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# Reader Information

## **Purpose**

This is a new publication which aims to provide a comprehensive and accessible overview of key statistics and information relating to energy in Northern Ireland. The report endeavours to present a disparate range of existing and emerging information and statistics into a single coherent source. The majority of statistics and data included are National Statistics or Official Statistics sourced from producers such as the Department for Energy and Climate Change (DECC), the Northern Ireland Statistics and Research Agency (NISRA) and the Office for National Statistics (ONS) among others.

## **Reporting Period**

The data presented in the report was the most up-to-date available at the time of publication. Where possible, data for 2015 has been used although some data relates to earlier periods.

## **Target audience**

This publication is intended to be helpful and informative to a wide range of stakeholders with an interest in the energy sector including: DETI, elected representatives, academics, energy interest groups, the media and general public.

## **Next Updates**

Decisions will be taken in due course as to the frequency of any subsequent publication of updates.

## **An Official Statistics Publication**

Official Statistics are produced to a high professional standard. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political interference. As we want to engage with users of our statistics, we invite you to feedback your comments on this publication to [sean.donnelly@detini.gov.uk](mailto:sean.donnelly@detini.gov.uk).

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# Energy policy in Northern Ireland

Responsibility for energy policy, with the exception of nuclear energy, is devolved to the Northern Ireland Executive. The Department of Enterprise, Trade and Investment minister leads on energy policy matters but, given the broad reach of energy issues, a number of other Northern Ireland Departments also have energy related functions. These include the Department for Regional Development (energy transport), the Department of Finance and Personnel (energy efficiency in the public sector), the Department of the Environment (energy emissions) and the Department for Social Development (energy efficiency in housing).

The Strategic Energy Framework (SEF) flags the direction for Northern Ireland energy policy over the 2010-2020 timeframe. It was agreed by the NI Executive and relates to targets which are in the current NI Programme for Government. The SEF is centred around the energy trilemma of energy costs, security of supply and protecting the environment. Determining energy policy involves balancing these three key issues.

The SEF is currently being reviewed given it is at its mid-point. This review will ensure that Northern Ireland's energy policies and priorities continue to contribute to a secure, competitively priced and sustainable energy sector. The review is also timely as considerable changes have occurred in the energy sector over the past five years and we can expect change to continue. One of the most significant changes is the achievement of the Programme for Government target for 20% of our electricity to be generated from renewable sources by 2015.

The electricity and gas industries are subject to regulation by the Northern Ireland Authority for Utility Regulation (NIAUR). The regulated gas and electricity industries can be broadly divided into generators, system generators such as Northern Ireland Electricity and suppliers. The system operators are responsible for the electricity and gas infrastructure and suppliers for billing consumers. The oil and coal industries are unregulated in Northern Ireland, operating in a fully competitive market.

Northern Ireland energy policy is increasingly influenced by EU energy policy. Most recently, the EU's Third Energy Package of Directives and EU Regulations has seen further liberalisation of the electricity and gas markets and changes to the structure of both industries in Northern Ireland.

Northern Ireland works with the Department of Energy and Climate Change which is responsible for energy policy for the rest of the United Kingdom. Northern Ireland contributes to the UK's Member State obligations in areas such as transposition of EU Directives and meeting Member State requirements and energy targets; and ensuring that local consumers have access to reliable electricity and gas supplies.

Northern Ireland also works with the Republic of Ireland on energy matters. There has been, since 2007, a single wholesale market for electricity in Northern Ireland and the Republic of Ireland, underpinned by legislation in both jurisdictions.

# Energy in Northern Ireland 2016

This is a new publication which aims to provide a comprehensive and accessible overview of key statistics and information relating to energy in Northern Ireland. The report endeavours to present a disparate range of existing and emerging information and statistics into a single coherent source. The majority of statistics and data included are National Statistics or Official Statistics sourced from producers such as the Department for Energy and Climate Change (DECC), the Northern Ireland Statistics and Research Agency (NISRA) and the Office for National Statistics (ONS) among others.

The publication is structured around 6 chapters including: 1) key socio-demographic statistics for Northern Ireland to provide a broad context; 2) the economic contribution of energy to the local economy; 3) electricity generation, transmission, distribution and supply; 4) renewable electricity generation; 5) total energy consumption; and 6) energy and the consumer.

As this is a new publication and as we want to engage with users of our statistics, we invite you to feedback your comments to [sean.donnelly@detini.gov.uk](mailto:sean.donnelly@detini.gov.uk).

## Chapter 1: Northern Ireland in Context

The scale and nature of energy within any given country or region, is shaped by a complex inter-play of impacting factors and, inevitably, direct comparisons between differing regions or countries in respect of energy generation, distribution and consumption will reflect these factors. The following key facts relating to Northern Ireland, its geography, climate, population and economy are intended to provide a broad scene setting context for the picture of energy in Northern Ireland as rehearsed in this report.

### Geography

- Northern Ireland is situated on the north eastern part of the island of Ireland, sharing a land border with the Republic of Ireland to the south and west, and is dependent on air and sea routes for travel and connectivity within the United Kingdom.

### Climate<sup>1</sup>

- The climate of Northern Ireland is characterised by equability, a consequence of the moderating effects of the Atlantic Ocean bringing relatively mild winters and cool summers. However, the indented shape of the coastline and the presence of high ground introduce localised differences in temperature, cloud and precipitation.
- The mean annual temperature at low altitudes in Northern Ireland varies from about 8.5 °C to 10.0 °C, with the higher values occurring around or near to the coasts. The January mean daily minimum temperatures vary from about 0.5 °C in the upland areas to about 2.5 °C on the coast. July is normally the warmest month in Northern Ireland, with mean daily maximum temperatures varying from about 17.5 °C in the upland areas and along the north coast to almost 20 °C in low lying areas south of Lough Neagh and in Fermanagh.
- Northern Ireland is one of the windier parts of the UK, with the windiest areas being over the highest ground and along the coasts of Counties Antrim and Down. The strongest winds are associated with the passage of deep areas of low pressure close to or across the UK. The frequency and strength of these depressions is greatest in the winter half of the year, especially from November to January, and this is when mean speeds and gusts (short duration peak values) are strongest.
- On the whole, Northern Ireland is cloudier than England, because of the hilly nature of the terrain and the proximity to the Atlantic. The dullest parts of Northern Ireland are the upland areas of the north and west, with annual average sunshine totals of less than 1,100 hours. Mean monthly sunshine figures reach a maximum in May and are at their lowest in December. Whilst the key factor is variation in the length of the day through the year, cloud cover plays a part as well. A feature is the reduction in mean monthly sunshine that typically occurs in July and August, accompanied by increased cloudiness, which is associated with an increase in the prevalence of westerly winds.

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<sup>1</sup> <http://www.metoffice.gov.uk/climate/uk/regional-climates/ni>

## Land area

- At an area of 13,843 km<sup>2</sup>, Northern Ireland comprises around 16% of the area of the island of Ireland and around 5% of that of the United Kingdom.
- The coastline of Northern Ireland comprises some 373 kilometres accounting for approximately 12% of the coastline of the island of Ireland (3,170 km).
- Of Northern Ireland's 1.8 million people, over six in ten (63%) live in a small/medium/large town or city with one in ten living in an intermediate settlement or village and just over one quarter (28%) living in open countryside or in a settlement of less than 1,000 people<sup>2</sup>.

## Population

- The Northern Ireland population in mid 2014 was estimated to be 1.84 million people. The number of children aged 0 to 15 years was 383,800 (20.9%), the working age population (persons aged 16 to 64) was 1,170,800 (63.6%) whilst the older population (persons aged 65 and over) was 285,900 (15.5%)<sup>3</sup>.
- The Northern Ireland population is projected to grow from 1.84 million in 2014 to 1.904 million people by 2020, 1.947 million by 2025, 1.980 million by 2030 and 2.005 million by 2035. Projected population growth from 2014 to 2035 is therefore estimated to be around 9%.
- Projections for the number of households in Northern Ireland indicate growth from 708,601 households in 2012 to 743,461 in 2020, 768,279 in 2025, 789,857 in 2030 and 807,004 in 2035<sup>4</sup>. Projected growth in the number of households from 2012 to 2035 is therefore estimated to be 13.9%, somewhat greater than the projected increase in population growth.
- At 2012, the number of people per square kilometre was 134 for Northern Ireland, 411 for England, 148 for Wales and 68 for Scotland<sup>5</sup>.
- A combination of population density, poorer public transport linkages and extent of rurality results in people in Northern Ireland travelling further using private vehicles accounting for 90% of distance travelled, compared to 88% in Wales, 80% in Scotland and 81% in England<sup>6</sup>.
- In 2014-15 and compared to England (76%), households in Northern Ireland (78%) report a slightly higher level of car ownership which has been a consistent picture over recent years<sup>7</sup>.
- In Northern Ireland in 2014, over half of all private and light goods vehicles registered were diesel fuelled (57%) whilst 42% were petrol<sup>8</sup>. In contrast, in Great Britain just over one third (36%) of cars licensed were diesel fuelled whilst 63% were petrol<sup>9</sup>.

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<sup>2</sup> <http://www.nisra.gov.uk/archive/geography/review-of-the-statistical-classification-and-delineation-of-settlements-march-2015.pdf>

<sup>3</sup> <http://www.nisra.gov.uk/archive/demography/population/projections/NPP14-Bulletin.pdf>

<sup>4</sup> <http://www.nisra.gov.uk/demography/default.asp21.htm>

<sup>5</sup> <http://www.ons.gov.uk/ons/rel/regional-trends/region-and-country-profiles/population-and-migration--december-2013/directory-of-tables.html>

<sup>6</sup> *ibid*

<sup>7</sup> [http://www.drndi.gov.uk/index/statistics/recent-stats-categories/ni\\_transport\\_statistics.htm](http://www.drndi.gov.uk/index/statistics/recent-stats-categories/ni_transport_statistics.htm)

<sup>8</sup> *ibid*

<sup>9</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/489894/tsgb-2015.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/489894/tsgb-2015.pdf)

## Housing

- At 2011, Northern Ireland's household accommodation type comprised 38% detached housing, 28% semi-detached, 25% terraced and 9% flats/apartments. By comparison for the UK as a whole, household accommodation type comprised 23% detached housing, 30% semi-detached, 24% terraced and 22% flats/apartments<sup>10</sup>.
- In terms of energy efficiency of the housing stock in Northern Ireland, the Standard Assessment Procedure (SAP) is Government's standard method of rating the energy efficiency of a dwelling, with a higher SAP rating indicating better energy efficiency. In 2011, this averaged 59.6 for Northern Ireland compared to an average of 55.0 for England in 2010<sup>11</sup>.
- In Northern Ireland in 2011<sup>12</sup>, household central heating systems were mostly oil fired (68% of households) compared to 17% with gas central heating and 14% other central heating including solid fuel, electric and dual fuel systems. In England and Wales by comparison, gas central heating accounted for 79% of household central heating, 4% by oil fired and 15% using other central heating systems<sup>13</sup>.

## Economy

- The number of Pay As You Earn (PAYE) or VAT registered businesses in Northern Ireland peaked at 71,555 in 2008 and at 68,085 in 2015 reflects a reduction of around 5% on peak numbers. For the UK as a whole, there were 2.16 million businesses registered in 2008 increasing to 2.45 million in 2015<sup>14</sup>.
- In 2015, just under half of all registered businesses in Northern Ireland were within the agriculture (25%), construction (13%), and retail (9%) sectors. By comparison the agriculture sector accounted for 6% of all UK registered business, with 12% in construction and 8% in retail<sup>15</sup>.
- The income approach estimate of Gross Value Added (GVA) for Northern Ireland for 2014 was £34,384 million representing £18,682 per head of population. Northern Ireland's GVA per head of population is 75.9 per cent of the corresponding UK figure for 2014. Northern Ireland's GVA per head was third lowest of the UK regions with only Wales and the North East of England having a lower GVA per head than Northern Ireland<sup>16</sup>.
- The Northern Ireland Composite Economic Index (NICEI) is an experimental quarterly performance of the Northern Ireland economy. Base lined at 100 in 2010, the latest NICEI value for 2015 quarter 3 at 102.1 was well below the maximum of 111.3 reached in 2007 quarter 2 and just above the minimum level of 99.3 reached in quarters 3 and 4 of 2012<sup>17</sup>.

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<sup>10</sup> 2011 Census: Key Statistics and Quick Statistics for local authorities in the United Kingdom

<sup>11</sup> [http://www.nihe.gov.uk/northern\\_ireland\\_house\\_condition\\_survey\\_main\\_report\\_2011.pdf](http://www.nihe.gov.uk/northern_ireland_house_condition_survey_main_report_2011.pdf)

<sup>12</sup> Ibid

<sup>13</sup> <https://www.nomisweb.co.uk/census/2011/QS415EW/view/2092957703?cols=measures>

<sup>14</sup> [https://www.detini.gov.uk/sites/default/files/publications/deti/IDBR%20Publication%202015\\_0.pdf](https://www.detini.gov.uk/sites/default/files/publications/deti/IDBR%20Publication%202015_0.pdf)

<sup>15</sup> Ibid

<sup>16</sup> <https://www.detini.gov.uk/sites/default/files/publications/deti/Regional-GVA-Income-Approach-1997-2014.pdf>

<sup>17</sup> <https://www.detini.gov.uk/sites/default/files/publications/deti/NI%20Composite%20Economic%20Index%20Statistical%20Bulletin%20Q3%202015.pdf>

## Chapter 2: Energy and the Economy

### Summary of key points

#### Activity-Based: Low Carbon and Renewable Energy Economic Contribution

- In 2014, some 2,000 businesses in the non-financial sector in Northern Ireland were estimated to be engaged in some form of Low Carbon and Renewable Energy (LCRE) activity, generating almost £1 billion in turnover and employing some 6,000 full time equivalent employees.
- In terms of total UK LCRE activity, Northern Ireland accounted for around 2% of all businesses, 2.2% of turnover and 2.6% of employment in 2014.
- Of the total LCRE activity in Northern Ireland in 2014, the Energy Efficient Products group was the group that accounted for the largest proportion of businesses (63%), turnover (35%) and employees (59%).
- Activity in the Energy Efficient Products group generated the greatest proportion of LCRE turnover in England (48.4%), Wales (36.9%) and Northern Ireland (34.5%).
- Businesses operating in the Energy Efficient Products sector, which includes installation of energy efficient lighting and energy efficient products, accounted for over half of all LCRE full-time equivalent employees in each UK region.
- The Low Carbon Electricity group accounted for around half (45.5%) of all businesses reporting at least some LCRE activity in Scotland, compared with one fifth in Northern Ireland (21%), about a quarter in England and just over one third in Wales.

#### Sector-Based: Energy Economic Contribution

- In 2013, the energy sector (constructed from a combination of Standard Industrial Classification codes) in Northern Ireland employed over 2,200 people.
- The total number of energy sector enterprises in Northern Ireland increased from 255 in 2010 to 475 in 2014, an increase of 86%. The major contributing factor to the overall rise in the number of energy sector enterprises was the more than fivefold increase in the 'Electricity, gas, steam and air conditioning supply' sector.
- Gross Value Added (GVA) per head in Northern Ireland for businesses operating in the 'Electricity, gas, steam and air conditioning supply' sector in 2013 was over 44% higher than the equivalent GVA per head figure for the UK as a whole and around 7 times higher than the 'all sectors' average for Northern Ireland.

## Introduction

This chapter presents information on the number of businesses, turnover and employment from a new business survey of Low Carbon and Renewable Energy economic activity. It also provides some information on employment, economic output and the number of registered enterprises in Northern Ireland's energy sector using other definitions and sources.

### Low Carbon and Renewable Energy Economy (LCRE) survey

The Low Carbon and Renewable Energy Economy (LCRE) survey<sup>18</sup> was despatched for the first time in 2015, for the reporting year 2014, to a sample of some 41,500 UK businesses. The survey was designed by the Office for National Statistics (ONS) to provide greater detail on low carbon and renewable energy activities in the UK and its regions, following demand from stakeholders for official statistics on this topic. The survey was developed in consultation with stakeholders from UK and devolved government departments, including the Department of Enterprise, Trade and Investment.

The LCRE survey collected information on business activity across a number of Low Carbon and Renewable Energy activities such as: electricity production from wind, solar, hydropower or other sources; the design, manufacture or installation of energy efficient products; the design, production and installation of infrastructure for generating heat directly through solar, thermal, geothermal or other means (i.e. renewable heat); the design and manufacture of vehicles with specific technology to significantly reduce or remove emissions; and the design, manufacture and installation of fuel cells and energy storage systems. A full list of all 17 sectors can be found in Annex 2.1.

It is worth noting that the LCRE survey collected information from businesses where some or all of their activities could be defined as low carbon or renewable energy activities. Indeed, Low Carbon and Renewable Energy activities were the primary activity of only around one third of all businesses active in the LCRE economy across the UK in 2014<sup>19</sup>. Also, the financial sector was excluded and the LCRE survey therefore reports on the non-financial business economy.

The key variables collected by the LCRE survey were the number of businesses, employment and turnover. The results for Northern Ireland, along with comparisons to England, Scotland, Wales and the UK are presented below.

### LCRE Headline Results by Region

Table 2.1 shows that in 2014 in Northern Ireland, just under 2,000 businesses in the non-financial sector were estimated to be carrying out some LCRE activity, generating almost £1 billion in turnover and with some 6,000 full time equivalent employees. In terms of total UK activity, Northern Ireland accounted for around 2% of all businesses, 2.2% of turnover and 2.6% of employment.

Whilst a lower proportion of businesses in Northern Ireland were involved in LCRE activities compared to the UK as a whole (3.2% in NI compared to 4.4% in the UK), Table 2.1 shows that Northern Ireland businesses in the non-financial sector with LCRE activity accounted for slightly

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<sup>18</sup> A copy of the main release and data tables is available [here](#)

<sup>19</sup> Low Carbon and Renewable Energy activity is classed as the primary activity of a business if 50% or more of its full-time equivalent (FTE) employees are working in the Low Carbon and Renewable Energy sectors.

higher proportions of total turnover (1.5% in Northern Ireland versus 1.3% in the UK) and employees (1.4% in Northern Ireland versus 1.3% in the UK).

Table 2.1 Low Carbon and Renewable Energy Activity by Region: Number of Businesses, Turnover and Employment 2014

	Low Carbon and Renewable Energy Economy <sup>1</sup>	As a Percentage of UK Total	As a Percentage of Total Regional Non-Financial Business Economy Activity
<b>Number of Businesses<sup>2</sup></b>			
UK	96,510	100.0	4.4
England	83,135	86.1	4.4
Scotland	8,017	8.3	5.2
Wales	3,397	3.5	3.8
Northern Ireland	1,961	2.0	3.2
<b>Turnover (£'000s)<sup>3</sup></b>			
UK	45,309,500	100.0	1.3
England	36,714,500	81.0	1.2
Scotland	5,610,000	12.4	2.4
Wales	1,992,500	4.4	2.0
Northern Ireland	993,000	2.2	1.5
<b>Employment<sup>4</sup></b>			
UK	233,000	100.0	1.3
England	196,500	84.3	1.3
Scotland	21,000	9.1	1.4
Wales	9,500	4.0	1.3
Northern Ireland	6,000	2.6	1.4

Source: Office for National Statistics [See Annex 2.2 for notes to this table]

Scotland had the highest percentage of businesses engaged in LCRE activities in 2014, with the equivalent of 5.2% of all non-financial businesses in Scotland reporting some activity in the LCRE sectors. The greatest proportion of LCRE turnover was also estimated for Scotland, accounting for 2.4% (£5.6 billion) of all turnover generated in the non-financial business economy in Scotland. Indeed, LCRE turnover in Scotland accounted for 12.4% of all LCRE turnover generated in the UK.



## LCRE Activity by Group

The headline results for Northern Ireland shown above can also be broken down into broad groups as shown in Table 2.2 below. These groups are aggregations of the 17 sectors within scope of the LCRE survey. Further details on which sectors fit into each group is detailed in Annex 2.1.

Table 2.2 Low Carbon and Renewable Energy Activity<sup>1</sup> by Group, Northern Ireland 2014

	Number of Businesses <sup>2</sup>	Turnover <sup>3</sup> (£'000)	Employees <sup>4</sup> (FTE)
Low Carbon Electricity	412	240,000	500
Low Carbon Heat	23	44,000	<500
Energy from Waste & Biomass	173	77,000	<500
Energy Efficient Products	1,227	342,500	3,500
Low Carbon Services	120	13,000	<500
Low Emission Vehicles	6	276,000	1,500
<b>Total</b>	<b>1,961</b>	<b>993,000</b>	<b>6,000</b>

Source: Office for National Statistics [See Annex 2.3 for notes to this table]

Note that estimates in italics in Table 2.2 above have a coefficient of variation (which is a measure of the error around an estimate) that is greater than or equal to 20% and these estimates should therefore be used with caution. Further details on this are given in Annex 2.3.

Of the total LCRE activity in Northern Ireland in 2014, the table shows that the Energy Efficient Products group was the group that accounted for the largest proportion of businesses (63%), turnover (34%) and employees (58%). The Low Carbon Electricity group accounted for around one fifth of all businesses carrying out any LCRE activity, about one quarter of total turnover but less than 10% of employees. Whilst there were a very small number of businesses in the Low Emission Vehicles<sup>20</sup> group, this group accounted for around a quarter of total LCRE turnover and employees in Northern Ireland.

## LCRE Activity by Group and Region – Number of businesses

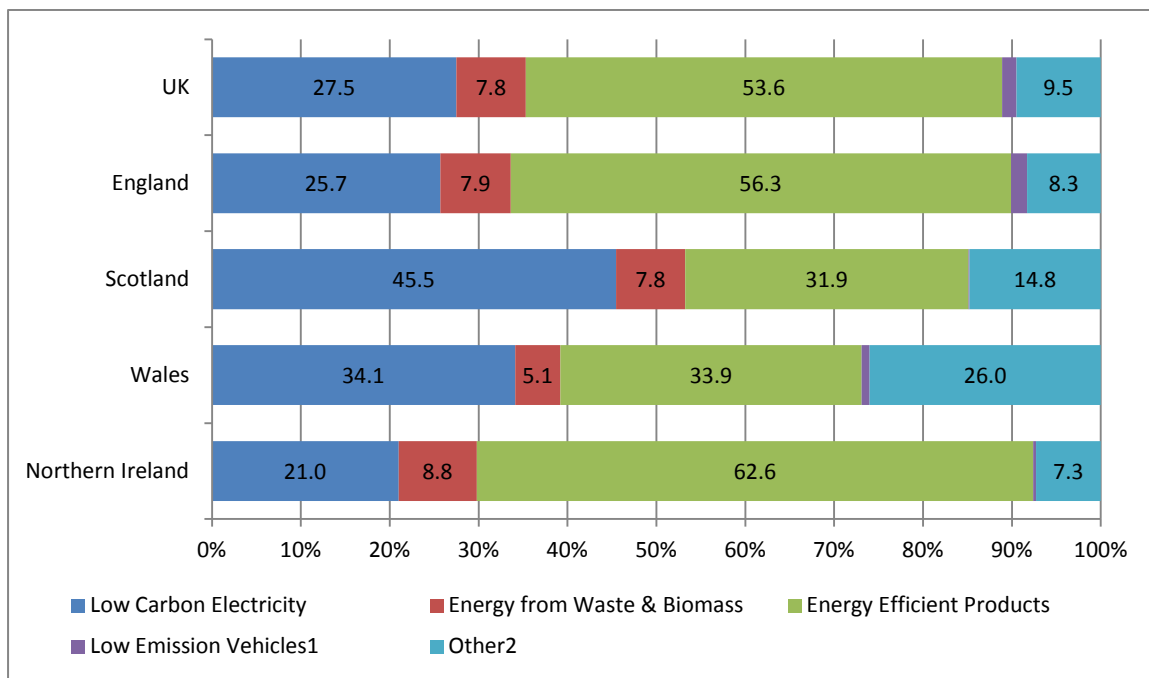
As shown in Chart 2.1 below, there was considerable regional variation by group in terms of the number of businesses operating in LCRE sectors<sup>21</sup>. The Low Carbon Electricity group accounted for around half (45.5%) of all businesses reporting at least some LCRE activity in Scotland, compared with one fifth in Northern Ireland (21%), about a quarter in England and just over one third in Wales.

The majority of businesses with LCRE activity in England and Northern Ireland were active in the Energy Efficient Products group (56.3% in England, 62.6% in Northern Ireland) whilst in Scotland and in Wales the same group accounted for only around one third of all LCRE active businesses.

<sup>20</sup> Low Emission Vehicles group includes Low Emission Vehicles and Infrastructure, and Fuel Cells and Energy Storage sectors.

<sup>21</sup> The number of businesses by region shows where the low carbon activity took place rather than where the head office of the business was located.

Chart 2.1 Low carbon group activity 2014, number of businesses, UK and regional

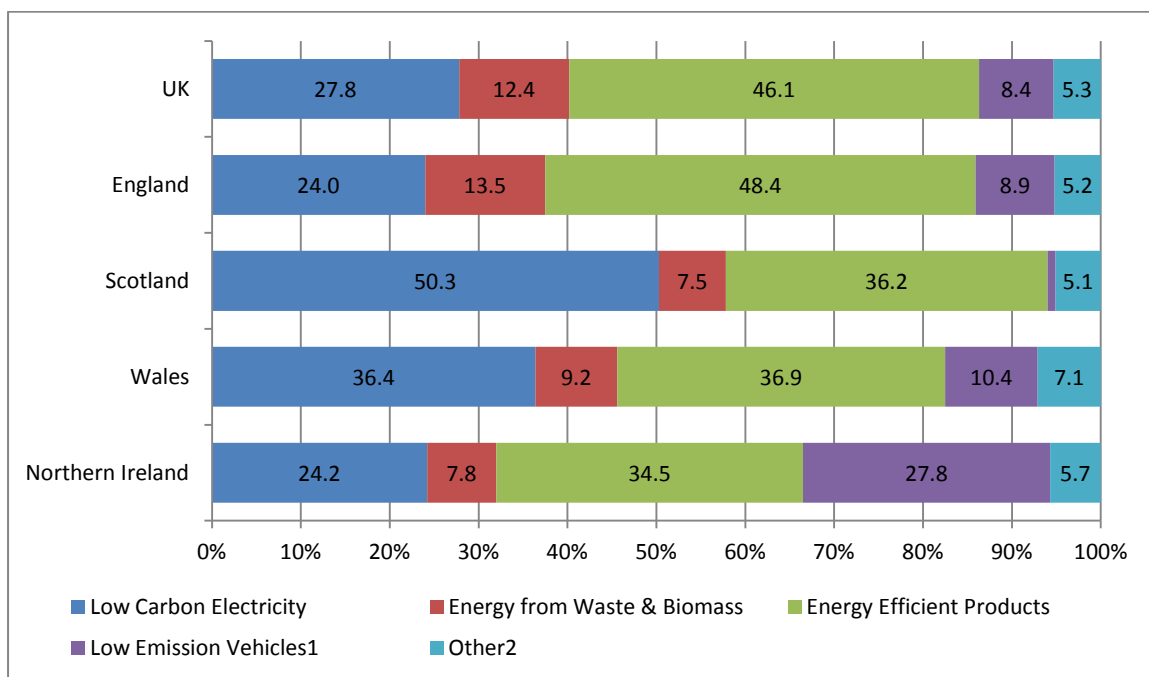


Source: ONS

### LCRE Activity by Group and Region – Turnover

Chart 2.2 below highlights the regional differences in terms of turnover. As with number of businesses, there is considerable variation in turnover by LCRE group between regions.

Chart 2.2 Low carbon group activity 2014, turnover, UK and regional



Source: ONS

The Low Carbon Electricity group in Scotland generated just over a half of all Scottish LCRE turnover. This compares to around one quarter for Northern Ireland, England and the UK as a whole and about one third in Wales.

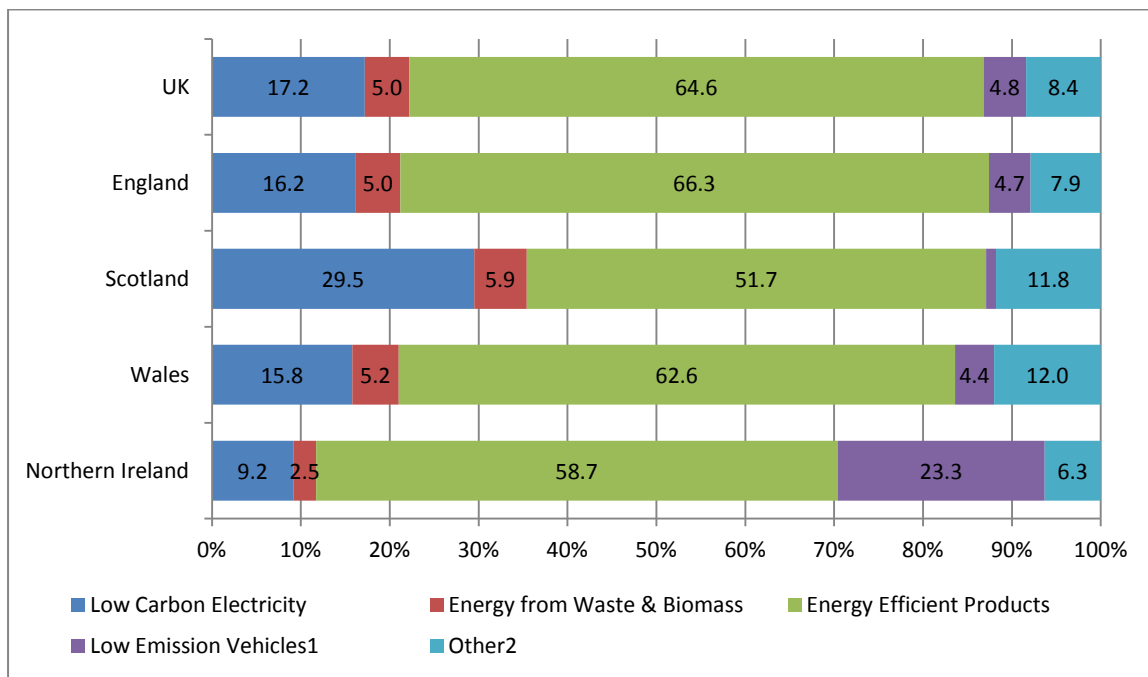
Activity in the Energy Efficient Products group generated the greatest proportion of LCRE turnover in England (48.4%), Wales (36.9%) and Northern Ireland (34.5%). Turnover in this sector however, was relatively smaller than the proportion of business operating in this group.

In Northern Ireland, the Low Emission Vehicles group generated 27.8% of LCRE turnover. Businesses operating in this group were involved in manufacturing specific technologies to reduce emissions and not necessarily involved in the production of entire vehicles. Turnover generated in Northern Ireland for this group, and for all UK regions, was proportionally much greater than the number of businesses operating in this sector.

### LCRE Activity by Group and Region – Employees

Businesses operating in the Energy Efficient Products sector employed 64.6% of LCRE full-time equivalent (FTE) employees in the UK (Chart 2.3). Indeed this group, which includes installation of energy efficient lighting and energy efficient products, accounted for over half of all LCRE full-time equivalent employees in each region.

Chart 2.3 Low carbon group activity 2014, employees, UK and regional



Source: ONS

[1. Low Emission Vehicles group includes Low Emission Vehicles and Infrastructure, and Fuel Cells and Energy Storage sectors; 2. Other includes Low Carbon Heat and Low Carbon Services.]

The Low Carbon Electricity group employed 17.2% of LCRE workers in the UK. This is smaller than this group’s relative contribution to number of businesses and generated turnover. This is because

the Low Carbon Electricity group includes electricity generation, which requires fewer employees compared with many of the other LCRE activities.

Low Carbon Electricity was the largest LCRE group in Scotland in terms of number of businesses and turnover. However, in terms of employees, this group accounted for 29.5% of LCRE FTEs, with the Energy Efficient Products group accounting for 51.7% of FTE employees in Scotland. The smaller employment estimate for the Low Carbon Electricity group is consistent across the UK. This is due to installation activity in this group requiring a greater number of workers than in the Low Carbon Electricity sector, which includes electricity generation.

In Northern Ireland, 23.3% of LCRE employees were working in the Low Emission Vehicles group. Many of these employees were involved in the manufacture of parts for low emission vehicles. However, the majority of UK employment in this sector (81.6%) consisted of employees working in England with 12.6% of employees in this group working in Northern Ireland.

## Energy Sector using data from other sources

Whilst the data from the Low Carbon and Renewable Energy Economy survey presented above gives details of such activity across all businesses in the non-financial sector in Northern Ireland, there are other sources of data which can provide a longer time series and some more detailed breakdowns in terms of the number of businesses, employment, Gross Value Added and turnover in the energy sector.

