user participation in the power system.

KEY MESSAGES

Progress Towards Meeting the 40% Renewable Electricity Targets

17% of the island's electricity demand was met from renewables in 2012 - 18% in Ireland and 13% in Northern Ireland.

During 2012, 116 MW of renewables connected in Ireland and 74 MW in Northern Ireland. At the end of September 2013 the total renewable generation installed on the island was 2,771 MW.

An all-Island wind generation record of 1,916 MW was reached in March 2013.

In 2012 instantaneous wind penetration on the island exceeded 40% of system demand on 46 days throughout the year.

On the 26th of November 2012 wind generation accounted for 39% of daily energy in Ireland.

Ireland and Northern Ireland will need to increase wind energy connections from a historic average of 230 MW per year (over the last 6 years) to a total of at least 350 MW per year in order to meet the 2020 targets.

EirGrid estimates that meeting the 40% renewable electricity targets in Ireland will reduce the CO_2 intensity of emissions in the power sector from 489 g/kWh in 2011 to approx. 300 g/kWh in 2020, representing a drop of by 38%.

In 2011 all-Island wind energy curtailment was 2.2%. In 2012, this figure was 2.1%.

During the past year, progress has been made across the programme for Delivering a Secure and Sustainable Electricity System (DS3). EirGrid Group is committed to maintaining active engagement with stakeholders as the programme of work transitions to the operational policy and tools implementation phase.

Grid Infrastructure Developments on the Island

In 2012, 130 km of new electricity lines were built and 215 km uprated in Ireland. Since the commencement of Grid25, 350 km of new lines have been built and 937 km uprated.

EirGrid has developed a "Project Development and Consultation Roadmap" to help engage with local communities on the steps we take when building new transmission lines.

According to a 2013 Indecon study conducted for EirGrid, investment in the Grid25 programme is likely to support almost 3,000 additional jobs over the next 15 years.

In Northern Ireland, approval for three important grid projects was secured in March 2013. These include:

- the uprating of the Kells - Coleraine 110 kV circuit;
- the uprating of the Tamnamore 275/110 kV substation and;
- the design and wayleaving of a new 110 kV circuit between Omagh and Tamnamore.

The East West Interconnector (EWIC) went into full commercial operation on 1st May 2013. In November 2013 EWIC won the Engineering Project of the Year 2013.

EWIC is facilitating the increased use of renewable energy by helping to reduce the curtailment of renewables through the use of System Operator trades directly with National Grid Electricity Transmission.

In recent years there has been growing international interest in the role and work of EirGrid. In 2013 EirGrid hosted a number of high level visits including a visit of European Union Parliamentarians and the visit of the Mr. Martin O'Malley, Governor of Maryland.

The EirGrid Group Smart Grid Innovation Hub has been in operation since October 2012 and has engaged with 500 individuals and 130 organisations interested in the Smart Grid space.

Renewable Energy Policy Developments in Ireland, the E.U. and Around the World.

In January 2013, the Irish and U.K. Governments signed a Memorandum of Understanding on energy cooperation. The primary aim is to develop the opportunity to export large scale renewable energy from Ireland to Britain.

A total of 31 Gigawatts (GW) of renewable power capacity was installed in the E.U. in 2012 and last year renewable energy accounted for almost 18% of the E.U.'s electricity consumption

In October 2013, the European Commission adopted a list of 248 key energy infrastructure projects called: "projects of common interest" (PCI). These projects will benefit from faster and more efficient permit granting procedures and improved regulatory treatment and includes projects in Ireland and Northern Ireland.

The Irish Presidency of the Council of the European Union took place during the first six months of 2013. During this period a number of important legislative and non-legislative agreements were reached in the area of energy.

In the United States, installed renewable electricity capacity reached 167 GW in 2012, representing 13% of total generation.

In China, 16 GW of hydropower was installed in 2012 and is now almost 18.5% of total generation, while 14 GW of wind was installed last year, reaching a total installed capacity of 75 GW.

The 2013 Annual Renewable Report details progress in the renewable electricity sector over the last twelve months and for perspective, it sets these developments in a broader regional and international context. The report also includes a chapter that assesses the future direction of energy policy in Ireland and Northern Ireland and possible implications for the power sector.

The structure of this report is as follows:

Chapter 1 - Policy Landscape:
Energy policy in Ireland and Northern Ireland is framed in the context of European legal requirements on the use of renewable energy and emission reduction targets. This chapter reviews renewable policy developments in the E.U., Ireland, and Northern Ireland and details progress in the deployment of renewable energy in the last twelve months.

Chapter 2 - EirGrid Group in the Renewable Electricity Sector:
This chapter presents an overview of the work of EirGrid Group in meeting the renewable electricity targets. It covers recent developments, current status and forthcoming milestones across the full range of our work in the renewable sector. The chapter also provides an overview of our engagement with key stakeholders throughout the last year and highlights our regional and international involvement.

Chapter 3 - At the Crossroads: A Vision of the Future:
This chapter provides an assessment of the future trajectory of energy policy developments and the expected implications for the electricity power sector. In presenting a thematic overview on the expected trajectory of energy policy out to 2030 and 2050, this chapter will discuss some of the potential challenges, solutions and opportunities for the electricity sector in the years ahead.

Chapter 4 - International Developments:
This chapter offers a highlight of some of the main international developments in the renewable energy space in the last year, focusing particularly on the E.U., the U.S. and China.

Chapter 5 - Conclusion:
The concluding chapter provides some brief closing remarks.

1 POLICY LANDSCAPE

1 POLICY LANDSCAPE

Targets for renewable energy are now in place in 138 countries worldwide and renewable generation exceeded 1,470 GW in 2012, up almost 8.5% from 2011.[4]

While the integration of increasing levels of renewable generation continued to revolutionise the electricity landscape across the globe in 2012, it was a mixed year for investors in the renewable energy sector. In the face of strong competition from other energy sources (e.g. shale gas in the United States) and increased policy uncertainty for renewable energy in many countries, financial investment in renewable energy slowed last year in Europe and North America. At the same time, however, investment in renewables actually increased in other regions of the world. Overall, while global investment in renewable generation was down 12% in 2012 to €184 billion; it was still the second highest year for investment in renewable generation ever recorded.

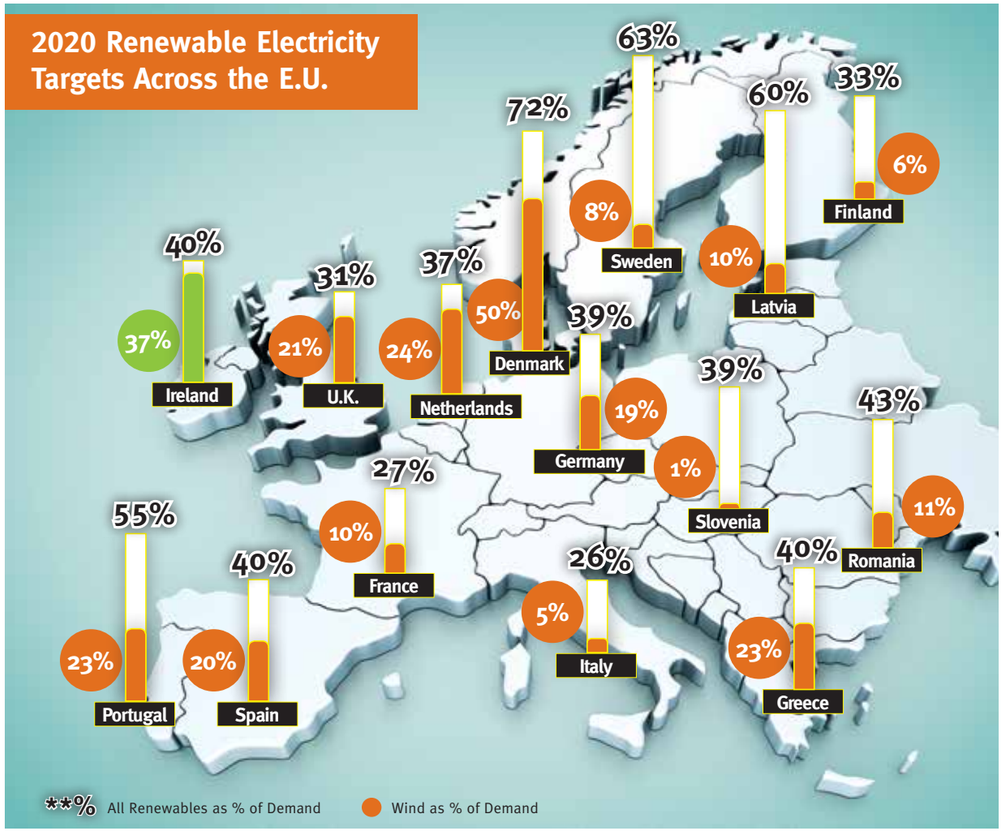
[4] Renewables 2013: Global Status Report: REN 21. Available at www.ren21.net

1.1 EUROPEAN UNION ENERGY POLICY

In 2012 renewable energy accounted for 18% of the E.U.'s electricity consumption and is now a fundamental part of the generation portfolio mix.[5] According to the updated National Renewable Energy Action Plans (NREAPs), this percentage is expected to increase to almost 35% in 2020. From a grid operator's perspective, this represents a paradigm shift and poses considerable challenges for electricity system operators to overcome.

The publication of a number of E.U. policy documents and public consultations in the past year has provided a level of systematic convergence, linking efforts to decarbonise the electricity power sector through renewable energy integration and grid development with the completion of the Internal Energy Market, and the need to focus on long-term policies to drive significant investments.

In November 2012 the European Commission published a consultation paper on Generation Adequacy, Capacity Mechanisms and the Internal Market in Electricity. This consultation paper was published in the context of the E.U. Communication on the Internal Energy Market and emphasised the importance of delivering a more coordinated approach to generation adequacy and security of supply in the Internal Electricity Market and ensuring that any state interventions in this regard are well designed and effective. In November 2013, the European Commission published its Communication on delivering the Internal Electricity Market and making the most of public interventions. This Communication was accompanied by several working papers offering guidance on renewable energy support schemes; renewable energy cooperation mechanisms; demand-side response; as well as generation adequacy and capacity mechanisms.



Source: The National Renewable Energy Action Plans (NREAP) January, 2012
Note: The Danish wind target was increased subsequenty in quarter 2 of 2012

[5] Eurostat: Electricity Statistics –Data for 2012 (April 2013). Available at: http://epp.eurostat.ec.europa.eu/statistics_explained/images/5/5b/Electricity_Statistics_2012_%28in_GWh%29.png

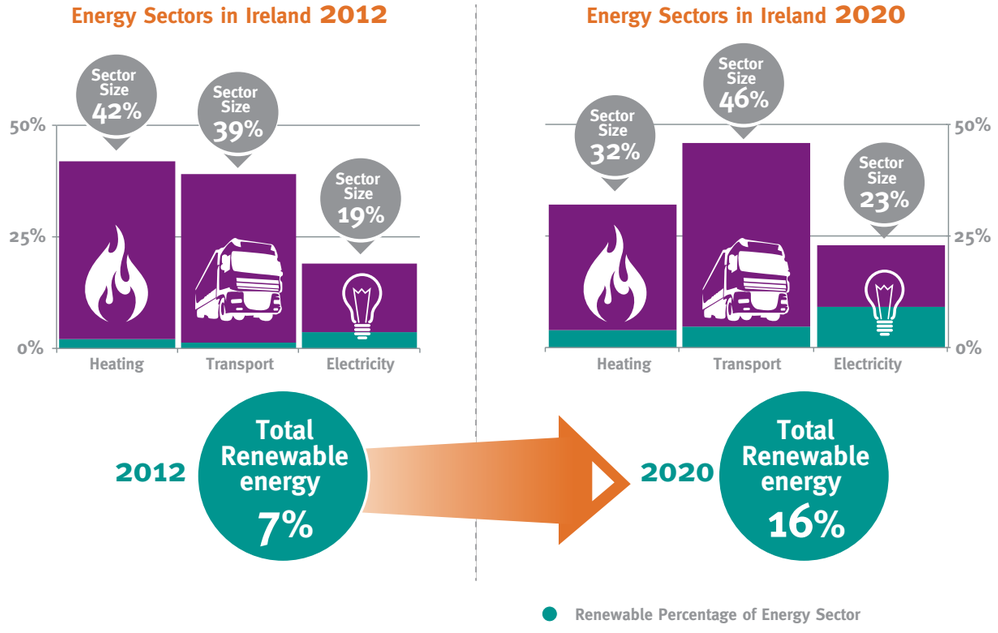
In December 2012 the European Commission issued a public consultation on Energy Technologies and Innovation. Agreed and published in May 2013, this Communication is designed to enable an integrated and coherent long-term strategy incorporating technology and innovation for the successful market transformation towards low-carbon economy and the achievement of the overall E.U. energy policy objectives (competitiveness, sustainability and security of supply).

In March 2013, the E.U. Commission published its first Renewable Energy Progress Report under the framework of the 2009 Renewable Energy Directive.[6] This progress report shows that since the introduction of legally binding renewable energy targets, most Member States have experienced significant growth in renewable energy consumption. The 2010 renewable energy figures indicate that the E.U. as a whole is on its trajectory towards the 2020 targets. However, the report argues that as the trajectory grows steeper towards 2020, increased efforts will be needed from the Member States in order to reach the 2020 targets.

In early 2013 the European Commission released a public consultation on the development of the 2030 energy policy framework. This Green Paper was aimed at providing clarity on a policy framework for 2030, offering more certainty to investors in order to stimulate innovation and demand for low-carbon technologies. The publication, by the European Commission, of a final 2030 framework is expected in early 2014 and will build on the experience and lessons learnt from the 2020 framework and will identify where improvements can be made. It will also take into account the longer term perspective set out by the Commission in the Energy Roadmap 2050.[7]

The development of modern infrastructure with adequate interconnectors and reliable networks is crucial for an integrated energy market across the E.U. To support the process, the European Commission adopted a list of 248 key energy infrastructure projects in October 2013. These projects have been selected by twelve regional groups established by the new guidelines for Trans-European Energy Network (TEN-E).

OF THE THREE MAIN ENERGY SECTORS, THE ELECTRICITY SECTOR WILL CONTRIBUTE THE MOST TO THE 2020 RENEWABLE ENERGY TARGET OF 16%.



Source: Data provided by SEAI

6 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0175:FIN:EN:PDF

7 The publication of the E.U. Commission's Energy Roadmap 2050 in December 2011 set out a number of different scenarios for developing a decarbonised energy sector over the coming decades.

Carrying the label "projects of common interest" (PCI) they will benefit from faster and more efficient permit granting procedures and regulatory treatment. They may also have access to financial support from the Connecting Europe Facility (CEF), under which a €5.85 billion budget has been allocated to trans-European energy infrastructure for the period 2014-20.

1.2 RENEWABLE POLICY & TARGETS: IRELAND

Energy policy has a pivotal role to play in creating the conditions for a return to economic growth and job creation right across the regions of Ireland. The policy aim is to create a low carbon economy which will deliver benefits in terms of growth, innovation, competitiveness, job creation, energy security and environmental quality. The development of indigenous renewable energy in the electricity sector is crucial to fulfilling these goals, and for improving Ireland's balance of payments position through an overall reduction in energy imports. In 2012 displacement of fossil fuel for electricity generation by renewable energy is estimated by SEAI to have resulted in an avoidance of almost €305 million in natural gas imports – equivalent to the annual energy needs of almost 350,000 homes.[8]

The electricity sector accounted for 19% of final energy demand in Ireland in 2012.[9] The deployment of renewable energy in the Irish electricity sector has increased considerably over the last decade. 154 wind farms across the island of Ireland have now been commissioned with a total capacity of approx 2,400 MW. This growth has been facilitated by a predictable policy and financial support framework for renewable energy and capital investment in the necessary grid infrastructure. In 2005 in Ireland renewable energy met 5% of total electricity demand; at the end of 2012 this had increased to 18%. At the end of September 2013, there was 1,879 MW of wind capacity, 238 MW of hydro power and 71 MW of smaller renewable sources installed in Ireland. Moreover, at particular time intervals, wind has produced enough power to meet 50% of electricity demand, and has even reached a high of 39% of the total daily electricity demand.[10]

In 2012 instantaneous wind penetration exceeded 40% of system demand on 46 days throughout the year.

While sufficient wind farms have now accepted offers to connect to the grid in order to meet the 40% renewable electricity target in 2020, Ireland still needs to increase wind energy connections from a historic average of 170 MW per year (over the last 6 years) to at least 250 MW per year out to 2020 in order to meet the target. This is a complex task that will require a concerted effort from all stakeholders.

Achieving the 40% renewable electricity target will require continued social acceptance, best practice in planning and permitting procedures and a level of policy coherence across the environmental and renewable sectors. The introduction of the Renewable Energy Feed-in Tariff (REFIT) II and III last year and the publication of a strategy on renewable energy and a policy statement on energy infrastructure in 2012 have provided a level of additional certainty in the industry.

