



Sustainable Development The Regulator's Role

Consultation Paper

March 2008

Chief Executive's Foreword

The Utility Regulator's primary aim is to protect the interests of Northern Ireland's utility consumers, both present and future. We were created under statute to deliver this aim, which is expressed in various ways through our many statutory duties and functions.

This aim is not new. We have always sought to balance the various interests of consumers and to ensure that the regulated industries are sustainable. We have ensured that they stand on a sound financial footing and do not waste consumers' resources through inefficient operation or excessive profit. We have ensured their investment programmes are sufficient to build robust infrastructure that is capable of delivering secure and good-quality services over the long term. We have tried to ensure that the costs of services are borne by those responsible for causing the cost, since this creates a clear incentive to minimise cost for those who are able to do so. We have ensured that both costs and benefits are shared fairly between different groups of consumers.

However, we have good reason now to review whether we are doing enough. The developing science of climate change shows clearly that Northern Ireland society is not environmentally sustainable and our utilities contribute to this problem. The Northern Ireland Government and Executive have accepted this and adopted challenging targets to reduce our environmental footprint. There are concerns about the dependence of Ireland's electricity generation sector on imported fossil fuel. Furthermore, Northern Ireland's high levels of fuel poverty mean that, with the restoration of locally accountable government, the question is asked with renewed force whether the Utility Sector is meeting the needs of today's society. Northern Ireland's utilities may not be currently developing sustainably and doing as much as possible to meet the needs of our most vulnerable.

The environmental targets coming from government at Northern Ireland, UK and EU level might change in detail, but are unlikely to become less stringent. They are not optional. The debate is not whether to meet them, but how to do so in a way that secures a better future for the present generation as well as protecting future generations.

The Utility Regulator has a vital role to play. We are a main gate-keeper to infrastructure investment in three sectors with high environmental impact i.e. gas, electricity and water. We intend through this consultation and the resulting action plan to ensure that our own regulation contributes more to sustainable development.

We also have substantial expertise and experience in channelling commercial drivers to deliver public policy goals. We therefore believe we have much to offer

in informing debate and policy making. We are not ourselves responsible for energy or water policy but – recognising that no single player holds all the levers to achieve sustainable development – we hope that we can make a useful contribution to this wider policy.

Iain Osborne

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Executive Summary

Introduction - Sustainability in the Context of Utility Services

- I. The Utility Regulator wishes to gather views on how best to contribute to sustainable development. By this we mean “development which meets the needs of the present without compromising the ability of future generations to meet their needs”. Sustainable utility service is at the heart of the Utility Regulator’s work. In the context of utility services, meeting today’s and future needs means that decisions regarding our water, electricity and gas services must take account of such factors as:
 - a. Northern Ireland’s overall economic competitiveness;
 - b. Northern Ireland’s vulnerable customers;
 - c. Northern Ireland’s security and quality of supply;
 - d. ensuring utilities are sustainably financed and maintained in the long term;
 - e. the cost of carbon and the potential future price and availability of carbon fuels.

Northern Ireland’s Current Performance

- II. There is evidence to suggest that Northern Ireland’s utility services could do more in relation to sustainability, for example:
 - a. Northern Ireland’s ecological footprint is higher than any other region in the UK;
 - b. Northern Ireland is heavily reliant on imports of fossil fuels;
 - c. converting much of Northern Ireland’s electricity generation to highly efficient combined cycle gas turbines (CCGTs) has helped to hold Northern Ireland’s greenhouse gas emissions at lower levels than would otherwise have been the case. However, conversions to CCGT can no longer be relied upon to continue to do this;
 - d. many customers within Northern Ireland suffer from fuel poverty and could potentially suffer from water poverty. In addition, Northern Ireland’s vulnerable customers may be at extra risk from climate change compared to the general population. (For example the physical and mental health risks associated with flooding or excess summer heat may have a higher impact on vulnerable customers.)
- III. Having said that Northern Ireland’s utility services could do more, it is important to consider potential costs to ameliorate the problem. Northern Ireland’s current and future customers will face unavoidable costs relating to both the mitigation of climate change and adaptation to climate change. Many of the costs relating to mitigation and adaptation are already with us. Mitigation costs are in the form of taxes and carbon trading schemes while

adaptation costs are being built into such things as insurance premiums and infrastructure maintenance. Although these costs are unavoidable the Stern Review indicates that early action can reduce the quantum of total costs.