The following data is based on a definition of the energy sector using aggregations of individual Standard Industrial Classification<sup>22</sup> groups. The Standard Industrial Classification (SIC) is a system that is used to classify businesses by the type of economic activity in which they are engaged. Whilst the following data is useful, it should be borne in mind that the Standard Industrial Classification system does not lend itself to measuring non-traditional or new sectors that straddle a number of different industries – like the renewable energy sector and low carbon economy<sup>23</sup>. However, the SIC-based energy sector data presented below will include activities such as mining and extraction (though there are few businesses in Northern Ireland engaged in such activities) but also electricity generation from traditional (fossil fuel based) plants that would not be covered in the Low Carbon and Renewable Energy Economy survey data presented earlier.

## Energy Sector Enterprises

The total number of energy sector<sup>24</sup> enterprises in Northern Ireland increased from 255 in 2010 to 475 in 2014 (an increase of 86%). The major contributing factor to the overall rise is the more than fivefold increase of the number of enterprises in the SIC division 'Electricity, gas, steam and air conditioning supply': up from 40 in 2010 to 210 in 2014. Indeed, the majority of enterprises in this sector in 2014 (around 200 of the 210 businesses, or over 90%) were in the SIC group 35.1: Electric power generation, transmission and distribution, and there were almost seven times as many enterprises in this SIC group in 2014 (200) compared to 2010 (30). This trend coincides with the large growth in recent years in the number of renewable electricity producers in Northern Ireland.

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<sup>22</sup> More information on the Standard Industrial Classification can be found [here](#)

<sup>23</sup> See page 19 of <http://www.gov.scot/Resource/0049/00493652.pdf>

<sup>24</sup> Based on the Standard Industrial Classification (SIC) definition using the following SIC codes: 05, 06, 09, 19, 20.14, 35, 36, 38.22, 71.12/2 and 74.90/1.

Table 2.3 Number<sup>25</sup> of Registered Energy Enterprises<sup>26</sup> in Northern Ireland, 2010 to 2014 (March of each year)

	2010	2011	2012	2013	2014
SIC 05: Mining of coal and lignite	0	0	0	*	0
SIC 06: Extraction of crude petroleum and natural gas	0	0	0	*	*
SIC 09: Mining support service activities	0	*	*	5	10
SIC 19: Manufacture of coke and refined petroleum products	5	*	*	5	5
SIC 20.14: Manufacture of other organic based chemicals	*	*	*	*	*
SIC 35: Electricity, gas, steam and air conditioning supply (SIC 35.1: Electric power generation, transmission and distribution)	40 (30)	55 (45)	85 (70)	150 (135)	210 (200)
SIC 36: Water collection, treatment and supply	5	10	5	10	10
SIC 38.22: Treatment and disposal of hazardous waste	*	*	*	5	*
SIC 71.12/2: Engineering related scientific and technical consulting activities	180	175	195	195	205
SIC74.90/1: Environmental consulting activities	25	25	30	30	35
Total Energy Sector <sup>27</sup>	255	265	315	400	475
All Enterprises	69,580	69,080	68,660	67,745	67,710
Energy Sector as a Percentage of All Enterprises	0.4%	0.4%	0.5%	0.6%	0.7%

Source: Inter-Departmental Business Register, NISRA

Table 2.3 above shows that the energy sector accounted for less than 1% of all enterprises in each year 2010-2014, although the proportion has grown each year (from under 0.4% in 2010 to 0.7% in 2014). Indeed, there has been a rise each year in the number of energy sector enterprises whilst the overall number of businesses in Northern Ireland has declined in each year over the period 2010-2014.

<sup>25</sup> Figures have been rounded to the nearest 5. \* Counts under 5 have been suppressed.

<sup>26</sup> It is not yet possible to routinely and systematically estimate the number of enterprises operating in the renewable energy industry. The figures above will capture some of these enterprises but it is only an approximation, given the lack of any agreed or clearly defined 'renewables' classification using SIC.

<sup>27</sup> Based on SIC definition using the following SIC codes: 05, 06, 09, 19, 20.14, 35, 36, 38.22, 71.12/2 and 74.90/1.

## Energy Employment

In 2013, the energy sector in Northern Ireland employed over 2,200 people. This is equivalent to less than 1 per cent of the number of energy sector jobs in Great Britain (GB)<sup>28</sup>.

Table 2.4 Employee Jobs in the Energy Sector<sup>29</sup>, Northern Ireland 2011 and 2013, GB 2013

	2011 NI	2013 NI	2013 GB
SIC 05: Mining of coal and lignite	*	*	4,600
SIC 06: Extraction of crude petroleum and natural gas	*	*	15,500
SIC 09: Mining support service activities	*	*	21,600
SIC 19: Manufacture of coke and refined petroleum products	26	*	10,200
SIC 20.14: Manufacture of other organic based chemicals	*	*	10,200
SIC 35: Electricity, gas, steam and air conditioning supply	1,283	1,696	111,900
SIC 36: Water collection, treatment and supply	*	*	31,800
SIC 38.22: Treatment and disposal of hazardous waste	*	*	6,000
SIC 71.12/2: Engineering related scientific and technical consulting activities	521	501	66,500
SIC 74.90/1 Environmental consulting activities	38	34	7,200
Total Energy Sector <sup>30</sup>	1,868	2,231	285,500
All Employee Jobs	681,641	691,501	27,176,600
Energy Sector as Percentage of All Jobs <sup>31</sup>	0.27%	0.32%	1.05% (0.68%)

Sources: Business Register and Employment Survey: NISRA<sup>32</sup>; Office for National Statistics<sup>33</sup>

The table above shows that in GB, just over 1% of all employee jobs in 2013 were in the energy sector. In Northern Ireland 0.32% of all employee jobs in 2013 were in the energy sector. However, given employee jobs data is not available for all SICs for Northern Ireland, a more direct comparison would be to compare the sectors for which employee jobs data is available in Northern Ireland against the same sectors for GB<sup>34</sup>. This gives a comparable GB figure of 0.68%, which is more than twice the proportion than for Northern Ireland.

<sup>28</sup> Great Britain, rather than the UK, is used as a comparator here as data for some individual SICs are not available at UK level due to such SICs being unavailable/disclosive at the Northern Ireland level.

<sup>29</sup> Based on SIC definition using the following SIC codes: 05, 06, 09, 19, 20.14, 35, 36, 38.22, 71.12/2 and 74.90/1.

<sup>30</sup> This is an approximation as data for some SICs in the Energy Sector are not available due to disclosure rules.

<sup>31</sup> This is an approximation as data for some SICs in the Energy Sector are not available due to disclosure rules.

<sup>32</sup> See [http://www.detini.gov.uk/sic07\\_5digit-2.xlsx?rev=0](http://www.detini.gov.uk/sic07_5digit-2.xlsx?rev=0) for full tables.

<sup>33</sup> From Table 2 of the UK Business Register Employment Survey by ONS – click [here](#) for full tables. GB data is rounded to nearest hundred.

<sup>34</sup> That is SICs 35, 71.12/2 and 74.90/1.

## Gross Value Added

Table 2.5 below shows the available data for economic output of the energy industry<sup>35</sup>, as measured by the most recent Gross Value Added (GVA) statistics from the Northern Ireland Annual Business Inquiry (NIABI) as well as data from the Annual Business Survey (ABS) for the UK published by the Office for National Statistics (ONS) for comparison purposes.

In short, GVA measures the contribution to the economy of each individual producer, industry or sector. GVA at basic prices, as published in the NIABI and ABS, represents the income generated by businesses, out of which is paid wages and salaries, the cost of capital investment and financial charges before arriving at a figure for profit. It includes taxes on production (e.g. business rates), net of subsidies but excludes subsidies and taxes on products (e.g. VAT and excise duty).

Table 2.5 Gross Value Added (£millions) in the Energy Sector, Northern Ireland 2010-2013, UK 2013

	2010 NI	2011 NI	2012 NI	2013 NI	2013 UK
SIC 05: Mining of coal and lignite			*		*
SIC 06: Extraction of crude petroleum and natural gas				*	18,497
SIC 09: Mining support service activities		*	*	*	3,139
SIC 19: Manufacture of coke and refined petroleum products		*	*	*	923
SIC 20.14: Manufacture of other organic based chemicals		*	*	*	861
SIC 35: Electricity, gas, steam and air conditioning supply	412	328	390	409	23,582
SIC 36: Water collection, treatment and supply		*	*	*	9,531
SIC 38.22: Treatment and disposal of hazardous waste		*			204
SIC 71.12/2: Engineering related scientific and technical consulting activities	22	32	15	16	5,871
SIC 74.90/1 Environmental consulting activities		*	*	*	370
All Sectors GVA <sup>36</sup>	18,158	17,901	18,683	18,976	1,001,124
Energy Sector GVA as Percentage of All Sectors GVA	2.4%	2.0%	2.2%	2.2%	6.3% (2.9%)

Source: Northern Ireland Annual Business Inquiry, NISRA; Annual Business Survey, ONS

Due to the small size (i.e. very few or no businesses) or structure (i.e. a small number of large dominant businesses) in some of the sectors in the energy industry definition used here, GVA information is limited<sup>37</sup>. Indeed, as shown above, GVA data is only available for 2 of the 10 SICs

<sup>35</sup> Based on SIC definition using the following SIC codes: 05, 06, 09, 19, 20.14, 35, 36, 38.22, 71.12/2 and 74.90/1.

<sup>36</sup> The NIABI and ABS cover the non-financial business economy. See <http://www.detini.gov.uk/stats-niabi-sample-coverage> for more detailed information on the sectors covered by the NIABI.

<sup>37</sup> Information is suppressed, and represented with an asterisk in the table, when there are either a small number of businesses operating in a particular sector or when a business is dominant in a sector and thus publication of results would risk identifying an individual enterprise. Further details on the disclosure rules used are available [here](#).



covered by the energy industry definition used. However, Table 2.1 earlier showed that 415 of the 475 enterprises were in SIC 35 or SIC 71122, so the GVA information above, whilst limited, still covers over 87% of all enterprises in the energy sector.

Table 2.5 above shows that GVA has changed little over the period 2010 to 2013 in SIC 35 and SIC 71122 (there has been a slight decrease of 2% in these sectors combined over the period). There was a noticeable drop in GVA in the ‘electricity, gas, steam and air conditioning supply’ sector between 2010 and 2011 (a fall of over 20%) but GVA rose in each of the following two years and in 2013 (£409 million) was roughly equivalent to the 2010 figure (£412 million).

Similar to the employment figures shown earlier, it is difficult to express the energy sector as a proportion of all Northern Ireland activity due to data for many of the energy sector SICs being suppressed. However, the table above shows that GVA in the energy sector accounts for around 2% of total GVA in each of the years shown.

Table 2.5 also shows comparative data for the UK. At the UK level there are fewer issues over suppression with only one of the ten SIC groups included in the energy sector definition not available. The table shows that Energy Sector GVA accounted for 6.3% of All Sectors GVA for the UK in 2013, about 3 times the NI figure for the same year. However, given GVA data is not available for all SICs for Northern Ireland, a more direct comparison would be to compare the sectors for which GVA data is available in NI against the same sectors for the UK<sup>38</sup>. This gives a comparable UK figure of 2.9%, which is about a third higher than the Northern Ireland proportion of 2.2%.

### GVA per head

The data so far has shown that the energy sector accounts for about 0.7% of enterprises, 0.3% of jobs but over 2% of GVA. This suggests that there must be a higher than average GVA per head in this sector compared to the average for all sectors and Table 2.6 below presents this data.

Table 2.6 Gross Value Added per head in the Energy Sector, Northern Ireland 2010-2013

	2010 NI	2011 NI	2012 NI	2013 NI	2013 UK
SIC 35: Electricity, gas, steam and air conditioning supply	£265,755	£233,023	£299,476	£248,295	£172,131
SIC 71.12/2: Engineering related scientific and technical consulting activities	£33,527	£37,867	£30,303	£35,572	£82,690
All Sectors <sup>39</sup>	£35,135	£34,907	£35,969	£36,310	£45,179

Source: Northern Ireland Annual Business Inquiry, NISRA

Whilst GVA per head in SIC 71122 was at or around the average for all sectors over the period shown, GVA per head in SIC 35 was much higher (around 7 or 8 times higher than the ‘all sectors’ average in the four year period shown). Indeed, GVA per head in Northern Ireland for SIC 35 in 2013 was over 44% higher than the equivalent GVA per head figure for SIC 35 for the UK as a whole.

<sup>38</sup> That is SICs 35 and 71.12/2.

<sup>39</sup> See <http://www.detini.gov.uk/stats-niabi-sample-coverage> for information on the sectors covered by the NIABI.

## Turnover

Information on turnover is also available and this is presented below.

Table 2.7 Turnover (£millions) in the Energy Sector, Northern Ireland 2010-2013, UK 2013

	2010 NI	2011 NI	2012 NI	2013 NI	2013 UK
SIC 05: Mining of coal and lignite			*		*
SIC 06: Extraction of crude petroleum and natural gas				*	34,945
SIC 09: Mining support service activities		*	*	*	7,742
SIC 19: Manufacture of coke and refined petroleum products		*	*	*	49175
SIC 20.14: Manufacture of other organic based chemicals		*	*	*	4853
SIC 35: Electricity, gas, steam and air conditioning supply	1,119	2,024	2,073	2,284	111,087
SIC 36: Water collection, treatment and supply		*	*	*	11,813
SIC 38.22: Treatment and disposal of hazardous waste		*			612
SIC 71.12/2: Engineering related scientific and technical consulting activities	69	63	46	33	10,313
SIC 74.90/1 Environmental consulting activities		*	*	*	770
All Sectors Turnover <sup>40</sup>	58,379	61,530	62,067	63,953	3,552,151
Energy Sector Turnover as Percentage of All Sectors Turnover	2.0%	3.4%	3.4%	3.6%	6.5% (3.4%)

Source: Northern Ireland Annual Business Inquiry, NISRA; Annual Business Survey, ONS

Like the GVA data presented previously, turnover information for Northern Ireland is only available for 2 of the 10 SICs covered by the energy industry definition used. This shows that these two SICs accounted for 3.6% of total turnover in 2013. In the UK as a whole, the same two SICs accounted for 3.4% of turnover. Data for 9 of the 10 SICs is available for the UK and this showed that 6.5% of all sectors turnover in the UK was from these sectors.

Turnover increased markedly in the Electricity, gas, steam and air conditioning supply sector between 2010 and 2011 (up 81%), was steady between 2011 and 2012 and rose by around 10% between 2012 and 2013. The large increase in turnover between 2010 and 2011 caused a similarly large increase in energy sector turnover as a proportion of all sectors turnover, from 2.0% to 3.4% and the proportion has been fairly steady since then.

<sup>40</sup> The NIABI and ABS cover the non-financial business economy. See <http://www.detini.gov.uk/stats-niabi-sample-coverage> for more detailed information on the sectors covered by the NIABI.

## Annex 2.1 Low Carbon and Renewable Energy Economy (LCRE) Scope

The LCRE collected business activity in each of the following Low Carbon and Renewable Energy sectors.

Sector	Description
Offshore wind	The production of electricity from Offshore wind renewable sources and the design, production, and installation of infrastructure for this purpose. Including operations and maintenance.
Onshore wind	The production of electricity from Onshore wind renewable sources and the design, production, and installation of infrastructure for this purpose. Including operations and maintenance.
Solar photovoltaic	The production of electricity from Solar renewable sources and the design, production, and installation of infrastructure for this purpose. Including operations and maintenance.
Hydropower	The production of electricity from Hydropower renewable sources and the design, production, and installation of infrastructure for this purpose. Including operations and maintenance.
Other renewable electricity	The production of electricity from wave and/or tidal and/or geothermal renewable sources and the design, production, and installation of infrastructure for this purpose. Including operations and maintenance.
Bioenergy	The production of energy (electricity and heat) from renewable bioenergy sources and the design, production, and installation of infrastructure for this purpose. Including operations and maintenance. Bioenergy is liquid biofuels, solid biomass and biogas e.g. biomethane, vegetable oil, peanut oil and energy crops. This sector includes gasification and anaerobic digestion.
Alternative Fuels	The production of fuels for low carbon and renewable energy use which is not classified as bioenergy. Including hydrogen. Excluding compressed natural gas and LPG.
Renewable heat	The design, production, and installation of infrastructure for generating heat directly through solar, thermal, geothermal or other means. Including operations and maintenance. Including Ground source and Air source heat pumps. Excluding generating electricity which is then used to generate heat. Excluding heat from biomass which is classified under Bioenergy.
Renewable combined heat and power	The design, production, and installation of infrastructure for generating heat directly through solar, thermal, geothermal or other means where the renewable sources both generate direct heat and electricity. Including operations and maintenance. Excluding heat and power from biomass which is classified under Bioenergy.
Energy efficient lighting	The design, manufacture and installation of energy efficient bulbs, tubes, fittings etc designed for the purpose of using less energy to produce the same or greater amount of light.
Energy efficient products	The design, manufacture and installation of energy efficient products. Examples include: <ul style="list-style-type: none"> <li>-Energy efficient doors and windows</li> <li>-Heating and ventilation, such as condensing boilers, ventilation and heating recovery</li> <li>-Insulation such as loft, external wall, roof insulation</li> <li>-Reducing energy consumption for heat or air conditioning by minimising 'leakage' of heat</li> <li>-Energy efficient building materials or technologies</li> </ul>

	-Sustainable buildings and architecture -Either materials with greater insulation properties or durability properties or those requiring significantly less carbon emission in their manufacture or recycling waste materials in their manufacture Exclude: 'Smart' goods such as TVs and freezers.
Energy monitoring, saving or control systems	The design, manufacture and installation of systems that reduce energy consumption through effective heat or energy management. Include equipment and related systems for doing this. Examples include: -Smart heating controls                      -Energy management systems -Condensation control                        -Energy management software -Control system components
Low carbon financial and advisory services	Expert advice and education on: reducing carbon consumption, engaging in low carbon industrial activities, carbon credits and funding systems for low carbon activities and services. Include: environmental and/or energy consultants
Low emission vehicles and infrastructure	Design and manufacture of vehicles with specific technology to significantly reduce or remove emissions. Include: hybrid vehicles, electric vehicles, fuel cell vehicles or other technologies. Exclude: small efficiency improvements such as lighter bodywork or aerodynamics. Fuel efficient, conventional vehicles are also excluded.
Carbon capture and storage	Capturing waste CO <sub>2</sub> at point of emission and depositing it where it will not enter the atmosphere. Activity of doing this and the design, manufacture and installation of infrastructure for this purpose.
Nuclear power	The production of electricity from nuclear power and the design, production and installation of infrastructure for this purpose. Including operations and maintenance. Decommissioning and waste processing activities are excluded.
Fuel cells and energy storage systems	The design, manufacture and installation of energy storage systems, flywheel energy storage, fuel cells, batteries and any other form of energy storage system.

These sectors can be aggregated into the following groups:

Group	Description
Low Carbon Electricity	Offshore wind, Onshore wind, Solar Photovoltaic, Hydropower, Other renewable electricity, Nuclear power, Carbon capture and storage
Low Carbon Heat	Renewable heat, Renewable combined heat and power
Energy from Waste and Biomass	Bioenergy, Alternative fuels
Energy Efficient Products	Energy efficient products, Energy efficient lighting, Energy monitoring, saving or control systems
Low Carbon Services	Low carbon financial and advisory services
Low Emission Vehicles and Infrastructure	Low emission vehicles and infrastructure
Fuel Cells and Energy Storage	Fuel cells and energy storage systems

Please note that due to statistical disclosure control, the Fuel Cells and Energy Storage and Low Emission Vehicles and Infrastructure sectors have been combined in published estimates. This combined group has been labelled the 'Low Emission Vehicles' group.

## Annex 2.2 Notes to Table 2.1

1. Figures may not sum due to rounding.

2. Total number of businesses in the UK Non-Financial Business Economy derived from UK Business: Activity, Size and Location 2015. This is based on an extract taken from the Interdepartmental Business Register in March 2015. Low Carbon Survey results are based on the calendar year 2014; this should be considered when making comparisons.

3. Total turnover in the UK Non-Financial Business Economy derived from Annual Business Survey, UK Non-Financial Business Economy, 2014 Provisional Results (released 12 November 2015). The Annual Business Survey excludes the following Agricultural industries: 01.1 Growing of non-perennial crops, 01.2 Growing of perennial crops, 01.3 Plant production, 01.4 Animal production and 01.5 Mixed farming, which were included in the Low Carbon and Renewable Energy Economy Survey. These industries are included in the Low Carbon Survey results. This should be considered when making comparisons. At the time of writing, regional results for 2014 were not available. Therefore, 2013 regional data have been used to derive proportions which have then been applied to the UK 2014 total.

4. Regional FTE Non-Financial Business Economy estimates are derived from the Business Register and Employment Survey (BRES) and the Northern Ireland Quarterly Employment Survey (QES). Figures for Great Britain derived from BRES exclude employees in all industries that are excluded from the Low Carbon Survey. Figures for Northern Ireland however, derived from QES do include employees in industries 63 Information service activities, and 95 Repair of computers and personal and household goods. This should be considered when making comparisons.

The Coefficient of Variation (CV) for each estimate in Table 2.1 are shown in the table below.

	Coefficient of Variation (CV) Range		
	Businesses	Turnover (£'000)	Employees (FTE)
England	CV =>5% and <10%	CV =>5% and <10%	CV =>5% and <10%
Scotland	CV =>10% and <20%	CV =>5% and <10%	CV =>5% and <10%
Wales	CV=>20% and <30%	CV =>10% and <20%	CV =>10% and <20%
Northern Ireland	CV =>10% and <20%	CV =>10% and <20%	CV =>10% and <20%

Source: Office for National Statistics

The Coefficient of Variation (CV) is the ratio of the standard error of an estimate to the estimate itself. For example, an estimate with a CV of 5% will have a standard error that is 5% of the estimate. The smaller the coefficient of variation the greater the accuracy of the estimate. A rough guide to CVs is: 5% is very good, 10% is good and 20% is acceptable. CVs that are greater or equal to 20% should be used with caution.

### Annex 2.3 Notes to Table 2.2

1. Figures may not sum due to rounding.

2. Total number of businesses in the UK Non-Financial Business Economy derived from UK Business: Activity, Size and Location 2015. This is based on an extract taken from the Interdepartmental Business Register in March 2015. Low Carbon Survey results are based on the calendar year 2014; this should be considered when making comparisons.

3. Total turnover in the UK Non-Financial Business Economy derived from Annual Business Survey, UK Non-Financial Business Economy, 2014 Provisional Results (released 12 November 2015). The Annual Business Survey excludes the following Agricultural industries: 01.1 Growing of non-perennial crops, 01.2 Growing of perennial crops, 01.3 Plant production, 01.4 Animal production and 01.5 Mixed farming, which were included in the Low Carbon and Renewable Energy Economy Survey. These industries are included in the Low Carbon Survey results. This should be considered when making comparisons. At the time of writing, regional results for 2014 were not available. Therefore, 2013 regional data have been used to derive proportions which have then been applied to the UK 2014 total.

4. Regional FTE Non-Financial Business Economy estimates are derived from the Business Register and Employment Survey (BRES) and the Northern Ireland Quarterly Employment Survey (QES). Figures for Great Britain derived from BRES exclude employees in all industries that are excluded from the Low Carbon Survey. Figures for Northern Ireland however, derived from QES do include employees in industries 63 Information service activities, and 95 Repair of computers and personal and household goods. This should be considered when making comparisons.

The Coefficient of Variation (CV) for each estimate in Table 2.2 are shown in the table below.

	Coefficient of Variation (CV) Range		
	Businesses	Turnover (£'000)	Employees (FTE)
Low Carbon Electricity	CV =>10% and <20%	CV =>10% and <20%	CV =>10% and <20%
Low Carbon Heat	CV=>20% and <30%	CV =>10% and <20%	CV=>20% and <30%
Energy from Waste & Biomass	CV=>30%	CV =>10% and <20%	CV=>20% and <30%
Energy Efficient Products	CV=>20% and <30%	CV =>10% and <20%	CV=>20% and <30%
Low Carbon Services	CV=>30%	CV=>30%	CV=>30%
Low Emission Vehicles & Infrastructure; Fuel Cells & Energy Storage	CV=>20% and <30%	CV =>10% and <20%	CV =>10% and <20%

Source: Office for National Statistics

The Coefficient of Variation (CV) is the ratio of the standard error of an estimate to the estimate itself. For example, an estimate with a CV of 5% will have a standard error that is 5% of the estimate. The smaller the coefficient of variation the greater the accuracy of the estimate. A rough guide to CVs is: 5% is very good, 10% is good and 20% is acceptable. CVs that are greater or equal to 20% should be used with caution.

## Chapter 3: Electricity

### Summary of key points

- Northern Ireland has three major fossil-fuel based electricity generating plants and a number of renewable generators which make up indigenous electricity production. Interconnection with the Republic of Ireland and Scotland help to maintain security of supply, with electricity imported via the Moyle Interconnector constituting a significant proportion of total electricity consumption in Northern Ireland in recent years.
- As expected, electricity consumption peaks during the winter months and is at its lowest during the summer months. Monthly consumption in Northern Ireland peaked in December 2010 (at about 837 GWh) and the lowest level recorded over the period was in August 2015 (around 585 GWh and 30% below peak monthly consumption).
- The 12 month rolling average in electricity consumption in Northern Ireland over the 7 year period April 2008 – April 2015 shows a fairly flat (though, from 2011 onwards, slightly downwards) trend in electricity consumption.
- In general, there has been a slight downwards trend in annual electricity consumption in Northern Ireland over the period 2010-2015 with consumption in 2015 (7,819 GWh) more than 7% lower than in 2010.
- Average annual domestic electricity consumption per meter ranges from 3,459 kWh in Belfast to 4,447 kWh in Mid Ulster District Council area, meaning consumption per meter in this council area is around 29% higher than Belfast and some 11% above the Northern Ireland average.
- Whilst some 93% of all meters are in domestic properties, the domestic sector accounts for only two-fifths of total electricity consumption.
- In each year 2004-2013, Northern Ireland was a net exporter in terms of electricity trades with the Republic of Ireland (via the North-South tie-lines). However in 2014, Northern Ireland imported more electricity from the Republic of Ireland than it exported (although such imports and exports totals are relatively small accounting for only a small proportion of overall consumption of electricity).
- Northern Ireland is a net importer of electricity from Scotland (via the Moyle interconnector). Transfers of electricity from Scotland via the Moyle Interconnector are significant, accounting for almost 14% of total electricity consumption in Northern Ireland in 2014. Indeed, between 2009 and 2013 around one quarter of all electricity consumed in Northern Ireland was via transfers from Scotland.

## Introduction

The electricity system in Northern Ireland consists of the following distinct businesses: generation, transmission, distribution and supply. A diagram highlighting the structure and main participants in the electricity market at the end of 2015 in Northern Ireland is shown below.

Figure 3.1 Structure and main participants of the Northern Ireland Electricity Market



## Generation

There are three major power generating sites in Northern Ireland as follows<sup>41</sup>:

- Ballylumford (gas fuelled<sup>42</sup>) is located at the tip of the Islandmagee peninsula, is owned by AES and is Northern Ireland's largest power station with an installed capacity of around 1,300 MW.
- Coolkeeragh (gas fuelled<sup>43</sup>) is located in Londonderry, is owned by ESB and has an installed capacity of some 460 MW.
- Kilroot (mainly coal and oil fuelled<sup>44</sup>) is located in Carrickfergus and is owned by AES and has an installed capacity of some 660 MW.

<sup>41</sup> The capacities for each power station are taken from Table 5.10 of the [Digest of United Kingdom Energy Statistics 2014](#). Please note that installed capacities are subject to change from year to year.

<sup>42</sup> Ballylumford generates electricity via a combination of Combined Cycle Gas Turbines (CCGT), gas and gas oil. CCGT are a form of highly efficient energy generation technology that combines a gas-fired turbine with a steam turbine.

<sup>43</sup> Coolkeeragh is mainly a CCGT plant (about 400MW) with a further 50MW of OCGT (Open Cycle Gas Turbine) capacity.



In addition to the major gas and coal/oil fuelled power stations, Northern Ireland also has renewable energy sources (capacity of around 700 MW<sup>45</sup>, mostly from wind). Northern Ireland also has interconnection with the Scottish grid (there are two 250 MW lines on the Moyle Interconnector though current capacity is limited to 250 MW as one line is under repair and due to be restored before 2017) and the Republic of Ireland grid (three tie-lines with a combined 600MW capacity). Electricity can be imported and exported via the Moyle Interconnector and North-South tie-lines.

### **Transmission**

Transmission normally refers to the bulk transfer of electrical energy from large electricity generators to electrical substations. Transmission lines carry electricity at a very high voltage. Ownership of the transmission system lies with Northern Ireland Electricity Networks Ltd (NIE Networks), which is a subsidiary of the ESB Group, and they are responsible for transmission construction and maintenance. The transmission network is operated by the System Operator for Northern Ireland (SONI). A map of the transmission system in Northern Ireland is shown in Annex 3.1.

### **Distribution**

The local wiring between high-voltage substations and customers is typically referred to as electric power distribution. The conversion of high voltage into a voltage that can be used by customers is done through transformers and distribution lines then carry electricity at lower voltage levels to houses and businesses<sup>46</sup>. In Northern Ireland, NIE Networks operates the distribution network which transports electricity to some 854,000 customers<sup>47</sup> in the domestic and non-domestic sectors.

### **Supply**

From November 2007 and the opening of the Single Electricity Market (SEM), electricity retail supply was fully open to competition, though there were no competing suppliers in the domestic market until 2010. Electricity suppliers buy energy and sell it to customers. Business and domestic consumers in Northern Ireland can choose between a number of private sector electricity suppliers to meet their individual electricity requirements.

### **The Single Electricity Market (SEM)<sup>48</sup>**

The electricity industry operates a single wholesale market across the whole of the island of Ireland and this is known as the Single Electricity Market (or SEM). This means that all electricity across the island is bought and sold through a single pool, which has increased competition, efficiency and security of supply<sup>49</sup>.

The operation of this single wholesale market requires the physical connection of the Northern Ireland grid to that in the Republic. The Northern Ireland and Republic of Ireland transmission

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<sup>44</sup> Kilroot station generates 520 MW of electricity from dual coal and oil fuelled generators, along with approximately 140 MW from four Gas Turbines.

<sup>45</sup> As at 31 March 2015, taken from <http://www.soni.ltd.uk>

<sup>46</sup> Maps of the 11kV and 33kV distribution network in Northern Ireland are available [here](#)

<sup>47</sup> At end September 2015 as per Utility Regulator's Quarterly Transparency report for Q3 2015 (see page 8 of report [here](#)).

<sup>48</sup> Work is currently ongoing to redesign SEM due to changes to European legislation. More information is available [here](#)

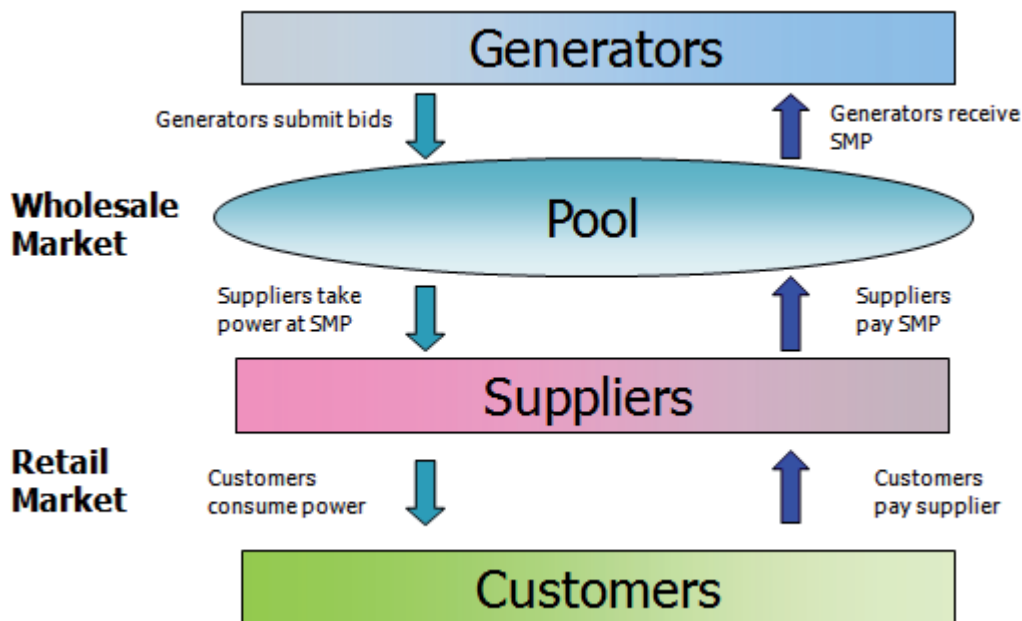
<sup>49</sup> See [http://www.uregni.gov.uk/electricity/market\\_overview/](http://www.uregni.gov.uk/electricity/market_overview/)

systems are connected via a double circuit 275 kV line between Tandragee and Louth. In addition there are two 110kV connections between Strabane and Letterkenny and Enniskillen and Corraclassy. The existing connections are proposed to be enhanced by a new North-South transmission connection (Tyrone-Cavan Interconnector) which should enable greater flexibility in the flows of electricity.