In the past year, the Minister for Communication, Energy and Natural Resources, Pat Rabbitte T.D., and the U.K. Secretary of State for Energy and Climate Change, Edward Davey, signed a Memorandum of Understanding on energy cooperation. This Memorandum is an important commitment to develop the technical, regulatory and financial framework to enable Ireland to export its excess renewable generation to Britain. Since the signing of the MoU, work has progressed steadily on the details of the renewable energy export project with input from all relevant stakeholders, and an Inter-Governmental Agreement (IGA) is expected to be signed in early 2014.

At the time of writing, the Department of Communications, Energy and Natural Resources is finalising an Offshore Renewable Energy Development Plan (OREDP). Informed by the findings of a Strategic Environmental Assessment (SEA), the OREDP will identify how best to coordinate action across the environmental, energy and economic development policy areas in order to realise Ireland's abundant offshore renewable energy potential, using both offshore wind and emerging ocean renewable technologies.

8 Information provided by the Sustainable Energy Authority of Ireland (SEAI) to EirGrid, October 2013.

9 Ibid

10 Wind generation is split between the Transmission System Operator and Distribution System Operator (DSO). Wind figures on the Distribution System are provided to EirGrid from the DSO. Small renewable include: renewable CHP, land fill gas, and biomass

THE IRISH PRESIDENCY OF THE COUNCIL OF THE EUROPEAN UNION

The Irish Presidency of the Council of the European Union took place during the first six months of 2013. During this period a number of important legislative and non-legislative agreements were reached in the area of energy.

LEGISLATIVE:

- First Reading Agreement with the European Parliament on the Directive on the safety of offshore oil and gas operations.
- Progress report on the Directive on Indirect Land-Use Change (ILUC) amending the Renewable Energy and Fuel Quality Directives, which was agreed by the Energy and Environment Ministers at their respective Councils in June.
- Agreement was reached under the Irish Presidency that a revised Regulation on the Notification of Investment in Energy Infrastructure Projects should form the basis for negotiations with the European Parliament.
- First Reading Agreement with the European Parliament on the Regulation of the European Parliament and the Council on the Connecting Europe Facility (CEF agreed under Transport formation of Transport, Telecommunications and Energy Council).

NON-LEGISLATIVE:

- Conclusions adopted on the Commission Communication "Making the Internal Energy Market Work".
- A Ministerial level debate on the European Commission's Communication on Energy Technologies and Innovation was held at the June Energy Council, which will contribute to the on-going reflection on priorities for research, development and innovation in energy until 2020 and beyond.
- Joint discussion held between Energy and Environment Ministers on the Commission's Communication on a 2030 Energy and Climate Policy Framework.

AGREEMENT WITH THE EUROPEAN PARLIAMENT ON THE SAFETY OF OFFSHORE OIL AND GAS OPERATIONS DIRECTIVE

The Irish Presidency secured an early agreement with the European Parliament on the Safety of Offshore Oil and Gas Operations Directive. The Directive provides a new area of competence for the E.U. in respect of the regulation of offshore oil and gas exploration and production activities, addressing their potential to give rise to both safety and major environmental hazards. It is designed to ensure that offshore oil and gas operators implement safety standards and procedures to avoid major accidents and improve response mechanisms to any such accidents.

COUNCIL CONCLUSIONS ON THE COMMISSION'S INTERNAL ENERGY MARKET COMMUNICATION

The June Energy Council adopted Council Conclusions in support of the Commission's Communication 'Making the internal energy market work'. The Communication calls for complete implementation of Internal Energy Market rules across the E.U., which will allow consumers and businesses to take advantage of lower energy prices and benefit from a more efficient, secure electricity and gas supply. The Council's Conclusions detail measures to complete the Internal Energy Market and set out a comprehensive range of common actions to ensure security of supply, enhance the rights and roles of consumers and strengthen the Union's external energy policy. The Conclusions emphasise the significant contribution that the Internal Energy Market will make to all three pillars of the E.U.'s energy policy - sustainability, competitiveness and security of supply - and to the E.U.'s jobs and growth agenda.

PROGRESS REPORT ON THE DRAFT DIRECTIVE ON INDIRECT LAND-USE CHANGE (ILUC)

This draft Directive aims to minimise the impact of indirect land-use change on greenhouse gas emissions resulting from biofuels. It is a complex proposal which amends both the Renewable Energy and the Fuel Quality directives, and aims to promote a transition to biofuels that deliver substantial greenhouse gas savings. A progress report setting out the progress made under the Irish Presidency in establishing a Council position in advance of negotiations with the Parliament was noted by Energy and Environment Ministers at their respective Councils in June.

REGULATION ON THE NOTIFICATION OF INVESTMENT IN ENERGY INFRASTRUCTURE PROJECTS

Substantial investment in European energy infrastructure is required in order to guarantee a secure energy supply, to contribute to the smooth functioning of the internal energy market and to transform the European energy system into a low-carbon system. A Regulation defining a common framework for the notification to the Commission of information relating to such investment projects was agreed in 2010. A revised Regulation to remedy a procedural defect in the original Regulation was presented by the Commission in 2013 and agreement was reached under the Irish Presidency that this text should form the basis for negotiations with the European Parliament, which is likely to be in the Autumn according to the Parliament's schedule.

COMMUNICATION ON ENERGY TECHNOLOGIES AND INNOVATION

The European Commission's Communication on Energy Technologies and Innovation, which was presented at the SET Plan Conference in Dublin in May 2013, sets out the Commission's strategy to ensure that the E.U. continues to have a world class energy technology and innovation sector to tackle the challenges for 2020 and beyond. This Communication was the subject of a major policy debate among Energy Ministers at the June Council, which will contribute to the on-going reflection on priorities for research, development and innovation in energy until 2020 and beyond.

2030 ENERGY AND CLIMATE POLICIES FRAMEWORK

Following a debate at Director General level in March on a post 2020 strategy for energy, chaired by the Irish Presidency, a joint discussion between Energy and Environment Ministers on the Commission's Green Paper for a 2030 Energy and Climate Policy framework was held at the Informal meeting of Ministers in Dublin in April. This was an important step in a process that will establish a medium-term direction for both the environment and energy sectors. This process includes a public consultation by the European Commission, who aim to bring forward proposals on this issue before the end of the year.

CONNECTING EUROPE FACILITY (CEF)

The Connecting Europe Facility (CEF) lays down the general rules for granting the Union financial aid in the field of the trans-European transport, energy and telecommunication networks, replacing the existing legal bases. With a budget of almost €30 billion, the CEF is a key instrument for targeted infrastructure investment at European level. In the energy field, the CEF will provide financial assistance for the modernisation and expansion of Europe's energy infrastructure in order to complete the internal energy market, link isolated regions and facilitate the development of renewables.

INFORMAL MEETING IN DUBLIN OF ENERGY MINISTERS

At the Informal meeting in Dublin of Energy Ministers in April 2013, Jon O' Sullivan from EirGrid was invited to present on "The economic effects of increased renewable technologies on the electricity system, particularly in accommodating a large increase in intermittent technologies."

Energy policy has a pivotal role to play in creating the conditions for a return to economic growth and job creation right across the regions of Ireland.

1.3 RENEWABLE POLICY & TARGETS: NORTHERN IRELAND

A similar policy commitment to integrating renewable energy in the electricity sector has emerged in Northern Ireland over the past few years. As part of Northern Ireland's contribution to the U.K. target, the Northern Ireland Executive has set targets for 40% of total electricity consumption and 10% of total heat consumption to be provided by renewable sources by 2020. Northern Ireland exceeded its 12% interim renewable electricity generation target in 2012, producing approximately 13% of its electricity from renewables throughout the year. The Programme for Government in Northern Ireland has set an additional interim target of 20% renewable electricity consumption by 2015 and Northern Ireland is on track to meet this.

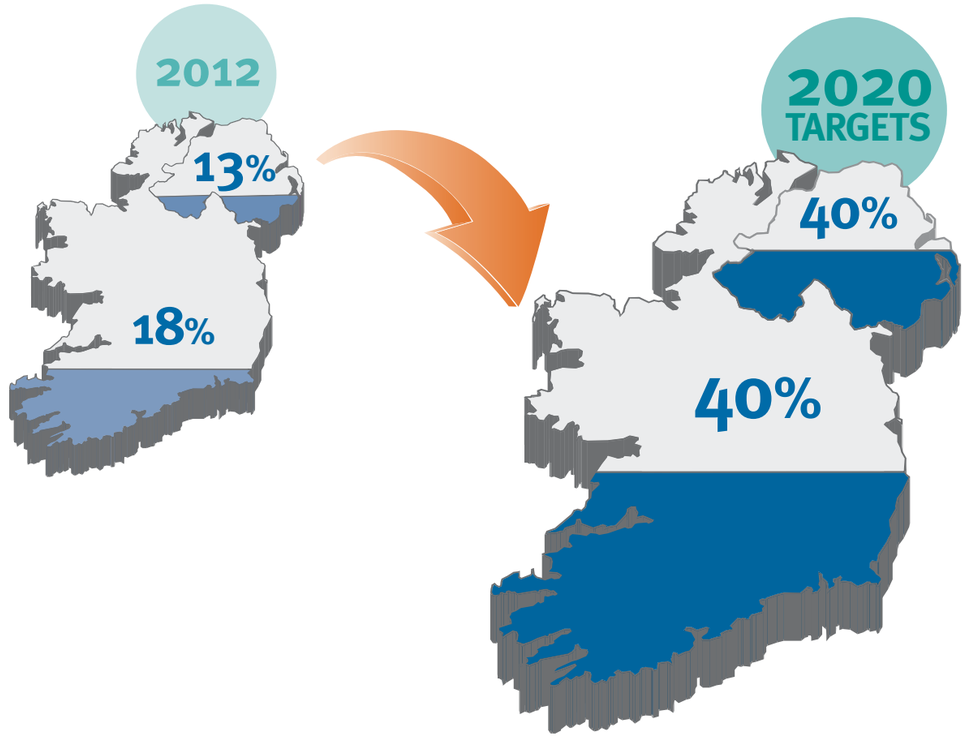
As highlighted in the Northern Ireland Executive's Strategic Energy Framework there is a general consensus that greater quantities of renewable energy are now important for Northern Ireland. At present Northern Ireland imports approximately 90% of its energy needs, which creates uncertainty in terms of security of supply and exposes Northern Ireland to the volatility of world energy prices. In addition, the Northern Ireland greenhouse gas emissions reduction action plan states that while levels of carbon dioxide reduction will vary for different energy mixes, increasing renewable energy generation, and reducing the high proportion of fossil fuel based fuels in the Northern Ireland energy mix, should reduce carbon dioxide emissions overall, helping Northern Ireland become more sustainable economically, environmentally and socially.[11]

In Northern Ireland there is currently 583 MW of renewable generation connected to the power system. To meet the 2020 renewable electricity target, EirGrid and SONI estimate that Northern Ireland will need to increase the installed level of wind generation on the power system to near 1,300 MW.

This development will pose significant infrastructural and operational challenges that SONI, EirGrid and Northern Ireland Electricity (NIE) are working to overcome. It is estimated that to facilitate this renewable target approximately £1 billion will need to be invested in the electricity network across Northern Ireland. The primary network infrastructure plan currently under development in Northern Ireland is Network 25. This plan considers the period from 2013-2025 and will outline the network

[11] Northern Ireland Greenhouse Gas Emission Reduction 2011 – Action Plan. Available at: http://www.doeni.gov.uk/northern_ireland_action_plan_on_greenhouse_gas_emissions_reductions.pdf

IRELAND AND NORTHERN IRELAND SET AMBITIOUS RENEWABLE ENERGY TARGETS FOR 2020



infrastructure required to facilitate the achievement of the 40% of renewable electricity consumption target by 2020.

1.4 DEVELOPMENTS IN THE UNITED KINGDOM

In recent weeks, energy policy in the U.K. has reached the top of the political agenda. The policy debate is now focusing on public support for renewable generation. In October 2013, Prime Minister Cameron declared that the Government should "roll back" costly environmental regulations and charges. If implemented this would represent a significant shift in U.K. energy policy.

In the meantime, the U.K. Electricity Market Reform (EMR) programme which has been on-going over the last few years has continued in earnest. EMR has significant implications for generators, suppliers and consumers of electricity from both fossil fuel and renewable sources. The published Energy Bill[12] has put in place the institutional framework expected to attract £110 billion in investment to replace ageing capacity, upgrade the grid and to meet rising demand to 2020 and beyond. EMR is a multi-strand reform programme which is progressing apace to consider the following:

- Feed in Tariffs (FiT) to provide investment signals and long term incentives for renewable generation. This includes the phasing out of the existing Renewables Obligation (RO) regime and transition to a replacement system of subsidies, which will apply to renewables and nuclear power based on Contracts for Difference (CfDs). The scheme will be implemented in 2014 in G.B. and 2016 in Northern Ireland.

[12] See the Department of Energy and Climate Change, Energy Bill 2012. Available at http://www.decc.gov.uk/en/content/cms/legislation/energybill2012/energybill2012.aspx

- A Capacity Mechanism which complements the FiT CfD scheme ensuring reliable capacity is available avoiding potential security of supply issues. The Capacity Market guarantees delivery of excess capacity in times of tight margins due to high system demand. Additional demand side response measures and supplemental reserve products are also being considered. The capacity mechanism proposed will not apply in Northern Ireland due to the existing Capacity Payment Mechanism (CPM) in the Single Electricity market (SEM).
- A Carbon Price Floor (CPF) tax which is a HM Treasury led mechanism that is designed to rebalance the electricity market towards low carbon generation by taxing generators based on the carbon content of the fuel. The rate of tax is designed to achieve a trajectory rising to £30/tCO2 by 2020 and applies as a top up to the carbon price under the European Union Emissions Trading Scheme (EU-ETS). The Carbon Price Floor is already in force in G.B. but exempted in Northern Ireland as of March 2013.
- An Emissions Performance Standard (EPS) to curb emissions of the most CO2 pollutant power stations. EPS will apply to all new fossil fuel-fired power plants over 50 MW. It will not cover existing plant but may apply where existing plant are subject to significant upgrades or life extension. The annual carbon emissions limit is set at 450g CO2/kWh. It is intended to prevent construction of any new coal-fired plant unless fitted with Carbon Capture and Storage (CCS).

Recent developments in U.K. EMR policy include the publication in June 2013 of the Capacity Market detailed design proposals[13], the Draft Strike Prices for Renewable technologies[14] and in July 2013 the consultation on the EMR Delivery Plan[15] which details the implementation of the strike price methodology for G.B. and Northern Ireland for the FIT CFD scheme. Also in July 2013 a consultation on the transition from the RO to the FIT CFD scheme was published.[16]

[13] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209280/15398_TSO_Cm_8637_DECC_Electricity_Market_Reform_web_optimised.pdf
[14] https ://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209361/Levy_Control_Framework_and_Draft_CfD_Strike_Prices.pdf
[15] https://www.gov.uk/government/consultations/consultation-on-the-draft-electricity-market-reform-delivery
[16] https://www.gov.uk/government/consultations/transition-from-the-renewables-obligation-to-contracts-for-difference

1.5 RENEWABLES IN THE SINGLE ELECTRICITY MARKET (SEM)

The first half of 2013 saw Ireland once again take on the presidency of the E.U. In this capacity, Ireland chaired the European Council meeting in May 2013. This meeting focused on energy priorities for Europe and in particular the need to complete the Internal Energy Market by 2014[17]. In pursuit of this aim, the European Commission has been leading the process to implement the Target Model for electricity markets through which new energy market arrangements are being developed to allow for cross-border trade in energy. [18]

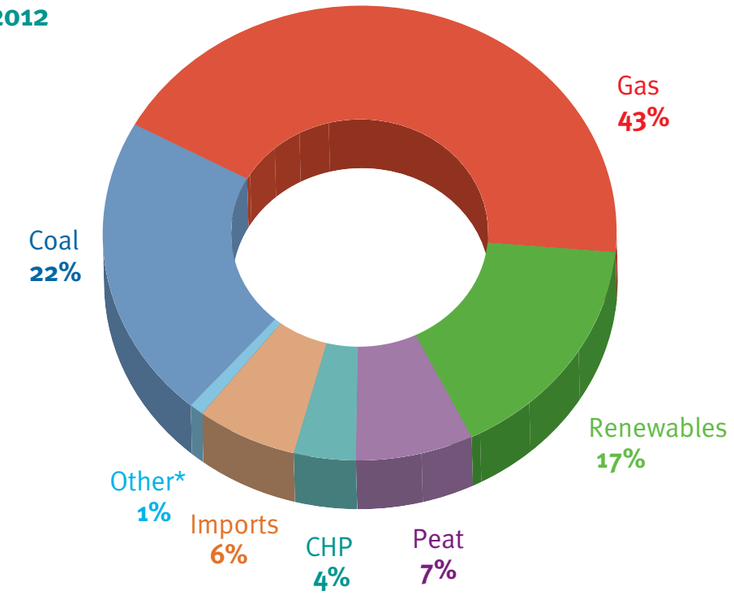
THE TARGET MODEL IS BASED ON TWO BROAD PRINCIPLES:

- Energy-only regional markets, preferably organised on a zonal basis, in which generators' revenues depend primarily on the price for each marginal unit of energy supplied.
- Market coupling, which is a way of linking zonal day-ahead spot markets into a virtual market, so that the lowest priced bids are accepted up to the point where congestion constraints limit further trade.