SEM is a unique dual currency (sterling and euro) inter-jurisdictional market that comes under the governance of both the Commission for Energy Regulation in the Republic of Ireland and the Northern Ireland Authority for Utility Regulation. The SEM is described as a mandatory wholesale market: i.e. electricity generators, with over 10MW capacity, are obliged by law to sell electricity into a single pool for the island of Ireland. As a gross mandatory pool market operating with dual currencies and in multiple jurisdictions the SEM represents the first market of its kind in the world<sup>50</sup>.

The operation of the SEM is facilitated by the Single Electricity Market Operator (SEMO). SEMO is a contractual joint venture between the two system operators - SONI in Northern Ireland and EirGrid Plc, their counterparts in the Republic of Ireland. SEMO facilitates the continuous operation and administration of the Single Electricity Market. A high level overview of the operation of the Single Electricity Market is depicted below.

Figure 3.2 Overview of the Single Electricity Market (SEM)



Source: Commission for Energy Regulation<sup>51</sup>

At a high-level, the SEM consists of a centralised and mandatory all-island wholesale pool (or spot) market, through which generators and suppliers trade electricity. Generators bid into this pool their own short-run costs for each half hour of the following day (which is mostly their fuel-related operating costs).

<sup>50</sup> Source: <http://www.sem-o.com/AboutSEMO/Pages/default.aspx>

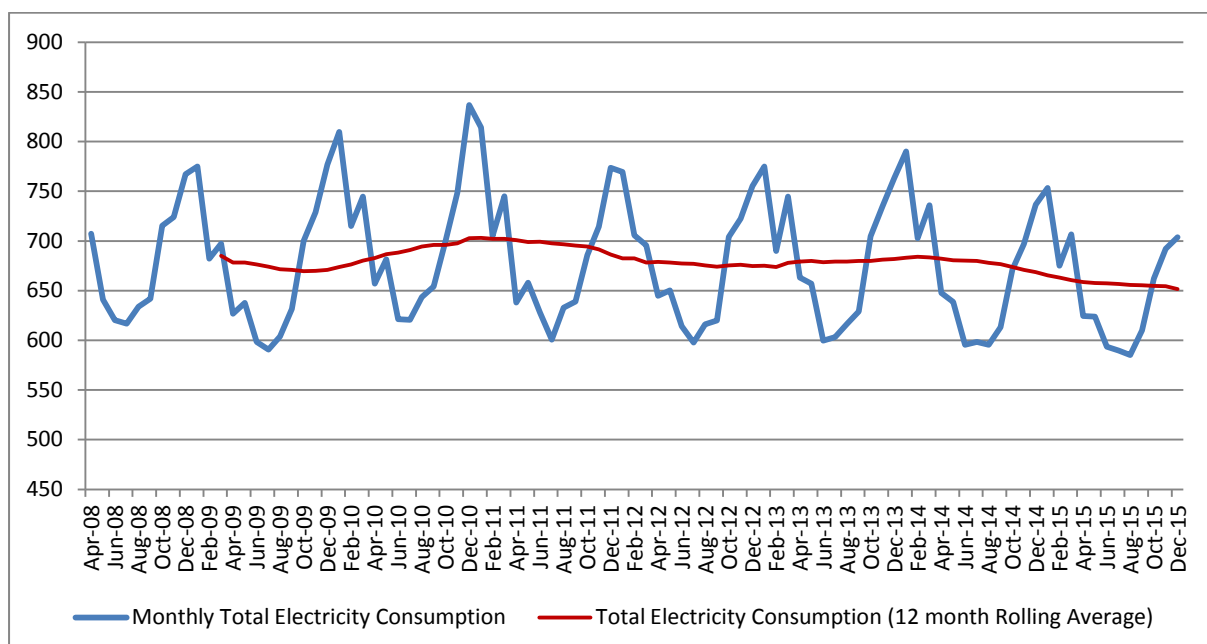
<sup>51</sup> See <https://www.cer.ie/docs/000262/cer11075.pdf>

Based on this set of generator costs and on customer demand for electricity, the System Marginal Price (SMP) for each half-hour trading period is determined by SEMO. Overall the SEM facilitates the running of the cheapest possible generators, determined by the stack of generation cost bids, to meet customer demand across the island. This mandatory centralised pool model in SEM, in which all key generators and suppliers must participate, differs from most other European markets in which most trade takes place bilaterally between generators and suppliers. All key players must trade in SEM, so there is much more transparency associated with SEM prices and market outcomes.

### Electricity Consumption – Monthly

DETI Analytical Services Unit publishes electricity consumption data for Northern Ireland twice a year as part of their Electricity Consumption and Renewable Generation in Northern Ireland publication<sup>52</sup>. The overall electricity consumption data contained in these reports is derived from aggregated meter readings supplied by NIE Networks and therefore is an accurate measure of actual electricity consumption across the domestic and non-domestic sectors. Chart 3.1 below shows total electricity consumption for Northern Ireland for each month over the period April 2008 to December 2015.

Chart 3.1 Monthly Total Electricity Consumption in Northern Ireland (GWh)



Source: NIE Networks

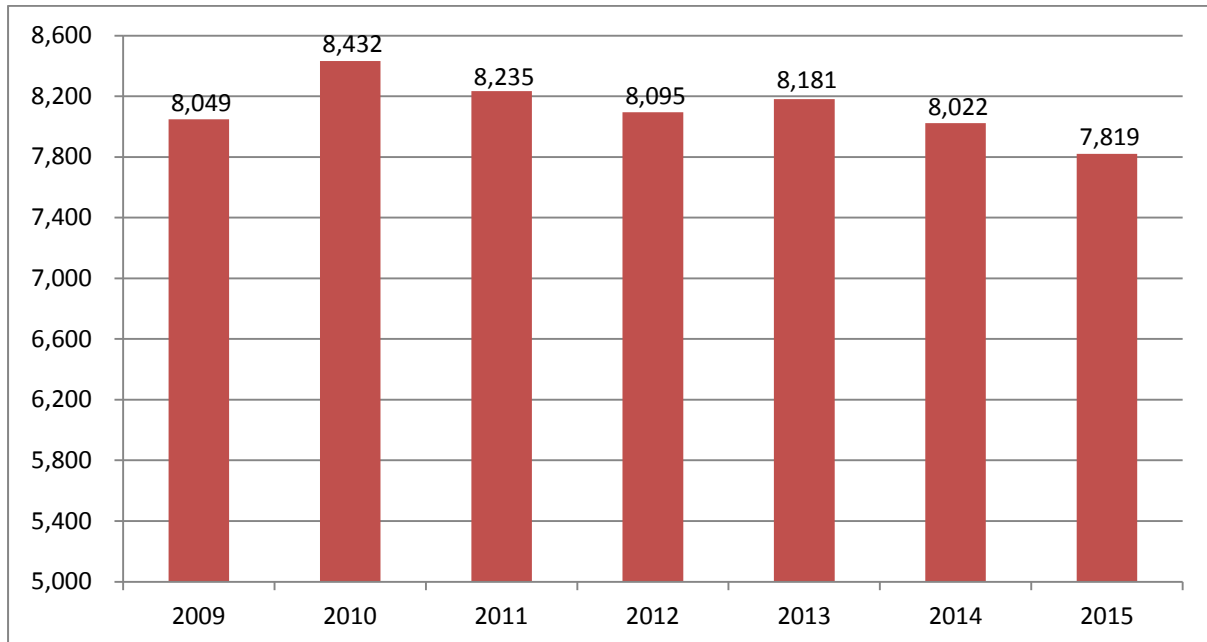
The chart shows that, predictably, electricity consumption peaks during the winter months and is at its lowest during the summer months. The 12 month rolling average line smoothes out short-term fluctuations and highlights longer-term trends in electricity consumption over the period April 2008 to December 2015. This shows a fairly flat (though, from 2011 onwards, slightly downwards) trend in electricity consumption. The chart also shows that monthly consumption peaked in December 2010 (at about 837 GWh) and the lowest level recorded over the period was in August 2015 (around 585 GWh and 30% below peak monthly consumption).

<sup>52</sup> Click [here](#) for further details of this publication.

## Electricity Consumption - Annual

The chart below shows total annual electricity consumption for Northern Ireland for each year 2009 to 2015.

Chart 3.2 Total Annual Electricity Consumption in Northern Ireland (GWh), 2009 to 2015



Source: NIE Networks

Electricity consumption in 2015 (7,819 GWh) was the lowest in the seven year period shown (though only around 3% lower compared to 2009). Over the 7 year period, consumption peaked in 2010 (8,432 GWh) but there has been a slight downwards trend over the period 2010-2014 (though there was a slight rise in consumption between 2012 and 2013) with annual consumption in 2015 over 7% lower than in 2010.

There are a number of factors which may have contributed to the reduction in consumption over the period 2010-2015, including: weather conditions, energy efficiency improvements (such as increased levels of insulation), new boilers and more energy efficient appliances, increases in electricity prices, the recession, changes in the building stock and household composition.

## Sub-national electricity consumption

The Department of Energy & Climate Change (DECC) have produced some experimental data in relation to domestic<sup>53</sup> and non-domestic<sup>54</sup> electricity consumption at a District Council level (the previous 26 council areas) for Northern Ireland. The latest year available is for 2013-14<sup>55</sup> and results have been aggregated into the new 11 super council areas as shown in Table 3.1 below<sup>56</sup>.

Table 3.1 Experimental Electricity Consumption Statistics at District Council Level (kWh<sup>57</sup>), 2013-14

Council name	Domestic			Non-domestic		
	Total consumption (kWh)	Total number of meters	Average consumption per meter (kWh)	Total consumption (kWh)	Total number of meters	Average consumption per meter (kWh)
Antrim & Newtownabbey	236,524,556	58,576	4,038	366,208,560	3,603	101,640
Ards & North Down	289,008,377	70,140	4,120	235,741,346	4,124	57,163
Armagh City, Banbridge & Craigavon	349,390,774	82,675	4,226	554,611,079	6,296	88,089
Belfast	471,633,699	136,360	3,459	1,047,058,574	11,340	92,333
Causeway Coast & Glens	253,200,595	63,228	4,005	255,449,626	4,672	54,677
Derry City & Strabane	236,198,249	60,502	3,904	435,369,114	4,649	93,648
Fermanagh & Omagh	185,570,697	47,002	3,948	349,441,235	4,281	81,626
Mid & East Antrim	241,698,001	58,653	4,121	338,773,753	3,981	85,098
Mid Ulster	232,272,759	52,227	4,447	417,785,910	5,272	79,246
Newry, Mourne & Down	291,085,053	68,182	4,269	303,988,262	5,771	52,675
Lisburn & Castlereagh	321,779,682	79,334	4,056	360,096,788	4,578	78,658
Unallocated	6,007,132	2,056	2,922	27,712,862	205	135,185
NI Total	3,114,369,574	778,935	3,998	4,692,237,109	58,772	79,838

Source: DECC

The data above are based on billed units from customers that have been connected for at least 12 months and cover the period 1 April 2013 to 31 March 2014. Therefore, the consumption figures will not match exactly with those shown for 2013 in Chart 3.2 earlier (total consumption in Table 3.1 above is some 7,807 GWh compared to total consumption of 8,181 GWh for 2013 as shown in Chart 3.2, a difference of less than 5%).

Unallocated consumption is consumption that was not able to be matched to a council area due to incomplete or a lack of postcode information.

<sup>53</sup> Link [here](#) to DECC sub-national domestic electricity consumption data.

<sup>54</sup> Link [here](#) to DECC sub-national non-domestic electricity consumption data.

<sup>55</sup> This covers the period 1 April 2013 to 31 March 2014.

<sup>56</sup> Data for the old 26 District Council Areas and details of how the data was aggregated into the new council areas is provided in Annex 3.2 for information.

<sup>57</sup> 1 GWh = 1,000,000 kWh

As the table shows, average domestic consumption per meter in 2013-14 ranged from 3,459 kWh in Belfast to 4,447 kWh in Mid Ulster District Council area, although consumption for most district council areas was close to the NI average of around 4,000 kWh. Domestic consumption per meter in Mid Ulster is around 29% higher than Belfast and 11% above the Northern Ireland average, whilst domestic consumption in Belfast was 13% below the Northern Ireland average. The lower domestic consumption per meter in Belfast council area may be due factors such as the better availability of mains gas in that council area which may reduce the requirement for electricity for heating etc. or the housing mix in council areas.

Predictably, given the concentration of domestic dwellings and businesses, Belfast City Council area has by far the largest share of both domestic consumption (around 15%) and non-domestic consumption (22%).

### Domestic versus non-domestic consumption – Northern Ireland

Table 3.1 above also highlights that, while around 93% of all meters in 2013-14 were in domestic properties, the domestic sector only accounted for two-fifths of total electricity consumption. More up-to-date information<sup>58</sup> presented in Table 3.2 below shows that, for 2014, a similar split continues to exist between the domestic and non-domestic sectors (39.5% and 60.5% respectively) in terms of consumption.

Table 3.2 Customer numbers & consumption by market segment in Northern Ireland, 2013 and 2014

Market Segments	Customer Numbers		Annual Consumption (GWh)	
	At end 2013	At end 2014	2013	2014
<b>Domestic:</b>				
Domestic Credit	474,421	463,810	2,069.5	1,958.0
Domestic Prepayment	308,438	324,477	1,174.1	1,174.4
<b>Non-Domestic:</b>				
Small and Medium Enterprises consuming less than 70kVA per year	55,178	56,231	1,300.5	1,253.8
Small and Medium Enterprises consuming 70kVA or more per year	4,814	4,871	1,971.2	1,972.5
Large Energy Users consuming more than 1MW per year	192	185	1,562.6	1,577.4
<b>Total</b>	<b>843,043</b>	<b>849,574</b>	<b>8,077.8</b>	<b>7,936.1</b>
<b>% Domestic</b>	<b>92.9%</b>	<b>92.8%</b>	<b>40.2%</b>	<b>39.5%</b>
<b>% Non-domestic</b>	<b>7.1%</b>	<b>7.2%</b>	<b>59.8%</b>	<b>60.5%</b>

Source: Northern Ireland Utility Regulator

Moreover, this more recent data shows that the largest industrial and commercial users consume a disproportionate amount of electricity. Indeed, less than 200 Large Energy Users consumed one fifth of the total volume of electricity in Northern Ireland in 2014, and were responsible for almost a third (32.8%) of non-domestic consumption in 2014.

<sup>58</sup> See Utility Regulator's Annual Quarterly Transparency Report [here](#)

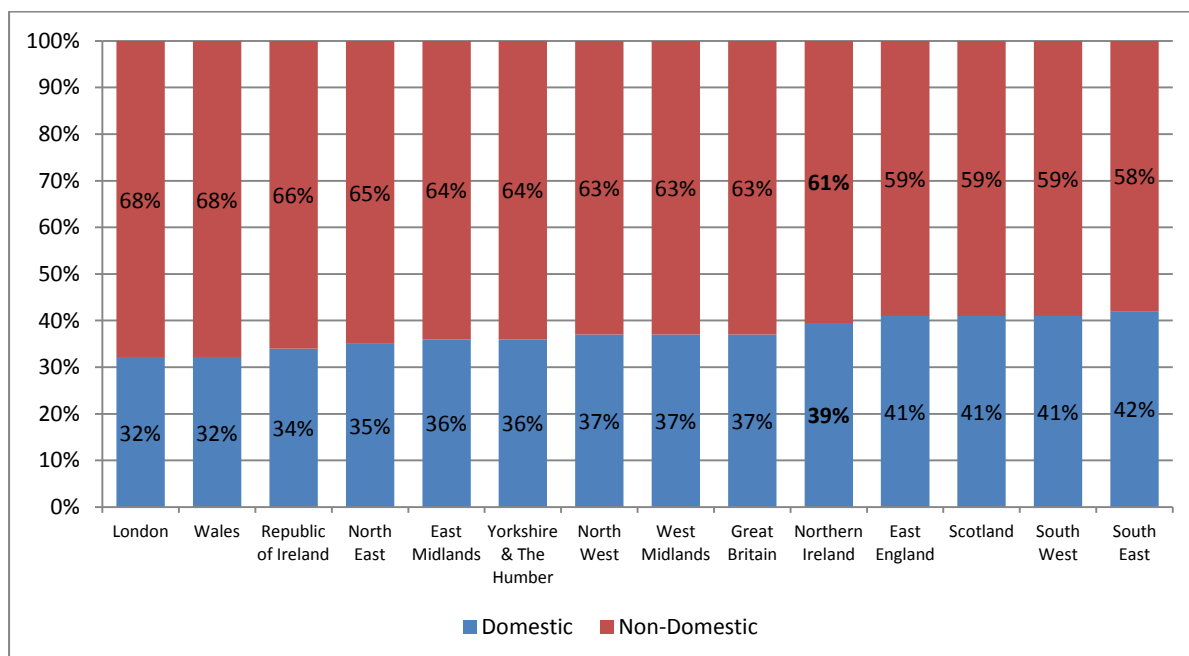
In the domestic sector, there was an increase of around 5,400 customers between 2013 and 2014 although this was made up of a 5.2% rise in prepayment customers (+16,000) and a 2.2% fall in credit customers (-10,600). In the non-domestic sector the largest number of customers is in the Small and Medium Enterprises (SME) category and, indeed, 92% of non domestic customers consume less than 70 kVA per annum.

### Domestic versus non-domestic consumption - Regional comparisons

Similar information for Great Britain and its regions is published by DECC<sup>59</sup>. As shown in Chart 3.3 below, the split between domestic and non-domestic electricity consumption for GB is similar to that for Northern Ireland, although a higher proportion of electricity consumed in GB was for non-domestic purposes. In 2014, 37% of electricity in GB was estimated to be consumed in the domestic sector and 63% by the non-domestic sector (with 92% of meters in the domestic sector and 8% in the non-domestic sector for GB).

However, as shown in the chart, the split varies across the regions of Great Britain. Domestic consumption accounted for 32% of total electricity consumption in London and Wales but was as high as 42% in the South East. Indeed, the variation is even more marked across GB local authorities (equivalent to NI council areas). For example domestic consumption makes up less than 20% of total electricity consumption in six local authorities (City of London, Tower Hamlets, Westminster, Rutland, Camden and Neath Port Talbot) and as much as 66% in one local authority (East Renfrewshire)<sup>60</sup>. The distribution depends on local factors, such as the type of industry/service, the mix of properties and the extent to which electricity is used for heating.

Chart 3.3 Distribution of domestic/non-domestic electricity consumption by country & region, 2014



Sources: DECC; Utility Regulator; ESB Networks and Eirgrid

<sup>59</sup> Full publication can be accessed [here](#)

<sup>60</sup> From page 10 of DECC publication, available [here](#)

In addition, data provided by ESB Networks and Eirgrid shows a fairly similar domestic/non-domestic split for the Republic of Ireland although, as for GB, there was a higher proportion of electricity consumed in the Republic of Ireland for non-domestic purposes compared to Northern Ireland. In 2014, domestic electricity sales in the Republic of Ireland were 8,219 GWh (accounting for 34% of all electricity sales) and non-domestic sales were 15,843 GWh which was 66% of all electricity sales in the Republic of Ireland<sup>61</sup>.

### Electricity Flowchart

The flowchart overleaf (Chart 3.4) produced by DECC<sup>62</sup> shows the relationship between generation and consumption of electricity in each of the UK countries by means of a flow diagram. Further details on generation and supply totals for the UK and its regions can be found in Annex 3.3.

The flowchart shows that, for Northern Ireland, indigenous generators produced 7,594 GWh of electricity in 2014. Of this, 257 GWh was for their own use resulting in 7,337 GWh net electricity supplied by indigenous generators to the public supply system. Net imports from Scotland were 1,044 GWh and a further 121 GWh was imported (net) from the Republic of Ireland, so adding these to indigenous generation means a total of 8,502 GWh of electricity supplied. However, 664 GWh of this was taken up through transmission and distribution losses<sup>63</sup> which leaves a total of 7,838 GWh of total consumption. Of this total consumption, 13 GWh was consumption by autogenerators<sup>64</sup> (see Annex 3.3 for more details) meaning 7,826 GWh was the derived figure for electricity 'consumption from public supply'<sup>65</sup> for Northern Ireland.

The flowchart (and table in Annex 3.3) highlights the fact that England, Wales, Northern Ireland and the UK as a whole were reliant on imports of electricity to meet demand in 2014. However, Scotland was a net exporter of electricity, exporting a significant amount of the electricity it generates. In 2014 Scotland exported around a quarter (23.7%) of the electricity generated there to other UK countries, mainly to England (10,770 GWh) and a smaller amount to Northern Ireland (1,044 GWh).

In 2014, Wales was a net importer from England for the first time. This was due to Wales experiencing a 22% drop in generation but just a 4.5% reduction in total consumption. Wales started trading with the Republic of Ireland in 2012 and has been a net exporter to them each year, with the equivalent of 11.5% of Wales' generation exported to the Republic of Ireland in 2014.

Northern Ireland trades electricity with the Republic of Ireland and had been a net exporter for the previous ten years (see Table 3.3); however it became a net importer from the Republic of Ireland in 2014.

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<sup>61</sup> Data for 2014 is provisional.

<sup>62</sup> See [here](#) for full publication.

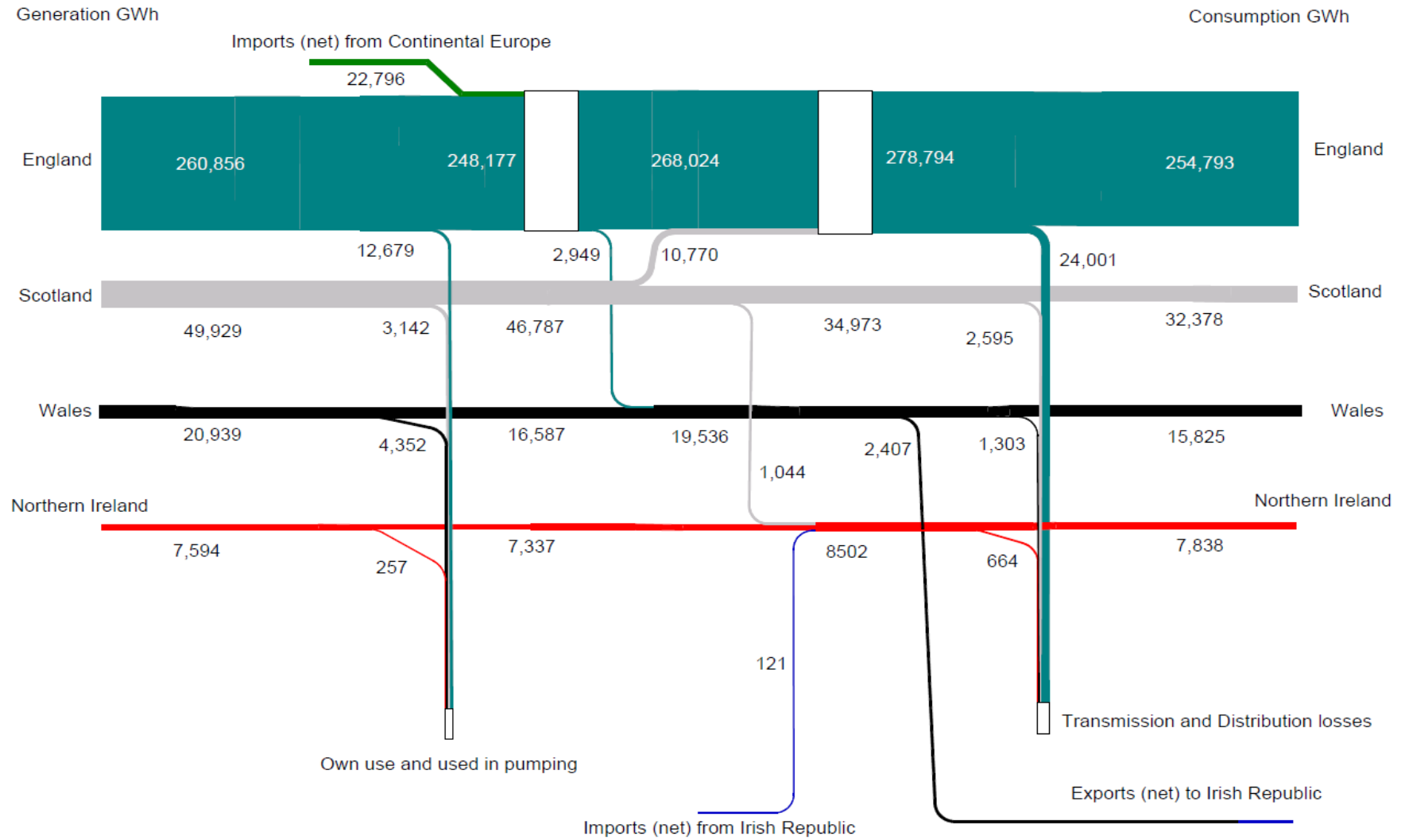
<sup>63</sup> In general, losses are estimated from the discrepancy between power produced (as reported by power plants) and power sold to the end customers; the difference between what is produced and what is consumed constitute transmission and distribution losses. In this case, estimates of losses for each country have been made by DECC using UK proportions. An estimate of losses due to theft has also been included along with the distribution losses estimate.

<sup>64</sup> Autogenerators are companies who produce electricity as part of their manufacturing or other commercial activities, but whose main business is not electricity generation. Such generation is typically for sole use by the business and not for supply to the electricity network. As such, this generation and consumption would not be captured in meter readings.

<sup>65</sup> This derived figure for consumption for Northern Ireland for 2014 (i.e. 7,826 GWh) differs slightly from that presented earlier (i.e. 8,022 GWh in Chart 3.2). More information on such differences is given in Annex 3.4.



Chart 3.4 Electricity generation and consumption flow chart, 2014



Source: DECC

## Imports, exports and transfers of electricity in Northern Ireland

As noted earlier, Northern Ireland has connection to the Republic of Ireland and Scottish electricity networks (via the North-South tie-lines and Moyle Interconnector respectively). Table 3.3 below highlights the volume of electricity that has passed between these countries in recent years.

Table 3.3 Annual imports, exports and transfers of electricity (GWh), 2002 – 2014 and 2015 Q1 to Q3

Year	Imports	Exports	Transfers	
	Ireland → NI	NI → Ireland	Scotland → NI	NI → Scotland
2002	140.43	147.98	815.51	0.00
2003	119.35	86.28	1011.92	0.00
2004	0.32	1574.21	2793.08	0.00
2005	1.14	2074.16	1687.02	0.17
2006	9.93	1787.94	941.01	35.69
2007	53.27	1381.99	1729.77	2.22
2008	151.56	373.33	700.14	155.25
2009	85.30	452.20	1950.88	14.17
2010	146.31	378.12	2298.14	0.69
2011	119.56	365.86	1769.07	0.00
2012	140.72	293.99	2164.31	1.93
2013	156.49	203.19	1551.37	10.74
2014 <sup>66</sup>	229.65	118.67	1108.81	64.77
2015 Q1-Q3 <sup>67</sup>	210.84	65.98	532.43	341.70

Source: DECC<sup>68</sup>

Table 3.3 shows that, with the exception of 2003, Northern Ireland has exported more electricity to the Republic of Ireland than it has received in imports from this source each year from 2002 to 2013. Differences were particularly large for the period 2004-2007 when Northern Ireland exported a significant amount of electricity to the Republic of Ireland. Indeed, exports to the Republic of Ireland in 2005 and 2006 were larger than the transfers from Scotland in the same years.

In 2014, however, Northern Ireland imported more electricity from the Republic of Ireland than it exported, although the imports and exports totals account for a relatively small proportion of overall consumption of electricity (as shown earlier total electricity consumption was around 8,000 GWh in Northern Ireland in 2014). Data for the first three quarters of 2015 show this new trend continuing with Northern Ireland importing more electricity from the Republic of Ireland than it exported in the first 9 months of 2015 (though, again, overall export and import volumes are relatively low).

Transfers of electricity from Scotland via the Moyle Interconnector have been significant in recent years. Indeed, between 2009 and 2013 around one quarter of all electricity consumed in Northern Ireland was via transfers from Scotland. Transfers of electricity from Scotland, whilst still significant, fell to around 14% of total electricity consumption in Northern Ireland in 2014 and data for the first

<sup>66</sup> Figures for 2014 are provisional and subject to revision.

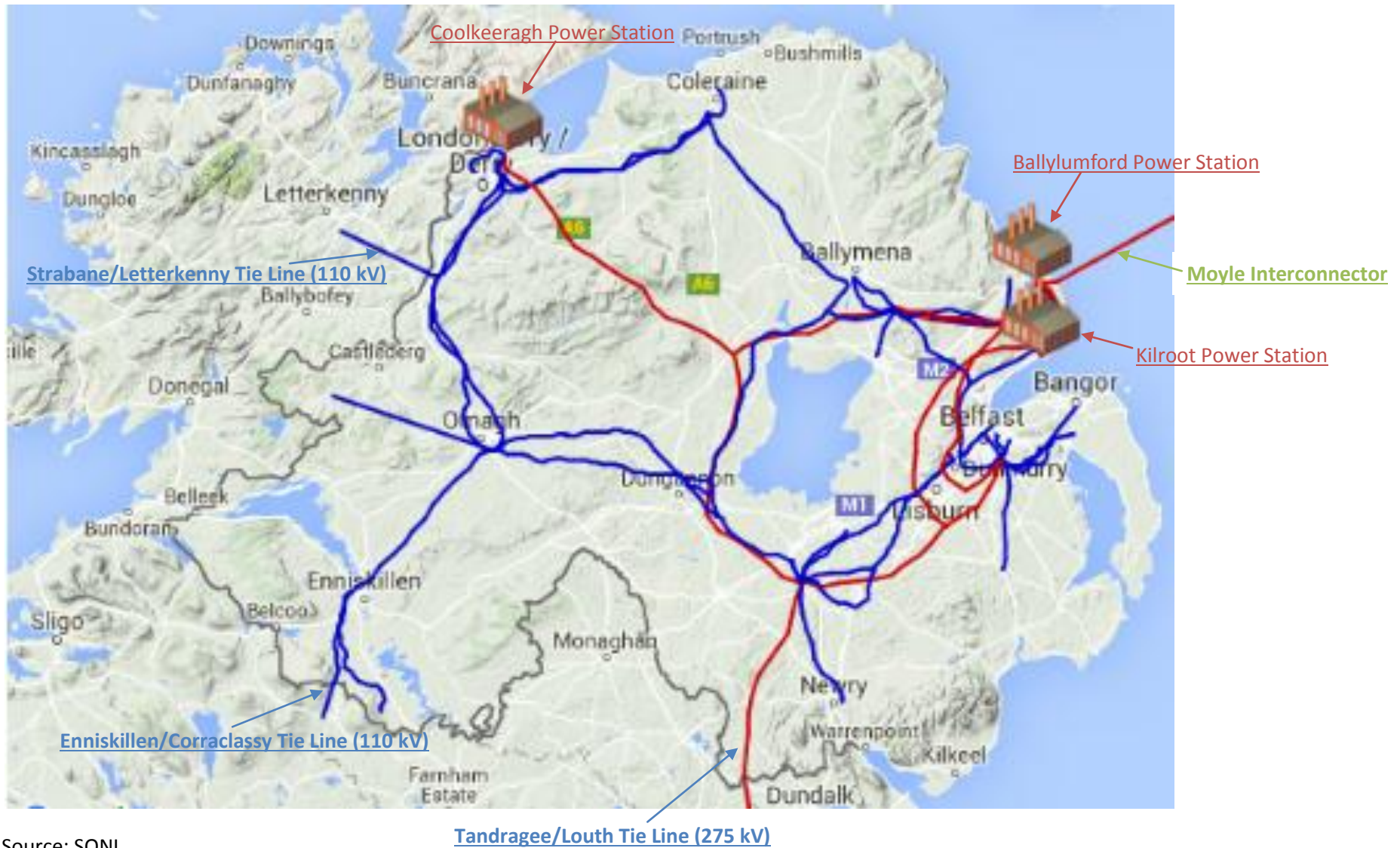
<sup>67</sup> Data up to Quarter 3 2015 was available at the time of writing. Latest updated data is available [here](#) (see Table ET5.6).

<sup>68</sup> Full annual and quarterly tables are available in Table ET5.6 [here](#).

three quarters of 2015 show transfers from Scotland have dropped further (to around 532 GWh) which represents the lowest amount transferred in the first nine months of any year since the interconnector became operational in 2002.

Only a small amount of electricity is transferred from Northern Ireland to Scotland each year, although transfers in the first three quarters of 2015 were up considerably compared to previous years. Around 342 GWh of electricity was transferred from Northern Ireland to Scotland in the first nine months of 2015 which is already over 5 times more than in 2014 and much higher than any other annual transfer total as shown in Table 3.3.

Annex 3.1 Map of transmission system network for Northern Ireland



Source: SONI

### Annex 3.2 Mapping old council areas to new super council areas

Table 3.1 presented data for the new 11 council areas in Northern Ireland. However, data is currently available from DECC for the old 26 district council areas only. In order to provide data for the 11 new council areas, the data for the old 26 district councils published by DECC has been aggregated as detailed in the table below. Please note that this is a ‘best fit’ of old council areas to new council areas and, as some of the new council areas include parts of old council areas, it is therefore an approximation of consumption for those new council areas.

For further information, a map of the previous and new local government districts can be found at [http://www.doeni.gov.uk/existing\\_and\\_new\\_lg\\_districts\\_-\\_aug\\_12\\_-\\_pdf.pdf](http://www.doeni.gov.uk/existing_and_new_lg_districts_-_aug_12_-_pdf.pdf).

New Council Areas:	Old Council Areas included in aggregation for Table 3.1:
Antrim & Newtownabbey	Antrim and Newtownabbey
Ards & North Down	Ards and North Down
Armagh City, Banbridge & Craigavon	Armagh, Banbridge and Craigavon
Belfast	Belfast
Causeway Coast & Glens	Ballymoney, Coleraine, Limavady and Moyle
Derry City & Strabane	Derry and Strabane
Fermanagh & Omagh	Fermanagh and Omagh
Mid and East Antrim	Ballymena, Carrickfergus and Larne
Mid Ulster	Cookstown, Dungannon and Magherafelt
Newry, Mourne & Down	Down and Newry & Mourne
Lisburn & Castlereagh	Castlereagh and Lisburn

Data as published by DECC for the old 26 district council areas is available overleaf.

## Sub-national electricity consumption – ‘old’ 26 district council areas

Experimental Electricity Consumption Statistics at District Council Level, 2013-14<sup>69</sup>

District Council	Domestic			Non-domestic		
	Total consumption (kWh)	Total number of meters	Average consumption per meter (kWh)	Total consumption (kWh)	Total number of meters	Average consumption per meter (kWh)
Antrim	92,083,813	21,719	4,240	172,382,164	1,621	106,343
Ards	143,946,222	34,495	4,173	107,629,541	2,179	49,394
Armagh	104,626,551	23,724	4,410	116,766,347	2,100	55,603
Ballymena	114,994,802	26,689	4,309	209,545,628	2,185	95,902
Ballymoney	54,648,379	12,275	4,452	35,650,060	921	38,708
Banbridge	84,558,416	19,918	4,245	70,709,242	1,416	49,936
Belfast	471,633,699	136,360	3,459	1,047,058,574	11,340	92,333
Carrickfergus	69,095,483	17,401	3,971	69,438,438	809	85,832
Castlereagh	117,019,182	29,451	3,973	118,808,726	1,326	89,599
Coleraine	114,126,185	29,363	3,887	151,342,197	2,097	72,171
Cookstown	63,382,581	13,882	4,566	139,076,832	1,375	101,147
Craigavon	160,205,807	39,033	4,104	367,135,490	2,780	132,063
Derry	169,988,498	44,325	3,835	368,456,413	3,399	108,401
Down	126,323,087	29,561	4,273	117,767,308	2,284	51,562
Dungannon	97,836,695	22,088	4,429	200,113,906	2,327	85,997
Fermanagh	102,581,185	26,708	3,841	247,073,873	2,410	102,520
Larne	57,607,716	14,563	3,956	59,789,687	987	60,577
Limavady	52,759,667	13,104	4,026	46,400,819	982	47,251
Lisburn	204,760,500	49,883	4,105	241,288,062	3,252	74,197
Magherafelt	71,053,483	16,257	4,371	78,595,172	1,570	50,061
Moyle	31,666,364	8,486	3,732	22,056,550	672	32,822
Newry & Mourne	164,761,966	38,621	4,266	186,220,954	3,487	53,404
Newtownabbey	144,440,743	36,857	3,919	193,826,396	1,982	97,793
North Down	145,062,155	35,645	4,070	128,111,805	1,945	65,867
Omagh	82,989,512	20,294	4,089	102,367,362	1,871	54,713
Strabane	66,209,751	16,177	4,093	66,912,701	1,250	53,530
Unallocated	6,007,132	2,056	2,922	27,712,862	205	135,185
<b>Total</b>	<b>3,114,369,574</b>	<b>778,935</b>	<b>3,998</b>	<b>4,692,237,107</b>	<b>58,772</b>	<b>79,838</b>

Source: DECC<sup>70</sup>

<sup>69</sup> This covers the period 1 April 2013 to 31 March 2014.

<sup>70</sup> Full sub-national domestic and non-domestic electricity consumption spreadsheets for Northern Ireland are available [here](#) and [here](#).

### Annex 3.3 Generation and Supply

As noted earlier Northern Ireland has three main electricity generating plants, a number of renewable generators and interconnection with grids in the Republic of Ireland and Scotland. All of these combine to fulfil the total electricity requirement for Northern Ireland. The table below, produced annually by DECC, gives information on the generation and supply of electricity for each country of the UK. The latest available data relates to 2014.

Table 3.3 Generation and supply of electricity in the UK, England, Scotland, Wales and Northern Ireland, 2014

		England	Scotland	Wales	Northern Ireland	UK
(A)	Electricity Generated by Major power producers (MPPs)	233,430	42,876	17,997	6,520	300,823
(B)	Minus Electricity Used in pumping at pumped storage and other own use by MPPs	-10,835	-2,668	-4,155	-184	-17,842
(C)	Equals Electricity supplied (net) by MPPs	222,595	40,209	13,842	6,335	282,981
(D)	Electricity Generated by Other generators	27,426	7,052	2,942	1,075	38,104
(E)	Minus Own use by other generators	-1,845	-474	-198	-72	-2,563
(F)	Minus Consumption by autogenerators	-17,125	-2,516	-1,320	-13	-20,608
(G)	Equals Electricity supplied (net) by Other generators	8,457	4,063	1,424	990	14,933
(H)	Total electricity generated = (A) + (D)	260,856	49,929	20,939	7,594	338,927
(J)	Total electricity supplied (net) by indigenous generators = (C) + (G)	231,052	44,271	15,266	7,325	297,914
(K)	Electricity transferred to England (imports minus exports)	7,821	-10,770	2,949	-	-
(L)	Electricity transferred to Northern Ireland (imports minus exports)	-	-1,044	-	1,044	-
(M)	Electricity transferred to Europe (imports minus exports)	22,796	-	-2,407	121	20,510
(N)	Total transfers = (K) + (L) + (M)	30,617	-11,814	542	1,165	20,510
(P)	Total electricity supplied (indigenous generation plus imports minus exports) = (J) + (N)	261,669	32,457	15,808	8,490	318,424
(Q)	Minus Transmission losses	-5,336	-669	-328	-156	-6,489
(R)	Minus Distribution losses and theft	-18,665	-1,925	-975	-508	-22,073
(S)	Equals Consumption from public supply	237,668	29,862	14,505	7,826	289,862

Source: DECC<sup>71</sup>

<sup>71</sup> Full publication is available [here](#).

The previous table shows figures on total generation, consumption, transfers and losses for the four regions of the UK and the UK total for 2014. The data is derived from a survey of major power producers and other generators.

The table shows that Scotland is a net exporter of electricity (supplying electricity to England, Wales and Northern Ireland), with England importing electricity from Scotland and from continental Europe (via the France and Netherlands interconnectors). In 2014, Scotland exported 23.7% of the electricity generated there to consumers elsewhere in the UK (i.e. transfers of 11,814 GWh out of 49,929 GWh generated).

Wales started trading with the Republic of Ireland in 2012 and has been a net exporter to them each year, with the equivalent of 11.5% of Wales' generation (2,407 GWh out of 20,939 GWh of indigenous generation) exported to the Republic of Ireland in 2014. However, Wales imported some 2,949 GWh of electricity from England making it a net importer of electricity overall.

Northern Ireland was a net importer in terms of electricity trades with the Republic of Ireland (via the North-South tie-lines) in 2014 (though the net amount was small) and was also a net importer of electricity from Scotland (over 1,000 GWh imported via the Moyle interconnector). These transfers were equivalent to around 15% of consumption from public supply in Northern Ireland (i.e. 1,165 GWh out of 7,826 GWh).



### Annex 3.4 Differences in Consumption Measures

The consumption data in Table 3.3 (produced by DECC) differs from those presented in Chart 3.2 (produced by DETI) as they are calculated in different ways, though the two estimates are very close. The following table shows the consumption figures from the two sources for the period 2011 to 2014. In the period 2011-2013, the DETI estimates of consumption (sourced from NIE Networks) for Northern Ireland were lower than those and published by DECC (although differences were small at around 2% in 2011 and 2012 and only 0.4% in 2013). For 2014 however, consumption from public supply as produced by DETI (via data from NIE Networks at 8,022 GWh) was higher than consumption in Northern Ireland as produced by DECC (7,826 GWh), although the difference remains low at 2.4%.

Electricity Consumption in Northern Ireland by publication source, 2011 to 2014

Year	DETI	DECC	% Difference (DETI Compared to DECC)
2011	8,235	8,396	-2.0%
2012	8,095	8,279	-2.3%
2013	8,181	8,216	-0.4%
2014	8,022	7,826	+2.4%

Source: DECC and DETI

The DECC consumption estimates are, in essence, ‘calculated’ consumption figures – that is, they are derived by taking total generation minus own use, any net exports and any transmission and distribution losses then adding net imports with the residual figure being called consumption. The figures presented earlier (in Chart 3.2) are those used in DETI’s Electricity Consumption and Renewable Generation in Northern Ireland publication to measure progress against the Programme for Government (PfG) target and are based on actual consumption from aggregated meter readings rather than a ‘calculated’ consumption figure. However, as shown in the table above, the two methodologies actually produce very similar estimates of Northern Ireland electricity consumption.

## Chapter 4: Renewable Electricity

### Summary of key points

- The Northern Ireland Executive's Programme for Government (PfG) target to "Encourage achievement of 20% of electricity consumption from renewable sources by 2015" was met during 2015. The proportion reached a peak of 25.4% for the 12 month period ending December 2015.
- The annual proportion of electricity consumption from renewable sources in Northern Ireland has risen considerably in recent years, from 8.4% in 2010 to 25.4% in 2015.
- Wind is the dominant source of renewable electricity generation in Northern Ireland accounting for around 90% of installed capacity and volume generated. Such reliance on this source does mean that monthly renewable electricity generation volumes in Northern Ireland can be prone to large fluctuations, due to changing weather conditions.
- In recent years, the volume of renewable electricity generated in Northern Ireland has steadily increased as has the number of sites and installed capacity at sites generating electricity from renewable sources. The volume of renewable electricity generated in 2015 (1,984 GWh) was around three times the volume generated in 2010 (706 GWh).
- Over three quarters of renewable electricity capacity and generation was accounted for by three of the 11 Northern Ireland district council areas namely: Causeway Coast & Glens; Derry City & Strabane; and Fermanagh & Omagh.
- For Northern Ireland, the main fuel type used in electricity generation was gas accounting for around half (49.1%) of all indigenous generation in 2014 which is a much higher proportion compared to England (34.3%), Scotland (5.4%) and Wales (24.1%).
- In terms of the percentage of total indigenous electricity generation accounted for by indigenous renewable generation, Northern Ireland had the second highest proportion (22.2%) of all four UK regions in 2014 using this measure. Scotland had the highest proportion (38.0%) with the UK average at 19.1%.

## Introduction

As noted in Chapter 3, there are an increasing number of renewable electricity generators in Northern Ireland. This chapter describes the available data on such electricity generation.

## Definition

Renewable energy can be defined as energy derived from natural processes (e.g. sunlight and wind) that are replenished at a faster rate than they are consumed<sup>72</sup>. Solar, wind, geothermal, hydro, and some forms of biomass are common sources of renewable energy. Renewable electricity is therefore any electricity generated from any of these sources.

## Measuring the PfG target

One of the Northern Ireland Executive's Programme for Government (PfG) targets is to "Encourage achievement of 20% of electricity consumption from renewable sources by 2015"<sup>73</sup>. DETI's bi-annual 'Electricity Consumption and Renewable Generation in Northern Ireland' publication aids reporting on performance against this PfG target<sup>74</sup>.

In this case, renewable electricity generation data is derived by aggregating output (excluding any transmission and distribution losses) from renewable electricity generators who are connected to the transmission and distribution network using a combination of data held by Northern Ireland Electricity Networks Ltd (NIE Networks) and the Systems Operator for Northern Ireland (SONI)<sup>75</sup>.

Electricity consumption data is calculated by aggregating actual and estimated meter readings across both domestic and non-domestic sectors in Northern Ireland. The NIE Networks electricity consumption data includes all electricity consumed in Northern Ireland across both domestic and non-domestic sectors regardless of where the electricity was generated (i.e. it will also include consumption of any imported electricity).

Therefore, the reported percentage against the target (or headline measure) is calculated by expressing renewable electricity generation as a percentage of electricity consumption, as defined above, on a rolling 12 month average basis. The rolling 12 month average helps to take account of monthly variations to provide a better measure of the underlying trend.

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<sup>72</sup> Taken from International Energy Agency – see <http://www.iea.org/aboutus/faqs/renewableenergy/>

<sup>73</sup> See <http://www.northernireland.gov.uk/pfg> for more information on the Programme for Government.

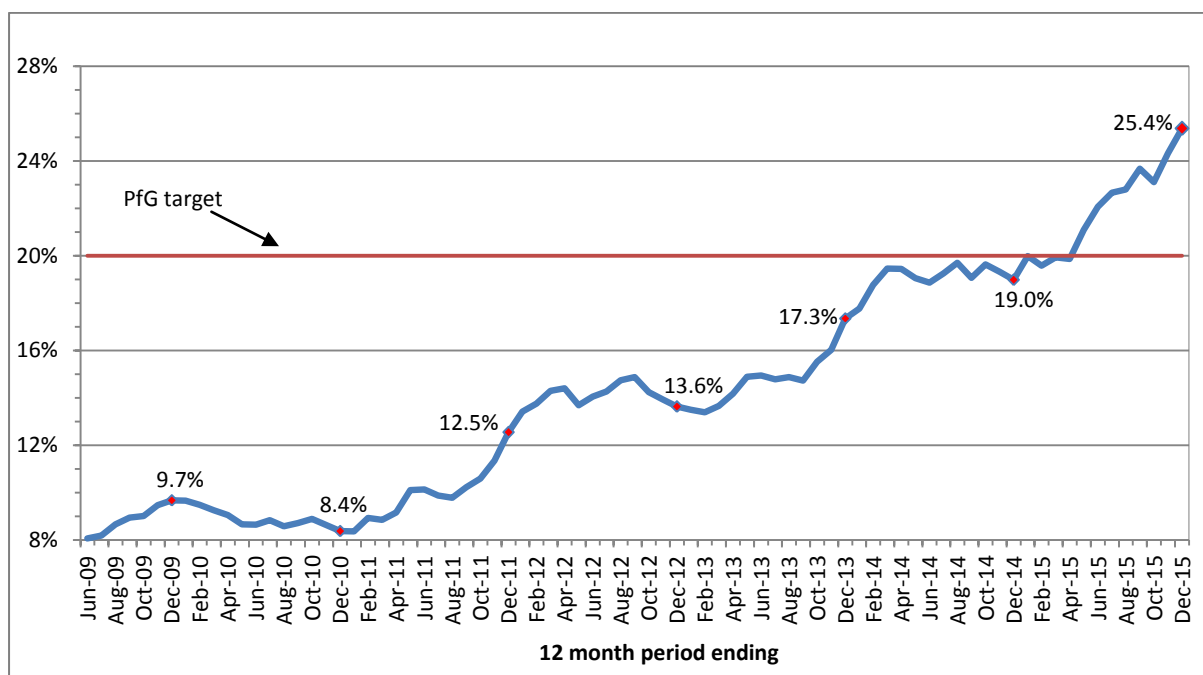
<sup>74</sup> More information on this publication is available [here](#).

<sup>75</sup> Electricity produced by those who generate their own electricity (mainly for their own use but some of which may 'spill' onto the distribution network) is excluded as information about such 'micro generation' or consumption is not readily available to NIE Networks. Also, some imported electricity that is consumed in Northern Ireland will have been generated from renewable sources outside Northern Ireland. However, the full extent of this is unknown and therefore cannot be reported separately.

## Headline Measure – Rolling 12 month average

For the 12 month period January 2015 to December 2015, 25.4% of total electricity consumption in Northern Ireland was generated from renewable sources. This represents an increase of 6.4 percentage points on the previous 12 month period (January 2014 to December 2014).

Chart 4.1: Rolling 12 month Average % Electricity Consumption from Renewable Sources



Source: DETI

Chart 4.1 above shows the trend in the percentage of electricity consumption in Northern Ireland from renewable sources. In the 12 month period ending June 2009, some 8.1% of total electricity consumption in Northern Ireland was generated from renewable sources. This proportion has grown considerably with over a quarter (25.4%) of total electricity consumption in Northern Ireland being generated from renewable sources for the 12 month period ending December 2015. This represents a threefold increase in average renewable generation volumes in comparison to the 12 month period ending June 2009. As the chart above shows, the PfG target of 20% was exceeded during 2015 and reached a peak of 25.4% for the 12 month period ending December 2015.

### Annual Proportion

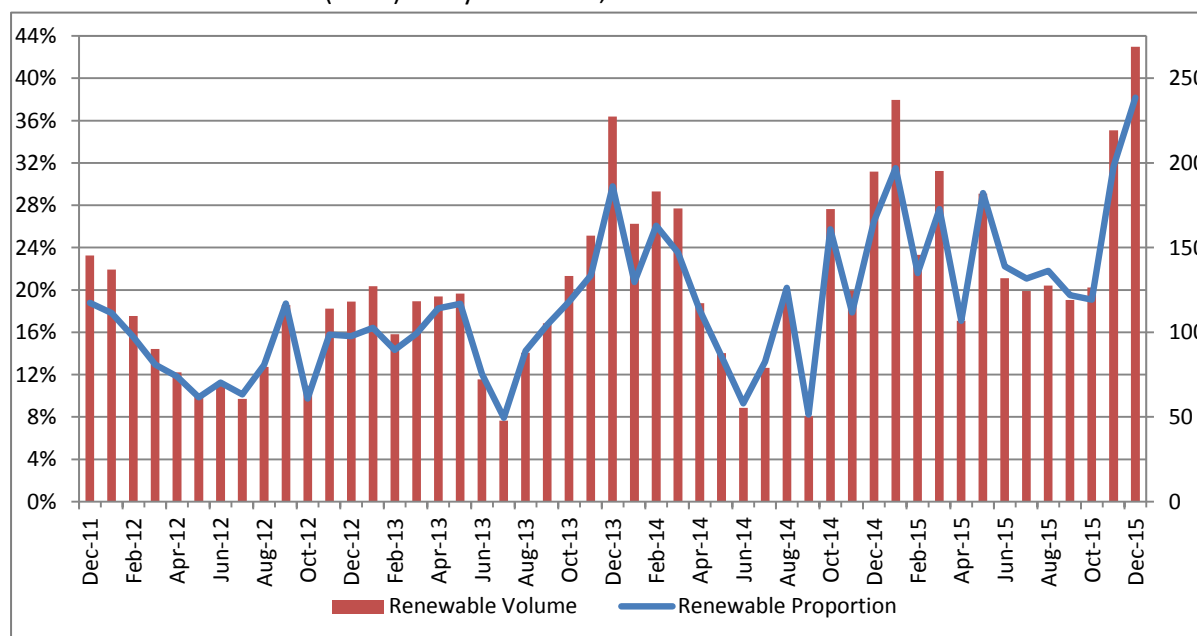
Chart 4.1 above also shows the proportion of total electricity consumption from renewable sources for each calendar year end. After a slight drop in the renewable proportion between 2009 (9.7%) and 2010 (8.4%), electricity generation from renewable sources in Northern Ireland as a percentage of electricity consumption in Northern Ireland has risen steadily to 25.4% in 2015. In particular, there were large rises of around 4 percentage points between 2010 and 2011 (from 8.4% to 12.5%) and between 2012 and 2013 (from 13.6% to 17.3%) and a rise of over 6 percentage points between 2014 and 2015 (19.0% to 25.4%). Such large rises are usually attributable to new renewable generation facilities coming on line and/or increased wind levels during the year.

## Monthly Proportion

The proportion of electricity consumption derived from renewable sources varies markedly from month to month, as shown in Chart 4.2. For example, in December 2015, generation from renewable sources located in Northern Ireland accounted for almost two fifths (38.2%) of all electricity consumed in Northern Ireland in that month. However, this compares to around 8% in July 2013 and September 2014. Such variation is due to large fluctuations in renewable electricity generation each month, caused mainly by changing weather conditions. Given the reliance on wind generation in Northern Ireland, weather plays an important role in the volume of renewable electricity generation. Other factors, such as new renewable generation facilities coming on line at various points, can also contribute to shifts in the renewable proportion. In general, renewable generation volumes are lower in the summer months (when it is less windy) and higher in winter when wind levels are increased. Such changes in renewable generation correlate directly with the large monthly variation in the proportion of electricity consumption from renewable sources, as shown in Chart 4.2.

The rolling 12 month average helps to take account of such monthly variations to provide a better measure of the underlying trend (as shown earlier in Chart 4.1).

Chart 4.2: Percentage of Electricity Consumption from Renewable Sources and Renewable Generation Volume (GWh) by month, December 2011 – December 2015



Source: DETI

Chart 4.2 also highlights the close relationship between renewable volumes and the overall renewable proportion. The renewable proportion for measuring against the PfG target (i.e. renewable generation in Northern Ireland divided by total consumption in Northern Ireland) is heavily influenced by changes in renewable generation (i.e. the numerator) and less so by changes in consumption (the denominator)<sup>76</sup>. As the chart above shows, the volume of renewable electricity

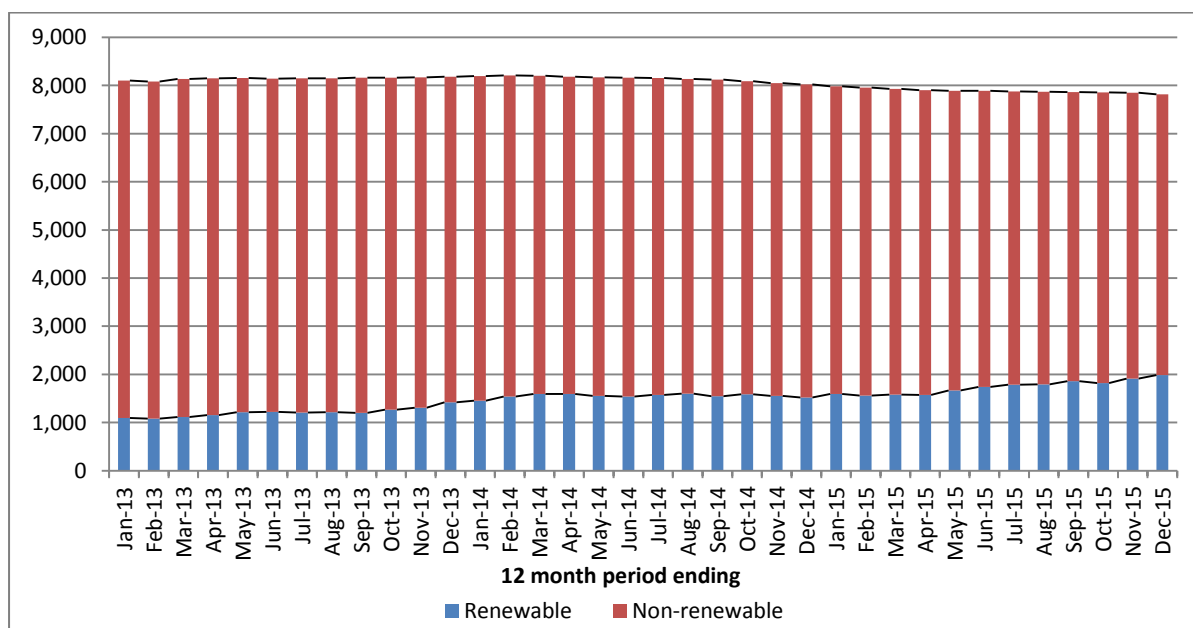
<sup>76</sup> Annex 4.1 shows the monthly renewable proportion mapped against monthly total consumption.

generated can change significantly from month to month whereas changes in consumption from month to month tend to be less marked.

### Volume – Rolling 12 month period

Renewable generation volumes were around 1,100 GWh for the 12 month period ending January 2013 but have risen to almost 2,000 GWh for the 12 month period ending December 2015 (a rise of 81%). Total consumption has remained fairly steady at around 8,000 GWh over the period (although showing a slight decline through 2014, into 2015 and representing a fall of about 3% since early 2013).

Chart 4.3: Rolling 12 month Volume of Electricity Consumed by Source<sup>77</sup> (GWh)



Source: DETI

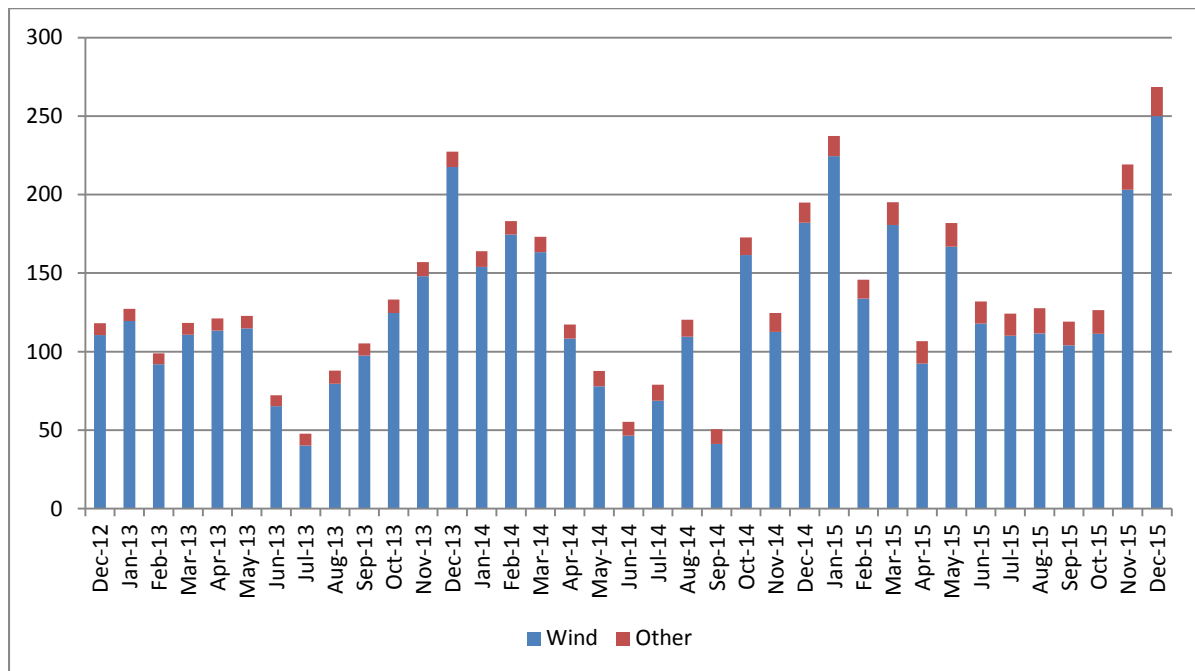
As Chart 4.3 shows, for the 12 month period January 2015 to December 2015, approximately 7,819 Gigawatt hours (GWh) of total electricity was consumed in Northern Ireland. Of this, some 1,984 GWh was generated from renewable sources within Northern Ireland.

<sup>77</sup> Non-renewable volumes are calculated by subtracting indigenous renewable generation from total consumption. It should be noted that all imported electricity is categorised as non-renewable even though some may actually have come from renewable sources. However, information on the total volume of imported electricity from renewable sources is not known.

## Volume – monthly

As noted earlier, given Northern Ireland’s reliance on wind for producing renewable electricity, such generation can vary markedly from month to month. As Chart 4.4 shows, there can be noticeable changes in monthly generation and the vast majority of renewable generation in Northern Ireland is from wind sources.

Chart 4.4: Monthly Volume of Renewable Electricity Generated (GWh)



Source: DETI

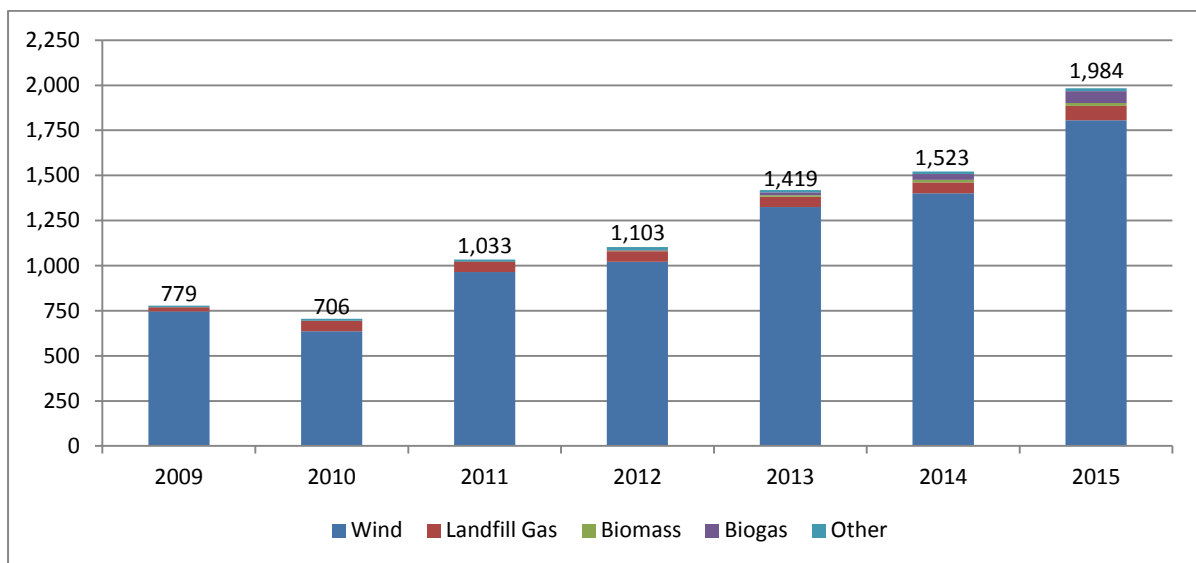
Renewable generation volumes are lower in the summer months (when it is less windy) and higher in winter when wind levels are increased. New renewable generation facilities coming on line at various points can also contribute to shifts in renewable generation volumes. Renewable electricity generation from sources other than wind are much more stable with no large monthly fluctuations. Volumes from these other sources<sup>78</sup>, whilst small in overall terms, have grown significantly over the period shown: volumes at the end of 2015 (18.6 GWh) were about two and a half times the volume at the end of 2012 (around 7.5 GWh).

<sup>78</sup> Other sources include landfill gas, biogas, biomass, hydro, Combined Heat and Power (CHP), tidal and solar.

## Volume – Calendar Year

The chart below shows the total volume of renewable electricity generated in Northern Ireland for each calendar year 2009 to 2015, split by type of renewable generation. Total renewable generation volumes have increased substantially in recent years; they have almost trebled between 2010 and 2015 (from around 706 GWh in 2010 to some 1,984 GWh in 2015). Again, wind is the largest contributor (it accounted for some 91% of total renewable generation in 2015), but there have been increases in all types in renewable electricity generation over the period.

Chart 4.5 Annual Volume of Renewable Electricity Generated by Type of Generation (GWh), 2009 to 2015



Source: DETI

Renewable generation from landfill gas sources remained stable between 2010 and 2014, contributing some 60 GWh annually to renewable generation volumes for Northern Ireland and this increased to almost 80 GWh in 2015 (representing around 4-5% of total renewable generation in each year).

Generation from biogas and biomass has shown significant growth in recent years. In 2011, there was less than 1 GWh in generation from these two sources but by 2015 there was a combined total of 82.1 GWh (66.3 GWh from biogas and 15.8 GWh from biomass) and together they represented 4% of total renewable generation volumes for Northern Ireland in 2015.



## Other Renewable Electricity Data – UK and UK Regions

The Department of Energy & Climate Change (DECC) produces a range of data on renewable electricity, including some at a UK regional level<sup>79</sup>. Some of the key tables are presented here.

Table 4.1 Number of sites generating electricity from renewable sources, 2014

	Hydro	Wind	Wave & Tidal	Landfill Gas	Sewage Gas	Other Bioenergy	Total exc PV	Solar PV	Total
England	241	3,400	2	360	163	302	4,468	496,086	500,554
East Midlands	24	342	-	40	13	35	454	58,305	58,759
East of England	6	803	-	69	13	37	928	68,029	68,957
North East	9	230	-	19	8	10	276	29,295	29,571
North West	41	419	-	54	24	46	584	54,583	55,167
London	-	29	-	1	4	14	48	15,630	15,678
South East	15	102	-	70	35	31	253	77,998	78,251
South West	96	660	1	39	21	43	860	89,650	90,510
West Midlands	18	151	-	29	20	50	268	46,483	46,751
Yorkshire and the Humber	32	664	1	39	25	36	797	56,113	56,910
Wales	142	468	-	24	16	12	662	38,914	39,576
Scotland	377	2,736	9	46	7	32	3,207	39,582	42,789
<b>Northern Ireland</b>	<b>65</b>	<b>713</b>	<b>1</b>	<b>12</b>	<b>2</b>	<b>28</b>	<b>821</b>	<b>11,879</b>	<b>12,700</b>
<i>Other Sites</i>	89	561	-	-	-	46	696	63,848	64,544
<b>UK Total</b>	<b>914</b>	<b>7,878</b>	<b>12</b>	<b>442</b>	<b>188</b>	<b>420</b>	<b>9,854</b>	<b>650,309</b>	<b>660,163</b>

Source: DECC

Table 4.1 shows that there were 821 non-PV<sup>80</sup> sites in Northern Ireland generating electricity from renewable sources, with 4,468 non-PV sites in England, 3,207 in Scotland and 662 in Wales<sup>81</sup>. There are large numbers of solar PV sites and these constitute the vast majority of sites in each country (99% for England, 98% for Wales, 93% for Scotland and 94% for Northern Ireland) although the majority of these will be on domestic properties generating electricity for their own consumption.