The implementation of the E.U. Target Model will have direct implications for renewable energy integration and the design of the Single Electricity Market (SEM) in Ireland and Northern Ireland. The three Market Network Codes—Forward Capacity Allocation, Capacity Allocation & Congestion Management and Electricity Balancing—have far reaching implications for the Single Electricity Market as they set out a Target Model that differs significantly from the current all-island arrangements. The majority of regions in Europe must implement the Target Model by the end of 2014. However, in recognition of the extent of the changes that may be required in the Single Electricity Market, Ireland and Northern Ireland are availing of transitional arrangements, where they have until the end of 2016 to implement the required changes in the code relating to capacity allocation and congestion management.

In February 2013, the Single Electricity Market Committee published a 'next-steps' paper containing a number of recommendations to the Department of Energy Communications and Natural Resources in Ireland and the Department of Energy, Trade and Investment in Northern Ireland on the implementation of the Target Model for the Single Electricity Market. These recommendations were accepted formally by the government departments in a letter dated 15th March

ALL-ISLAND FUEL MIX 2012



Source: EirGrid Group, 15-minute SCADA data as percentage of demand.
* Other generation sources: Oil, distillate, pump storage, aggregated generation units (AGU) and waste energy.

[17] Ireland and Northern Ireland have been allowed to delay the full application of the network code on capacity allocation and congestion management until 2016.
[18] European Council Meeting May 2013 http://ec.europa.eu/energy/council/2013_en.htm

2013 including the recommendation to proceed to a market design phase that considers fully the requirements of the Network Codes against a set of high level principles that were outlined in the recommendation paper.

This market design phase is being conducted by the Regulatory Authorities (Commission for Energy Regulation in Ireland and the Utility Regulator in Northern Ireland). The Regulatory Authorities have indicated their intention to involve the industry in the market design process and have established a High Level Design Group comprising of 14 industry experts representing a cross-section of the electricity industry on the island.

In March 2013, DCENR announced that the terms and conditions of REFIT II would be amended so that while the support mechanism will continue to be open for applications until the 31st of December 2015, projects must be built and operational by the 31st of December 2017, and the support for any project cannot exceed 15 years and may not extend beyond the 31st of December 2032. This represents a two year extension to the original terms and conditions which required projects to be built and operational by the 31st of December 2015 to be eligible for the scheme.

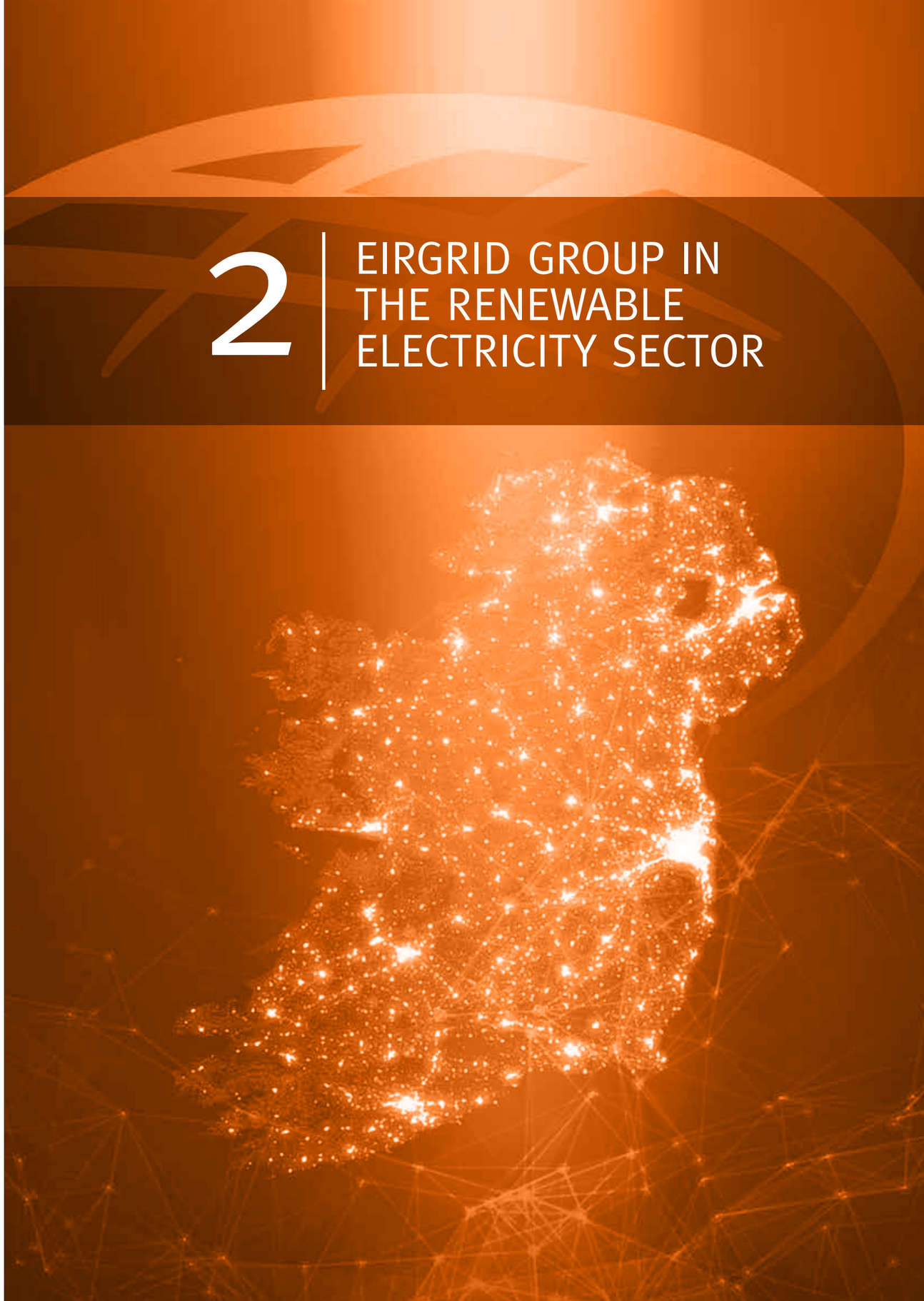
In March 2013, the SEM Committee decision (SEM-13-010) was published. The SEM Committee has decided to implement pro rata with the removal of finanical compensation for curtailment by the 1st of January 2018 as its final decision on the treatment of curtailment in tie-break situations[19]. Thus, all operational wind farms will be dispatched on a pro rata basis with regard to treatment of curtailment, thereby meaning equal treatment for new connections. In addition, compensation for curtailment currently paid to firm wind farm generators will cease in 2018. This represents a significant shift and will change the criteria upon which wind generators make their investments.

TABLE 1: FIGURES INCLUDE CURTAILMENTS AND LOCAL CONSTRAINTS

Wind Curtailment	Northern Ireland	Ireland	All-Island
2011	1.3%	2.4%	2.2%
2012	0.7%	2.5%	2.1%
Est YTD Sep 2013	0.7%	2.4%	2.0%

[19] The SEMC has decided that all wind generation will be curtailed on a pro-rata basis.

2 EIRGRID GROUP IN THE RENEWABLE ELECTRICITY SECTOR



2 EIRGRID GROUP IN THE RENEWABLE ELECTRICITY SECTOR

To meet the renewable electricity targets on the island, a major expansion and upgrade of the all-island transmission network is needed between now and 2020.

In the electricity sector the primary catalysts for change are the renewable targets, economic competitiveness and the need for enhanced energy security. This change is not only creating the need for new and upgraded electricity grid infrastructure, but also a need to better understand the impact of variable renewable energy on the operational aspects of the power system. This change is also fostering an environment for the development and deployment of new and innovative grid technologies. EirGrid Group is engaged in several interrelated activities that contribute in different ways to the integration of increasing amounts of variable renewable energy sources across the island; the integration of Smart Grid technologies on the power system and the development of renewable energy for export. This section outlines our work in this regard.

2.1 CONNECTION PROCESS

IRELAND: THE GATE CONNECTION PROCESS

The government target is for 40% of electricity to be consumed from renewable sources by 2020. The Gate process is a fundamental part of reaching this target. 'Gate' is a term used to refer to the processing of batches of connection applications received prior to a Gate closure date. Gate 1 and 2 processed 370 MW and 1,300 MW respectively. When Gate 3 commenced in 2008, it was intended that the combination of Gates 1 to 3 would be sufficient for Ireland to attain its 2020 renewable electricity targets.

Under the Gate 3 process, over 4,000 MW of connection offers were issued to renewable generators, a process that was completed in 2011. In 2013 a significant Gate 3 milestone was reached when a Decision by Regulatory Authorities led to the provision of all of the necessary information for the execution (signature) of offers. To date 638 MW of Gate 2 has connected and 663 MW remains contracted. 2,820 MW of Gate 3 is now contracted and 409 MW has lapsed. The remaining capacity is expected to either contract or lapse by the end of 2013.

NORTHERN IRELAND

In Northern Ireland, any generator wishing to connect to the electricity transmission system must submit an application to SONI. Similarly a generator wishing to connect to the distribution system must submit an application to NIE, the Distribution System Operator (DSO). Any generator applying to either SONI or NIE for a connection must already have received full Planning Permission for their installation.

With 554 MW of wind generation connected in Northern Ireland, and in excess of a further 500 MW of wind generation with planning permission anticipating to connect in the medium term, the delivery of the Medium Term Plan will be vital in enabling this generation to connect. It is estimated that approximately 1,300 MW of wind generation will be required to be connected to meet Northern Ireland's 40% renewable electricity target.

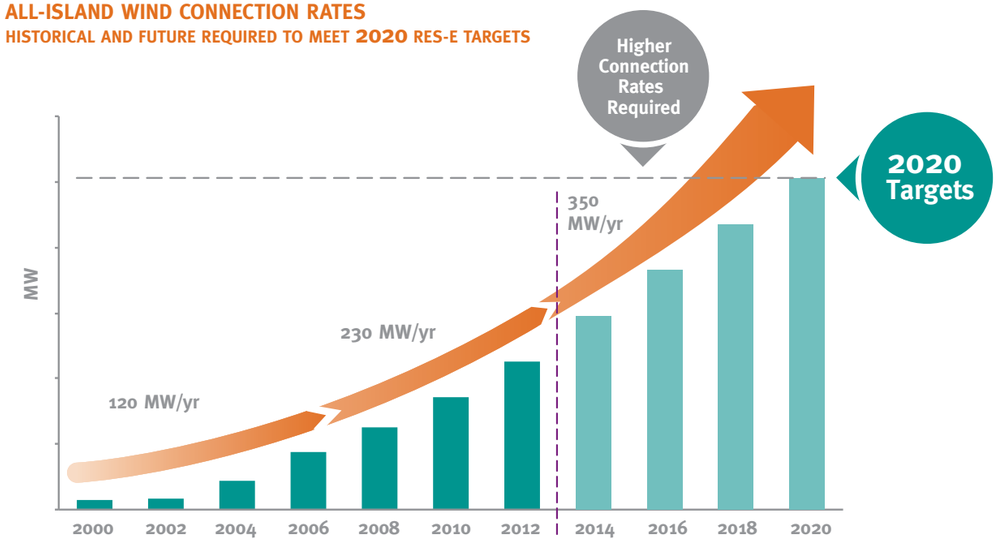
While the level of renewable generation involved in these connection processes represents a significant milestone on the road to reaching Ireland's and Northern Ireland's renewable electricity targets, it is important to note that the actual rate and level of these connections is contingent on a number of variables - many of which are outside the control of the system operators. These might include difficulties with securing financing for proposed wind farm projects, obtaining the necessary planning permission (in Ireland), commercial decisions, the delivery of transmission infrastructure and the construction of the wind farm itself.

TABLE 1: TOTAL RENEWABLE GENERATION INSTALLED CAPACITIES (MW)

Jurisdiction	Wind	Hydro	Bio Energy	RES CHP	Ocean	Solar	Total Renewables
Northern Ireland	554.3	2.3	19.6	0.0	1.2	5.5	582.9
Ireland	1,879.3	238.1	65.7	5.3	0.0	0.1	2,188.4
All-Island	2,433.6	240.4	85.2	5.3	1.2	5.6	2,771.3

Source: EirGrid Group All-Island Renewable Connection Report and 36-Month Forecast (Qtr3, 2013).

ALL-ISLAND WIND CONNECTION RATES
HISTORICAL AND FUTURE REQUIRED TO MEET 2020 RES-E TARGETS



Source: EirGrid Group All-Island Renewable Connection Report and 36-Month Forecast (Qtr3, 2013).

2.2 SMART GRIDS

The complexity of the power system is increasing and will continue to increase through the planned integration of renewables, an expected increase in customer participation and the electrification of new sectors including transport and heating. These changes to the electrical energy sources and how electrical energy is utilised necessitates a fundamental change in the way EirGrid Group operates the system. The development of Smart Grid solutions and technologies will be crucial to addressing the challenges presented by these changes.

In Ireland and Northern Ireland, due to the relatively small size of our power system coupled with our ambitious targets for incorporating renewable generation, we are at the forefront of identifying, and solving, many of these challenges. No other synchronous system of scale manages the same levels of instantaneous wind penetration levels (50%) seen today, and no other synchronous power system is aiming to safely and securely manage real-time wind generation penetration levels of 75% by 2020.

EirGrid's Smart Grid programme is a collection of technologies, services, and projects to upgrade the electricity system at present; to drive innovation to deliver benefits for all customers and to facilitate a low carbon energy future; while continuing to operate and maintain a safe, secure, efficient and reliable system. The Smart Grid Programme focuses on four key areas:

- Technology and Infrastructure
- Delivering Sustainable Secure System (DS3) Programme
- Smart Grid Innovation Hub
- Demonstration Projects

TECHNOLOGY & INFRASTRUCTURE

It is the application of digital technology on the grid infrastructure that allows us to optimise the power system to ensure that it is used as efficiently as possible and which really makes our Grid "Smart". This technology or intelligence layer will allow two-way communication across the network. EirGrid are in the process of both trialling and deploying a number of innovative Smart technologies onto the system.

The advanced technologies at the heart of the Smart Grid will bring about a number of benefits for electricity consumers, suppliers and network operators and will form a vital element in any future strategy designed to increase flexibility on the demand-side and increase control over new forms of renewable generation.

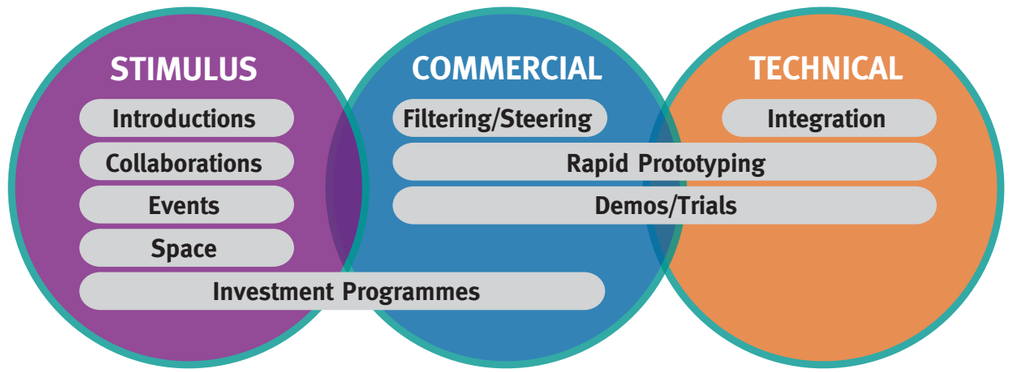
DS3 PROGRAMME

EirGrid's DS3 programme is developing innovative solutions to the challenges associated with increasing levels of renewable generation, particularly with regard to secure power system operation, as we work to achieve the 2020 renewable targets. Please reference the "DS3" section of this report for further information.

SMART GRID INNOVATION HUB

The Smart Grid Innovation Hub (SGIH) combines the energy and ICT industries and is a collaborative initiative between EirGrid, SONI and the National Digital Research Centre (NDRC) to promote the development of innovative Smart Grid ideas on the island of Ireland. The SGIH was established to create a facility to enable innovation in the Smart Grid arena in Ireland or Northern Ireland, with access to the people, systems and data necessary to test ideas and concepts and enable them to develop from ideas to reality.

Support provided by the SGIH is tailored for each specific project or company depending on its stage of development and/or specific support requirements. The SGIH works with each project or company to determine how the resources available can be most appropriately leveraged.