There has been huge growth in the number of sites generating electricity from renewable sources in Northern Ireland over the last 10 years, as shown below.

Table 4.2 Number of sites generating electricity from renewable sources in NI, 2004-2014

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Non-PV	43	74	81	105	112	431	495	535	587	708	821
Solar PV	0	0	7	7	7	250	326	498	1,464	5,240	11,879
<b>Total</b>	<b>43</b>	<b>74</b>	<b>88</b>	<b>112</b>	<b>119</b>	<b>681</b>	<b>821</b>	<b>1,033</b>	<b>2,051</b>	<b>5,948</b>	<b>12,700</b>

Source: DECC

<sup>79</sup> This data is taken from a special feature on sub-national renewable electricity published by DECC, available [here](#).

<sup>80</sup> Figures for Solar PV (Photo Voltaic) sites includes all small solar PV installations, the majority of which will be on single domestic properties for own consumption. PV uptake for Northern Ireland (11,879) is based on data from the Microgeneration Certification Scheme and the Renewables Obligation.

<sup>81</sup> There are a further 63,848 PV schemes and 696 non-PV schemes in other sites that, due to lack of appropriate geographical information, could not be assigned to one of the four countries.

## Renewable Installed Capacity – UK and UK Regions

Table 4.3 shows there was some 796 megawatts<sup>82</sup> (MW) of installed capacity at sites generating electricity from renewable sources in 2014 in Northern Ireland, which is about 3.2% of total UK renewable capacity. England accounts for 58.1% of total UK installed capacity, Scotland 29.4% and Wales 7.4%<sup>83</sup>.

Table 4.3 Installed capacity of sites generating electricity from renewable sources, 2014 (MW)

	Hydro	Wind	Wave & Tidal	Landfill Gas	Sewage Gas	Other Bioenergy	Solar PV	Total
England	32.0	5,792.6	0.1	874.7	189.5	2,940.3	4,469.5	14,298.8
East Midlands	4.6	723.8	-	68.5	17.5	121.9	471.1	1,407.4
East of England	0.1	1,401.5	-	201.6	26.3	153.0	896.6	2,679.2
North East	7.6	405.7	-	44.6	11.6	135.7	97.2	702.4
North West	6.2	1,392.3	-	149.6	27.0	135.5	202.1	1,912.7
London	-	11.2	-	0.3	23.4	172.4	60.7	268.0
South East	0.7	1,104.4	-	172.1	29.2	255.7	855.4	2,417.5
South West	9.7	230.4	-	96.1	15.1	45.7	1,419.4	1,816.5
West Midlands	0.8	4.7	-	60.3	23.1	501.7	230.1	820.8
Yorkshire and the Humber	2.3	518.6	0.1	81.5	16.2	1,418.7	236.9	2,274.3
Wales	157.8	1,172.2	-	45.5	13.1	45.9	375.8	1,810.3
Scotland	1,507.6	5,215.8	7.4	116.3	5.6	226.1	155.6	7,234.3
<b>Northern Ireland</b>	<b>8.5</b>	<b>689.0</b>	<b>1.2</b>	<b>14.3</b>	<b>0.2</b>	<b>20.6</b>	<b>62.2</b>	<b>796.0</b>
<i>Other Sites</i>	17.3	117.9	-	-	-	34.0	314.3	483.5
<b>UK Total</b>	<b>1,723.2</b>	<b>12,987.5</b>	<b>8.7</b>	<b>1,050.9</b>	<b>208.4</b>	<b>3,266.8</b>	<b>5,377.3</b>	<b>24,622.9</b>

Source: DECC

Wind accounts for just over half (53%) of total installed renewable capacity in the UK, however this varies considerably among the UK regions. For example, in the West Midlands (which has a similar total installed capacity to Northern Ireland) wind accounts for less than 1% of installed capacity whilst in Northern Ireland some 87% of installed capacity is in wind. Wind is also the predominant source of installed capacity in Scotland (72%) and Wales (65%) but in England it accounts from a much lower proportion (41%).

In England solar PV (31%) and other bioenergy (21%) together account for over half of installed capacity, whereas these two renewable sources account for only 5% of installed capacity for Scotland and 10% for Northern Ireland.

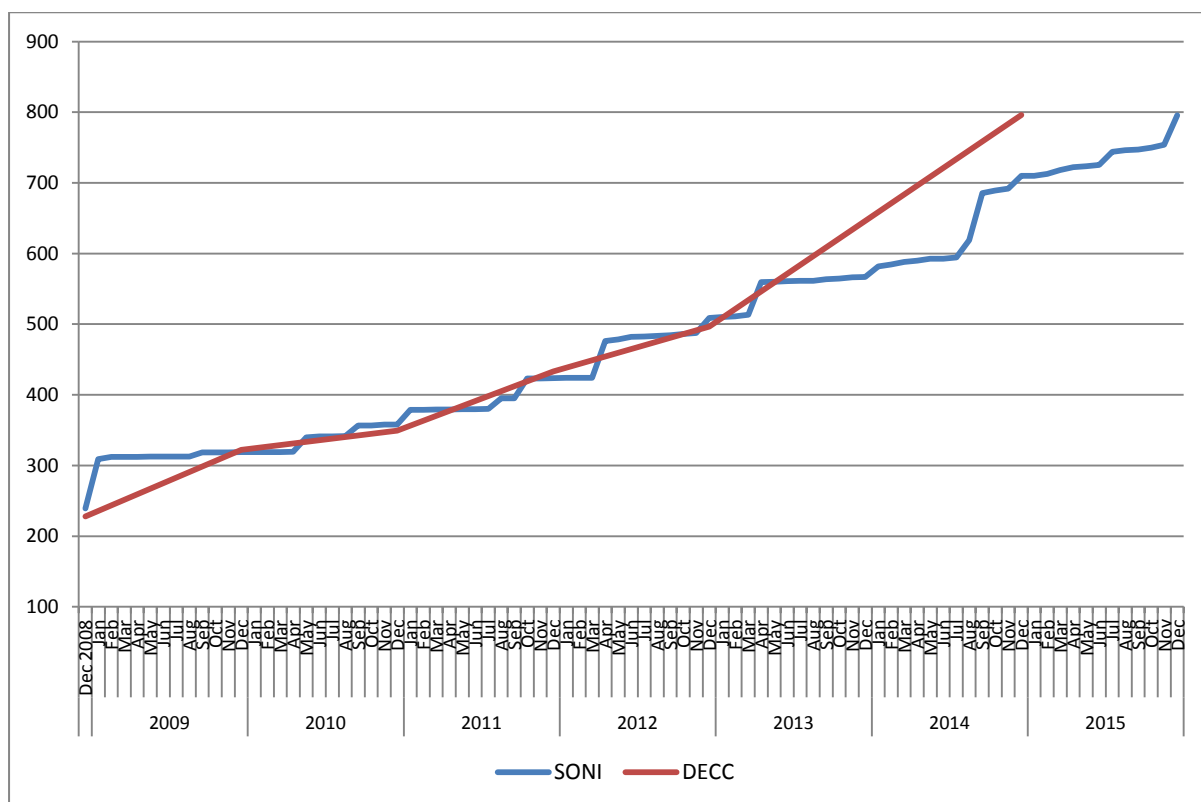
<sup>82</sup> Megawatts are used to measure the output of a power plant. One megawatt (MW) = 1,000 kilowatts = 1,000,000 watts.

<sup>83</sup> Around 2.0% of installed capacity is in other sites that could not be assigned to one of the four countries.

## Monthly Installed Capacity Data

SONI also produce data on installed renewable capacity as part of their 'Monthly Electricity Statistics' bulletins<sup>84</sup>. As the chart below shows, installed renewable capacity has been increasing steadily over recent years. Note that the monthly series shows how the total installed capacity in Northern Ireland can increase in 'steps' as new renewable generation facilities are installed.

Chart 4.6 Monthly and Annual Installed Renewable Capacity (MW) for Northern Ireland, 2008 - 2015



Source: SONI and DECC

In general, the SONI installed capacity figure should be lower than the DECC figure because DECC include all microgeneration capacities, whereas SONI do not<sup>85</sup>. However, as the chart shows, the divergence in the two measures has only occurred in 2013 and 2014 which would be mainly due to more recent increases in microgeneration installations (this is highlighted by the large growth in solar PV sites in Northern Ireland shown in Table 4.2 earlier).

The most recent figures published by DECC relate to the end of 2014 and show an installed capacity of just under 800 MW for Northern Ireland. The SONI data for December 2014 indicates installed capacity of around 710 MW (which is around 12% lower than the DECC figure). Whilst some of this difference may be due to different data collection methodologies between the two sources, microgeneration (particularly solar PV) will account for the majority of the variation between the SONI and DECC totals.

<sup>84</sup> See <http://www.soni.ltd.uk/InformationCentre/Publications/> for copies of these publications.

<sup>85</sup> It is mainly solar PV information that is not available to SONI, however they do include data for small scale wind which would include most wind microgeneration (i.e. single wind turbines on domestic or commercial properties).

## Generation Volumes – UK and UK Regions

Table 4.4 below shows the actual amounts of electricity generated from renewable sources for the latest year available, 2013. This again highlights that the majority of renewable electricity generated in Northern Ireland is wind generated – some 1,345.2 GWh out of a total 1,530.7 GWh, or 88%. Wind is also the prevalent renewable generation source in the other UK countries, although with much smaller proportions. Wind accounted for around two-thirds of renewable generation in Scotland (66%) and Wales (64%) but less than half (44%) of all renewable electricity generated in England. England has considerable bioenergy and landfill gas resources (indeed, England accounted for 90% and 84% of total UK generation for those sources respectively in 2013).

Table 4.4 Generation of electricity from renewable sources, 2014 (GWh)

	Hydro	Wind	Wave & Tidal	Landfill Gas	Sewage Gas	Other Bioenergy	Solar PV	Total
England	98.8	16,429.1	0.1	4,256.7	773.4	15,080.3	3,447.1	40,085.4
East Midlands	13.7	1,952.0	-	319.9	77.8	407.2	353.9	3,124.5
East of England	0.3	4,343.9	-	1,014.1	66.3	812.9	665.8	6,903.3
North East	32.9	875.5	-	163.6	53.2	576.1	78.6	1,779.9
North West	17.0	4,110.4	-	627.5	133.3	535.5	167.1	5,590.8
London	-	14.5	-	2.6	53.1	560.3	53.3	683.8
South East	1.8	3,547.0	-	958.6	125.4	718.7	611.1	5,962.6
South West	24.6	466.7	-	474.3	71.3	187.1	1,139.4	2,363.4
West Midlands	2.3	7.5	-	335.5	128.3	2,238.5	181.8	2,893.9
Yorkshire and the Humber	6.3	1,111.6	0.1	360.6	64.5	9,044.0	196.0	10,783.1
Wales	275.7	2,331.6	-	193.5	43.6	330.5	234.3	3,409.3
Scotland	5,435.8	11,664.1	2.1	533.5	28.2	1,166.5	131.7	18,961.9
<b>Northern Ireland</b>	<b>28.2</b>	<b>1,454.3</b>	<b>0.0</b>	<b>61.3</b>	<b>0.7</b>	<b>104.4</b>	<b>45.7</b>	<b>1,694.6</b>
<i>Other Sites</i>	46.4	136.5	-	-	-	129.1	191.0	503.0
<b>UK Total</b>	<b>5,884.9</b>	<b>32,015.7</b>	<b>2.2</b>	<b>5,045.0</b>	<b>845.9</b>	<b>16,810.8</b>	<b>4,049.7</b>	<b>64,654.1</b>

Source: DECC

The vast majority (over 90%) of Hydro and Wave & Tidal renewable electricity is generated in Scotland. England accounts for some 90% of all renewable electricity generated from Sewage Gas or Other Bioenergy (as well as accounting for about 85% of Landfill Gas and Solar PV renewable electricity generation). Overall, Northern Ireland accounted for 2.6% of total renewable electricity generated in the UK in 2014 and 4.5% of all renewable electricity generated from wind sources in the UK.

The renewable electricity generation volumes produced by DECC as shown above do not correlate exactly with the data published by DETI (and sourced from NIE Networks and SONI) as shown in Chart 4.5 earlier. Annex 4.2 shows a comparison of the two sources and seeks to explain any differences.

## Sub-regional Renewable Data

DECC also produce renewable electricity data at a District Council level (the previous 26 council areas) for Northern Ireland<sup>86</sup>. The latest year available is for 2014 and results have been aggregated into the new 11 'super council' areas as shown in Table 4.5 below<sup>87</sup>.

Table 4.5 Renewable electricity generation, capacity and site numbers by District Council Area as at end 2014

District Council	Number of sites	Capacity (MW)	Generation (MWh)
Antrim & Newtownabbey	35	31	82,272
Ards & North Down	10	2	5,484
Armagh City, Banbridge & Craigavon	35	6	18,341
Belfast	7	6	15,457
Causeway Coast & Glens	51	159	298,629
Derry City & Strabane	57	206	508,284
Fermanagh & Omagh	55	237	513,834
Mid & East Antrim	47	25	58,507
Mid Ulster	59	45	93,494
Newry, Mourne & Down	31	7	25,826
Lisburn & Castlereagh	20	4	11,940
Unallocated	12,294	68	54,807
<b>Total</b>	<b>12,701</b>	<b>796</b>	<b>1,686,875</b>
Unallocated as % of Total	97%	8%	3%

Source: DECC

'Unallocated' means those sites (and associated capacity and generation) that were not able to be matched to a council area due to incomplete or a lack of postcode information. As the table shows, the vast majority of sites (around 97%) were unallocated. However, further analysis shows that the vast majority (11,857 or over 96%) of the 12,294 unallocated sites are solar PV sites and, as shown in Table 4.5 above, these account for only 8% of capacity and 3% of generation.

The table shows that over three quarters (76%) of renewable electricity capacity and generation (78%) was accounted for by three of the 11 council areas namely: Causeway Coast & Glens; Derry City & Strabane; and Fermanagh & Omagh. This is perhaps unsurprising given that the majority of the large onshore wind turbines would be located in these council areas<sup>88</sup>. In general, the majority of capacity and generation is located in rural areas with large urban areas like Belfast or Lisburn & Castlereagh accounting for a very small proportion (around 1%) of renewable capacity and generation.

<sup>86</sup> Full tables are available [here](#)

<sup>87</sup> Data for the old 26 District Council Areas and details of how the data was aggregated into the new council areas is provided in Annex 4.4 for information.

<sup>88</sup> See [here](#) for a map of wind farm locations in Northern Ireland.

## Electricity generation by fuel type - UK countries

Data is also available, for each of the four UK countries, in relation to the shares of generation of electricity by fuel type<sup>89</sup>. For Northern Ireland, gas is the main fuel type used in electricity generation accounting for around half of all indigenous generation in 2014, a much higher proportion compared to England (around a third), Scotland (only 5.4%) and Wales (around a quarter).

Table 4.6 Shares of each country's generation, by fuel type, 2013 and 2014

	UK	Scotland	Wales	Northern Ireland	England
<b>2013</b>					
Coal	36.4%	20.4%	44.4%	<b>34.0%</b>	38.8%
Gas	26.7%	10.3%	17.3%	<b>45.8%</b>	30.3%
Nuclear	19.7%	34.9%	16.7%	-	17.5%
Renewables	14.8%	32.0%	10.3%	<b>19.5%</b>	11.8%
Oil and Other	2.4%	2.4%	11.3%	<b>0.7%</b>	1.6%
<b>2014</b>					
Coal	29.7%	20.3%	35.7%	<b>28.3%</b>	31.1%
Gas	29.8%	5.4%	24.1%	<b>49.1%</b>	34.3%
Nuclear	18.8%	33.3%	9.3%	-	17.3%
Renewables	19.1%	38.0%	16.3%	<b>22.2%</b>	15.6%
Oil and Other	2.6%	2.9%	14.6%	<b>0.3%</b>	1.7%

Source: DECC

In 2013, coal was the dominant fuel type used for electricity generation in England, Wales and the UK as a whole and it accounted for a significant proportion in Northern Ireland also (over one third). However, coal use for electricity generation fell significantly in 2014 in these regions and it was only in Wales that it remained the dominant fuel used for electricity generation (although electricity generation from coal and gas were almost identical at the UK level).

In Scotland, renewable generation now accounts for the largest share of generation (38% in 2014 and up from 32% in 2013). Nuclear accounted for a third of all electricity generation in Scotland in 2014, over 17% of all electricity generation in England and some 19% for the UK as a whole. Renewables' share of generation has been continually increasing in all regions, reaching a record high of 19.1% for the UK in 2014.

<sup>89</sup> Taken from DECC 'Special feature - Sub national electricity figures' publication [link here](#)

## Renewable electricity generation by country – comparable basis

In the UK, the share of renewables in electricity generation or sales can be measured in different ways<sup>90</sup>. Table 4.7 shows the ‘headline’ overall measure for 2011 to 2014 which is the percentage of electricity generation accounted for by all renewable generation. Whilst the proportions shown in the table below for Northern Ireland are different from those presented earlier (in Chart 4.1) the percentages in Table 4.7 are all calculated on the same basis and, therefore, are directly comparable.

Table 4.7 Comparable renewables percentages for the UK and UK countries, 2010 to 2013

	UK	Scotland	Wales	Northern Ireland	England
2011	9.4%	26.7%	8.4%	12.6%	6.2%
2012	11.3%	29.1%	9.3%	15.9%	8.1%
2013	14.8%	32.0%	10.3%	19.5%	11.8%
2014	19.1%	38.0%	16.3%	22.2%	15.6%

Source: DECC

The table shows that Scotland had the highest renewable percentage of the four UK countries with almost two fifths (38%) of electricity generation in 2014 accounted for by renewable generation. Northern Ireland had the second highest proportion in each of the four years, with renewable generation in Northern Ireland accounting for over one-fifth (22.2%) of all electricity generation in Northern Ireland in 2014 using this headline measure. In 2014, all four countries had a record high percentage of electricity generated by renewables.

The amount of electricity from renewable sources transferred from Scotland or Wales to England, or from Scotland to Northern Ireland, is not known.

The renewable electricity percentages produced by DECC in Table 4.7 above do not match with the annual percentages published by DETI (and sourced from NIE Networks and SONI) as shown in Chart 4.1 earlier. Annex 4.3 shows a comparison of the two sources and seeks to explain any differences.

## Renewable Energy Planning Data

Table 4.8 overleaf shows the number of planning applications received by the Department of the Environment (DOE) for each year 2002/03 to 2014/15, split by type of renewable energy.

The table shows that there was a large increase in applications between 2009/10 and 2010/11; applications peaked in 2011/12 and have fallen to around 35% below the peak for the latest year available (2014/15). Of all planning applications received in relation to renewable energy over the period 2002/03 – 2014/15, around 8 out of every 10 were for single wind turbines. Note that planning permission is required for all wind turbines (including those for domestic purposes, hospitals, factories, farms, schools etc.) whilst solar panels on domestic properties can be installed without the need to apply for planning permission provided certain conditions are met.

<sup>90</sup> A second measure is based on the Renewables Obligation (RO) which shows the percentage of electricity sales accounted for by renewables eligible under these obligations. However, on a RO basis the percentage measure for the UK (9.8% in 2011, 11.9% in 2012, 16.1% in 2013 and 19.1% in 2014) is not meaningful at sub-national level because electricity generated in one part of the UK can be sold in a different part of the UK. There is also a third method used by the EU – a Renewables Directive basis – see Chapter 6 of the Digest of UK Energy Statistics 2014, table 6.7 and paragraph 6.52 ([link here](#)).

Table 4.8: Applications Received from 2002/03 to 31st March 2015 by Renewable Energy Type

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Total
Single wind turbine <sup>91</sup>	22	42	47	87	136	172	226	159	629	674	614	547	421	3,776
Wind farm	4	7	21	13	18	19	15	16	17	12	6	21	13	182
Hydroelectricity	1			3	6	1	2	10	16	30	23	20	17	129
Solar panels <sup>92</sup>	1	2	3	31	19	40	22	11	5	36	124	69	61	424
Biomass/Anaerobic digester	2	2	2	3	3	5	6	4	31	68	31	16	20	193
Other						5	3	3	6		3	5	4	29
<b>Total</b>	<b>30</b>	<b>53</b>	<b>73</b>	<b>137</b>	<b>182</b>	<b>242</b>	<b>274</b>	<b>203</b>	<b>704</b>	<b>820</b>	<b>801</b>	<b>678</b>	<b>536</b>	<b>4,733</b>

Source: DOE

Table Notes:

1. All applications received in the period may not have had a decision issued within the same time period. Applications received may also include some applications that are subsequently withdrawn.
2. Data for 2014/15 is the latest available, provisional, renewable energy information.
3. Other includes, Landfill Gases, Waste Incineration and Heat Pumps.

<sup>91</sup> Planning permission is required for all wind turbines. This includes turbines for: domestic purposes, hospitals, factories, farms, schools etc. (see [here](#) for further details).

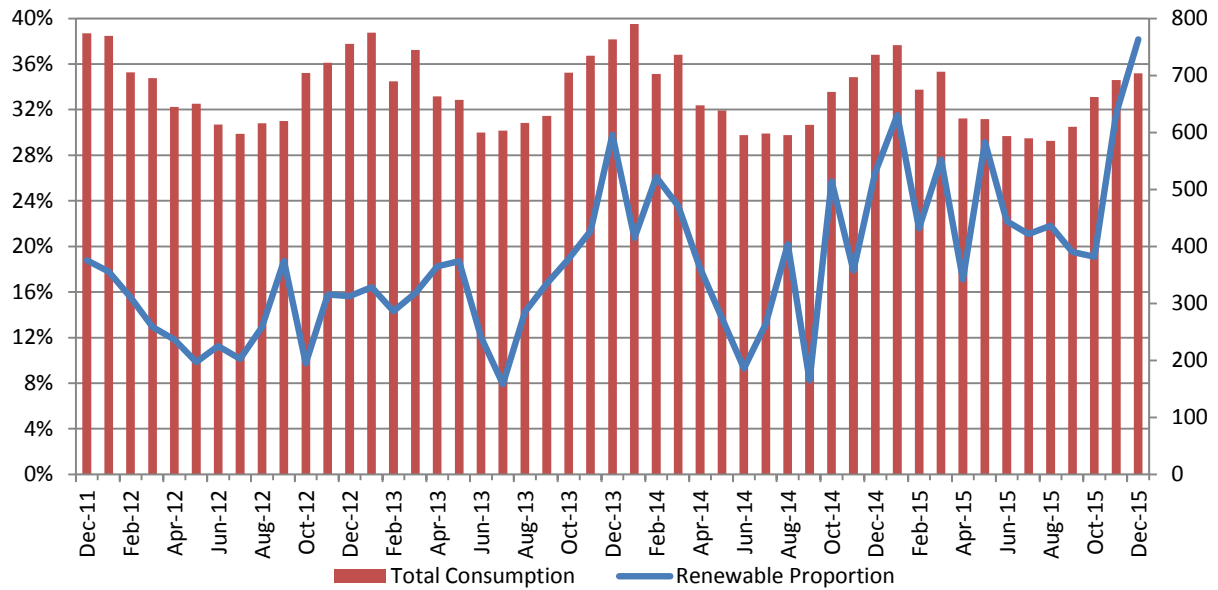
<sup>92</sup> Solar panels on domestic properties can be installed without the need to apply for planning permission provided a number of limitations and conditions are met (see [here](#) for further details).



### Annex 4.1 Renewable Proportion and Total Consumption Volume by month

The chart below highlights the seasonal nature of electricity consumption (i.e. higher in winter months and lower in summer months). Whilst a change in total consumption does have some effect on the renewable proportion, it is renewable generation that has a much more significant impact on the proportion as shown in Chart 4.2 earlier.

Chart 4.7 Percentage of Electricity Consumption from Renewable Sources and Total Consumption Volume (GWh) by month, December 2011 – December 2015

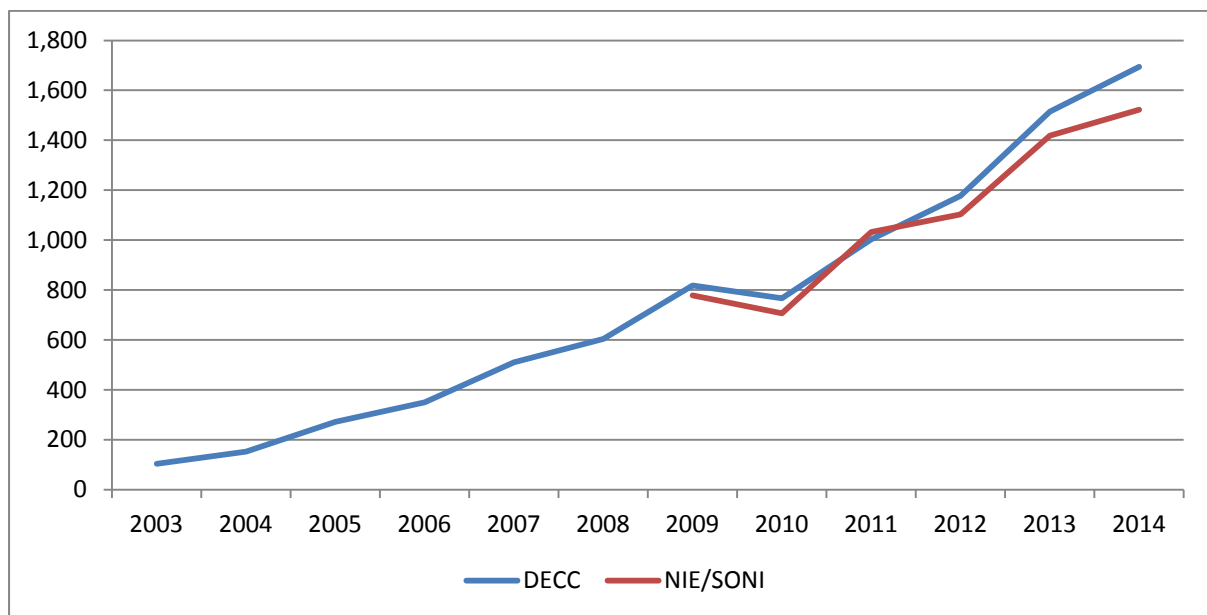


Source: DETI

## Annex 4.2 Comparisons of Annual Renewable Generation Volume Data

DECC have published a consistent series on annual renewable generation volumes from 2003 onwards<sup>93</sup> and the most recent data from this series was presented in Table 4.4 earlier. NIE Networks provide data to DETI on a monthly basis to allow the compilation of the bi-annual Electricity Consumption and Renewable Generation in Northern Ireland publication, as shown in Chart 4.5 earlier. Annual data from this source is available from 2009 onwards. The chart below compares these two sources.

Chart 4.8 Annual Volume of Renewable Electricity Generated (GWh), DECC and NIE Networks sources



Source: DECC; NIE Networks and SONI

The chart shows that, in general, DECC estimates tend to be around 7-8% higher than those from NIE Networks (except for 2011 when they were 4% lower and 2014 when they were 11% higher) although the general trend in each series is similar. The renewable electricity generation data published biannually by DETI is derived by aggregating output from renewable electricity generators who are connected to the transmission and distribution network using a combination of data held by NIE Networks and SONI excluding any transmission and distribution losses. Microgenerators would not be included as they are not directly connected to the transmission and distribution network.

The DECC data is derived from a combination of sources<sup>94</sup>: a survey of major electricity generators and ROCs data which covers smaller sites and includes microgeneration (this is estimated for sites where ROCs data are issued only annually, which is generally the case for all microgeneration). Transmission or distribution losses are not deducted. In summary, therefore, the reason for the difference between DECC data and the NIE Networks/SONI renewable generation volume data is the inclusion of microgeneration in the data published by DECC.

<sup>93</sup> Available at <https://www.gov.uk/government/statistics/regional-renewable-statistics>

<sup>94</sup> Further detail is available [here](#).

### Annex 4.3 Comparisons of Annual Renewable Percentages

The table below shows the renewable percentages for Northern Ireland for the period 2010-2014 as produced by DETI and DECC. In general, the proportion published by DECC are around 2-3 percentage points higher than the corresponding figure published by DETI (except for 2011 where the proportions were almost identical).

Table 4.9: Comparison of DECC and DETI renewable electricity generation proportions

	DETI	DECC	Percentage Point Difference (DECC minus DETI)
2010	8.4%	10.0%	1.6
2011	12.5%	12.6%	0.1
2012	13.6%	15.9%	2.3
2013	17.3%	19.7%	2.4
2014	19.0%	22.2%	3.2

Source: DETI and DECC

DECC proportions are based on indigenous generation only – that is, indigenous renewable electricity generation divided by all indigenous electricity generation. The percentages published by DETI, to report against the PfG target, are indigenous renewable generation divided by total electricity consumption (which will include imports of electricity into Northern Ireland). As shown in Chapter 3, Northern Ireland relies on imports via the Moyle Interconnector to meet demand. So while the numerators are the same under both the DECC and DETI measures, the denominators are different. The DETI denominator will be larger (because Northern Ireland consumes more electricity than it generates) which has the effect of making its reported renewable percentage smaller compared to the ‘headline’ figure reported by DECC.

In order to compare proportions between Northern Ireland and other countries we must compare proportions that have been calculated on the same basis, therefore the DECC data presented in Table 4.7 should be used to compare Northern Ireland with other UK countries.

#### Annex 4.4 Mapping old council areas to new super council areas

Table 4.5 presented data for the new 11 council areas in Northern Ireland. However, data is currently available from DECC for the old 26 district council areas only. In order to provide data for the 11 new council areas, the data for the old 26 district councils published by DECC has been aggregated as detailed in the table below. Please note that this is a ‘best fit’ of old council areas to new council areas and, as some of the new council areas include parts of old council areas, it is therefore an approximation of consumption for those new council areas.

For further information, a map of the previous and new local government districts can be found at [http://www.doeni.gov.uk/existing\\_and\\_new\\_lg\\_districts\\_-\\_aug\\_12\\_-\\_pdf.pdf](http://www.doeni.gov.uk/existing_and_new_lg_districts_-_aug_12_-_pdf.pdf).

New Council Areas:	Old Council Areas included in aggregation for Table 3.1:
Antrim & Newtownabbey	Antrim and Newtownabbey
Ards & North Down	Ards and North Down
Armagh City, Banbridge & Craigavon	Armagh, Banbridge and Craigavon
Belfast	Belfast
Causeway Coast & Glens	Ballymoney, Coleraine, Limavady and Moyle
Derry City & Strabane	Derry and Strabane
Fermanagh & Omagh	Fermanagh and Omagh
Mid and East Antrim	Ballymena, Carrickfergus and Larne
Mid Ulster	Cookstown, Dungannon and Magherafelt
Newry, Mourne & Down	Down and Newry & Mourne
Lisburn & Castlereagh	Castlereagh and Lisburn

Data as published by DECC for the old 26 district council areas is available overleaf.

### Sub-regional renewable electricity data at end 2014 – ‘old’ 26 district council areas

District Council	Number of sites	Capacity (MW)	Generation (MWh)
Antrim	25	9.7	19,907
Ards	5	0.4	530
Armagh	14	3.8	10,616
Ballymena	27	23.0	53,859
Ballymoney	20	48.2	115,813
Banbridge	14	1.5	2,411
Belfast	7	6.0	15,457
Carrickfergus	4	0.5	1,110
Castlereagh	5	0.4	462
Coleraine	15	3.9	15,732
Cookstown	15	2.0	2,780
Craigavon	7	0.9	5,314
Derry	13	36.4	107,119
Down	18	3.4	6,368
Dungannon	23	39.9	82,572
Fermanagh	26	126.1	319,891
Larne	16	1.7	3,539
Limavady	11	106.1	166,630
Lisburn	15	3.4	11,478
Magherafelt	21	3.2	8,142
Moyle	5	0.7	454
Newry & Mourne	13	3.9	19,458
Newtownabbey	10	20.8	62,365
North Down	5	1.6	4,954
Omagh	29	111.1	193,943
Strabane	44	169.8	401,165
Unallocated	12,294	67.5	54,807
<b>Total</b>	<b>12,701</b>	<b>796.0</b>	<b>1,686,875</b>
Unallocated (%)	97%	8%	3%

Source: DECC

The table above shows that renewable generation and capacity is not shared equally among District Council Areas. Indeed almost two thirds (64%) of generation is accounted for by only four council areas: Strabane (24%), Fermanagh (19%), Omagh (11%) and Limavady (10%). This is perhaps unsurprising given that the majority of the large onshore wind turbines would be located in these council areas<sup>95</sup>.

<sup>95</sup> See [here](#) for a map of wind farm locations in Northern Ireland.

## Chapter 5: Total Energy Consumption

### Summary of key points

- From sources other than electricity and gas, some 32,480 GWh of energy was consumed in Northern Ireland in 2013. Consumption of these energy products has decreased by 15% from the peak in 2006 and consumption in 2013 was the lowest level in the 9 year period 2005-2013.
- The largest contributor to these other sources of consumed energy is petroleum products, which generally account for around 90% of consumption in each year 2005-2013 (although they accounted for about 85% in 2013, the lowest proportion over the 9 year period).
- Of the 27,455 GWh of petroleum products consumed in Northern Ireland in 2013, just over half was in the Road Transport sector; some 28% was due to domestic consumption and 19% was consumption by industry.
- Coal accounted for around 6-8% of consumption of total energy other than electricity and gas in each year 2005-2009 with the proportion increasing each year up to a high of 12% in 2013. Industry and commerce accounted for around 89% of total coal consumption with domestic sector consumption accounting for the other 11% in 2013.
- Some 46,264 GWh of energy was consumed in Northern Ireland in 2013 (13,784 GWh from electricity and gas and 32,480 GWh from other fuels). This was equivalent to 3.2% of the total energy consumption in GB for the same year.
- The number of gas connections continues to rise each year across all categories. Between 2012 and 2014 the total number of connections in Northern Ireland rose substantially, by over 33,500 or almost 20%.
- Over the period 2013-2014, there was a slight fall in gas consumption (around 2%) despite an increase of over 15,000 in the number of connections over this period.
- Between 2005 and 2013, the combined total of diesel and petrol consumed in Northern Ireland due to road transport fell by 10% to just over 1.23 million tonnes of oil equivalent. However, consumption by diesel cars in Northern Ireland rose by 14% over the period 2005-2013 whilst consumption by petrol cars fell by over one quarter (26%) over the same period.
- In each year 2005-2013, around 70% of all diesel and petrol road transport consumption was due to personal use (i.e. consumption by buses, cars and motorcycles) while the remaining 30% was due to freight transport consumption (i.e. consumption by HGVs and LGVs).

## Introduction

This chapter provides some focus on areas of energy other than electricity. It begins by looking at sub-national final energy consumption data produced by DECC which is available as a historic series for Northern Ireland and, also, at sub-Northern Ireland level. It then looks at other sources of information on gas, coal and road transport (petrol and diesel) consumption statistics for Northern Ireland. Also included is an estimate of total energy consumption for Northern Ireland calculated using an amalgamation of sources on energy consumption.

### DECC Total Final Energy Consumption Data

While the total final energy consumption datasets published by DECC cover each region of the United Kingdom, there are no gas or electricity data included for Northern Ireland. This, according to DECC, is due to the differences in market structure<sup>96</sup>.

In addition, the datasets also exclude some sectors and fuels. It was recognised that it would not be meaningful to allocate energy consumption locally or regionally for some energy uses, in particular aviation (air transport) and shipping (national navigation). Together these excluded fuels account for around a 15% share of total final energy consumption in the UK<sup>97</sup>.

As shown in Table 5.1 overleaf, for sources other than electricity and gas, some 32,480 GWh of energy was consumed in Northern Ireland in 2013. Overall consumption of these energy products has decreased by 15% from the peak in 2006 and consumption in 2013 was the second lowest level in the 9 year period shown. By way of comparison, Chart 3.2 in Chapter 3 showed that total annual electricity consumption in Northern Ireland is around 8,000 GWh, so consumption of the other fuel types detailed in Table 5.1, at over 4 times this amount, is indeed significant and worthy of separate consideration.

By far the largest contributor to these other sources of consumed energy is petroleum products<sup>98</sup>, with these generally accounting for around 90% of consumption in each year 2005-2013 (although they accounted for just under 85% in 2013, the lowest proportion over the 9 year period shown). Of the 27,455 GWh of petroleum products consumed in Northern Ireland in 2013, just over half was in the Road Transport sector; around 30% was due to domestic consumption with slightly under 20% being consumption by industry.

Coal accounted for around 6-8% of final energy consumption in each year 2005-2009 but the proportion has increased each year since and in 2013, coal accounted for around 12% of total consumption of these fuel types. In 2013, total coal consumption was equivalent to 3,813.6 GWh and, of this, industry and commerce accounted for around 89% of total coal consumption with domestic sector consumption accounting for the other 11%.

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<sup>96</sup> See Sub-national Consumption Statistics Guidance Booklet [here](#) for further details.

<sup>97</sup> See page 63 of the Sub-national Consumption Statistics Guidance Booklet [here](#) for further details.

<sup>98</sup> Petroleum products include petrol, diesel and home heating oil.

Table 5.1 Northern Ireland Final Energy Consumption (GWh), 2005-2013

Year	Coal <sup>(1)</sup>			Manufactured fuels <sup>(2)</sup>			Petroleum products <sup>(1)</sup>					Bio energy & wastes	All fuels	Consuming Sector <sup>(3)</sup>		
	Indust/Comm	Domestic	Total	Indust/Comm	Domestic	Total	Indust/Comm	Domestic	Road transport	Rail	Total	Total	Total	Ind/Comm	Domestic	Transport
2005	1,917.5	341.6	2,259.2	239.5	230.7	470.2	9,885.0	8,081.8	15,699.9	117.9	33,784.6	641.3	37,155.2	12,042.0	8,654.1	15,817.8
2006	2,870.3	333.6	3,203.9	197.9	226.7	424.6	8,930.8	8,771.4	16,109.3	117.2	33,928.8	530.8	38,088.1	11,999.0	9,331.8	16,226.6
2007	2,107.0	406.1	2,513.1	124.3	214.6	338.9	8,860.7	8,020.5	16,393.1	137.2	33,411.4	577.7	36,841.1	11,091.9	8,641.2	16,530.3
2008	2,317.3	441.1	2,758.3	36.6	253.9	290.5	7,493.4	8,340.6	16,149.2	139.7	32,123.0	516.4	35,688.2	9,847.2	9,035.6	16,289.1
2009	2,174.0	445.4	2,619.3	50.7	159.1	209.8	6,594.6	8,563.2	15,837.8	140.5	31,136.1	1,325.3	35,290.6	8,819.2	9,167.7	15,978.4
2010	2,635.7	483.5	3,119.2	39.5	178.0	217.5	6,928.1	9,768.6	15,234.8	139.8	32,071.3	1,406.9	36,815.0	9,603.3	10,430.1	15,374.7
2011	2,446.2	478.3	2,924.5	25.7	169.3	195.0	6,093.9	7,629.6	14,902.1	138.6	28,764.2	1,092.2	32,975.9	6,647.4	9,274.7	15,316.1
2012	2,689.6	448.0	3,137.5	30.6	177.6	208.2	5,352.1	7,666.2	14,431.0	139.5	27,588.8	588.2	31,522.7	6,279.9	9,345.5	14,492.9
2013	3,381.9	431.7	3,813.6	59.0	196.2	255.2	5,189.5	7,793.8	14,333.0	138.6	27,455.0	956.6	32,480.4	8,630.4	8,421.7	14,471.7

Source: DECC

Notes:

- (1) Includes coal/petroleum (as appropriate) consumed in all the following sectors: Heat Generation, Energy Industry use, Industry, Public administration, Commercial, Agriculture, Miscellaneous. Excludes petroleum used within the public administration and agriculture sectors and coal used for electricity generation (or other transformation purposes).
- (2) Includes only manufactured solid fuels and not derived gases.
- (3) Excludes bioenergy & waste.



## **Sub-regional Final Energy Consumption estimates**

Final energy consumption data are also published by DECC at District Council Area level (the latest available data is for 2013 and the figures relate to the previous 26 council areas of Northern Ireland). Results have been aggregated into the new 11 super council areas as shown in Table 5.2<sup>99</sup>.

Table 5.2 overleaf shows that the Mid Ulster council area was responsible for the highest volume of consumption of these fuel types – it accounted for 4,466.4 GWh of consumption or 13.8% of the Northern Ireland total.

### **Petroleum products**

In terms of the fuel with the largest share of overall consumption, petroleum products, again the Mid Ulster council area has the largest share (at 3,424.7 GWh or 12.5% of total NI consumption), slightly more than in Armagh City, Banbridge & Craigavon council area (at 3,327.0 GWh or 12.1% of the total) but more than double that of the council area with the lowest consumption of petroleum products (i.e. Ards & North Down which had 1,562.2 GWh of consumption or 5.7% of the total).

Looking at the share of petroleum consumption by sector highlights some differences. In 2013 over two fifths (42%) of petroleum product consumption in Ards & North Down council area was domestic consumption compared to around one fifth in Mid Ulster (20%) and Fermanagh & Omagh (21%) council areas and around 28% as an NI average. Road transport's share of petroleum consumption is significant in each council area, ranging from around 47% in Ards & North Down to 57% in Causeway Coast & Glens, with just over half (52%) being the Northern Ireland average.

### **Coal**

While coal represents a much smaller proportion of consumption in overall volume terms, there are also some interesting results to note at a district council level. Firstly, two council areas (Mid Ulster and Derry City & Strabane) account for nearly two fifths (38%) of all coal consumption in Northern Ireland.

Overall, about 90% of coal consumption in Northern Ireland is by the industrial & commercial sector; however there was some variation at district council level. For example, almost all coal consumed in Mid Ulster (96%) and Derry City & Strabane (95%) was by the industrial & commercial sector whilst in Belfast only 27% of coal consumption was due to the industrial & commercial sector (although it is worth noting that the overall volume of coal consumed in Belfast council area was the lowest of all council areas at about 76 GWh, or only 2% of the Northern Ireland total).

### **Average consumption per household**

Belfast had the lowest average consumption per household at 6.2 MWh, around half the Northern Ireland average. The lower consumption per household in Belfast council area may be due factors such as the better availability of mains gas in that council area which would reduce the requirement for home heating oil or the housing mix in council areas.

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<sup>99</sup> Data for the old 26 District Council areas is provided in Annex 5.3 and details of how the data was aggregated into the new council areas is provided in Annex 5.2 for information.

Table 5.2 Northern Ireland Final Energy Consumption by District Council Area (GWh), 2013

Area	Coal <sup>(1)</sup>				Manufactured Fuels <sup>(2)</sup>			Petroleum products <sup>(1)</sup>					Bio energy	All fuels	Consuming Sector <sup>(3)</sup>			Average per household (MWh) <sup>(4)</sup>
	Industrial	Domestic	Rail	Total	Industrial	Domestic	Total	Industrial	Domestic	Road transport	Rail	Total	Total	Total	Industrial	Domestic	Transport	
Antrim & Newtownabbey	350.6	32.4	-	383.0	8.2	26.2	34.5	434.5	582.9	1,263.3	13.5	2,294.3	47.1	<b>2,758.8</b>	793.4	641.5	1,276.8	11.8
Ards & North Down	151.9	20.3	-	172.2	0.9	1.5	2.4	147.2	655.6	741.6	17.9	1,562.2	60.0	<b>1,796.7</b>	299.9	677.4	759.5	10.4
Armagh City, Banbridge & Craigavon	296.6	66.5	-	363.1	1.5	41.1	42.5	434.5	1,002.1	1,870.1	20.3	3,327.0	104.6	<b>3,837.3</b>	732.6	1,109.7	1,890.4	14.3
Belfast	20.7	55.6	-	76.3	0.5	59.0	59.5	211.4	634.8	1,068.9	21.6	1,936.6	8.7	<b>2,081.1</b>	232.6	749.4	1,090.4	6.2
Causeway Coast & Glens	174.3	37.5	0.0	211.9	11.3	2.6	13.9	292.9	727.2	1,374.8	17.3	2,412.3	106.0	<b>2,744.2</b>	478.6	767.3	1,392.2	14.1
Derry City & Strabane	577.9	30.7	-	608.6	1.9	2.1	4.0	395.1	675.1	976.2	2.7	2,049.0	107.6	<b>2,769.3</b>	974.9	707.9	978.8	12.5
Fermanagh & Omagh	341.4	34.7	-	376.1	1.7	2.4	4.2	799.4	606.4	1,447.5	-	2,853.2	120.8	<b>3,354.2</b>	1,142.5	643.5	1,447.5	15.3
Mid and East Antrim	236.0	38.3	-	274.3	1.1	20.0	21.1	408.4	628.1	1,139.6	19.6	2,195.7	77.6	<b>2,568.7</b>	645.5	686.4	1,159.2	12.5
Mid Ulster	810.7	36.1	-	846.8	25.3	2.5	27.8	1,084.5	694.0	1,646.2	-	3,424.7	167.1	<b>4,466.4</b>	1,920.5	732.7	1,646.2	14.9
Newry, Mourne & Down	181.9	51.6	0.0	233.6	5.3	24.2	29.5	579.0	859.9	1,567.8	8.2	3,014.8	92.7	<b>3,370.6</b>	766.2	935.7	1,576.0	14.9
Lisburn & Castlereagh	239.7	28.0	-	267.7	1.4	14.5	15.8	402.7	727.8	1,237.1	17.6	2,385.2	64.2	<b>2,732.9</b>	643.8	770.2	1,254.7	10.3
Northern Ireland	3,381.8	431.7	0.1	3,813.6	59.0	196.2	255.2	5,189.5	7,793.8	14,333.0	138.6	27,455.0	956.6	<b>32,480.4</b>	8,630.4	8,421.7	14,471.7	11.8

Source: DECC

Notes to table: (1) Includes coal/petroleum (as appropriate) consumed in all the following sectors: Heat Generation, Energy Industry use, Industry, Public administration, Commercial, Agriculture, Miscellaneous. Excludes petroleum used within the public administration and agriculture sectors and coal used for electricity generation (or other transformation purposes). (2) Includes only manufactured solid fuels and not derived gases. (3) Excludes bioenergy & waste. (4) This is calculated as total domestic consumption (as shown in the table) divided by the number of households. Household numbers used in this calculation are 2012-based projections from NISRA (full details available here) for the previous 26 council areas which have then been aggregated into the new 11 council areas as detailed in Annex 5.2.

## Gas

The Utility Regulator is responsible for regulating Northern Ireland's natural gas industry. Similar to the electricity system shown in chapter 3 earlier, the gas system can be divided into three main areas: transmission, distribution and supply<sup>100</sup>.

### Transmission

Gas transmission deals with the large high pressure pipelines that convey gas to the distribution systems. There are four transmission pipelines in Northern Ireland:

1. Scotland to Northern Ireland Pipeline (SNIP) is 135 kilometres long and runs from Twynholm in Scotland to Ballylumford. The SNIP is owned by Premier Transmission Limited which is part of the Mutual Energy Ltd group of companies.
2. Belfast Gas Transmission Pipeline (BGTP) is 26 kilometres long and is connected to the SNIP and to the North West Pipeline. It also supplies gas to the Belfast distribution network. The BGTP is owned by Belfast Gas Transmission Limited (BGTL) which is part of the Mutual Energy Ltd group of companies.
3. North West Pipeline (NWP) is 112 kilometres long and runs from Carrickfergus to Coolkeeragh power station. It is owned by BGE Northern Ireland (BGE NI).
4. South North Pipeline (SNP) is 156 kilometres long and runs from County Antrim where it links into the NWP to Gormanstown in County Meath, Ireland. It is owned by GNI (UK) Ltd, a wholly owned subsidiary of Ervia.

A map of the current gas pipelines is shown in Annex 5.1.

### Distribution

Gas distribution deals with the medium and low pressure gas mains that convey gas to licensed areas within Northern Ireland and there are currently two distribution systems.

The gas market in Northern Ireland is split into two geographical areas. There are two gas distribution network operators: Phoenix Natural Gas operates the network in the Greater Belfast area<sup>101</sup>, and Firmus Energy operates the network in the 'Ten Towns' area along the South-North Pipeline and North-West Pipeline.

The gas network in Northern Ireland continues to be extended. In January 2013 the Northern Ireland Executive agreed to assist the extension of the natural gas network to the largest towns in counties Tyrone, Fermanagh and South Derry<sup>102</sup>. The Utility Regulator is currently working with and encouraging suppliers to prepare to supply gas in the new gas area. It is planned that gas supply in these towns will commence in 2017.

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<sup>100</sup> The information on transmission, distribution and supply was sourced from the Utility Regulator (see <http://www.uregni.gov.uk/gas/>)

<sup>101</sup> The Greater Belfast area includes Holywood, Bangor, Newtownards, Belfast, Newtownabbey, Carrickfergus, Lisburn and Larne.

<sup>102</sup> These towns being: Dungannon including Coalisland, Cookstown including Magherafelt, Enniskillen including Derrylin, Omagh, and Strabane.

## Supply

Gas suppliers are those companies supplying customers with gas into their homes/businesses. Currently there are twelve suppliers holding gas supply licences for supply in the Greater Belfast market and the Ten Towns market. In the Greater Belfast market, two of these suppliers are active in supplying gas to domestic and industrial & commercial customers: SSE Airtricity Gas Supply and firmus energy, and another four of these suppliers are active in supplying gas only to industrial & commercial customers: Electric Ireland, Vayu, Go Power and Flogas.

In the Ten Towns market, the large industrial & commercial market opened to competition from 1 October 2012 and the small industrial & commercial and domestic markets opened to competition from 1 April 2015. There are currently four active suppliers in the industrial and commercial market in the Ten Towns: firmus energy, SSE Airtricity Gas Supply, Go Power and Flogas.

## Gas Connection

Table 5.3 below shows the number of connections in each of the two distribution networks split by domestic and Industrial & Commercial (I&C) sectors where possible<sup>103</sup>.

Table 5.3 Number of Gas Connections in Northern Ireland by Distribution Licensed Area, 2012-2014

Market Segment	Connections at end 2012	Connections at end 2013	Connections at end 2014	2014 as % of total
<b>Greater Belfast</b>	<b>154,974</b>	<b>165,820</b>	<b>177,109</b>	<b>87.4</b>
Domestic & Small I&C	151,758	162,644	173,704	85.8
I&C 73,200 - 732,000 kWh	2,818	2,768	2,970	1.5
I&C > 732,000 - 2,196,000 kWh	291	299	322	0.2
I&C > 2,196,000 kWh	107	109	113	0.1
<b>Ten towns</b>	<b>17,277</b>	<b>21,494</b>	<b>25,429</b>	<b>12.6</b>
Domestic credit	1,793	2,112	2,375	1.2
Domestic prepayment	13,639	17,309	20,735	10.2
I&C < 73,200 kWh	798	953	1,148	0.6
I&C 73,200 - 732,000 kWh	824	883	932	0.5
I&C 732,001 – 2,196,000 kWh	142	156	152	0.1
I&C > 2,196,000 kWh	81	81	87	0.0
<b>Total</b>	<b>172,251</b>	<b>187,314</b>	<b>202,538</b>	<b>100.0</b>

Source: Utility Regulator<sup>104</sup>

The table shows that in 2014 in the Greater Belfast network (operated by Phoenix Natural Gas), some 98% of connections were in the domestic and small I&C sector while the percentage of

<sup>103</sup> In the Greater Belfast area connections and consumption amounts group domestic and small I&C together (relating to those customers consuming <73,200 kWh/annum). In the Ten Towns area connections and consumption report these customers segments separately.

<sup>104</sup> From Utility Regulator's Annual Transparency Reports – see <http://www.uregni.gov.uk/retail/reports/>

domestic connections in the Ten Towns area (operated by Firmus Energy), was 91% at the end of 2014.

Of the over 200,000 total connections to the gas network in 2014, 87.4% are in the Greater Belfast area and the remaining 12.6% in the Ten towns area. Those I&C customers with 73,200 kWh or more of consumption and connected to either of the two networks make up less than 2.5% of total connections in Northern Ireland. However, as Table 5.4 shows below, these customers are responsible for over 60% of total Northern Ireland gas consumption.

Table 5.3 above clearly shows that the number of gas connections continues to rise each year across all categories. Between 2012 and 2014 the total number of connections in Northern Ireland has risen substantially, by over 33,500 or almost 20%. Over the same period, the rise in the number of connections in the Greater Belfast area was over 25,000 (16.7%) with a rise of over 8,000 (47.2%) in the Ten towns area.

### Consumption

Table 5.4 Annual Gas Consumption (therms) in Northern Ireland by Distribution Licensed Area, 2012-2014

Market Segment	2012	2013	2014	As % of total (2014)	2014 consumption converted to GWh <sup>105</sup>
<b>Greater Belfast</b>	<b>129,874,762</b>	<b>133,955,233</b>	<b>128,533,793</b>	<b>70.1</b>	<b>3,766</b>
Domestic & Small I&C	60,606,073	65,717,852	63,918,929	34.9	1,873
I&C 73,200 - 732,000 kWh	19,500,980	20,339,381	18,392,603	10.0	539
I&C > 732,000 - 2,196,000 kWh	12,025,029	11,472,440	10,824,745	5.9	317
I&C > 2,196,000 kWh	37,742,680	36,425,559	35,397,517	19.3	1,037
<b>Ten towns</b>	<b>50,073,594</b>	<b>53,178,827</b>	<b>54,842,514</b>	<b>29.9</b>	<b>1,607</b>
Domestic credit	649,270	803,773	812,738	0.4	24
Domestic prepayment	3,183,498	4,471,115	5,127,852	2.8	150
I&C < 73,200 kWh	380,930	669,459	740,657	0.4	22
I&C 73,200 - 732,000 kWh	4,799,353	6,017,828	5,974,799	3.3	175
I&C 732,001 – 2,196,000 kWh	5,168,285	5,675,918	5,601,076	3.1	164
I&C > 2,196,000 kWh	35,892,258	35,540,734	36,585,393	20.0	1,072
<b>Total</b>	<b>179,948,356</b>	<b>187,134,060</b>	<b>183,376,307</b>	<b>100.0</b>	<b>5,373</b>

Source: Utility Regulator<sup>106</sup>

<sup>105</sup> The conversion factor is 1 therm = 0.0000293 GWh

<sup>106</sup> From Utility Regulator's Annual Transparency Reports – see <http://www.uregni.gov.uk/retail/reports/>

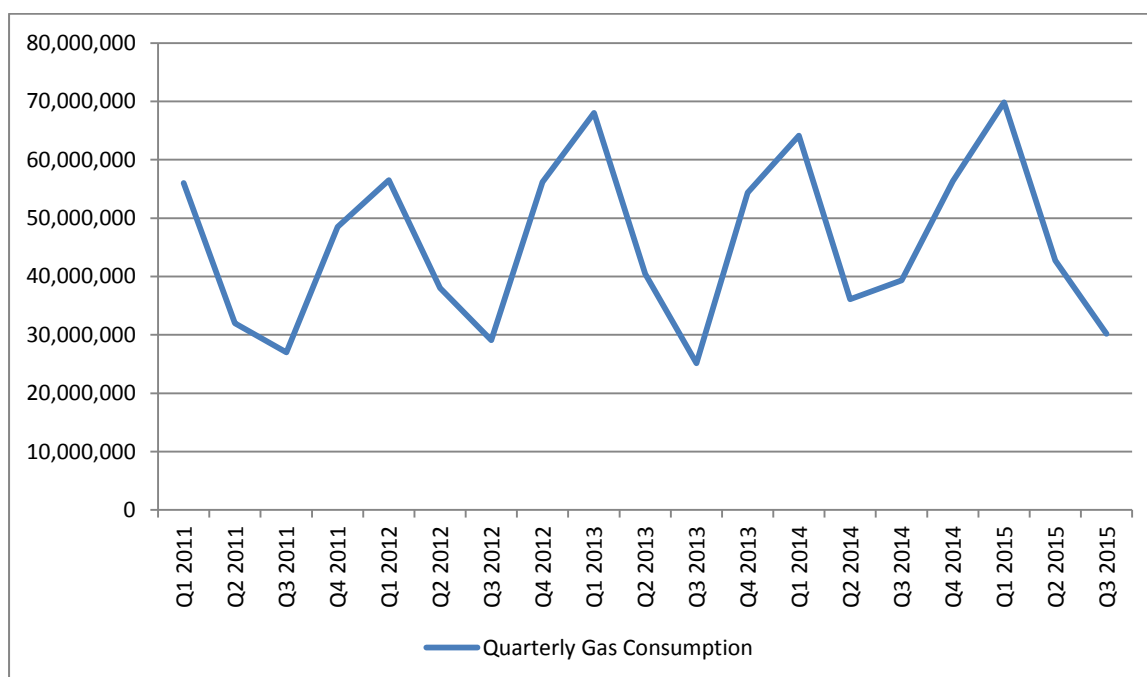
As shown above total gas consumption was over 183 million therms in 2014, which is equivalent to approximately 5,373 GWh of consumption. Over the period 2012-2014, there was a slight rise in total consumption (an increase of over 3.4 million therms or about 2%). However, consumption fell by 2% over the period 2013-2014 even though, as shown in Table 5.3 earlier, there was an increase of over 15,000 in the number of connections over this period. The table above shows that consumption in the Ten towns area has increased each year (the 2014 figure was around 10% higher than in 2012) whilst in the Greater Belfast area, consumption was lower in 2014 than 2012 (down about 1%).

Around 70% of total consumption in 2014 was in the Greater Belfast network area with 30% in the Ten towns licensed area. The relatively small number of the biggest industrial and commercial customers (I&C > 2,196,000 kWh) accounted for almost two-fifths of consumption in 2014. Table 5.3 earlier showed there were only around 200 such companies, which represents less than 0.1% of all connections.

### Quarterly Data

Like electricity consumption (shown in Chart 3.1 earlier), gas consumption is seasonal and varies considerably over the year as shown in Chart 5.1 below.

Chart 5.1 Quarterly Total Gas Consumption in Northern Ireland (therms), Q1 2011 – Q3 2015



Source: Utility Regulator

Consumption is considerably lower over the second and third quarters of the year (during the spring and summer months), and increases substantially during the winter months (i.e. in Q1 and Q4). Such trends are to be expected given that gas will be used by customers as the main fuel for heating purposes.

## Total Energy Consumption for Northern Ireland – amalgamation of sources

The following table provides information on total energy consumption<sup>107</sup> in Northern Ireland using an amalgamation of sources already presented in this report, namely: DECC total final energy consumption data<sup>108</sup> (which excludes electricity and gas for NI), electricity consumption data (published by DETI and sourced from NIE Networks<sup>109</sup>) and gas consumption data (as published by the Utility Regulator<sup>110</sup>).

Table 5.5 Total Energy Consumption in Northern Ireland (GWh), 2009 - 2013

	2009	2010	2011	2012	2013
Electricity	8,049	8,432	8,235	8,095	8,181
Gas	3,984	4,487	4,834	5,008	5,603
Total Electricity and Gas	12,033	12,919	13,069	13,103	13,784
Plus DECC final energy consumption (excluding electricity and gas)	35,291	36,815	32,976	31,523	32,480
<b>Equals Total Energy Consumption in Northern Ireland</b>	<b>47,324</b>	<b>49,734</b>	<b>46,045</b>	<b>44,626</b>	<b>46,264</b>
Total Energy Consumption in GB <sup>111</sup>	1,506,847	1,510,205	1,447,081	1,435,022	1,426,912
NI as a % of GB	3.1%	3.3%	3.2%	3.1%	3.2%

Source: NIE Networks, Utility Regulator, DECC

Table 5.5 shows that some 46,264 GWh of energy was consumed in Northern Ireland in 2013 (13,784 GWh from electricity and gas and 32,480 GWh from other fuels). This was equivalent to 3.2% of the total energy consumption in GB for the same year.

Over the five year period shown, total energy consumption was highest in 2010 in both Northern Ireland and GB. Total consumption then fell between 2010-11 and between 2011-12 in Northern Ireland but showed a 4% rise between 2012-13, whilst consumption has fallen year on year in GB since 2010. Northern Ireland energy consumption as a proportion of GB consumption has been fairly steady (at just over 3%) in each year 2009 to 2013.

The table also shows that gas consumption has increased each year over the period shown, more than offsetting any falls in electricity consumption over the period. Indeed, the 4% rise in total consumption between 2012 and 2013 was due to small rises in electricity (1%) and other fuels (4%) but a 12% rise in gas consumption.

<sup>107</sup> This excludes any gas or coal consumption by power stations in Northern Ireland. Also, as noted earlier, energy consumption by aviation (air transport) and shipping (national navigation) are excluded from the DECC total final energy consumption data.

<sup>108</sup> As presented in Table 5.1 above, rounded to nearest GWh.

<sup>109</sup> See Chart 3.2 in Chapter 3 of this report.

<sup>110</sup> See page 14 of [http://www.uregni.gov.uk/uploads/publications/2015-09-01\\_NI\\_Capacity\\_Statement\\_FINAL\\_v07.pdf](http://www.uregni.gov.uk/uploads/publications/2015-09-01_NI_Capacity_Statement_FINAL_v07.pdf)

<sup>111</sup> See [here](#) for full spreadsheets. GB total includes a small amount of unallocated consumption (i.e. consumption that could not be allocated to any particular UK region).

## Coal Imports

NISRA produce data on coal imports into Northern Ireland, which includes information on the amount of coal imported for use by power plants in the generation of electricity. The figures in Table 5.6 are inclusive of all sources of coal shipped (bulk cargo and containerised) to Northern Ireland including cross channel and foreign imports.

Table 5.6 Shipments of Coal and Other Solid Fuels<sup>112</sup> into Northern Ireland (Thousand Tonnes), 2004-2014

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014 <sup>113</sup>
Domestic Use	480	421	468	483	462	358	402	432	346	674	502
Industrial Use	194	169	199	165	339	190	172	299	348	360	506
Generation of Electricity	1,125	977	1,142	782	746	508	778	588	1,021	1,047	937
All Shipments	1,799	1,567	1,809	1,430	1,547	1,055	1,351	1,320	1,716	2,081	1,946
% of imports used for Electricity Generation	63%	62%	63%	55%	48%	48%	58%	45%	59%	50%	48%

Source: Annual Coal Inquiry, NISRA

Just under half (48%) of coal imported into Northern Ireland in 2014 was for generation of electricity (as noted in Chapter 3, Kilroot power station in Carrickfergus is mainly coal fuelled). This proportion has fallen over the 10 year period 2004-2014, though it can fluctuate from year to year.

Coal imported for domestic use typically accounts for between one quarter and one third of all imports. Coal shipments into Northern Ireland for industrial use have grown from around 10% each year from 2004-2007 to about 20% in the period 2008-2013 (except for 2010) and this had increased to over one quarter (26%) for 2014. Indeed, in 2012 and 2014 the volume of coal imported for industrial use was slightly above the level of coal imported for domestic use whereas in the period 2004-2007 around two and a half times as much coal was shipped into Northern Ireland for domestic use as for industrial use.

<sup>112</sup> Covers all types of solid fuels including coal, anthracite, lignite, coke and manufactured smokeless fuels.

<sup>113</sup> The 2014 data are provisional and are correct as at 27/02/2015.



## Road Transport Energy Consumption

DECC produce a range of data on road transport energy consumption at Northern Ireland level and also at a sub-Northern Ireland (District Council) level. These detail the amount of petrol and diesel used and data are available split by vehicle type (buses, cars, HGV etc.) and by use (personal or freight)<sup>114</sup>.

Between 2005 and 2013, the amount of diesel and petrol consumed in Northern Ireland due to road transport fell by over 10% (a fall of over 117,000 tonnes of oil equivalent) to over 1.23 million tonnes of oil equivalent. Of this fall around 101,000 tonnes was due to falls in personal consumption (i.e. buses, cars and motorcycles) and around 16,000 tonnes due to falls in freight transport consumption (i.e. Heavy Goods Vehicles (HGV) and Large Goods Vehicles (LGV)).

Interestingly, consumption by diesel cars in Northern Ireland has risen considerably (by around 52,000 tonnes of oil equivalent or 14.3%) over the period 2005-2013 whilst consumption by petrol cars has fallen by over a quarter over the same period (by around 155,000 tonnes of oil equivalent or 26%). Indeed, in 2005 consumption by diesel cars was around 40% lower than the volume of petrol car consumption (with a difference of over 236,000 tonnes) but by 2013 the gap between the volumes consumed had narrowed considerably (a difference of only 30,000 tonnes or less than 7%).

Overall, in each year around 70% of all diesel and petrol road transport consumption is due to personal use (i.e. consumption by buses, cars and motorcycles) while the remaining 30% is due to freight transport consumption (i.e. consumption by HGVs and LGVs).

## Comparisons with Great Britain

Table 5.7 also shows GB proportions for comparative purposes and there are some significant differences. In general, in GB a higher proportion of consumption takes place on motorways and a lower proportion of consumption is due to transport on minor roads. This is perhaps to be expected given that a much higher proportion of the road network in GB is motorway (around 2.3%<sup>115</sup> in 2013 compared to only 0.5%<sup>116</sup> in 2013 in Northern Ireland).