SMART GRID INNOVATION HUB SUPPORT OFFERINGS

The SGIH has been in operation since October 2012 and has provided a wide variety of supports to a large number of companies during this time. Some of these companies have reflected upon their experience through the Hub here:

For more information on the Smart Grid Innovation Hub please visit our website at **www.smartgridinnovate.com** or on LinkedIn '**Smart Grid Innovation Hub**'

ENERGY NEEDS IRELAND

EirGrid is a strong supporter of Energy Needs Ireland (ENI), an interdisciplinary summer education and research programme which is based in the Electricity Research Centre (ERC) in University College Dublin (UCD). The Smart Grid Innovation Hub supported the 2013 ENI group of students to focus their research on the area of Smart Grids. This group of 21 students from a number of universities across Ireland produced a final paper entitled "Participating in Ireland's Smart Energy Future" This paper focused on the need for consumer participation in order to successfully implement a smarter energy network.

SMART GRID APP

The SmartGrid iPhone app allows users to see graphs on key energy-related data, in a straightforward and intuitive way. It also provides users with a real time view of the power system in Ireland and Northern Ireland, with information direct from control centres in Dublin and Belfast.

Key features include:

- Summary map of Ireland and Northern Ireland showing real time data for the power system, with ability to switch between graphical and tabular views
- Real-time Electricity System Data including system demand, wind, fuel mix, interconnection, frequency, pricing and CO_2 emissions and intensity
- Zoomable map showing Transmission System in Ireland and Northern Ireland
- Real-time carbon emissions household appliance rating

iPhone users can download the EirGrid Group SmartGrid app for free from the iTunes store

DEMONSTRATION PROJECTS

The EirGrid Group demonstration projects initiative is in place to promote and support innovation in new grid applications across the Smart Grid domain. EirGrid and SONI recognise that demonstration projects can play an important role in order to develop, test and assess the technological and economical feasibility of innovative energy solutions.

All of these projects ensure that our electricity network works smarter to deliver for the future in a cost effective, efficient and sustainable way.

The EirGrid and SONI Demonstration Projects initiative offers the opportunity to trial a Smart Grid technology, solution or application on the Irish power system. Our demonstration partners within the industry gain unique system experience and knowledge through the trailing of their project. EirGrid Group also views this as an important mechanism to promote and support innovation in new grid applications across the Smart Grid domain.

DEMONSTRATION PROJECT CASE STUDY:

Glen Dimplex Quantum Greenway Demonstration project

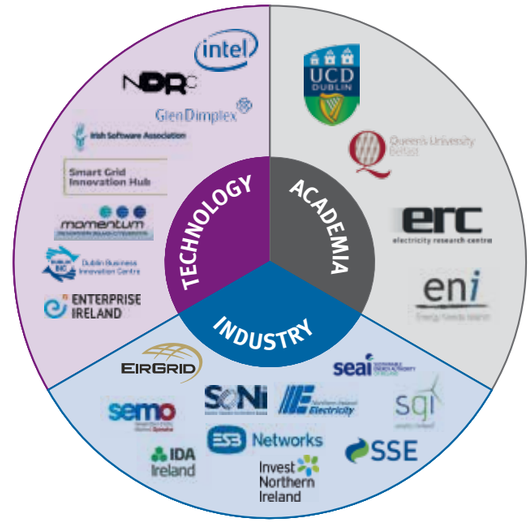
EirGrid and SONI are collaborating with Glen Dimplex as part of the Quantum Greenway Demonstration project. This project is examining how a population of storage heaters in homes across the country can be deployed as a demand side management tool by switching the heaters on and off remotely. The project aims include, maximising the use of renewable energy, providing increased flexibility to the power system and providing energy and cost savings to homeowners.

- Phase 1 of the demonstration Project which is nearing completion focused on a pilot roll out to 140 homes and is already showing positive economic and energy efficiency results.
- Phase 2 of the project is expected to see the roll-out extended to over 1000 homes across Ireland and Northern Ireland and has been broadened to include collaboration with ESB Networks, Intel, SSE and UCD.

For more information on our call for demonstration projects please visit our website at: **http://www.eirgrid.com/operations/demonstrationprojects/**

ADVANCING PARTNERSHIPS

To drive innovation and joined up thinking across the Smart Grids area requires a collaborative response through Smart Grid initiatives and the advancement of key partnerships between the energy Industry, technology organisations and academic institutes. EirGrid are actively working in partnership and collaboration with a number of key organisations across these sectors with some examples of these included below:



2.3 DELIVERING A SECURE, SUSTAINABLE ELECTRICITY SYSTEM (DS3)

The DS3 programme was launched in August 2011 as a multiyear programme of work. At its core, DS3 is designed to ensure the secure, safe operation of the power system in Ireland and Northern Ireland with increasing amounts of variable renewable generation. In order to achieve the renewable targets the generation plant portfolio on the Island will be transformed from the traditional mix of conventional generation - mostly of gas and other thermal plant - to a portfolio where in 2020, variable non-synchronous wind generation will account for 37% of all electrical power generated on the Island.

The power system is currently operated at a maximum SNSP (System Non Synchronous Penetration) level of 50% in real-time, however in order for the TSOs to efficently achieve the 40% RES-E targets by 2020; the system will need to be operated in real-time with SNSP levels of up to 75%. Operating the system in this manner creates a range of technical challenges that are being managed by the TSOs through the DS3 Programme.

What is SNSP?
System Non-Synchronous Penetration (SNSP) is a real-time measure of the percentage of generation that comes from non-synchronous sources, such as wind and HDVC interconnector imports, relative to the system demand.

PROGRESS TO DATE

Since the establishment of the DS3 programme, there have been a number of key achievements and developments. These have included but are not limited to:

- A multi stage consultation process for System Services, including consultations on the approach used, the products required and finally the financial arrangements. The TSOs also published the TSO System Services recommendations paper in May 2013.
- The approval of a number of grid code modifications in Ireland and the corresponding modifications to the Wind farm setting schedule in Northern Ireland,
- The implementation of the Wind Security Assessment Tool (WSAT) System assessment tool in both the Dublin and Belfast Control Centres.
- The proposed decisions on RoCoF from the Regulators in both jurisdictions.
- Work is also progressing on the Annual High Wind Speed Shutdown Report, Wind Curtailment Reports and the All-Island Wind and Fuel Mix Summary Report.

In addition the annual contribution of Wind to the All Island system demand continues to grow. The amount of wind generation installed on the island has now surpassed 2,400 MW and the system records for instantaneous wind generation in Ireland is currently 1,540 MW (March 2013) and 412 MW in Northern Ireland (August 2013). In addition there are now two Demand side units operational in the market with a number of other potential participants becoming operational in the coming months.

In terms of the open and transparent availability of data, the TSOs are now publishing a number of reports including the Quarterly All-Island Renewable Connection Reports, High Wind reports, and Annual Summary Report.

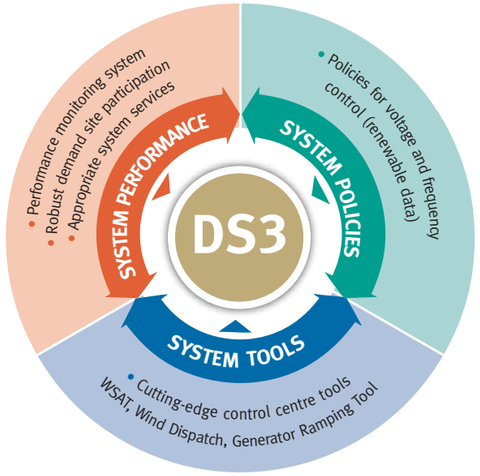
DS3 PROGRAMME STRUCTURE

The DS3 Programme is made up of 11 work streams which fall under the three main pillars of System Policies, System Performance and System Tools. Each pillar is fundamental to the success of the programme itself and the delivery of the 40% renewable electricity targets.

DS3: System Performance: System Performance refers to the performance of all plant including Demand side participation connected to the power system. The Grid Code sets out the performance standards for this plant and enforcement of these standards is essential to ensure the capability of the portfolio. In order to ensure the required System performance required to meet the 2020 targets a large amount of work is required in the areas of Grid Code modifications, Provision of System Services, Greater participation from Demand connected loads and superior performance monitoring capabilities.

DS3: System Policies: As the level of renewable generation increases, the TSOs will be required to develop new system operational policies to manage the increasing complexity associated with integrating large amounts of variable non-synchronous renewable generation. In particular, operational polices will need to be developed to support frequency control and voltage control. This has implications in terms of frequency control of the power system that will require refinement to current system policies.

DS3: System Tools: Improved system operational tools will be needed in order to operate of the power system as the system becomes more complex with a rapidly changing plant portfolio. The aim of the tools is to provide the system operator with more accurate real-time information, flexibility and also greater control and monitoring facilities. These tools include the ability to dispatch wind, to forecast wind output accurately, assess the stability of the power system in real-time and dispatch the scheduling of System Services and Demand side participation.



NEXT STEPS

The focus over the past two years has been on creating the correct technical and commercial mechanisms to incentivise and improve system performance and capability. While this work will continue over the coming months, the main focus will now start to move towards the implementation of increased performance capability and the system policies required to progress towards the 2020 targets.

Due to a number of developments within the programme a major re-planning exercise of DS3 is currently being conducted. This will include revised workstream plans for a number of the workstreams with a strong focus on the delivery of some fundamental building blocks within the programme including the delivery of the Rate of Change of Frequency (RoCoF) modification, finalisation of the financial arrangements for System Services and implementation of policies related to both frequency and voltage control on the system. The revised plans are due to be published on the EirGrid and SONI website at the end of 2013.

2.4 ELECTRICITY INFRASTRUCTURE DEVELOPMENT

To meet the renewable electricity targets on the island, a major expansion and upgrade of the all-island transmission network is needed between now and 2020. Investment in the network is also required to manage the connection of new conventional generators and future increases in electricity demand.

In recognition of this need, EirGrid published a €3.2 billion transmission network capital investment plan out to 2025 entitled Grid25. The Grid25 Strategy will provide a platform to harness Ireland's future electricity needs and meet Ireland's renewable energy potential. While EirGrid is making progress on the roll-out of Grid25, the International Energy Agency has noted that to meet all "Grid25's ambitious goals regarding the construction of new transmission lines, a speedy, streamlined consenting process – including community acceptance – is required.[20]" This is an accurate reflection of the various interrelated elements that are needed in order to implement Grid25 on time. Since the Grid25 strategy was launched in 2008, significant progress has been made in optimising our investment plans and in building new transmission circuits and uprating existing circuits. Table 2 below provides an overview of the type and km of line commissioned between 2009 and 2012.

TABLE 2: KM OF ELECTRICITY INFRASTRUCTURE DEVELOPMENT 2009-2012

Circuit Type / YEAR	2012	2011	2010	2009	Total
110kV New Line (km)	73	66	20	104	263
220kV New Line (km)	55	10	17	5	87
110kV Line Uprate (km)	136	225	215	167	743
220kV Line Uprate (km)	79	114	0	1	194

During the past year considerable work has started on two important grid projects –Grid Link and Grid West. The development of these projects is consistent with the Grid25 strategy which is designed to ensure that all regions in Ireland will have access to reliable, high-quality power supplies, facilitating access to renewable energy resources.

[20] See the All-Island Generation Capacity Statement 2012-2021.

GRID LINK

The Grid Link project was launched in April 2012. This grid development project consists of a 400 kV High Voltage Alternating Current circuit line (HVAC) linking the three node points of Dunstown, Co. Kildare and Knockraha, Co. Cork via Great Island, Co. Wexford. Since its launch, two rounds of public consultations have been held. These consultations invited the general public and stakeholders to comment on the proposed study area map, comment on the constraints report, identify constraints within the study area and provide feedback on how EirGrid should develop grid corridors for the project. EirGrid has now identified a number of 1km route corridor options and substation zones for the Grid Link Project and is undertaking a third round of public consultation.

The Grid Link Project represents the single largest project in the Grid25 strategy. It is required to reinforce the transmission network in the south-east of Ireland and to address a number of key drivers for the transmission network in that region, namely the integration of new renewable and conventional generation, ensuring security of supply in the south-east in order to support demand growth in the region and facilitating possible future interconnection with either Great Britain or France. The investment for Grid Link will be in the order of €500 million and EirGrid intends to develop the project over the next 8-10 years

Map of the Grid Link Project – This map is for illustrative purposes only

EirGrid IN THE COMMUNITY: GRID LINK

An essential component of any Grid development plan undertaken by EirGrid is to engage early and effectively at every stage of the project with local communities.Since the launch of Grid Link in April 2012, EirGrid has engaged with people within the study area through:

- Briefings with local authorities within the study area and meeting with elected representatives
- 3 focused periods of public consultation
- A total of 35 open days across the study area
- 5 information offices in Midleton, Carrick-on-Suir, New Ross, Kilcullen and Carlow
- An extensive community outreach programme, setting up information stands at marts, supermarkets, libraries, race meetings, shows and other venues and events throughout the study area
- Print and Radio Advertising
- A dedicated project website, phone line and email

At all stages, feedback from the public is reviewed and considered by the project team. As the project develops, the public, local communities and everyone who is interested in The Grid Link Project will have regular opportunities to review and provide input into the issues and options under consideration.

NEXT STEPS:

- Selection of Least Constrained Corridor and Indicative Route – 2014
- Landowner Meetings and Surveys 2014
- Submission of Planning application to An Bord Pleanala 2015
- Planning Grant 2016
- Construction 2016-2020

GRID WEST

The Grid West Electricity Scheme which involves the construction of a 400 kV circuit from the Bellacorick area to either Flagford or Cashla transmission stations will facilitate the connection of approximately 650 MW of renewable generation in the Bellacorick area. This project will ensure a secure energy supply for the west of Ireland into the future.

The Grid West project is the largest Grid25 project in the West of Ireland, initially accounting or €240 million of the investment earmarked for the region. By connecting the electricity generated by the region's huge renewable energy resources, the Grid West project will facilitate significant job creation and investment. It will contribute to national recovery and growth while at the same time allowing the region to attract inward investment that requires a strong reliable source of power. The Grid West project is one of the projects in the west of Ireland under the Grid25 programme. It consists of a new high capacity power line linking the North Mayo area to the existing Flagford substation near Carrick-on-Shannon which is a strong point on the transmission grid. The Grid West project was launched in May 2012 by An Taoiseach Enda Kenny T.D. and Minister for Communications, Energy and Natural Resources, Pat Rabbitte T.D.

Map of the Grid Link Project – This map is for illustrative purposes only

EirGrid IN THE COMMUNITY: GRID WEST

Central to the Grid25 implmentation programme is engaging with the local communities. Since the launch of Grid West in May 2012, we have engaged with communities in the region through:

- Four rounds of public consultation; in June 2012, October 2012, March 2013 and October 2013 with a total of 22 open days across the study area.
- Published the proposed study area map.
- Set up a dedicated project website, phone line, email and a text update system.
- Established an Information Centre in Castlebar.
- Introduced a Community Liaison Officer.
- Met and engaged with numerous groups and individuals.
- Delivered a letter to over 200,000 homes in the region outlining contact details for the project.
- Briefings with local authorities within the study area and meeting with elected representatives.
- Print and Radio Advertising.
- Published the Stage 1 Report outlining 16 potential route corridors including the least constrained corridor.
- Published the emerging preferred route corridor in October 2013.
- Attended community events over the summer 2013 to inform people about how they can interact with the project.

As the project develops, the public, local communities and everyone who is interested in The Grid west Project will have regular opportunities to review and provide input into the issues and options under consideration.