As an example, only 8% of diesel and petrol car consumption in Northern Ireland is due to the use of such vehicles on motorways, while in GB the proportions are 22% and 16% respectively. The use of these cars on A-roads is similar in GB and NI (at around 46%) but use of petrol and diesel cars on minor roads in NI accounts for almost half of consumption from these vehicles whereas in GB it is 36% for diesel and 39% for petrol cars.

In the freight sector this tendency is also apparent, though the differences are even more marked. In Northern Ireland in 2013, only 10% of fuel consumption by HGVs and 7% of fuel consumption by LGVs was due to driving by such vehicles on motorways compared to 44% and 24% in GB respectively. The use of these vehicles on A-roads is similar in GB and NI (at around 50% in Northern Ireland and about 45% in GB) but this means the proportion of consumption by HGVs and LGVs on minor roads is much higher in Northern Ireland (38% for HGV and 45% for LGV) than it is in GB (12% for HGV and 33% for LGV).

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<sup>114</sup> See pages 46-50 of the DECC methodology booklet for more details on these datasets ([link here](#)).

<sup>115</sup> Taken from Road Lengths in Great Britain: 2013 (see [link here](#)).

<sup>116</sup> Taken from Northern Ireland Transport Statistics 2012-13 (see [link here](#)).

Table 5.7 Northern Ireland Road Transport Energy Consumption (Tonnes of oil equivalent), 2005-2013

	Personal												Freight							
	Buses				Diesel Cars				Petrol Cars & Motorcycles <sup>117</sup>				HGV				Diesel and Petrol LGV <sup>118</sup>			
	Motor ways	A roads	Minor roads	Total	Motor ways	A roads	Minor roads	Total	Motor ways	A roads	Minor roads	Total	Motor ways	A roads	Minor roads	Total	Motor ways	A roads	Minor roads	Total
2005	1,427	7,213	3,594	12,233	26,132	172,260	163,505	361,898	44,150	287,489	271,889	603,528	33,979	163,698	95,479	293,156	8,051	40,170	30,909	79,130
2006	1,546	6,346	2,046	9,938	26,746	179,728	174,116	380,590	41,776	277,076	262,989	581,842	33,997	179,779	108,619	322,395	8,118	39,503	42,761	90,382
2007	1,749	7,594	2,996	12,338	26,830	182,945	190,306	400,081	39,248	262,865	264,288	566,400	47,932	179,363	106,682	333,977	8,590	51,998	36,167	96,755
2008	1,492	6,927	3,229	11,648	27,549	184,507	195,114	407,171	38,999	256,819	249,261	545,078	37,647	163,594	128,559	329,800	8,553	38,791	47,544	94,888
2009	2,737	7,632	3,045	13,414	31,183	187,070	208,183	426,436	41,120	244,767	247,449	533,337	27,859	158,700	115,831	302,390	5,611	41,765	38,851	86,227
2010	2,539	6,746	1,982	11,267	31,127	187,642	203,091	421,860	38,801	230,137	233,251	502,189	27,572	153,468	116,313	297,352	5,499	37,180	34,608	77,286
2011	2,526	6,807	4,262	13,596	31,733	191,096	198,891	421,720	37,706	222,804	220,833	481,342	28,009	154,697	101,643	284,349	5,885	39,561	34,893	80,339
2012	2,580	7,027	3,526	13,133	31,812	192,563	195,610	419,985	35,674	211,344	211,181	458,198	28,074	143,591	101,546	273,211	5,745	36,759	33,811	76,315
2013	2,623	8,634	3,679	14,935	31,380	187,590	194,675	413,645	35,260	205,863	206,701	447,825	27,711	144,635	104,544	276,891	5,809	38,008	35,302	79,120
NI % 2013	18%	58%	25%	100%	8%	45%	47%	100%	8%	46%	46%	100%	10%	52%	38%	100%	7%	48%	45%	100%
GB % 2013	8%	45%	47%	100%	22%	42%	36%	100%	16%	46%	39%	100%	44%	45%	12%	100%	24%	43%	33%	100%

	Total			% of Total		
	Personal	Freight	Total	Personal	Freight	Total
2005	977,659	372,286	1,349,945	72%	28%	100%
2006	972,371	412,776	1,385,147	70%	30%	100%
2007	978,820	430,732	1,409,552	69%	31%	100%
2008	963,897	424,688	1,388,585	69%	31%	100%
2009	973,186	388,617	1,361,804	71%	29%	100%
2010	935,316	374,638	1,309,954	71%	29%	100%
2011	916,658	364,689	1,281,346	72%	28%	100%
2012	891,316	349,527	1,240,843	72%	28%	100%
2013	876,405	356,011	1,232,416	71%	29%	100%
GB 2013	22,392,977	13,039,269	35,432,246	63%	37%	100%

Source: DECC

<sup>117</sup> Petrol cars account for over 99% of consumption in this category.

<sup>118</sup> Diesel LGV accounts for 98% of consumption in this category. LGVs can be used for a number of tasks (to carry freight, provide transport or for private use) so not all LGV traffic is related to freight transport.

## **Sub-regional Road Transport Energy Consumption**

DECC also publish road transport consumption data at a District Council level (for Northern Ireland, this is the previous 26 District Council areas). Results have been aggregated into the new 11 super council areas for the most recent year (2013) as shown in Table 5.8 overleaf<sup>119</sup>.

The council area with the highest consumption (for both personal and freight consumption) is Armagh City, Banbridge & Craigavon with over 160,000 tonnes of consumption or 13% of the total. The three biggest consuming District Councils (Armagh City, Banbridge & Craigavon, Mid Ulster and Newry, Mourne & Down) together account for over one third (35.5%) of total Northern Ireland petrol and diesel consumption for road transport use.

### **Buses**

Consumption of diesel<sup>120</sup> by buses is highest in Belfast council area with a significant share accounted for by Belfast and surrounding District Council areas. Three of the eleven council areas (i.e. Belfast, Lisburn & Castlereagh and Antrim & Newtownabbey) together accounted for two fifths (40%) of diesel consumption by buses in 2013, with Belfast on its own accounting for over 16% of such consumption.

### **Cars**

Armagh City, Banbridge & Craigavon District Council was the top consuming council in terms of petrol and diesel use by cars, accounting for about 13% of total Northern Ireland consumption in 2013. In addition, it is other council areas outside the Greater Belfast area that then make up the other highest consuming council areas, namely Newry, Mourne & Down (11%), Mid Ulster (11%) and Fermanagh & Omagh (10%). Together these council areas account for around half (45%) of all petrol and diesel use by cars.

### **HGV**

In terms of diesel use by Heavy Goods Vehicles (HGVs), again Armagh City, Banbridge & Craigavon District Council area had the largest share (13.6% or 37,689 tonnes of oil equivalent), followed closely by Mid Ulster (13.5% or 37,412 tonnes of oil equivalent), with these two councils together accounting for over one quarter (27.1%) of HGV diesel use in Northern Ireland in 2013.

### **Consumption by use**

Overall, around 71% of all petrol and diesel fuel consumed for road transport purposes in Northern Ireland in 2013 was for personal use with 29% used by freight. At a council level there was some variation in the split between personal use and freight use. In Belfast and Ards & North Down council areas between 77-79% of petrol and diesel used was for personal use whilst in council areas like Mid Ulster and Mid and East Antrim the percentage of petrol and diesel used for personal use was lower, at around 67%.

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<sup>119</sup> Data for the old 26 District Council areas is provided in Annex 5.4 and details of how the data was aggregated into the new council areas is provided in Annex 5.2 for information.

<sup>120</sup> Petrol cars, motorcycles and petrol LGV are petrol consuming vehicles, while buses, diesel cars, HGV and diesel LGV are diesel consuming vehicles.

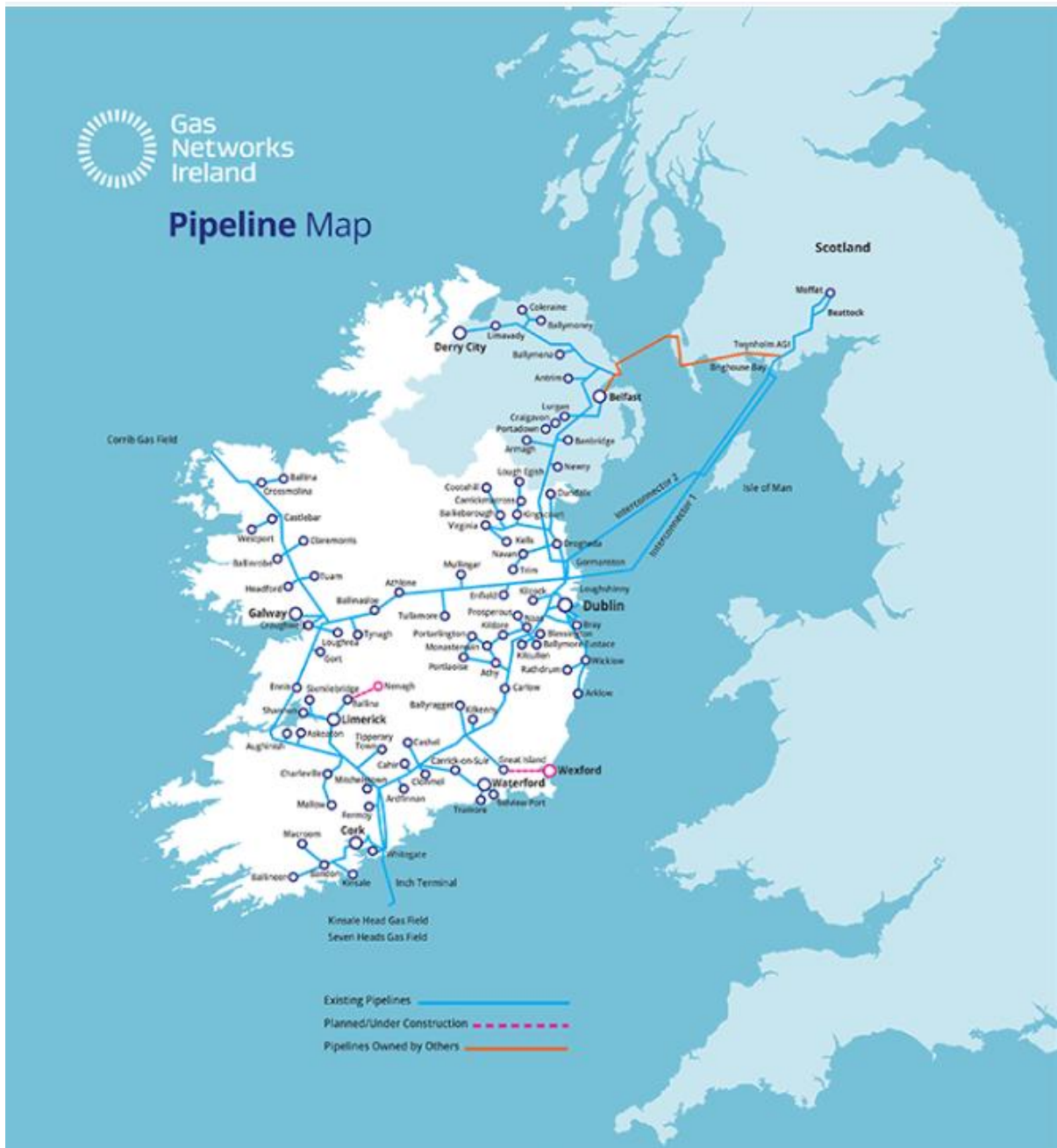
Table 5.8 Road transport energy consumption at District Council level (tonnes of oil equivalent), 2013

District Council Area	Personal				Freight			Personal	Freight	Total
	Buses	Diesel Cars	Petrol Cars	Motorcycles	HGV	Diesel LGV	Petrol LGV			
Antrim & Newtownabbey	2,122	34,658	37,531	430	27,395	6,356	128	74,741	33,880	108,621
Ards & North Down	1,076	23,715	25,372	252	9,490	3,777	82	50,416	13,349	63,765
Armagh City, Banbridge & Craigavon	1,637	53,255	57,054	523	37,689	10,429	216	112,469	48,334	160,803
Belfast	2,418	32,953	34,956	622	17,204	3,667	85	70,949	20,957	91,905
Causeway Coast & Glens	923	40,482	43,494	288	25,400	7,469	159	85,187	33,028	118,215
Derry City & Strabane	895	29,088	30,851	289	18,115	4,599	99	61,123	22,812	83,935
Fermanagh & Omagh	1,056	42,005	44,984	304	28,273	7,672	166	88,349	36,111	124,461
Mid and East Antrim	668	31,364	33,667	306	23,840	7,971	172	66,005	31,983	97,988
Mid Ulster	1,310	44,197	47,587	330	37,412	10,496	213	93,423	48,121	141,545
Newry, Mourne & Down	1,397	46,244	49,941	341	27,872	8,826	183	97,923	36,882	134,805
Lisburn & Castlereagh	1,433	35,685	38,254	449	24,199	6,224	131	75,821	30,554	106,375
Northern Ireland	14,935	413,645	443,691	4,134	276,891	77,485	1,635	876,405	356,011	1,232,416

Source: DECC

[Please note that LGVs can be used for a number of tasks such as carrying freight, providing transport, carrying equipment or for private use, meaning that not all LGV traffic is related to freight transportation.]

Annex 5.1 Map of existing gas pipelines



Source: Gas Networks Ireland<sup>121</sup>

<sup>121</sup> See <http://www.gasnetworks.ie/en-IE/About-Us/Our-network/Pipeline-Map/>

## Annex 5.2 Mapping old council areas to new super council areas

Tables 5.2 and 5.8 presented data for the new 11 council areas in Northern Ireland. However, data is currently available from DECC for the old 26 district council areas only. In order to provide data for the 11 new council areas, the data for the old 26 district councils published by DECC has been aggregated as detailed in the table below. Please note that this is a ‘best fit’ of old council areas to new council areas and, as some of the new council areas include parts of old council areas, it is therefore an approximation of consumption for those new council areas.

For further information, a map of the previous and new local government districts can be found at [http://www.doeni.gov.uk/existing\\_and\\_new\\_lg\\_districts\\_-\\_aug\\_12\\_-\\_pdf.pdf](http://www.doeni.gov.uk/existing_and_new_lg_districts_-_aug_12_-_pdf.pdf).

New Council Areas:	Old Council Areas included in aggregation for Table 3.1:
Antrim & Newtownabbey	Antrim and Newtownabbey
Ards & North Down	Ards and North Down
Armagh City, Banbridge & Craigavon	Armagh, Banbridge and Craigavon
Belfast	Belfast
Causeway Coast & Glens	Ballymoney, Coleraine, Limavady and Moyle
Derry City & Strabane	Derry and Strabane
Fermanagh & Omagh	Fermanagh and Omagh
Mid and East Antrim	Ballymena, Carrickfergus and Larne
Mid Ulster	Cookstown, Dungannon and Magherafelt
Newry, Mourne & Down	Down and Newry & Mourne
Lisburn & Castlereagh	Castlereagh and Lisburn

Data as published by DECC for the old 26 district council areas is available overleaf.

### Annex 5.3 Northern Ireland Final Energy Consumption by District Council Area, 2013 (GWh)

Area	Coal <sup>(1)</sup>			Manufactured Fuels <sup>(2)</sup>			Petroleum products <sup>(1)</sup>					Bioenergy	All fuels	Consuming Sector <sup>(3)</sup>			Av per house (MWh) <sup>(4)</sup>
	Industrial	Domestic	Total	Industrial	Domestic	Total	Industrial	Domestic	Road transport	Rail	Total	Total	Total	Industrial	Domestic	Transport	
Antrim	142.2	19.8	162.1	0.6	16.9	17.5	269.1	256.1	798.7	6.0	1,329.9	16.7	<b>1,526.1</b>	411.9	292.8	804.7	14.4
Ards	44.6	13.6	58.2	0.3	1.0	1.3	108.1	369.8	450.9	-	928.8	36.2	<b>1,024.5</b>	153.0	384.4	450.9	12.1
Armagh	122.9	17.3	140.2	0.5	3.3	3.8	119.0	301.3	754.9	5.2	1,180.5	48.8	<b>1,373.3</b>	242.3	322.0	760.1	14.7
Ballymena	125.7	27.7	153.3	0.7	18.4	19.1	267.3	325.2	690.5	5.4	1,288.3	42.6	<b>1,503.4</b>	393.6	371.3	695.9	14.7
Ballymoney	17.2	7.4	24.5	1.7	0.5	2.2	66.3	160.1	299.0	5.0	530.5	19.0	<b>576.2</b>	85.1	168.0	304.0	14.4
Banbridge	71.1	10.6	81.7	0.4	0.7	1.1	135.4	250.1	513.2	-	898.8	32.8	<b>1,014.5</b>	207.0	261.5	513.2	14.1
Belfast	20.7	55.6	76.3	0.5	59.0	59.5	211.4	634.8	1,068.9	21.6	1,936.6	8.7	<b>2,081.1</b>	232.6	749.4	1,090.4	6.2
Carrickfergus	57.7	4.0	61.8	0.1	0.3	0.4	82.2	155.4	139.9	8.6	386.1	15.6	<b>463.8</b>	140.0	159.7	148.5	9.8
Castlereagh	18.0	11.5	29.6	0.1	11.1	11.2	37.7	257.2	257.6	-	552.5	5.7	<b>598.9</b>	55.8	279.8	257.6	10.0
Coleraine	70.3	12.7	83.0	9.5	0.9	10.4	162.5	308.9	453.1	7.6	932.1	36.4	<b>1,061.9</b>	242.3	322.5	460.7	13.6
Cookstown	306.6	9.6	316.3	22.6	0.7	23.2	188.3	187.8	350.5	-	726.6	45.2	<b>1,111.3</b>	517.5	198.1	350.5	15.1
Craigavon	102.7	38.6	141.2	0.6	37.0	37.6	180.1	450.6	602.0	15.0	1,247.7	23.0	<b>1,449.5</b>	283.3	526.2	617.0	14.3
Derry	510.9	19.4	530.2	0.9	1.4	2.3	124.2	467.3	528.2	2.7	1,122.4	73.5	<b>1,728.4</b>	636.0	488.1	530.8	11.8
Down	42.2	22.7	65.0	3.1	10.0	13.0	102.8	379.2	658.4	-	1,140.4	39.0	<b>1,257.4</b>	148.1	411.9	658.4	15.4
Dungannon	225.8	14.5	240.3	1.4	1.0	2.4	460.4	287.0	843.3	-	1,590.7	60.6	<b>1,894.1</b>	687.6	302.5	843.3	14.6
Fermanagh	298.0	19.0	316.9	1.1	1.3	2.5	604.0	337.5	799.0	-	1,740.5	79.7	<b>2,139.6</b>	903.2	357.8	799.0	15.3
Larne	52.6	6.5	59.1	0.3	1.3	1.6	58.9	147.5	309.2	5.6	521.3	19.4	<b>601.4</b>	111.8	155.4	314.8	11.6
Limavady	79.3	11.0	90.3	0.1	0.8	0.9	45.4	164.0	404.7	4.7	618.9	34.8	<b>744.8</b>	124.8	175.8	409.5	14.3
Lisburn	221.7	16.4	238.1	1.3	3.3	4.6	365.0	470.6	979.6	17.6	1,832.7	58.5	<b>2,134.0</b>	588.0	490.4	997.1	10.5
Magherafelt	278.3	12.0	290.3	1.3	0.8	2.2	435.7	219.2	452.4	-	1,107.3	61.3	<b>1,461.0</b>	715.3	232.0	452.4	15.1
Moyle	7.6	6.4	14.1	0.0	0.5	0.5	18.8	94.1	218.0	-	330.9	15.8	<b>361.2</b>	26.4	101.0	218.1	15.2
Newry & Mourne	139.7	28.9	168.6	2.2	14.2	16.4	476.2	480.6	909.4	8.2	1,874.5	53.7	<b>2,113.2</b>	618.1	523.7	917.6	14.6
Newtownabbey	208.4	12.6	221.0	7.7	9.4	17.0	165.4	326.9	464.5	7.5	964.3	30.4	<b>1,232.7</b>	381.5	348.8	472.1	10.2
North Down	107.3	6.7	114.0	0.6	0.5	1.1	39.0	285.8	290.7	17.9	633.4	23.8	<b>772.3</b>	146.9	293.0	308.6	8.8
Omagh	43.4	15.8	59.2	0.6	1.1	1.7	195.3	268.9	648.5	-	1,112.7	41.1	<b>1,214.7</b>	239.3	285.8	648.5	15.2
Strabane	67.1	11.3	78.4	0.9	0.8	1.7	270.9	207.8	448.0	-	926.6	34.1	<b>1,040.9</b>	338.9	219.9	448.0	14.6
Northern Ireland	3,381.8	431.7	3,813.6	59.0	196.2	255.2	5,189.5	7,793.8	14,333.0	138.6	27,455.0	956.6	<b>32,480.4</b>	8,630.4	8,421.7	14,471.7	11.8

Source: DECC (see Table 5.2 above for Notes to table)

**Annex 5.4 Road transport energy consumption at District Council level, 2013 (tonnes of oil equivalent)**

District Council Area	Personal				Freight			Personal	Freight	Total
	Buses	Diesel Cars	Petrol Cars	Motorcycles	HGV	Diesel LGV	Petrol LGV			
Antrim	1,013	21,375	23,201	237	18,516	4,252	85	45,826	22,852	68,679
Ards	476	14,324	15,535	114	5,807	2,460	53	30,449	8,319	38,768
Armagh	546	22,015	23,669	161	14,270	4,160	88	46,392	18,518	64,910
Ballymena	330	18,638	20,147	177	14,243	5,716	125	39,292	20,084	59,376
Ballymoney	153	8,623	9,295	53	5,712	1,831	40	18,124	7,583	25,707
Banbridge	598	14,373	15,463	115	10,353	3,165	64	30,550	13,581	44,131
Belfast	2,418	32,953	34,956	622	17,204	3,667	85	70,949	20,957	91,905
Carrickfergus	93	4,333	4,547	55	2,324	661	14	9,027	3,000	12,027
Castlereagh	323	8,081	8,556	108	3,868	1,184	27	17,068	5,079	22,147
Coleraine	357	13,732	14,738	114	7,708	2,262	50	28,941	10,020	38,961
Cookstown	192	10,111	10,832	66	6,976	1,922	42	21,200	8,940	30,139
Craigavon	493	16,867	17,922	246	13,067	3,104	64	35,528	16,235	51,763
Derry	622	16,148	17,074	194	9,160	2,169	47	34,037	11,376	45,413
Down	675	20,119	21,795	137	9,885	3,919	80	42,726	13,884	56,610
Dungannon	800	21,812	23,488	184	20,496	5,617	111	46,285	26,225	72,509
Fermanagh	603	23,319	25,067	165	15,267	4,189	90	49,153	19,546	68,699
Larne	246	8,393	8,973	74	7,272	1,593	33	17,686	8,899	26,585
Limavady	181	11,499	12,355	81	8,443	2,198	44	24,116	10,686	34,801
Lisburn	1,109	27,603	29,699	341	20,332	5,039	104	58,752	25,475	84,227
Magherafelt	318	12,274	13,267	81	9,940	2,957	60	25,939	12,957	38,896
Moyle	231	6,627	7,106	40	3,536	1,179	25	14,005	4,740	18,745
Newry and Mourne	722	26,125	28,146	204	17,987	4,908	103	55,197	22,998	78,195
Newtownabbey	1,109	13,282	14,330	193	8,880	2,104	43	28,915	11,027	39,942
North Down	600	9,392	9,837	138	3,684	1,317	29	19,967	5,030	24,997
Omagh	453	18,686	19,917	140	13,007	3,483	76	39,196	16,565	55,761
Strabane	273	12,940	13,777	95	8,955	2,430	52	27,086	11,436	38,522
Northern Ireland	14,935	413,645	443,691	4,134	276,891	77,485	1,635	876,405	356,011	1,232,416

Source: DECC

[Please note that LGVs can be used for a number of tasks such as carrying freight, providing transport, carrying equipment or for private use, meaning that not all LGV traffic is related to freight transportation.]



## Chapter 6: Energy and the Consumer

### Summary of key points

#### Household expenditure on energy

- Northern Ireland had the highest weekly household expenditure on energy of any UK region; it was some 36% higher in the period 2012-2014 than the UK average.
- Weekly household expenditure on electricity was highest in Northern Ireland in the period 2012-2014, 17% higher than the UK average and 28% above the UK region with the lowest expenditure.
- Weekly expenditure on gas in Northern Ireland was around a quarter of the UK average expenditure and households in Northern Ireland spend about 9 times as much per week on other fuels (e.g. home heating oil) compared to the UK as a whole in the period 2012-2014.
- In 2015, for domestic electricity customers, Northern Ireland had the third highest unit cost and annual bill of all UK regions with these being some 6.4% above the UK average.
- The standard domestic electricity tariff for Northern Ireland from 1<sup>st</sup> April 2015 was 5.5% above the EU 15 average (median) figure and higher than 9 of the 15 EU countries.
- In the first six months of 2015, domestic gas prices in Northern Ireland were lower than the EU15 median price.

#### Non-domestic expenditure on energy

- In the period January-June 2015, Northern Ireland non-domestic electricity prices were around 6%-8% higher than the UK in the very small, small and small/medium categories, approximately the same for the medium category and around 13% lower than the UK in the large/very large category.
- Northern Ireland non-domestic electricity prices were above the EU median price in all categories and, indeed, were substantially above the EU median price in the small/medium category (44% higher), the medium category (41% higher) and in the large/very large category (58% higher) in the period January-June 2015.

#### Road fuel prices

- Diesel and petrol prices at the start of 2016 were at their lowest level since 2009.
- Between 2006 and 2014, the price per litre for petrol and diesel in Northern Ireland were generally higher than the UK average. However, during 2015 and into 2016, this trend has reversed and average prices in Northern Ireland (particularly for diesel) are generally below, or equivalent to, the UK average price.

## Introduction

This chapter looks at energy from the consumer perspective including household expenditure on energy, electricity prices and road fuel prices. Comparisons with other regions are provided where possible.

### Household Expenditure on Energy

The Office for National Statistics' Living Costs and Food Survey provides data on the amount of weekly household expenditure on electricity, gas and other fuels. This is presented in Table 6.1 below.

Table 6.1 Weekly household expenditure (£) by UK countries and regions, 2012-2014

Region	Electricity	Gas	Other fuels	Total weekly expenditure on energy	Total weekly expenditure (on all commodities and services)	Expenditure on energy as a % of total weekly expenditure
North East	10.60	11.80	0.90	23.30	427.40	5.5%
North West	11.60	12.30	0.60	24.40	467.10	5.2%
Yorkshire & the Humber	10.90	12.70	1.10	24.70	450.60	5.5%
East Midlands	11.20	11.70	1.80	24.70	494.70	5.0%
West Midlands	11.80	12.40	1.70	25.90	454.50	5.7%
East	11.60	10.80	2.50	25.00	540.60	4.6%
London	11.10	13.40	0.10	24.60	616.30	4.0%
South East	12.00	12.00	1.50	25.50	594.80	4.3%
South West	11.80	9.80	2.50	24.10	533.00	4.5%
England	11.50	12.00	1.40	24.80	521.40	4.8%
Wales	11.90	11.20	2.70	25.80	444.50	5.8%
Scotland	12.60	11.20	2.00	25.70	474.40	5.4%
<b>Northern Ireland</b>	<b>13.60</b>	<b>3.30</b>	<b>17.40</b>	<b>34.30</b>	<b>484.10</b>	<b>7.1%</b>
United Kingdom	11.60	11.60	1.90	25.20	512.60	4.9%

Source: Office for National Statistics (ONS) Living Costs and Food Survey<sup>122</sup>

The table above highlights a number of differences in expenditure on energy in Northern Ireland compared to other UK regions. Firstly, Northern Ireland had by far the highest weekly expenditure on energy of any UK region. Weekly household expenditure on energy in Northern Ireland was some 36% higher (at £34.30 per week in the period 2012-2014) compared to the UK average of £25.20.

Weekly household expenditure on electricity was highest in Northern Ireland (at £13.60), 17% higher than the UK average and 28% more than the UK region with the lowest expenditure (North East).

As the table above shows, expenditure on Gas and 'Other fuels' in Northern Ireland is very different from any other region of the UK. For example, weekly spending on gas in NI is around a quarter of

<sup>122</sup> Detailed household expenditure by UK countries and regions spreadsheets are available [here](#)

the UK average expenditure and households in Northern Ireland spend over 9 times as much per week on other fuels compared to the UK as a whole.

The main reasons for such differences are the availability of mains gas and, consequently, the propensity for oil use for home heating purposes. Unlike Northern Ireland, mains gas is widely available throughout GB and this means it is the main type of central heating at the UK level with some 84% of UK households in 2012 having gas central heating installed and only 4% using oil central heating<sup>123</sup> (see Table 6.2 below).

In contrast, according to the Northern Ireland Housing Executive’s House Conditions Survey, in 2011 around 17% of households in Northern Ireland used mains gas as their primary central heating fuel and some 68% of households relied on oil for domestic central heating purposes. However, it is worth noting that the proportion of dwellings in Northern Ireland with gas central heating has risen from 4% in 2001. Also, the use of mains gas in Northern Ireland is predominantly in the Belfast Metropolitan Area (BMA) and almost two fifths (101,890 or 38%) of all dwellings in the BMA had mains gas central heating. The vast majority of all gas-heated dwellings are located in urban areas (98% in 2011) reflecting the extent of the gas network<sup>124</sup>.

Household expenditure data for the Republic of Ireland shows a spending profile on energy that is more closely aligned with that in Northern Ireland although gas usage is again much higher in the Republic of Ireland than in Northern Ireland (around 33% of households in the Republic of Ireland in 2011 had gas fired central heating and 43% used oil fired central heating<sup>125</sup>). Similar to NI, a much higher than average proportion of households in the main urban area in the Republic of Ireland are gas-heated dwellings (69% of households in Dublin have gas central heating) with almost 3 out of every 5 gas-heated households (58%) in the Republic of Ireland located in Dublin<sup>126</sup>.

Table 6.2 Comparison of energy expenditure and central heating type by country – NI, UK, RoI

Region	Proportion of weekly energy expenditure that is spent on:			Proportion of households with central heating that is:		
	Electricity	Gas	Other fuels	Oil	Gas	Other/None
<b>Northern Ireland</b>	<b>40%</b>	<b>10%</b>	<b>51%</b>	<b>68%</b>	<b>17%</b>	<b>15%</b>
UK	46%	46%	8%	4%	84%	13%
Republic of Ireland	46%	23%	31%	43%	33%	24%

Sources: ONS, CSO, NIHE

In terms of weekly expenditure, Table 6.2 above shows that only 10% of weekly energy expenditure in Northern Ireland was on gas, compared to almost half (46%) for the UK as a whole. Over half (51%) of all weekly energy expenditure in Northern Ireland was on ‘other fuels’ such as home heating oil, coal etc., compared to only 8% for the UK as a whole. In the Republic of Ireland<sup>127</sup>, around one third (31%) of all weekly energy expenditure was on ‘other fuels’, still lower than the equivalent proportion for Northern Ireland but almost four times that for the UK as a whole.

<sup>123</sup> See Table 3.16 [here](#)

<sup>124</sup> See Chapter 7 of [http://www.nihe.gov.uk/northern\\_ireland\\_house\\_condition\\_survey\\_main\\_report\\_2011.pdf](http://www.nihe.gov.uk/northern_ireland_house_condition_survey_main_report_2011.pdf)

<sup>125</sup> Data from the 2011 Census on the CSO website – click [here](#) for data tables

<sup>126</sup> Data from the 2011 Census on the CSO website – click [here](#) for data tables

<sup>127</sup> The most recent data on household expenditure for the Republic of Ireland refers to 2009-10 and is taken from the Central Statistics Office’s Household Budget Survey – see [here](#) for data tables

Similarly, expenditure on gas accounted for 23% of weekly energy spend in the Republic of Ireland, much higher than the proportion for Northern Ireland (10%) but only half the proportion for the UK.

### Electricity Prices – Domestic Customers

The table below shows that in 2015, for domestic customers, Northern Ireland had the highest average unit cost and, consequently, the highest average annual electricity bill of all 15 UK regions for Direct Debit payment customers, the fifth highest unit cost and annual bill for Credit customers and the sixth highest unit cost and annual bill for Prepayment customers.

Overall (i.e. taking into account all three payment methods) Northern Ireland had the third highest unit cost and annual bill, with these being some 6.4% above the UK average and some 10.7% above the regions with the lowest unit cost and annual bill (i.e. East Midlands and Eastern). The overall annual average bill, based on consumption of 3,800kWh/year, for domestic customers in Northern Ireland is around £60 higher than in the cheapest UK regions and some £37 above the UK average.