NEXT STEPS:

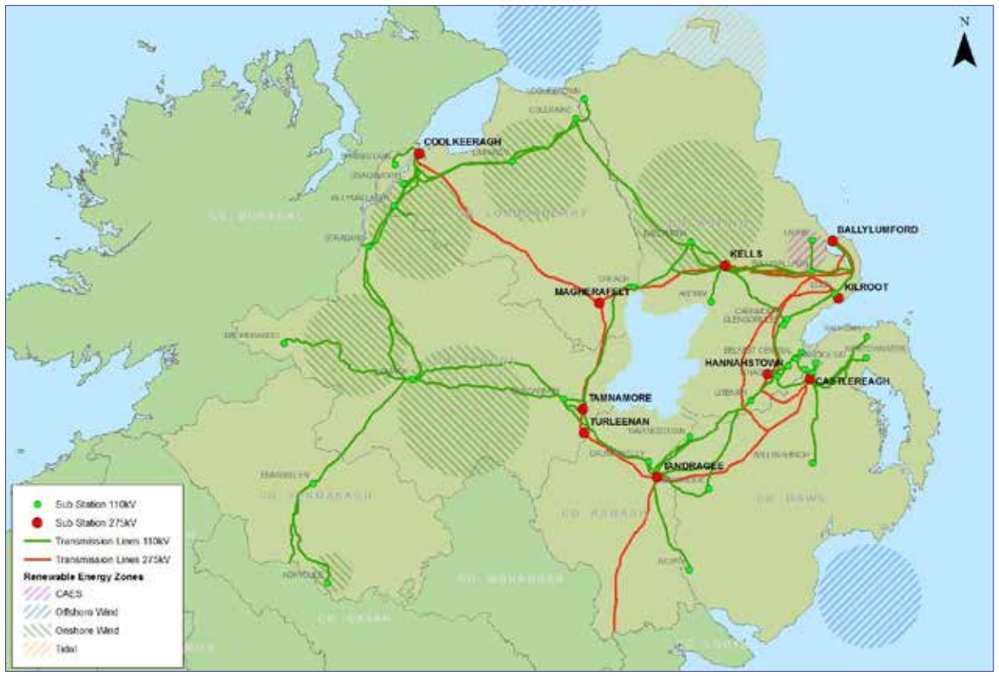
- Landowner Meetings and Surveys to commence – Nov 2013
- Indicative line route – Q2 2014
- Submission of Planning application to An Bord Pleanala Q1 2015
- Planning Grant 2016
- Construction 2016-2019

ELECTRICITY INFRASTRUCTURE DEVELOPMENT: NORTHERN IRELAND

Following the publication in 2010 of Northern Ireland's Strategic Energy Framework, the Department of Enterprise, Trade and Investment (DETI) has completed Strategic Environmental Assessments for both off-shore and on-shore renewable generation. DETI also published corresponding Strategic Action Plans (SAP). Northern Ireland Electricity (NIE) is curtently the party in Northern Ireland with responsibility for planning and developing the transmission network and in fulfilling this role it interacts with SONI and exchanges information.

Taking all this information into account NIE, in conjunction with SONI, is currently developing a Northern Ireland wide strategy document, Network 25, for publication. A Strategic Environmental Assessment (SEA) of Network 25 is also underway and it is planned that the SEA and Network 25 will be completed in the spring of 2014. According to the on-shore SAP the "Network 25 plan will explore the need for future grid strengthening and will address grid requirements for all forms of generation."[21] To ensure that the strategic planning process includes a proper consideration of the potential effects of transmission network development upon the environment and communities across Northern Ireland, NIE issued a public consultation on a Strategic Environmental Assessment (SEA) Draft Scoping Report in September 2013. This consultation will be followed by an Environmental Statement in early 2014.[22]

NORTHERN IRELAND POTENTIAL RENEWABLE GENERATION AREAS



[21] See the Draft Onshore Renewable Electricity Action Plan 2011-2020 recently released by DETI. Available at http://www.onshorerenewablesni.co.uk/

[22] For more details on the SEA Draft Scoping Report consultation see: http://www.nie.co.uk/documents/Network-Renewable_Invest/Renewable-integration/SEA-Scoping-Network-25.aspx

EirGrid and SONI are also working with NIE on the Renewable Integration Development Project (RIDP). The RIDP study work has focused on potential transmission reinforcement options for the North West region, including a large portion of the North and West of Northern Ireland and County Donegal. The Phase 3 stage of the project has just recently completed with the selection of a preferred scheme for the study area. This selection process compared a number of candidate schemes using a wide range of technical, economic and environmental performance indicators.

The RIDP proposals will be factored into Northern Ireland's Network 25 strategy along with other emerging renewable developments and technologies both on shore and off shore. NIE will then in due course seek the necessary approvals in order to move forward with the first stages of major transmission development.

In Northern Ireland, there has been significant progress with renewable generation related development. Three major projects from NIE's Medium Term Plan (MTP) received approval from the Utility Regulator for Electrity and Gas in Northern Ireland (UREGNI) in March 2013. Work on one of these, the uprating of the 58 km Kells - Coleraine 110 kV circuit, is already underway, and scheduled for completion in early 2014. Work on the uprating of Tamnamore 275/110 kV substation has commenced and design and wayleaving of a new 110 kV circuit between Omagh and Tamnamore is ongoing with an anticipated completion date for both projects of the end of 2015. Overall, this represents some £45 million of investment, and will considerably increase the amount of renewable generation that can be accommodated in Northern Ireland. Several new wind farms were connected in 2013, totalling some 80 MW, with progress continuing on the development of wind farm cluster substations.

2.5 EAST-WEST INTERCONNECTOR (EWIC)

The East West Interconnector (EWIC) went into full commercial operation on 1st May 2013. This project represents a significant investment that has considerable benefits for Ireland by helping the country reach its renewable electricity targets, by improving security of supply, and by increasing competition in the market.

The completion of East West Interconnector connects Ireland to Great Britain and by extension the broader European energy market. The Interconnector is symbolic of Ireland's commitment to European energy-market integration. The completion of the EWIC means that interconnection to Great Britain is 500 MW or equivalent to approximately 10% of the all-island electricity demand. This is a significant addition to the Irish power system and is equivalent to the non-binding E.U. target that Member States should achieve 10% electricity grid interconnection.

The 500 MW capacity available on EWIC in both the import and export directions equates to enough electricity to power 300,000 homes. EWIC customers are now actively competing for annual, seasonal, quarterly and monthly long-term auction products and daily auction products. The commercial activity on EWIC has led to a significant downward pressure on the price of electricity in the SEM, which is narrowing the gap between the cost of electricity between the islands of Ireland and Great Britain, facilitated by competition from generators located elsewhere in the E.U., particularly in Great Britain.

EWIC is facilitating the development of the indigenous renewable electricity market and provides export potential to help Ireland achieve its European 2020 40% renewable electricity target. To this end, EirGrid has been working hard to reduce RES curtailment through the use of System Operator trades directly with National Grid Electricity Transmission and with a third party, with priority dispatch trade volumes of approximately 90 GWh and associated reduction in dispatch balancing costs of over €3 million to date.

In November 2013 EWIC won the Engineering Project of the Year 2013. The award is run by Engineers Ireland and the winner was decided by online voting.

2.6 RENEWABLE EXPORTS

"We have in Ireland a rich and abundant wind and ocean energy potential which I firmly believe can be harvested and exported as a real economic opportunity."

Minister for Communications, Energy and Natural Resources Pat Rabbitte, T.D., March 2013.

It is widely acknowledged that Ireland has the capability to achieve its national renewable electricity target from onshore renewable generation, with capacity to spare. This means that there is potential for renewable projects of scale - onshore and offshore - that can be developed as an export opportunity. In recognition of this potential and the challenges the U.K. faces in meeting its own renewable electricity target by 2020, the Irish and U.K. Governments signed a Memorandum of Understanding on energy cooperation in January 2013.[23] The primary aim is to develop the opportunity to export large scale renewable energy from Ireland to Great Britain with the signing of an Inter-Governmental Agreement (IGA) in early 2014.

In signing this MoU the two Governments are operating under the provisions of the 2009 E.U. Renewable Energy Directive (2009/28/EC) which sets out the ground rules for what the Directive refers to as 'joint projects' between Member States. The 2009 Directive provides a mechanism whereby renewable energy produced in one country can not only be exported to another but can also be counted towards meeting that other country's national target.

The renewable export project is an important economic opportunity for Ireland to harness its abundant renewable energy resources and export them to the U.K. EirGrid has been engaging with all relevant stakeholders over the past few months and will continue to provide support for the delivery of the necessary actions arising from the MoU and forthcoming Inter-Governmental Agreement (IGA).

In October 2013 the Irish Government announced the commencement of the first phase of the public consultation on the proposed Renewable Energy Export Policy and Development Framework. This is an important milestone and will ensure the views of local communities are at the heart of this development. Input from all interested parties will assist in the preparation of the development framework and the scoping of the Strategic Environmental Assessment Environmental Report and the Habitats Directive Natura Impact Statement, which will accompany the proposed renewable export policy and development framework in the coming months.

[23] The U.K. Government foresees possible shortages in its ability to meet growing demand, as a fifth of the existing generation capacity in Britain is due to be closed down in the coming years.

2.7 CUSTOMER AND STAKEHOLDER ENGAGEMENT

The EirGrid Group is committed to engaging with all our customers and stakeholders through regular and open communications. In the last year, we hosted and sponsored a range of workshops, seminars, and conferences designed to fulfil this commitment.

EIRGRID GROUP CUSTOMER CONFERENCE 2013

The EirGrid Group Customer Conference entitled "Delivering the Power System and Market of Tomorrow" was held in the Hilton Hotel, Belfast on 31st October 2013. The event was the first EirGrid Group Consumer Conference hosted in Northern Ireland. The conference was attended by approximately 190 delegates from the electricity sector including renewable generators and suppliers, large electricity customers, personnel for state bodies and representative groups, expert consultants, academics and researchers. Topics included; facilitating Ireland's changing fuel mix, regional integration and a round table discussion on the Social Acceptance of Transmission Projects. The event was opened by Enterprise Minister Arlene Foster MLA and Pierre Bornard (Vice-CEO French TSO RTE, Chairman ENTSO-E) provided the keynote address for the event. A link to the presentations from the conference can be found on the EirGrid website.

CUSTOMER FORUMS/WORKSHOPS AND TRAINING

As part of EirGrid's Customer Communications plan, we hosted a Customer Connections Forum on the 16th April 2013 which was aimed at Gate 3 customers. The forum was attended by approximated 80 delegates and there was excellent engagement and participation from the attendees during the detailed Q&A sessions. EirGrid also hosted a Customer Contracts Workshop in July 2013 for transmission connection customers who are contracted to connect to the grid and those with live Gate 3 offers. The aim was to provide clarity to these customers on how EirGrid will deliver connection projects with a focus on the link between the delivery of shallow connections and deep reinforcements and contractual milestones. The event was attended by over 20 participants.

The EirGrid Group is committed to engaging with all our customers and stakeholders through regular and open communications.

The " Welcome to the Market" training course is held by SEMO as part of the Participant Readiness during the Registration process and the courses are run quarterly. This training has been revised to reflect the changes leading from Intra Day Trading.
For further information on this course or any other training requirement please feel free to contact – Markethelpdesk@sem-o.com.

The management and monitoring of harmonic levels across the power system is of vital importance as harmonic distortions can have a significant impact on the performance and lifetime of connected equipment. In response to the increased interaction between customer projects and harmonic levels, EirGrid plans to host a customer workshop covering Power System Harmonics in November 2013. This workshop will cover a number of aspects ranging from what harmonics are to how they may affect your project and possible mitigation methods.

Stakeholder Forums on Electricity Network Codes and European developments were held in January, April, June, August, September and October 2013. These events were well attended by the industry and provided an opportunity for all interested parties to participate in what is a vital stage for influencing the evolution of All-Island electricity market.

DELIVERING A SECURE SUSTAINABLE POWER SYSTEM (DS3) – FORUMS AND ADVISORY COUNCIL

Following the launch of the DS3 Programme in August 2011, EirGrid and SONI have hosted seven forums on DS3. Some of the forums have focussed on specific aspects of the DS3 Programme including the System Services Review and the proposed Enhanced Performance Monitoring System. All the forums have been very well attended by delegates from across the energy industry and were very well received. These forums will be continuing as part of the on-going DS3 Programme. In addition, the DS3 Advisory Council meetings are continuing as part of the DS3 programme. The Advisory Council was established to provide a forum to discuss views and concerns on those issues which impact on the successful implementation of the programme. The Council is comprised of experts from academia, industry and research centres across the island and internationally. To date, seven Advisory Council meetings have taken place with a further three planned for 2014.

2.8 REGIONAL AND INTERNATIONAL INVOLVEMENT

Over the past twelve months, EirGrid has continued its involvement in a range of international research projects and organisations. The main research projects EirGrid is or has been involved with include Anemos Plus, SafeWind, the International Energy Agency Task 25 on wind energy, the European Wind Integration Studies (EWIS), and CIGRE (the International Council on Large Electric Systems).

These projects offer a platform to engage with international stakeholders and share international best practice in the renewable energy space.

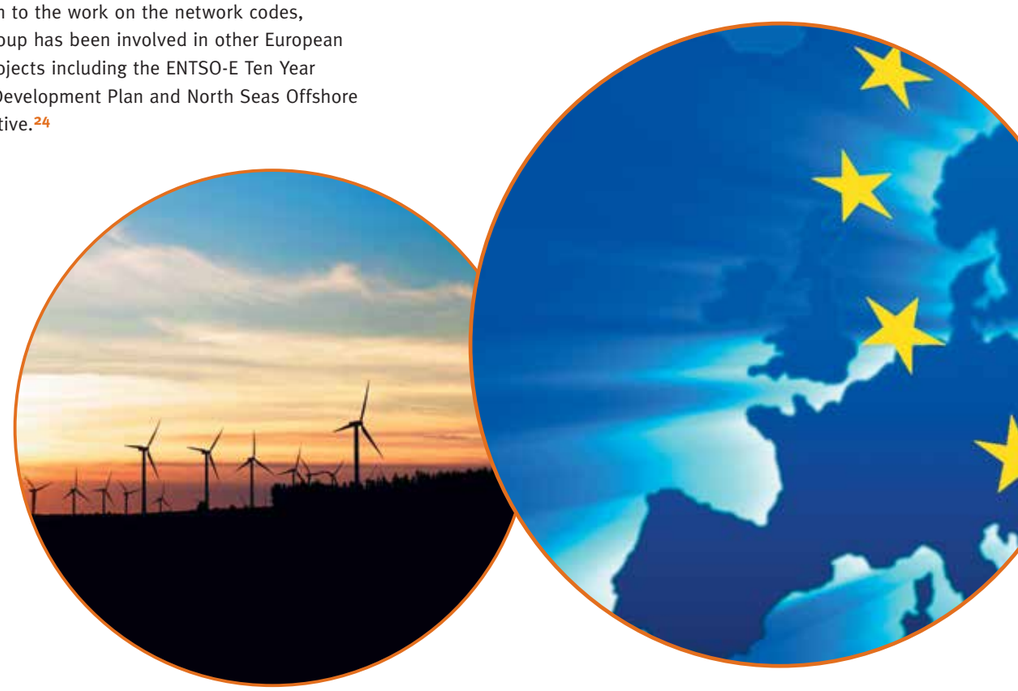
As active members of ENTSO-E and EuroPex (the European Association of Power Exchanges), EirGrid Group is heavily involved in a number of important European Working Groups (WG) and Committees that cover areas of strategic importance to the power and market systems in Ireland, Northern Ireland and Europe. SEMO (the Single Electricity Market Operator for Ireland and Northern Ireland) is a member of Europex (the Association of European Energy Exchanges) and has been following closely the development of the various systems required to deliver the Target Model.

In addition to the work on the network codes, EirGrid Group has been involved in other European energy projects including the ENTSO-E Ten Year Network Development Plan and North Seas Offshore Grid Initiative.[24]

THIRD ENERGY PACKAGE

At the heart of the European Union's Third Package of energy liberalisation laws is the development of European Network Codes in 12 topic areas in electricity (and the same in gas). These Network Codes are critical to enable cross-border trade and competition to develop across the European Union and for an integrated European energy market to become a reality. Of the 12 topic areas set out in the Third Package, the European Commission has prioritised the development and adoption of the following nine Network Codes under three broad headings:

- Connection Network Codes - Requirement for Generators, Demand Connection Code and High Voltage Direct Current Connection;
- System Operation Network Codes - Operational Security, Operational Planning and Scheduling and Load Frequency Control and Reserves;
- Market Network Codes - Forward Capacity Allocation, Capacity Allocation and Congestion Management and Electricity Balancing.



[24] The North Seas Offshore Grid Initiative is a political agreement between ten European countries - Ireland, Germany, United Kingdom, France, Denmark, Sweden, the Netherlands, Belgium, Luxembourg and Norway.

NETWORK CODES

The last year has been a particularly busy one with the development of nine network codes prioritised for the delivery of the Internal Electricity Market. EirGrid Group is actively involved in drafting these network codes and influencing the direction of the detailed rules for grid connection, system operation and market integration. Experts from EirGrid and SONI are members of the drafting teams for each network code and are convenors of two of the nine network codes under development.

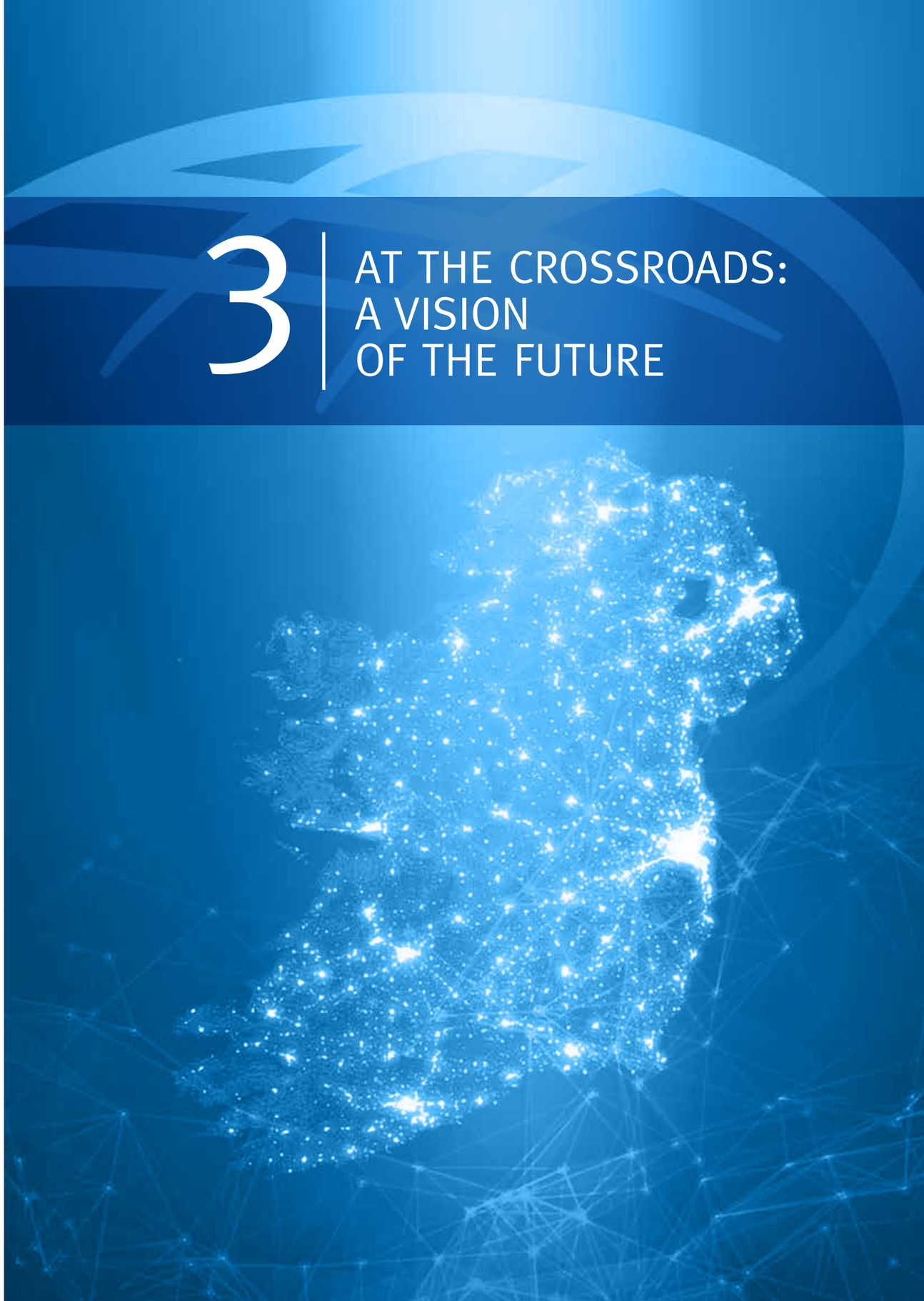
Given the importance of the Network Codes in terms of their overarching impact on the All-island electricity market, a Stakeholder Forum on Electricity Network Code Developments, organised jointly by the TSOs and Regulatory Authorities (RAs), was established in January 2013 rotating every two months between Dublin and Belfast. The purpose of this Forum is to inform industry on developments with each of the network codes under development, to listen to their views and to take these views on board when drafting the respective network codes. In addition to the Stakeholder Forum, EirGrid Group has also organised a number of dedicated workshops on specific network codes at critical points in their development to provide industry with an opportunity to ask questions and seek clarification on certain rules under consideration or to directly take their views and requirements on board.

EUROPEX

In addition to our representation at the European level in ENTSO-E, the Single Electricity Market Operator (SEMO), for Ireland and Northern Ireland is a member of Europex, the association of European energy exchanges. Europex has an important role in supporting the Price Coupling of Regions (PCR) initiative for the development of the day-ahead price coupling algorithm and the cross border intraday (XBID) continuous trading system (between the day-ahead and balancing).

Membership of the Europex ensures that SEMO remains actively engaged with other emerging developments of relevance for electricity markets across Europe. These include considerations in relation the role of power exchanges/market operators in all the timeframes of the target model including forwards, day-ahead, intraday and balancing, reporting requirements for Market Participants under REMIT and potential impacts of Markets in Financial Instruments Directive (MIFID II) financial regulations. Furthermore, Europex provides SEMO with an opportunity to explore with the other major power exchanges across Europe the challenges beyond the target model in particular in relation to the integration of renewables.

3 AT THE CROSSROADS: A VISION OF THE FUTURE



3 AT THE CROSSROADS: A VISION OF THE FUTURE

"Energy is the single most important challenge facing humanity today"

Nobel Laureate Rick Smalley, April 2004

As the world struggles to emerge from a global recession and financial crisis, policymakers are beginning to look to the energy sector as a potential source of economic growth and job creation. The energy sector's impact on the economy is greater than the sum of its parts. Most importantly, energy is an input to nearly every good and service in the economy. For this reason, stable and reasonable energy prices are beneficial to reigniting, sustaining and expanding economic growth. Beyond its direct contributions to the economy, energy is also deeply linked to other sectors in ways that are not immediately obvious. It is this multiplier effect that policymakers want to exploit.

In many countries today, the principal aim of energy policy is to ensure a competitive, secure and sustainable energy for the economy and for society out to 2020 and beyond. The electricity sector is viewed as central to this development. Many governments have already legislated for an expanded role for the electricity sector, whether through the development of Smart Grids, the introduction of Electric Vehicles, or integrating large-scale renewable energy.

The most significant contribution that the electricity sector will make to this transition will be to reduce carbon emissions by replacing fossil-fuel generation with low or zero carbon generation technologies. However, smarter networks and demand-side are also expected to be a key facilitator in the transition to a low-carbon energy sector. In addition, with a largely renewable generation portfolio, the electrification of the heating and road transport sectors can make energy-efficient, oil-independent and low-carbon homes and cars a future reality - a change that will pose additional operational challenges out to 2030 and 2050.

Over the next few decades the combination of these developments will transform many aspects of the electricity industry, offering opportunities and presenting additional challenges to power system operators.

3.1 ENERGY POLICY DEBATES: WHAT FUEL FOR THE FUTURE?

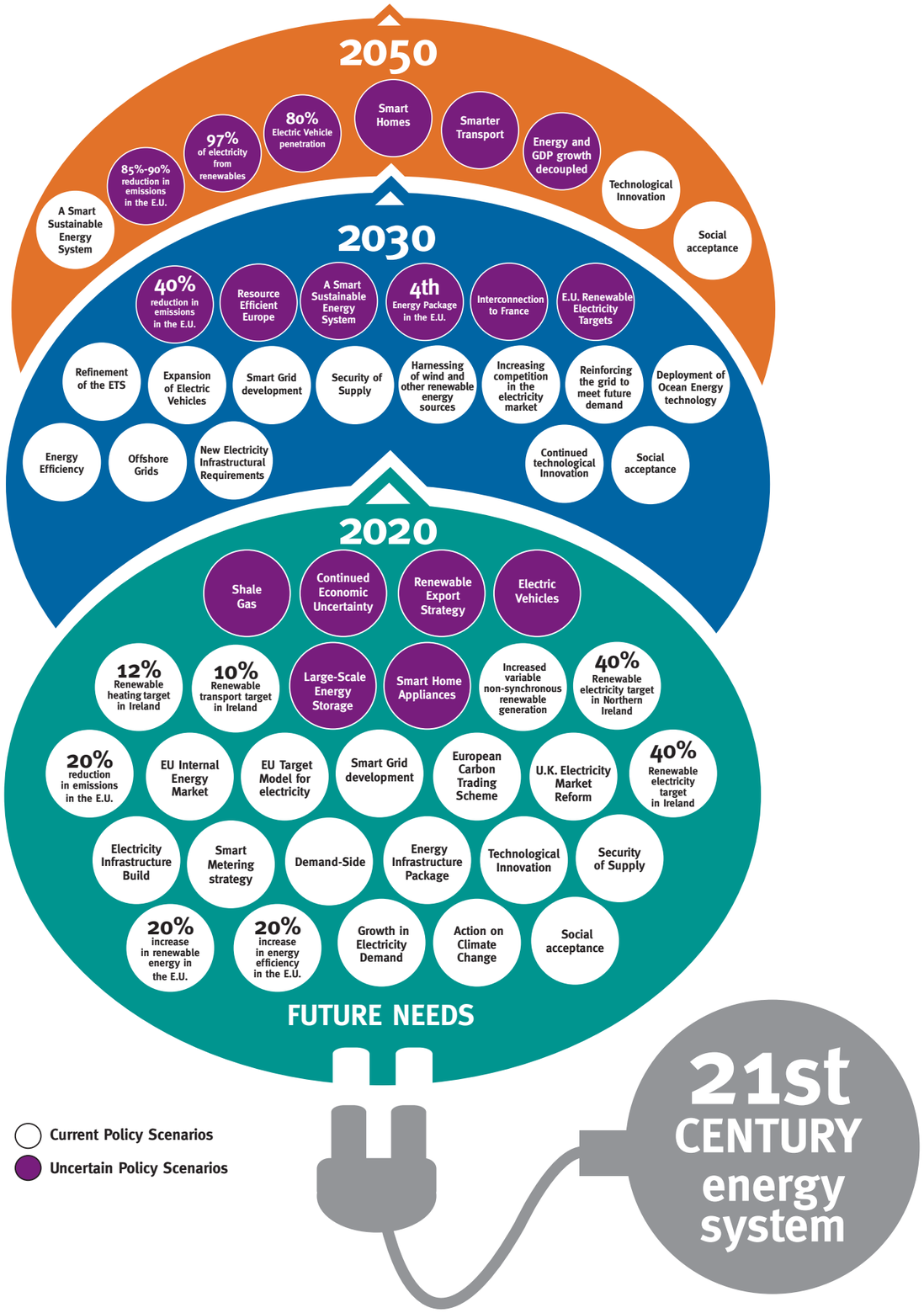
While renewable energy continues to grow in many countries, there is a range of broader developments in the global energy sector that can impact on the direction of energy policy and the energy industry more generally. For example, in the International Energy Agency (IEA) World Energy Outlook Report for 2012, an extraordinary growth in oil and natural gas output in the United States is expected over the coming decade, representing a sea-change in global energy flows. This development could lead to a possible surge in the search for and use of shale gas deposits and unconventional and deepwater oil in many countries around the world. On top of this, the IEA predicts that global ambitions for the nuclear industry will be scaled back in the coming decades as countries review their energy policies following the accident at Fukushima Daiichi in Japan in 2011. This scale back will create a generation shortage.

Ireland is not isolated from these broader trends. While renewable energy is expected to become a greater part of the generation portfolio in Ireland in the coming years, the policy debate is far from over. In 2011, the McCarthy report[25] highlighted the potential of shale gas in Ireland. The exploitation of shale gas would have the potential to impact on several energy policy areas all at once, including security of supply, energy price, and the role and penetration of renewables, particularly wind energy. In September 2005, Schlumberger Oilfield Services gave a gas-in-place estimate of 9.4 trillion cubic feet of gas (1.5 billion barrels of oil equivalent) in two of three reservoirs in the Lough Allen Basin.[26] While there are environmental concerns around the extraction method of shale gas, the use of indigenous shale gas would reduce Ireland's heavy reliance on imported natural gas for electricity generation. In addition to developments in the gas sector, a recent oil find off the south coast of Ireland, with an estimated recoverable capacity of around 280 million barrels can also impact on the direction of current energy policy and the investment flows into different emerging energy technologies in Ireland.[27] Whatever the final outcome of these policy debates, the electricity sector is expected to play an increasingly important role in all scenarios.

[25] Colm McCarthy and others, "Report of the Review Group on State Assets and Liabilities", April 2011

[26] Ireland imported approximately 45 million barrels of oil equivalent and imported 161 billion cubic feet of natural gas in 2012. This information was provided to EirGrid by SEAI in November 2013.

[27] See: http://www.theguardian.com/business/2012/oct/10/irish-oil-find-bigger-providence-resources



While the impact of shale gas on global energy prices might increase the use of gas over the medium term, the European Union's 2030 Energy Policy Green Paper and 2050 Energy Roadmap is pointing to a low-carbon society where energy production and use is dominated by low carbon energy efficient technologies and renewable generation. The Roadmap suggests that, by 2050, the E.U. should cut its emissions to 80% below 1990 levels and it sets out milestones which form a cost-effective pathway to this goal - reductions of the order of 40% by 2030 and 60% by 2040. It also shows how the main sectors responsible for Europe's emissions - power generation, industry, transport, buildings and construction, as well as agriculture - can make the transition to a low-carbon economy most cost-effectively. This low carbon energy future has the potential to be a catalyst for innovation and economic growth.

While the policy debates about future energy resources will continue into the future, several trends have emerged in Europe in the past decade that point to one possible energy future were low carbon technologies form the centrepiece of a smarter energy system.

3.2 SMART ENERGY SYSTEMS

By 2035, the IEA World Energy Outlook projects that demand for electricity will be more than 70% higher than current demand.

This growth in electricity demand will be driven by rapid population increases and economic growth in developing countries, by the continuing increase in the number of electrical devices used in homes and commercial buildings, and by the growth in electrically driven industrial processes and transport. At the same time, global renewable generation is expected to continue growing over the next 25 years, benefiting from government support, declining investment costs and rising fossil-fuel prices. According to the IEA, renewables will be the fastest-growing power source in global percentage terms and are expected to surpass that from natural gas and double that from nuclear in absolute terms in 2016.[28] In this context, renewable generation will form part of a future balanced global energy portfolio which will include fossil fuels (primarily gas), energy efficiency and nuclear.

The E.U. Energy Roadmap 2050, published in December 2011, reaffirms these trends. The Roadmap 2050 identifies a higher penetration of renewable energy beyond 2020 as a major pre-requisite for a more sustainable and secure energy system. More specifically, it shows that renewables will supply the biggest share of E.U. final energy consumption in 2050. The direction of energy policy the E.U. indicates that, at the very least, renewable generation will be a significant percentage on the electricity system out to 2050, possibly reaching 97% in a high level scenario.[29] On top of this, the E.U. is supporting the development of markets for Electric Vehicles, Smart Metering and demand-side technologies. This development will transform the behaviour of the power systems across Europe, and this change must be a core part of the design and operation of every facet of power systems, including operations, grid development and markets.

As well as working to integrate increasing amounts of renewable energy in the electricity power sector, Smart Grids are a key component of the European Strategy to a low carbon energy future. The Directive on Internal Markets (2009/72/EC) encourages member states to deploy Smart Grids and smart metering systems (Article 3). To help support this initiative, the European Electricity Grid Initiative (EEGI) laid down the Smart Grids Research, Development & Demonstration needs to achieve the European objectives by 2020 in a report published in 2010. This was followed in March 2012 by a Smart Grids Strategic Research Agenda 2035 that focused on the technology related research that will be necessary for the further development of the electricity system from 2020 to 2035 and beyond. Determining research and innovation activities, necessary for electricity networks and intelligent electric systems by 2035 and contributing to the E.U.'s envisioned CO_2 reduction of at least 80% by 2050 are at the heart of research work in this area.

[28] Renewable Energy Medium-Term Market Report 2013, p 14

[29] See the E.U. Energy Road Map 2050. Available at http://ec.europa.eu/energy/energy2020/roadmap/index_en.htm

It is widely recognised that Smart Grid research must consider the increasing future complexities of maintaining a high quality level of the electricity supply and the security of the electric system by creating a more controllable and intelligent overall system.

The work to develop a smart, sustainable energy system for the future is not just happening in the E.U. The U.S. government has also focused on the role out of Smart Grids. Indeed, according to the U.S. Department of Energy, the development and deployment of Smart Grid technologies in the United States "represents an unprecedented opportunity to move the energy industry into a new era of reliability, availability, and efficiency that will contribute to our economic and environmental health."[30] To help fulfil this potential, the American Recovery and Reinvestment Act of 2009 allocated almost USD $4.5 billion funding for a range of Smart Grid projects. The two largest initiatives in the U.S. are the Smart Grid Investment Grant (SGIG) programme and the Smart Grid Demonstration Program (SGDP). The SGIG aims to deploy existing smart grid technologies, tools, and techniques to improve grid performance today, while the SGDP explores advanced Smart Grid and energy storage systems and evaluates performance for future applications. Both five year initiatives fall under the auspices of the Department of Energy's Office of Electricity Delivery and Energy Reliability (OE).

Electricity systems will be at the heart of the transition to a smart, sustainable energy system. Even today the electricity sector is undergoing a transformation as a result of a number of mutually reinforcing policy objectives centred on the issues of energy security, climate change and economic competitiveness.

3.3 THE NEW FUTURE ENERGY CHALLENGES: MANAGING INCREASED COMPLEXITY

In order to improve energy efficiency, reduce energy use, and increase the deployment of renewables, the power system of the future must be developed in a manner that manages an array of new additional complexities while maintaining system security and continuing to provide a high quality level of electricity supply. This can be achieved in the coming decades by creating a more controllable and intelligent overall energy system. All relevant energy industry stakeholders have a role in making this happen. With the shift away from an electricity sector dominated by fossil fuel generation towards a reliance on increasing amounts of variable renewable generation, power system operators are entering a new phase in the history of electrification and power system operations.