Table 6.3: Average annual domestic standard electricity bills in 2015 for UK regions based on consumption of 3,800kWh/year: Unit cost (Pence per kWh) and Bill (£)

Payment type	Credit			Direct debit			Prepayment			Overall		
Region	Unit cost	Bill	Rank	Unit cost	Bill	Rank	Unit cost	Bill	Rank	Unit cost	Bill	Rank
East Midlands	15.61	593	15	14.18	539	15	15.69	596	15	14.78	562	14
Eastern	15.63	594	14	14.18	539	14	15.70	597	14	14.77	561	15
London	15.98	607	12	14.60	555	9	16.06	610	11	15.41	586	7
Merseyside & North Wales	17.41	662	2	15.80	601	3	17.26	656	2	16.52	628	2
North East	16.21	616	8	14.52	552	10	16.16	614	8	15.21	578	9
North Scotland	17.51	665	1	16.12	612	2	17.51	665	1	16.71	635	1
North West	16.36	622	6	14.95	568	6	16.40	623	5	15.58	592	6
<b>Northern Ireland</b>	<b>16.87</b>	<b>641</b>	<b>5</b>	<b>16.14</b>	<b>613</b>	<b>1</b>	<b>16.24</b>	<b>617</b>	<b>6</b>	<b>16.36</b>	<b>621</b>	<b>3</b>
South East	16.04	610	11	14.68	558	7	16.13	613	10	15.18	577	10
South Scotland	15.87	603	13	14.41	548	12	15.76	599	13	15.03	571	12
South Wales	16.99	646	3	15.61	593	4	17.06	648	4	16.25	618	4
South West	16.94	644	4	15.58	592	5	17.06	648	3	16.14	613	5
Southern	16.07	611	9	14.65	557	8	16.15	614	9	15.16	576	11
West Midlands	16.26	618	7	14.44	549	11	16.18	615	7	15.23	579	8
Yorkshire	16.06	610	10	14.23	541	13	15.94	606	12	15.01	571	13
UK	16.20	616	-	14.72	560	-	16.26	618	-	15.38	584	-

Source: DECC<sup>128</sup> (See Annex 6.1 for notes to this table)

<sup>128</sup> See <https://www.gov.uk/government/collections/domestic-energy-prices>

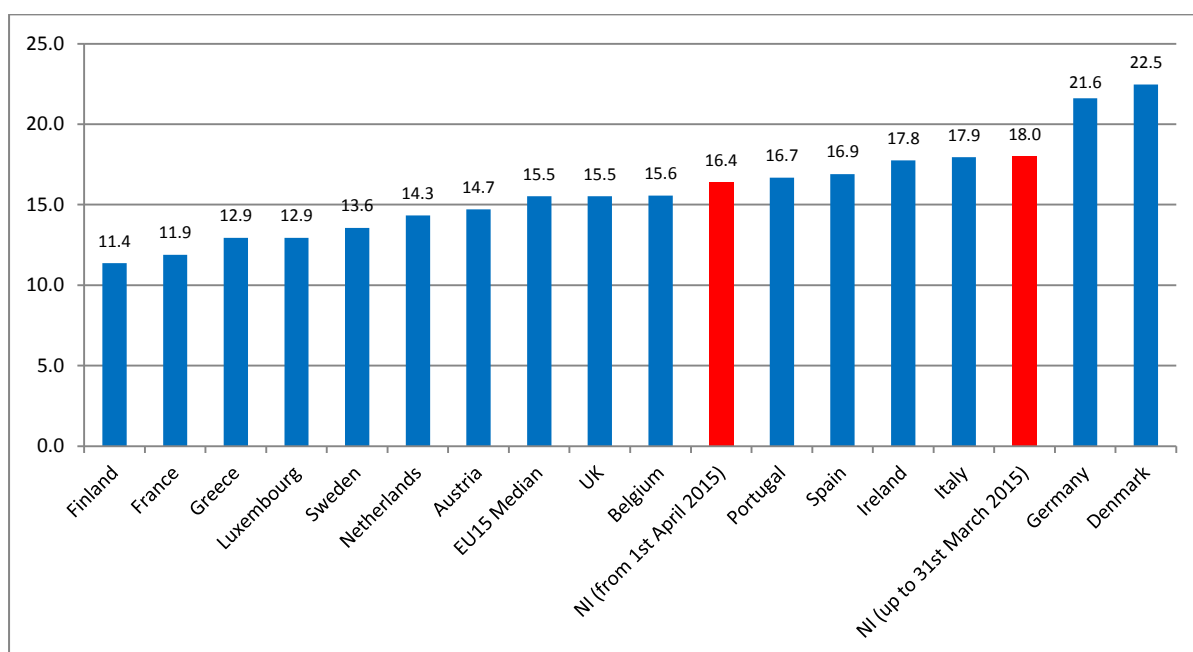
Historically in NI, electricity prices have been higher than in GB. This is due to various factors including higher energy transport costs, small size of the market that reduces chances of economies of scale and difference in fuel mix.<sup>129</sup>

However it is worth noting that, as shown in Table 6.3, the Northern Ireland annual average bill for prepayment customers in 2015 was slightly below the UK average. This is important given prepayment accounts for almost 2 out of every 5 electricity customers in Northern Ireland<sup>130</sup>. In addition, whilst overall annual bills remained higher in NI compared to the UK, the gap between the NI and UK annual bill narrowed between 2014 and 2015. In 2014<sup>131</sup>, the overall annual average bill, based on consumption of 3,800kWh/year, for domestic customers in Northern Ireland was £69 above the UK average but the gap had fallen to £37 in 2015.

### Comparison with EU

Electricity prices for domestic customers in Northern Ireland can also be compared with other EU countries. The chart below compares the Northern Ireland regulated price with the most recent available prices for other EU countries.

Chart 6.1 Domestic Electricity Prices in the EU for medium consumers<sup>132</sup>, Jan-June 2015 (p/kWh)



Source: DECC<sup>133</sup> and Utility Regulator for NI

The Northern Ireland regulated tariff changed during the period January-June 2015 so two NI prices are shown in the chart above. For domestic customers, the Northern Ireland regulated tariff up to 31<sup>st</sup> March 2015 was 18 pence per kilowatt hour (p/kWh) including taxes which was 16% above both the EU15 average (median) figure and UK figure of 15.5p/kWh and higher than 13 of the 15 EU

<sup>129</sup> See page 17 of [http://www.uregni.gov.uk/uploads/publications/Transparency\\_Report\\_2015\\_FEB.pdf](http://www.uregni.gov.uk/uploads/publications/Transparency_Report_2015_FEB.pdf)

<sup>130</sup> See page 8 of DECC's Quarterly Energy Prices publication [here](#)

<sup>131</sup> See <https://www.gov.uk/government/collections/domestic-energy-prices>

<sup>132</sup> Medium consumers are those consuming 2,500 - 4,999 kWh per annum.

<sup>133</sup> See Table 5.6.2: Medium consumers (2,500-4,999 kWh) including taxes, from DECC's Quarterly Energy Prices – link [here](#)

countries. However, the Northern Ireland regulated tariff fell by 9% from 1 April 2015 to 16.38p/kWh including taxes. This is still 5.5% above the EU 15 average (median) and UK figure of 15.5p/kWh and higher than 9 of the 15 EU countries, but is now lower than the Republic of Ireland figure.

### Electricity Prices – Non-Domestic Customers

The Utility Regulator regularly publishes data on electricity prices for the non-domestic sector<sup>134</sup>. These figures are presented in the charts and tables below.

At present, all business users who consume more than 50 MWh per year can obtain an individual quotation from active electricity suppliers in the Northern Ireland market. Many of these customers, especially the larger customers, follow a tender exercise and subsequently agree individual contracts with their supplier, often with unique terms and conditions (including price). Due to the bilateral nature of such agreements, non-domestic electricity prices for Northern Ireland are not published by suppliers and such information has historically not been available from any other source.

Due to this data gap, the Utility Regulator developed average electricity non-domestic prices per consumption band and since 2013 has reported these for Northern Ireland. The Utility Regulator follow DECC's format and methodology<sup>135</sup> which means Northern Ireland prices can then be compared to those collected and published by DECC and Eurostat for the EU Member States.

### Non-domestic Market Breakdown

The information from the Utility Regulator on non-domestic electricity prices is broken down into different user groups depending on their annual consumption. As Table 6.4 shows, the largest proportion of non-domestic customers in Northern Ireland is in the smallest consumption size band. These 'very small' consumers represented two thirds (66.4%) of total Industrial & Commercial (I&C) customers at the end of June 2015 but only 7% of consumption. The majority of consumption is accounted for by a much smaller number of users, namely the 'small/medium', 'medium' and 'large/very large' groups. Together these three groups account for less than 2% of all I&C customers but they are responsible for 58% of non-domestic electricity consumption. These findings are in line with the data presented in Table 3.2 earlier – i.e. that a small number of large industrial and commercial users consume a disproportionate amount of electricity.

Table 6.4: Northern Ireland Non-domestic Market Breakdown, January-June 2015

Size of consumer	Annual Consumption (MWh)	% of I&C customers	% of I&C consumption
Very small	< 20	66.43%	7%
Small	20 - 499	31.94%	35%
Small/Medium	500 - 1,999	1.19%	16%
Medium	2,000 - 19,999	0.41%	30%
Large/Very Large	> 20,000	0.03%	12%

Source: Utility Regulator

<sup>134</sup> See Transparency Reports at <http://www.uregni.gov.uk/retail/reports/>

<sup>135</sup> For further details on the methodology used see page 20 of the November 2015 Transparency Report [here](#)

It should be noted that few, if any, of our largest energy users would be considered ‘energy intensive’ by international, EU or UK standards. Most businesses therefore consume relatively little electricity, but a very small number are heavily reliant on it.<sup>136</sup>

### **Non-domestic Electricity Prices**

The charts overleaf show industrial and commercial (or non-domestic) electricity prices in the 15 EU countries and in Northern Ireland by consumption size band. All prices shown are pence per kilowatt hour (p/kWh). The charts show non-domestic average unit prices, including Climate Change Levy (CCL)<sup>137</sup> but excluding VAT. As VAT is a refundable expense for many businesses, excluding VAT means that the values are more representative of the actual energy costs for businesses.

Smaller electricity users typically have to sign up to available tariffs from providers (similar to domestic customers), whereas larger users have more scope to negotiate tailored deals, often with unique terms and conditions (including price), based on their much higher consumption. Indeed, as the charts overleaf show, the price per kilowatt hour falls as consumption increases for all countries shown.

### **Comparisons with other regions<sup>138</sup>**

Chart 6.2 shows that Northern Ireland prices are around 6%-8% higher than the UK in the very small, small and small/medium categories. As Table 6.4 showed earlier, over 99% of non-domestic customers in Northern Ireland are in these three categories combined. Prices were approximately the same for the medium category whilst Northern Ireland prices were around 13% lower than the UK in the large/very large category.

Northern Ireland prices are above the EU median price in all categories and, indeed, are substantially above the EU median price in the small/medium category (44% higher), the medium category (41% higher) and in the large/very large category of non-domestic electricity consumers (+58%).

Northern Ireland industrial and commercial prices are about 4% lower than Republic of Ireland prices in the very small category. However, Northern Ireland industrial and commercial prices are around 7% above Republic of Ireland prices in the small and small/medium categories, over 16% higher in the medium category and over 18% higher for large/very large users.

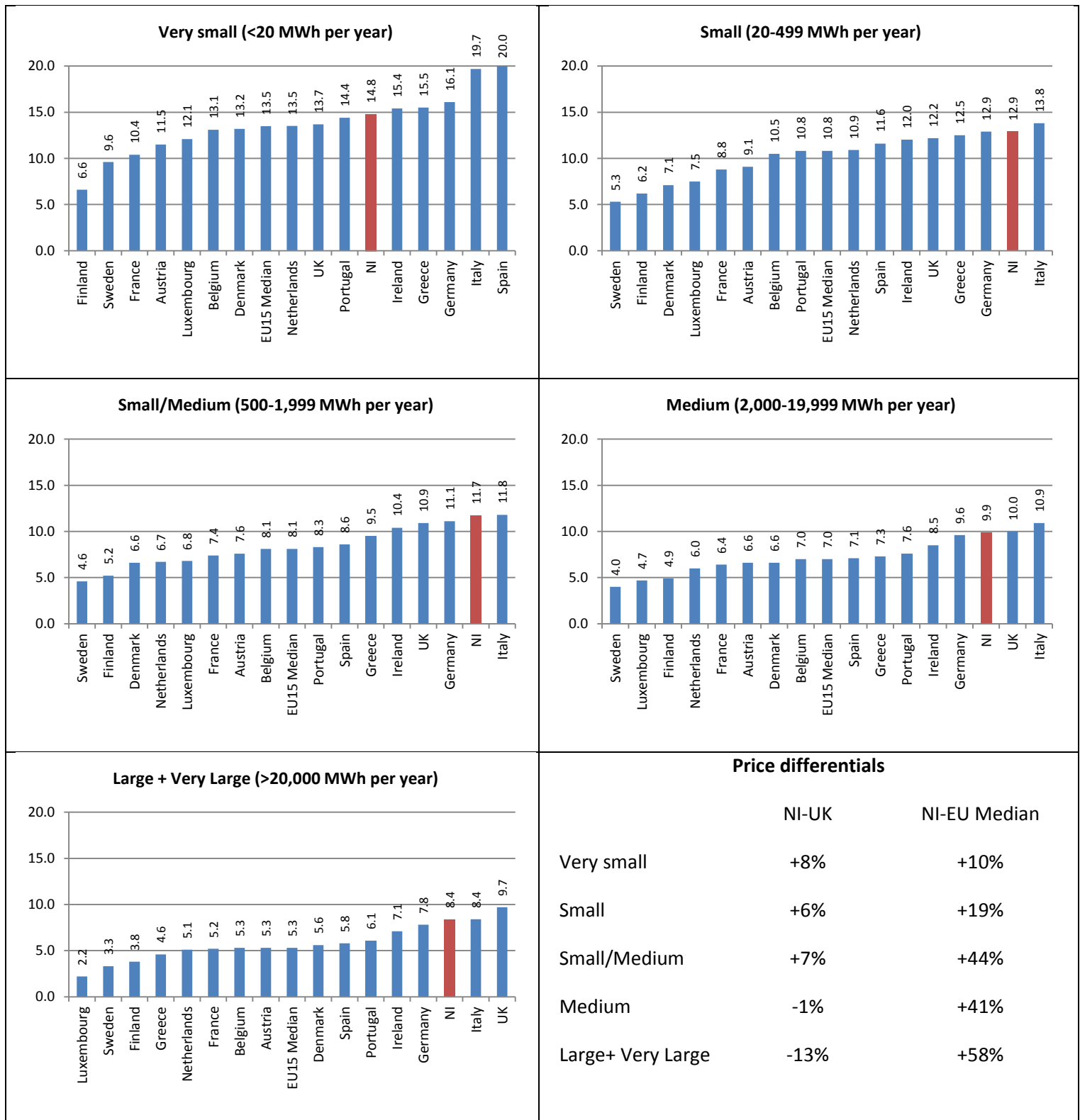
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<sup>136</sup> Source: The cost of doing business in Northern Ireland, DETI ([link here](#))

<sup>137</sup> The Climate Change Levy (CCL), is a tax on electricity, gas and solid fuels delivered to non-domestic consumers. Its objective is to encourage businesses to reduce their energy consumption or use energy from renewable sources. The rate changes every year. From 1 April 2012, it is 0.509p/kWh.

<sup>138</sup> For further reading, Chapter 4 of DETI’s ‘The cost of doing business in Northern Ireland’ report ([link here](#)) looks at reasons for the differences in electricity prices between Northern Ireland and GB and Northern Ireland and the Republic of Ireland.

Chart 6.2 Non-domestic electricity prices (p/kWh)<sup>139</sup> by consumption size band, January-June 2015



Source: Utility Regulator

<sup>139</sup> Prices exclude VAT but include other taxes

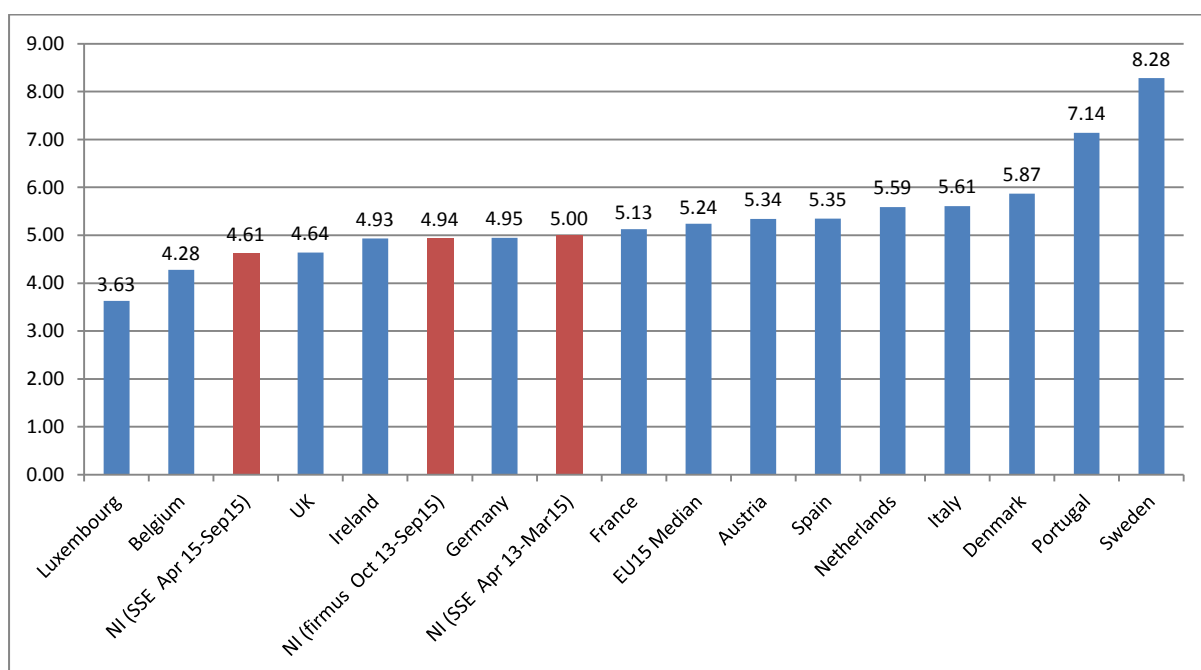


## Gas Prices

There is limited information available on gas prices in Northern Ireland. Indeed, DECC do not publish any gas consumption or price data (either domestic or non-domestic) relating to Northern Ireland due to the limited availability of gas here (compared to GB) and the difference in market structure.

However, the Utility Regulator does publish some information on domestic gas prices in Northern Ireland and compares these against other EU countries<sup>140</sup>. This data is replicated in the chart below. Prices are in pence per kilowatt hour (p/kWh), for medium domestic consumers<sup>141</sup>

Chart 6.3 Domestic gas prices including taxes (p/kWh) in the EU15 for medium consumers, January-June 2015



Source: Utility Regulator

There are three NI prices shown in Chart 6.3 that were applicable in the period January-June 2015, as follows:

- The SSE Airtricity tariff that applied during the period January-March 2015: 6.957p/kWh for first 2000 kWh and then 4.629p/kWh (which equates to 5.00p/kWh for consumption of 12,500 kWh per year).
- The SSE Airtricity tariff that applied during the period April-June 2015: 6.261p/kWh for first 2000 kWh and then 4.291p/kWh (which equates to 4.61p/kWh for consumption of 12,500 kWh per year).
- The firmus energy tariff that applied during the period January-June 2015: 6.804p/kWh for first 2000 kWh and then 4.586p/kWh (which equates to 4.94p/kWh for consumption of 12,500 kWh per year).

<sup>140</sup> See Quarterly Transparency Reports at [http://www.uregni.gov.uk/publications/transparency\\_reports\\_2015](http://www.uregni.gov.uk/publications/transparency_reports_2015)

<sup>141</sup> Medium consumers are those consuming 12,500 kWh per annum.

SSE Airtricity tariffs relate to domestic gas customers in the Greater Belfast area, whilst firmus energy tariffs apply to domestic gas customers in the Ten Towns area. In addition, it should be noted that the tariffs shown for all countries in Chart 6.3 are subject to change. For example SSE Airtricity decreased its domestic gas tariff in the Greater Belfast area by a further 10% (with effect from 1 October 2015) and firmus energy tariffs in the Ten Towns area were also reduced (by 5%) from 1 October 2015<sup>142</sup>.

Chart 6.3 shows that Northern Ireland domestic gas prices were competitive compared to other countries. In the first six months of 2015, domestic gas prices were around 0.3p/kWh lower than the EU15 median price for gas customers in the Ten Towns area and up to 0.63p/kWh lower than the EU15 median price for gas customers in the Greater Belfast area.

For customers in the Greater Belfast area, prices were 0.36p/kWh above the UK average for the first 3 months of 2015 and then (after the tariff change) slightly below the UK average price between April-June 2015. In the Ten Towns area, prices were 0.30p/kWh above UK prices in the first 6 months of 2015 but were equivalent to prices in the Republic of Ireland.

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<sup>142</sup> See page 18 of Utility Regulator's November 2015 Quarterly Transparency Report [here](#)

## Road Fuel Prices

As shown in Chapter 5 earlier, some 27,455 GWh of petroleum products were consumed in Northern Ireland in 2013 (as a comparison, total electricity consumption was around 8,200 GWh in Northern Ireland in the same year). Therefore consumption of such products are significant and the price paid by consumers for these fuels is worthy of separate consideration.

The AA produces regular reports<sup>143</sup> on road fuel prices (i.e. petrol and diesel) by UK region. Information from the most recent report is shown in Table 6.5 below. All prices shown are pence per litre (ppl).

Table 6.5 Road fuel prices by UK region (ppl) - average of mid-month prices, January 2016

Garages and Supermarkets	Unleaded petrol (pence per litre)	Diesel (pence per litre)
Northern Ireland	102.2	101.6
Scotland	102.6	103.1
Wales	102.1	102.6
North	102.4	103.1
North West	102.6	102.9
Yorkshire & Humberside	101.9	102.3
West Midlands	102.6	102.3
East Midlands	102.5	102.8
East Anglia	101.9	102.9
South East	102.2	102.7
South West	102.3	102.6
London	102.3	102.5
UK Average	102.2	102.6

Supermarkets	Unleaded petrol (pence per litre)	Diesel (pence per litre)
UK Average	99.9	99.8

Source: The AA<sup>144</sup>

In January 2016, the average price for unleaded petrol in Northern Ireland was the same as the UK average price and stood at 102.2 pence per litre. Three regions (Scotland, North West and West Midlands) recorded the highest price for petrol at 102.6 ppl whilst East Anglia and Yorkshire & Humberside recorded the lowest price for unleaded at 101.9 ppl.

The North and Scotland recorded the highest diesel price at 103.1 ppl in January 2016 whilst Northern Ireland had the lowest average diesel price at 101.6 ppl (and 1.0 ppl below the UK average).

<sup>143</sup> See [http://www.theaa.com/motoring\\_advice/fuel/](http://www.theaa.com/motoring_advice/fuel/). DECC also produce data on road fuel prices (see [here](#)) but these are only available at UK level. However, analysis of the AA and DECC data at UK level shows a strong correlation with differences typically less than 1%. The AA data is used in this compendium to allow for Northern Ireland data to be shown and also to allow for regional comparison.

<sup>144</sup> The AA Public Affairs Fuel Price Report uses data sourced from Experian Catalist ([www.catalist.com](http://www.catalist.com))

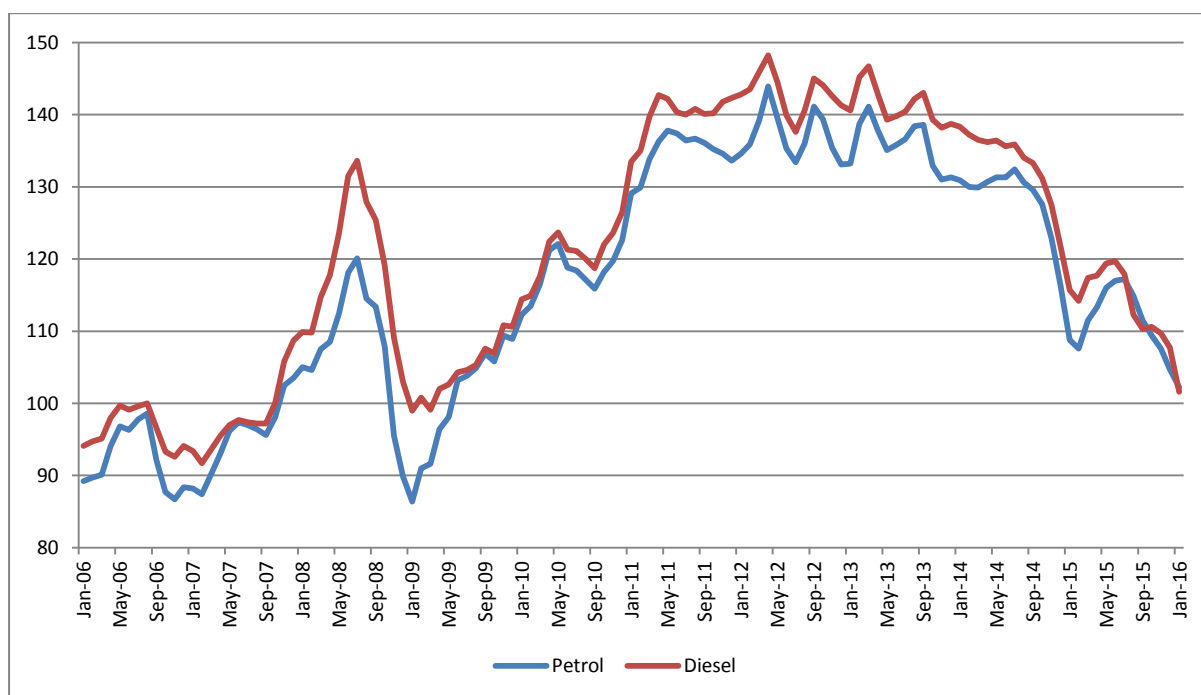
It is also worth noting that the UK average fuel price for both petrol and diesel in supermarket forecourts are around 2-3 pence per litre cheaper than the average UK price for all retailers (i.e. supermarkets and garages) and it is probable that a similar situation exists in Northern Ireland. The UK supermarket average for both fuels was below one pound per litre in January 2016.

### Price history

Whilst current prices for petrol and diesel are similar (diesel was 0.6 pence per litre lower in Northern Ireland in January 2016) this has not always been the case as the chart below shows.

Chart 6.4 details the history of prices for petrol and diesel in Northern Ireland over last 10 years. This shows that in the period June-August 2008, for example, diesel was some 13.5 ppl higher than petrol. Indeed, over the 10 year period shown, diesel prices were on average about 5 ppl higher than petrol. Diesel prices dipped below petrol prices in August and September 2015 and again in January 2016 but these were the only three months when this occurred during the ten year period shown.

Chart 6.4 Price history of petrol and diesel in Northern Ireland (ppl), January 2006 – January 2016



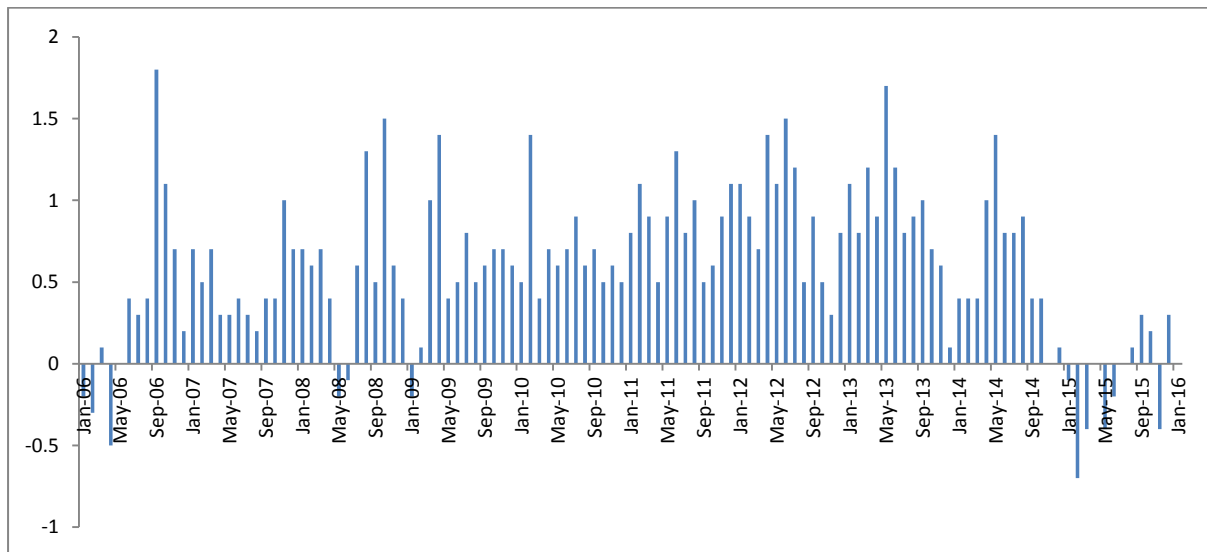
Source: The AA

It is also worth noting that diesel and petrol prices at the end of 2015/start of 2016 have been at their lowest level since 2009. Indeed, the average diesel price in 2015 (around 115.5 ppl) is some 22% below the peak price of 148.2 in April 2012. Similarly, the average petrol price in 2015 (around 113.0 ppl) is around 21.5% below the peak price of 143.9 in April 2012. However, diesel and petrol prices in 2015 were significantly higher than the prices for such fuels in early 2007 (26% and 29% higher respectively).

## Historic comparison NI v UK

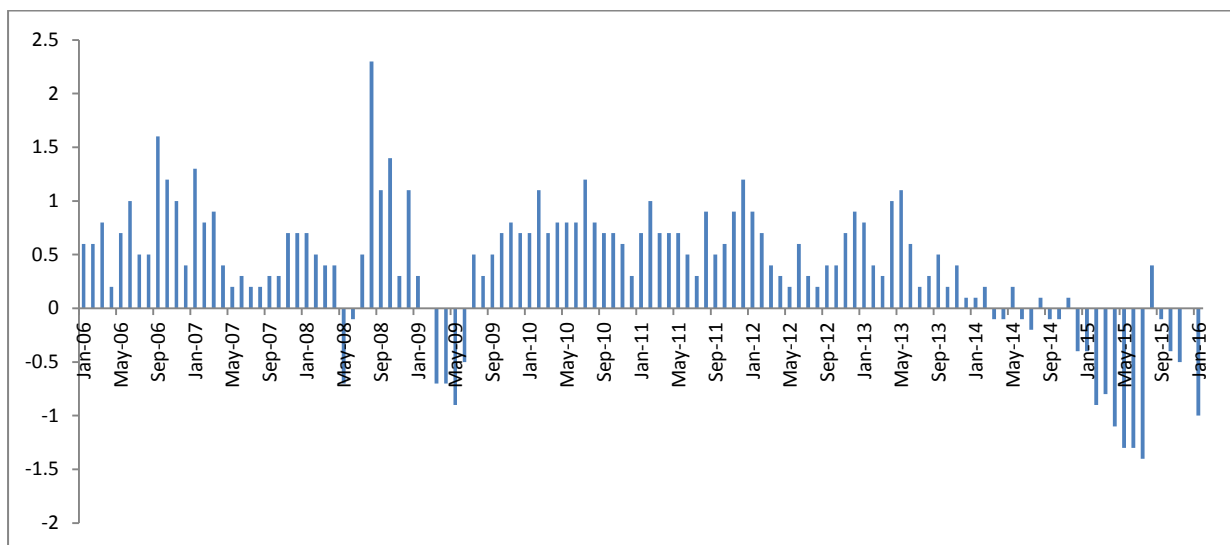
The charts below show the price differential in pence per litre between the Northern Ireland average and UK average prices for petrol and diesel. The charts show that, in general, petrol and diesel prices in Northern Ireland were higher than the UK average for each fuel type up to the end of 2014. However, during 2015, this trend has reversed and average prices in Northern Ireland are generally below, or equivalent to, the UK average price. Indeed, the diesel price in Northern Ireland in January 2016 was 1.0 pence per litre below the UK average and was the lowest of any UK region.

Chart 6.5 Differential in petrol prices between NI and UK (ppl), January 2006 – January 2016



Source: The AA

Chart 6.6 Differential in diesel prices between NI and UK (ppl), January 2006 – January 2016



Source: The AA

## **Annex 6.1      Notes to Table 6.3**

All bills are calculated assuming an annual consumption of 3,800 kWh. Bills and unit costs reflect the prices of all suppliers and include standing charges. Figures are inclusive of VAT. Bills relate to calendar year, i.e. covering consumption from Q1 to Q4 of the named year. Unit costs are calculated by dividing the bills shown by the relevant consumption levels.

In Q4 2015, a £12 Government rebate was applied to electricity bills for all customers in Great Britain. This is included in the figures in Table 6.3.

Data on electricity tariffs is received directly from all the main energy companies that supply electricity across the UK via a quarterly survey. The suppliers provide figures for each tariff (unit costs, standing charges, split levels, discounts, dates of tariff changes and number of customers), splitting the tariff information by payment type and region.