[30] See Smart Grid.gov http://www.smartgrid.gov/the_smart_grid

For many years the conventional wisdom held that renewable energy technologies (other than large hydro) could only supplement the generation portfolio mix in electricity power systems. From an operational perspective there was a perceived limit on the share of variable renewable sources that the power system could accommodate. Experience in Ireland and some other European countries, notably Denmark and Spain, however, has demonstrated that the implementation of appropriate operational policies can enable the successful integration of higher shares of variable renewables than was thought possible only a few years ago. Today Ireland and Northern Ireland are managing world-leading levels of variable renewable energy on a synchonrous electricity power system.

In Ireland it has been shown that a mix of variable and dispatchable renewables (in addition to flexible conventional generation) can provide a stable and reliable electricity supply so long as the grid system is operated smartly and the regulatory framework is flexible.

In the 21st century, the electricity system can no longer be simply viewed as a largley isolated part of the wider energy system. On the basis of policy objectives calling for the electrification of the heating and transport sectors, the electricity sector must be viewed as central to the overall energy system. Technologies such as Electric Vehicles and increased electrical heating are becoming increasingly significant and will continue to do so in the coming decades.

At the heart of operating a power system in this new and complex environment is the need to adopt a balanced approach to increasing flexibility as variable power plant capacity grows. While a variety of technological solutions are all ready in place and being utilized by system operators, some new and innovative technological solutions are still under development and will be deployed in the coming years. Some of the solutions and changes helping to manage more variable renewables include:

- The latest generation forecasting techniques should be utilised, and have a material impact on the commitment of power plants on the system;
- The energy market should allow for closer to real-time trading of variable renewables;
- Power system operators and regulators need to ensure the adequacy of economic incentives presented by the market for the provision of services such as energy storage, flexibility and ramping;
- Shifting demand through demand-side management (DSM);
- Existing grid weaknesses should be identified and where congestion is likely to occur planning and remedial measures should be undertaken.
- Grid systems are becoming interconnected and balancing areas are being extended;
- Shifting demand by directing excess electricity generation to other sectors - such as charging electric vehicles, heating water, or producing hydrogen;
- The use of intelligent grids and smart software that can improve grid security by improving real-time information flow between the system operator and power plants;
- System users will play an important role in the Smart Grid, providing distributed system services that improve the resilience of the system as a whole. A system-wide understanding of the effects of these distributed smart services (such as Smart Metering) is essential to ensure that their full benefit can be realised.

Note - Some of the requirements sourced from IEA publications

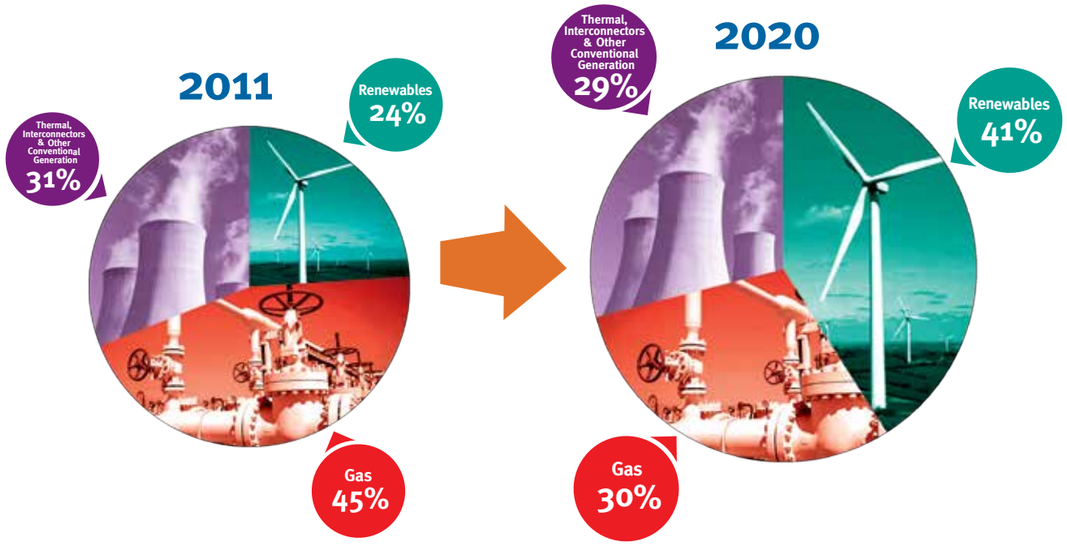
3.4 BENEFITS & OPPORTUNITIES FOR THE ISLAND

Policymakers are increasingly aware of the potential benefits and opportunities that can accrue from the use of renewable energy, adopting energy efficiency measures, and the integration of Smart Grid technologies onto the power system. Beyond reducing greenhouse gas emissions from the energy sector, these policy objectives can be an important driver of economic growth—providing wider benefits such as enhancing energy security; supporting job creation; and advancing energy security.

In 2006 approximately 90% of Ireland's primary energy requirements came from imported fossil fuels; in 2011 that figure had reduced to 88%[31]. In part, this shift is down to a year-on-year decrease in economic growth since 2007 and the associated decrease in energy demand; however, the contribution of renewable energy to overall energy demand has also increased considerably in this period from 3% to 7% in 2012, with renewable electricity contributing 3.7% to the overall energy demand in 2011.[32] In 2012 Northern Ireland imported approximately 90% of its energy needs.[33] The importance of reducing this dependence through the deployment of renewables was noted in Northern Ireland Executive's Strategic Energy Framework published in 2010.

According to the Environmental Protection Agency (EPA) in Ireland, the deployment of increasing amounts of renewable energy has already had an impact on carbon emissions. The data for 2011 shows an 11 percent decrease in carbon dioxide emissions in the power generation sector in Ireland.[34] In Northern Ireland, overall carbon emissions decreased by 5% in 2011 as compared to 2010. According to the Department of Environment (DoE) the shift away from coal and an increase in renewables contributed to this reduction.[35] EirGrid estimates that meeting the 40% renewable electricity targets in Ireland will reduce the CO2 intensity of emissions in the electricity sector from 489 g/kWh in 2011 to 300 g/kWh in 2020, representing a drop of 38%. Continued development of both the renewable energy sector and energy efficiency policies is crucial to further reducing power generation emissions and meeting future overall carbon emissions obligations.

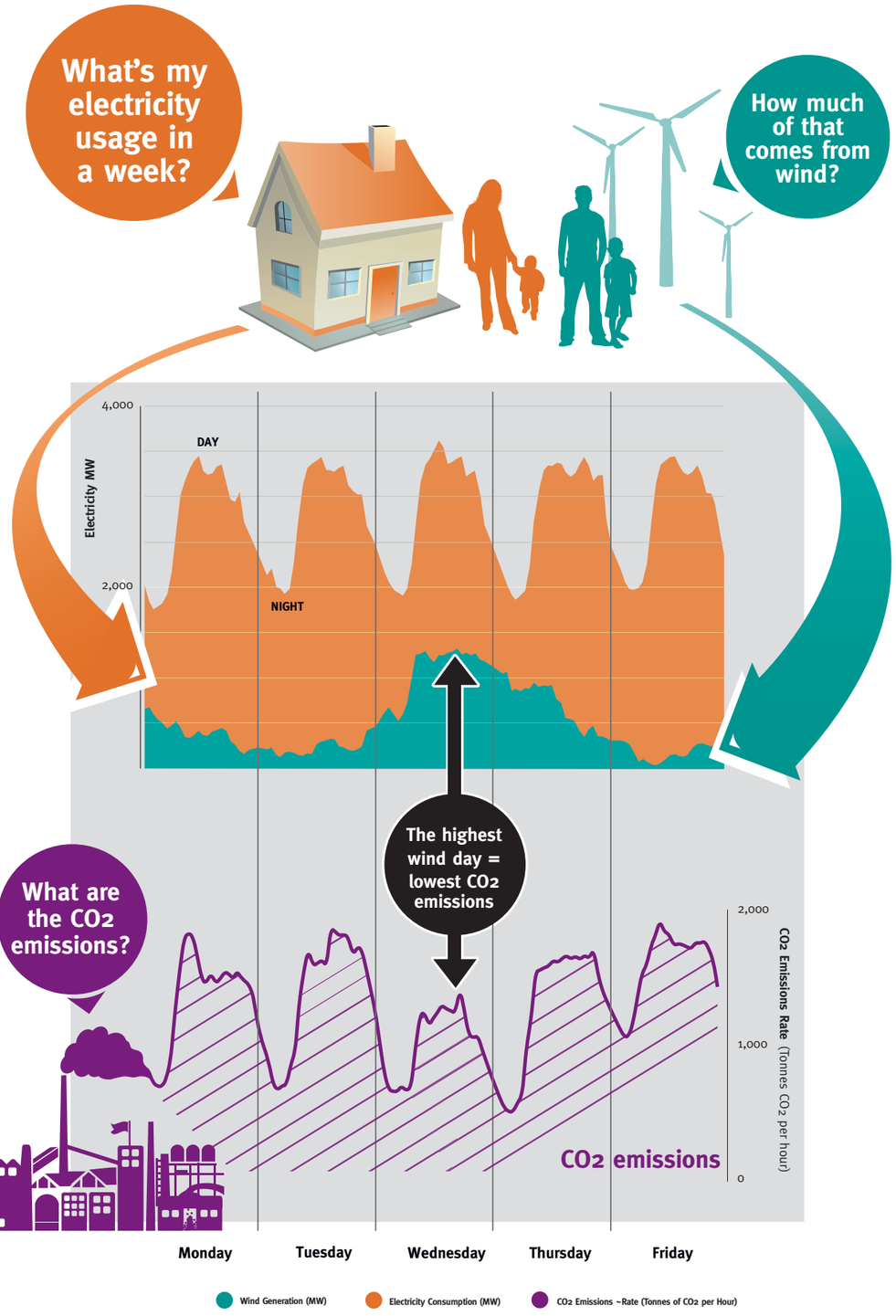
ALL-ISLAND GENERATION PLANT PORTFOLIO EVOLUTION INSTALLED & PROJECTED CAPACITY 2011 & 2020



Source: EirGrid Group Generation Capacity Statement

31 See the Sustainable Energy Authority of Ireland report - Energy in Ireland, 2012
32 See the Sustainable Energy Authority of Ireland report - Renewable Energy in Ireland, 2012
33 Communities and Renewable Energy: A Study - A report commissioned by DETI, DoE and DARD, 2013
34 Environmental Protection Agency press release 2012: http://www.epa.ie/news/pr/2012/april/name,32707,en.html
35 See the latest emission figures in the Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland, 1990-2011

HOW DOES WIND ENERGY IMPACT CO2 EMISSIONS?



Typical Working Week: 28th March to 1st April, 2011

Driven and shaped by ambitious renewable electricity targets, legislation promoting the operational integration of renewable generation and a range of financial support measures, the renewable technological research sector has expanded in recent years.

The large basket of energy and operational technologies needed to address the challenges of moving towards a smart, sustainable energy system will require continued research, development and demonstration (RD&D).

For Ireland the opportunities of this energy transition go beyond meeting our domestic renewable energy targets and are aimed at turning renewable energy production into an important export sector for the economy. It is broadly acknowledged that Ireland has an excellent, largely untapped wind resource which could be developed for export. In 2013, the Irish and U.K. Governments have signed a Memorandum of Understanding on energy cooperation signalling their intention to progress this opportunity and this work is on-going.

The development of a 21st century grid system will form the backbone of the economy this century and, akin to the benefits that accrued from the development of the telecommunication system in the past, the delivery of grid infrastructure and operational capability is the first crucial step to position Ireland as a world leader in clean energy production.

Public and private sector investment in energy infrastructure and the energy sector more generally is fundamental to enabling the integration of increasing amounts of distributed renewable energy. This spending can have wider benefits in the economy such as job creation. Indeed, according to a recent Indecon study conducted for EirGrid, investment in the Grid25 programme is likely to support almost 3,000 additional jobs over the next 15 years.[36] In addition to these jobs, however, the number of construction job opportunities will increase as new renewable generation plants are being built. It is also worth noting that renewable generators are commercial businesses so they also form part of the rate-paying base. At a time when government finances are under pressure, renewable developments are, and will be, a long term and stable source of income for local authorities.

According to a recent Indecon study conducted for EirGrid, investment in the Grid25 programme is likely to support almost 3,000 additional jobs over the next 15 years.

[36] See Indecon study at: http://www.eirgrid.com/aboutus/latestnews/

4 INTERNATIONAL DEVELOPMENTS

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According to the IEA, renewables continue to be the fastest-growing power source in global percentage terms and are expected to surpass that from natural gas and double that from nuclear in absolute terms in 2016.

Last year the United Nations announced that 2012 was the International Year of Sustainable Energy for All. This initiative called for action in support of three interlinked objectives to be achieved by 2030: providing universal access to modern energy services; doubling the global rate of improvement in energy efficiency; and doubling the share of renewable energy in the global energy mix.[37] The two principal drivers underpinning this initiative at the international level are climate change and energy security, although the idea of sustainable development was also at the heart of this proposal.

[37] The United Nations: The Sustainable Energy for All Initiative. Available at http://www.sustainableenergyforall.org/

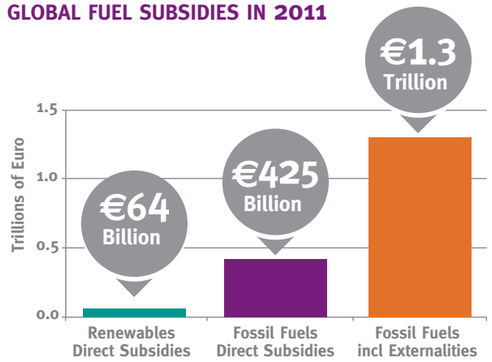
In September 2013 the Intergovernmental Panel on Climate Change (IPCC) published its fifth assessment report (AR5) on the Earth's climate. The report states "with 95% certainty, humans are the dominant cause of global warming since the 1950s."[38] One of the key findings in the IPCC report is the claim that over half the increase in global surface temperatures from 1951-2010 is due to human activities. While the report is not policy-prescriptive by design, it nonetheless presents governments with a comprehensive assessment of the most up-to-date scientific, technical, and socioeconomic knowledge on issues related to climate change.

As of 2011, the global power sector is responsible for 38% of total energy-related CO_2 emissions.[39] Thus the electricity sector has a significant part to play in decreasing global emissions. In the electricity sector, the deployment of renewable energy, energy efficiency and Smart Grid development are regarded as the core components of a sustainable energy system, and for many governments these developments are viewed as a means to reduce their energy dependence on fossil fuel imports, fulfil climate change obligations, generate jobs and reduce the price of energy for all end-users.

According to the International Energy Agency (IEA), worldwide subsidies for fossil fuel consumption amounted to an estimated €425 billion in 2011.[40] The International Monetary Fund (IMF) has estimated that on a "post-tax basis" - which also factors in the negative externalities from energy consumption - total subsidies for petroleum products, electricity, natural gas, and coal are much higher, at €1.3 trillion (or 2.5% of global Gross Domestic Product).[41] The IEA has called fossil fuel subsidies "public enemy number one to sustainable energy development."[42]

Subsidies and financial support for renewable energy (excluding large hydropower) in 2011 totalled €64 billion. About 73% went to the electricity sector (mostly to support solar PV), and most of the rest went to biofuels, with very little used to support renewable heating or cooling. The European Union accounted for nearly 57% of these subsidies, and the United States for 24%.[43]

GLOBAL FUEL SUBSIDIES IN 2011



Source: The International Energy Agency (IEA) and the International Monetary Fund (IMF).

Although maintaining the attractive financial support mechanisms for renewables will become more difficult in some countries as they increase their market share, the financial support underpinning global growth in renewable energy is set to continue at least over the medium. Renewables continue to be the fastest-growing power source in global percentage terms and are expected to surpass that from natural gas and double that from nuclear in absolute terms in 2016.[44] Indeed, last year renewable generation made up over half of total net additions to electricity generating capacity from all sources and at the end of the year renewable energy sources comprised more of installed global generating capacity.

This report is published at a time of continuing uncertainties in the global economy; fierce competition from 'cheap' gas and a wave of downward revisions to support mechanisms. Nonetheless, renewable energy has continued to grow strongly in the electricity sector. Buoyed by a supportive policy and market framework, installed renewable generation exceeded 1,470 GW in 2012, up almost 8.5% from 2011.[45] As in Ireland, extensive investment in transmission and distribution systems are taking place in countries around the world with a view to providing a solid backbone for an intelligent and sustainable energy system to emerge.

[38] See the IPCC 5th Assessment Report at: http://www.ipcc.ch
[39] See the International Energy Agency website: http://www.iea.org/aboutus/faqs/climatechange/
[40] IEA World Energy Outlook 2012
[41] The International Monetary Fund (IMF) ENERGY SUBSIDY REFORM: LESSONS AND IMPLICATIONS, January 2013. Available at http://www.imf.org/external/np/pp/eng/2013/012813.pdf (U.S. dollars have been converted to Euro equivalent as of October 2013).
[42] Fatih Birol, Chief Economist at the IEA made this statement at the European Wind Energy Association Conference in Vienna in February 2013.
[43] Renewables 2013: Global Status Report: REN 21. Available at www.ren21.net
[44] Renewable Energy Medium-Term Market Report 2013, p 14
[45] Renewables 2012: Global Status Report: REN 21. Available at www.ren21.net

4.1 EUROPEAN UNION

The European Union is a world leader in the deployment of renewable energy. In 2012 almost 70% of all new installed capacity in the E.U. was renewable. It was, furthermore, the fifth year running that over 55% of all new electricity generation capacity installed in the E.U. was renewable. A total of 31 GW of renewable power capacity was installed in 2012 and last year renewable energy accounted for almost 18% of the E.U.'s electricity consumption.[46]

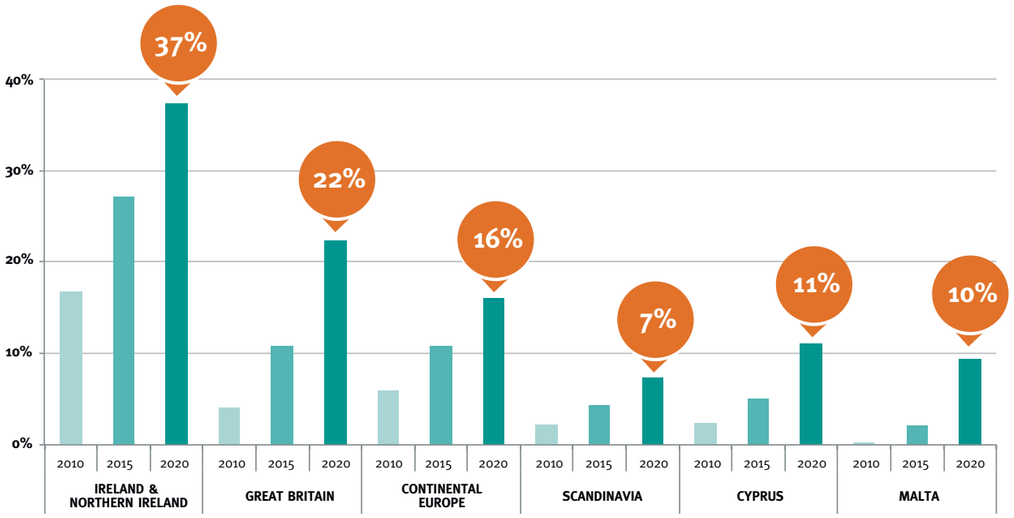
At the heart of E.U. energy policy is an array of mechanisms and measures that aim to address the issues of energy security, climate change and economic competitiveness. The deployment of large-scale renewable generation is considered central to limiting E.U. energy imports in the future, which today currently stand at 50% of total energy. Without these concrete efforts it is predicted that this import dependency could increase to 70% in the coming decades.[47] In 2012 the E.U. power sector continued its move away from fuel oil, coal and nuclear, with each generating technology decommissioning more than it installed. At the beginning of 2013, the total installed power capacity in E.U. had reached 931.9 GW.

Last year was another strong year for the deployment of renewable generation in the E.U.; indeed, 31 GW of new renewable generation (Wind, Concentrated Solar Power, Solar PV, Biomass, Hydro, Geothermal, Waste, Wave and Tidal) was installed throughout 2012. The deployment of wind generation in the E.U. in 2012 reached 11.8 GW of additional capacity, of which, 10.7 GW was onshore and 1.1 GW was offshore. Total installed wind generation in the E.U. has now reached over 105 GW.[48]

WHAT IS A SYNCHRONOUS SYSTEM?

A Synchronous System is a power grid where electricity is generated at a single synchronised AC frequency. Ireland and Northern Ireland form such a system – all of the conventional generators on the island run in synchronism, producing electricity at 50 Hz. Synchronous systems can be relatively small, such as Ireland and Northern Ireland, or span vast areas, such as Continental Europe.

PENETRATION OF NON-SYNCHRONOUS RENEWABLES IN EACH EUROPEAN SYNCHRONOUS SYSTEM 2010-2020



Source: The National Renewable Energy Action Plans (NREAP)

[46] EWEA Renewable Forecast and IEA Medium Term Market Report

[47] Umbach F. Global energy security and the implications for the E.U. Energy Policy. 2010; 38:1229-1240.

[48] The European Wind Energy Association (EWEA) press release 27th of September, 2012. Available at: http://www.ewea.org/index.php?id=60&no_cache=1&tx_ttnews%5Btt_news%5D=1959&tx_ttnews%5BbackPid%5D=259&cHash=3259e84369df598531fb6d7d69ef7ea5

4.2 UNITED STATES OF AMERICA

In January 2013 President Obama addressed the U.S. Congress and declared his intention to act to tackle the threat posed by climate change. The President stated: "...if Congress won't act soon to protect future generations, I will. I will direct my Cabinet to come up with executive actions we can take, now and in the future, to reduce pollution, prepare our communities for the consequences of climate change, and speed the transition to more sustainable sources of energy."[49] This statement was followed in June 2013 by the Obama Administration's Climate Action Plan.

The Action Plan aims to achieve three broad objectives: cutting carbon emissions in the United States (by 17% in 2020 compared to 2005); preparing the U.S. for the impact of climate change, (which is estimated to have cost $100 billion in 2012) and agreeing a series of bilateral agreements with key stakeholders such as China (including an end to U.S. funding for overseas coal plants without Carbon Capture and Storage and a commitment to reduce fossil fuel subsidies). The Plan calls for a doubling of renewable generation in the U.S. by 2020.

The U.S. policy environment has experienced some volatility over the past year, though it remains broadly supportive. With no federal target, State Renewable Portfolio Standards (RPS) and federal financial incentives act as the main deployment drivers. Overall, a continued substitution away from coal towards natural gas and non-hydro renewable power underpin recent changes in U.S. power generation.

In 2012 installed renewable electricity capacity had reached 167 GW, representing 13% of total generation. In 2012, wind energy was the largest source of new U.S. electricity generation, providing some 42% of all new capacity. Underpinning this strong growth is the fact that in the U.S., 26 States (and the District of Columbia) have a Renewable Portfolio Standard (RPS); 8 States have renewable energy goals and 18 States offer performance based incentives for renewable generators, including Feed-in-Tariffs.

The electricity sector is responsible for 33% of all U.S. greenhouse gas emissions, thus the shift towards renewable targets will help reduce total emissions in the U.S. The IEA has predicted that renewable generation will expand by 56% from 2011 to 2017 reaching a total installed capacity of 223 GW.

In 2012 wind generation rose to 3.3% of power generation up from 2.8% in 2011. 13 GW of onshore wind was installed in 2012 (8GW connected in December 2012 to qualify for anticipated expiration of the Production Tax Credit). Total installed wind in the U.S. reached 60 GW at the end of 2012. According to a 2008 study by U.S. Department of Energy, wind generation is capable of contributing up to 20% of America's electricity demand by 2030.[50]

The U.S. Department of Energy funds research, development, and deployment projects to advance the use and adoption of clean, renewable energy technologies and continued this funding last year for nascent generation technologies such as ocean energy. This research funding has produced a number of useful technical studies on integrating renewable generation such as the 2009 North American Electric Reliability Corporation (NERC) report on Integrating Variable Generation. This NERC study provides America with a robust roadmap for grid planning and operational changes needed for America's future electric generation portfolio.[51]

"...if Congress won't act soon to protect future generations, I will. I will direct my Cabinet to come up with executive actions we can take, now and in the future, to reduce pollution, prepare our communities for the consequences of climate change, and speed the transition to more sustainable sources of energy."

President Obama
January 2013

[49] See the 2013 State of the Union address at http://www.whitehouse.gov/state-of-the-union-2013

[50] See U.S. Department of Energy Study: 20% Wind Energy by 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply. http://www.nrel.gov/docs/fy08osti/41869.pdf

[51] The NERC study is available on the Internet at http://archive.awea.org/newsroom/releases/releases/NERC_study_16Apr09.html

4.3 CHINA

The deployment of renewable energy in China is driven by official government targets published in the 12th Five Year Plan (11.4% in 2015 and 15% in 2020 of total primary energy consumption). Feed-in Tariffs are in place for onshore wind, solar PV and bio energy generation. Installed wind generation capacity is scheduled to reach 100 GW by 2015. Offshore wind generation is expected to expand to 5GW in 2015 and 30GW by 2020.

China's robust economic growth and thirst for energy resources in the past decade has driven it to become one of the top global energy consumers. China has the largest oil and gas production in the Asia-Pacific region and the largest coal production in the world, but the country continued to experience strong renewable energy deployment across most generation technologies in 2012.

At the end of 2012, total power generation in China was 1,144 GW (fossil fuel accounts for over 840GW). While China's power generation continues to be dominated by coal, renewable energy led the growth in 2012. 16 GW of hydropower was installed last year and it is now almost 18.5% of total generation, while 14 GW of wind was installed in 2012, reaching a total installed capacity of 75 GW. It is worth noting that an estimated 20% of total wind capacity was not connected to the grid. The State Grid Corporation of China is expected to invest $270 billion through to 2015 to expand the electricity network and speed up connections.

4.4 THE REST OF THE WORLD

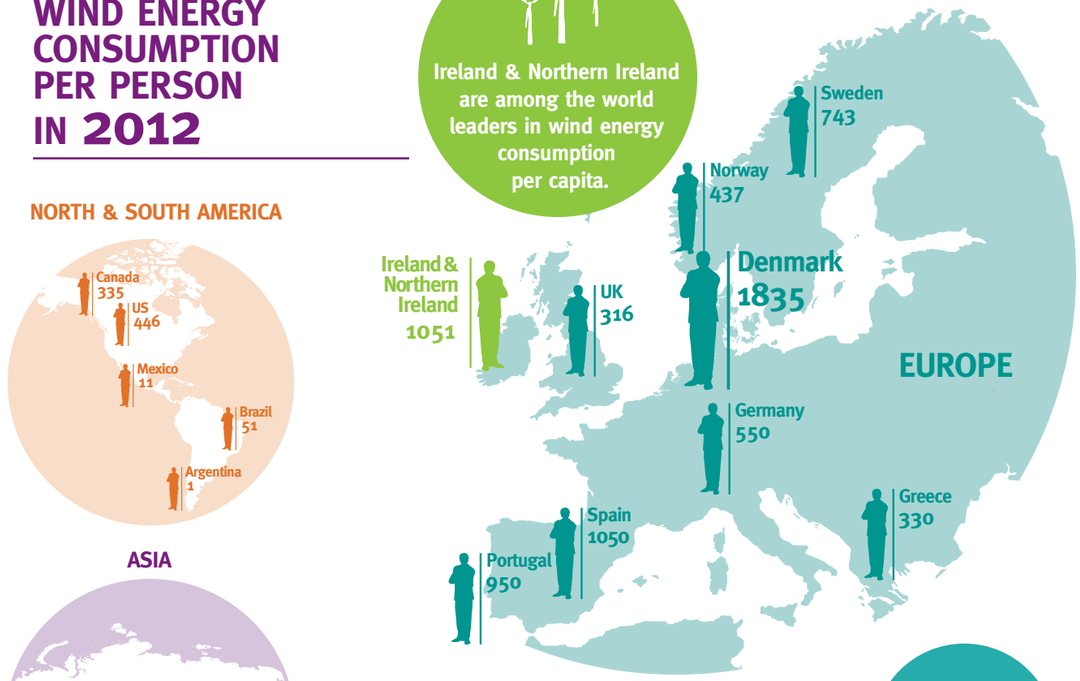
The upward trend in the deployment of renewable energy in Europe, the U.S. and China was typical in many other parts of the world in 2011, too. India experienced strong growth in wind, solar and hydropower last year. After installing 2.3 GW of wind in 2012, India now has an installed wind generation capacity of 18.5 GW, bringing total renewable energy installations to 26.9 GW. However, grid constraints remain a significant issue to further development on a countrywide basis.

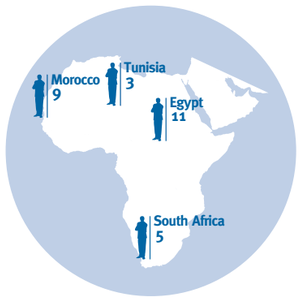
The nuclear incident in Fukushima in 2011 will have a major impact on energy policy in Japan for many years to come. Many of the Japanese nuclear power facilities, which account for almost 30% of its electricity generation, have been shutdown since March 2011. In addition, with the announcement of a new feed-in tariff for renewables in 2012, there is now real potential for renewables to grow rapidly in Japan over the next decade. At the end of 2012, Japan announced a target to develop 1,500 MW of new wave and tidal capacity by 2030.

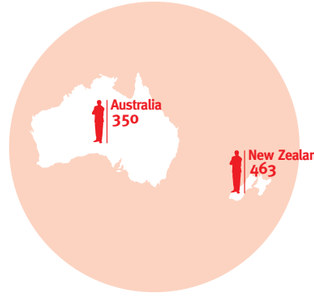
In Australia, total installed wind capacity reached over 3 GWs in 2012, with the addition of 358 MW throughout the year. Wind generation now accounts for 2.4% of total electricity generation. Hydropower is still the largest renewable contributor to the generation portfolio at 5.6%. Total installed wind generation in Latin America reached 3.5 GW in 2012, adding more than 1 GW throughout the year for the first time. This represented a year-on-year growth rate of 56%.

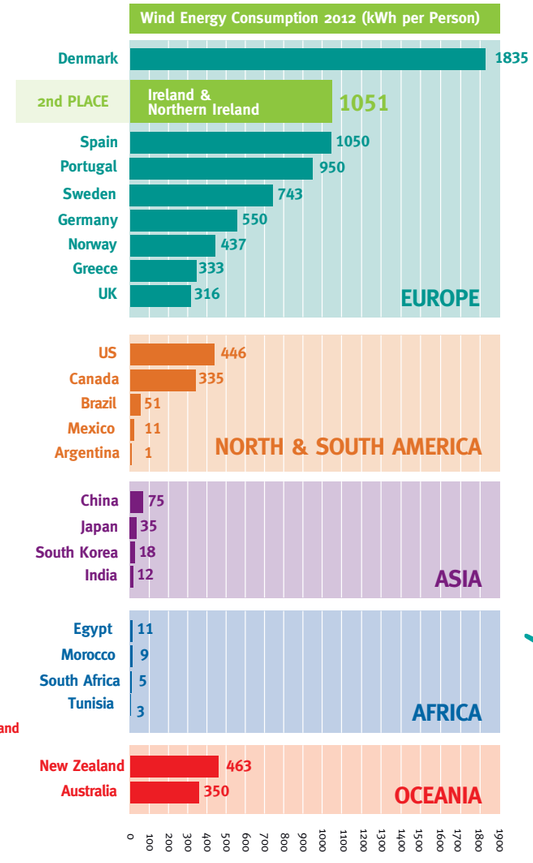
WIND ENERGY CONSUMPTION PER PERSON IN 2012

Ireland & Northern Ireland are among the world leaders in wind energy consumption per capita.









Capitalising on our wind resources

Reducing our dependence on imported fossil fuels

Reducing our carbon footprint

5 CONCLUSION

5 CONCLUSION

EirGrid Group is actively engaging with communities across Ireland in order to listen and understand the views of the wider public and we look forward to enhancing our cooperative work with all stakeholders in the coming years.

The aim of this report is to provide an overview of the wide array of renewable activity in the electricity sector across the island of Ireland and place these developments in a broader regional and international context.

As the report shows, renewable energy is a significant and growing percentage of the overall generation portfolio mix on the island. At the end of september 2013, renewable generation capacity on the island has reached 2,771 MW - 2,188 MW in the South and 583 MW in the North.

Developing a robust electrical power system across the island that has the infrastructural capacity, technological capability and operational tools to facilitate the development of the island's renewable energy potential is fundamental to reaching the 40% renewable electricity targets - North and South. EirGrid Group is fully focused on ensuring that all aspects of delivering the 40% target - Grid25, Network 25, RIDP, the Gate 3 process, Smart Grid development, and DS3 - are in place to secure the island's future energy and sustainability needs.

Meeting the renewable electricity targets and building the necessary grid infrastructure will only be achieved through the full engagement and support of all stakeholders in the electricity sector and the wider public. EirGrid Group is actively engaging with communities across Ireland in order to listen and understand the views of the wider public and we look forward to enhancing our cooperative work with all stakeholders in the coming years.

The EirGrid Group would like to thank the Sustainable Energy Authority of Ireland, the Environmental Protection Agency, and the Department of Communications, Energy and Natural Resources for contributions throughout this report.

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