The Challenge

- IV. Early action, as it relates to utility services could be in the form of energy efficiency, water conservation, or a move to lower carbon energy or renewable energy. Energy efficiency can be analysed as a response to price. In order to assess the impact of price on energy demand in Northern Ireland, the Utility Regulator commissioned the University of Ulster to conduct an economic analysis of the responsiveness of demand for energy to changes in price and income, known as elasticity. This analysis found that, overall, the price elasticity of energy is relatively low. A 10% rise in fuel prices will result in a 2.1% fall in demand in the short run and 1.8% in the long run. The research also suggested that a 10% rise in real income would lead to a 2.8% increase in electricity demand. The research did not comment on the effect of price changes on Northern Ireland's competitiveness or on Northern Ireland's vulnerable customers. However it did highlight the important fact that policies on energy prices and growth need to be joined up with targets for reductions in greenhouse gases, energy efficiency and increases in renewable energy.
- V. Energy efficiency and renewable energy, as a means to reducing carbon emissions, can bring the additional benefit of increasing security of supply. They reduce the need to import fossil fuels, the price and supply of which can be affected by world political and economic events. However the accommodation of renewable energy sources on the electricity network requires careful planning and investment. Northern Ireland's electricity grid was designed to accommodate large dispatchable electricity generation, embedded generation (which may be unpredictable in nature, for example wind) requires careful planning and investment.
- VI. Water conservation and efficiency can also contribute to sustainability in Northern Ireland. The water industry's raw materials and services both impact upon and are directly affected by the climate and the environment. In addition water treatment and pumping, and the treatment of waste water, consume significant quantities of energy. Good progress has been made in relation to water conservation. However, the water industry faces serious challenges in relation to the quality of the water environment, the level of energy used and the ability of drainage systems to cope with changing patterns of rainfall.
- VII. Fuel and water poverty are issues which must be addressed in the context of sustainability. Social sustainability means meeting the needs of our most vulnerable, both today and in the future. Northern Ireland currently faces levels of fuel poverty of 34% and potential levels of water poverty (if the water

affordability tariff is not introduced) of 14.4%. Careful planning and consideration are necessary to ensure that any costs associated with climate change prevention or mitigation measures do not adversely impact on vulnerable customers.

Existing Responses to the Challenge

- VIII. Northern Ireland is committed to reducing greenhouse gas emissions by 25% below 1990 levels by 2025. There is also a wide range of other targets including the aspirational target to supply 20% of electricity from renewable sources by 2020. In order to progress these targets there is a number of instruments in place.
- IX. In relation to price signals and “pricing in the cost of carbon” there are two main policy instruments. The European Emissions Trading Scheme is the UK’s principal carbon pricing instrument. The Climate Change Levy is a tax on energy which also aims to provide incentives to increase energy efficiency and reduce carbon.
- X. The Utility Regulator is responsible for implementing a number of policy instruments aimed at promoting energy efficiency and lower carbon, including the Northern Ireland Renewables Obligation and the promotion of the gas industry. We are also responsible for a number of other instruments implemented through NIE such as the Sustainable Management of Assets and Renewable Technologies (SMART) programme which encourages environmentally friendly approaches to the provision of the electricity network and infrastructure to meet consumer demand in Northern Ireland. We are also responsible for a number of instruments aimed at promoting behavioural change such as the Energy Efficiency Levy and price controls.
- XI. In water, our main focus is on water conservation and biodiversity. NIW produces a sustainability report each year which reports on a number of indicators. It has a target to source 8% of its energy from green sources by 2008. It is currently exceeding this target and is looking at the options available to produce more energy through hydro and wind turbines.
- XII. The Utility Regulator’s response to the challenge of sustainability must be framed within its statutory duties. We have hierarchies of duties which differ across the three industries we regulate. Although we cannot amend our own duties, it is important to consider how appropriate they are in relation to the sustainability challenges facing Northern Ireland’s utilities, which are vital to the wellbeing of present and future customers.

Utility Regulator – Contributions to Meeting the Challenge

- XIII. The Utility Regulator considers that there are three main ways by which we can contribute to the sustainable development of Northern Ireland's utilities. These are:
- a. gathering and publishing more evidence;
 - b. contributing our expertise and experience to wider government policy;
 - c. regulating differently.
- XIV. Our draft proposals in relating to regulating differently are framed within the following goals which are outlined in this paper:
- a. create clarity for licence holders and customers regarding licence holder duties;
 - b. give better information to customers;
 - c. send the right signals to customers;
 - d. equitably accommodate renewable energy on the electricity network;
 - e. encourage energy efficiency;
 - f. promote gas;
 - g. take account of climate change within the NIW price control and asset management plan;
 - h. ensure our own practices and procedures demonstrate leadership in incorporating sustainability principles into our everyday work.

The draft proposals are summarised in the attached response pro forma and outlined in full in chapter 7.

Consultation Response Pro Forma

<i>Chapter 1</i>
1.1 Respondents to the consultation are asked to comment on whether or not they think any of the proposals in this paper would impact on equality of opportunity or good relations for any of the Section 75 Groups.
<i>Chapter 3</i>
3.1 Respondents are asked to comment on the balance between present and future climate change costs.
3.2 Respondents are asked to give their views on the relationship between sustainability and security and diversity of supply.
3.3 Respondents are asked to give their views on the degree to which sustainability issues should drive the Utility Regulator's first NI water price review.

3.5 Respondents are asked to consider whether a monetary value of CO₂ equivalent or shadow price of carbon ought to be included within guidance on use of business cases.

3.6 Respondents are asked to indicate their preference for inclusion of “carbon footprint” monitoring and target setting within the new regulatory contract at the first NIW price review.

3.7 Respondents are asked to consider the benefits of going beyond the “Economic Level of Leakage”, possibly by the inclusion of the carbon shadow price in calculations.

3.8 Respondents are asked to consider the degree to which NIW should be incentivised to increase its uptake of renewable energy and reduce its non-CO₂ gas emissions and mechanisms by which this might be achieved.

Chapter 4

4.1 Respondents are asked to rate the following existing instruments from 1-10 (1 being poor 10 being excellent) for the following characteristics:

- A Profile (do enough people know about the work)**
- B Ability to protect customers**
- C Ability to influence consumers to be more energy / water efficient or change to a lower carbon fuel**

Measure	Profile	Ability to protect customers	Ability to influence
The NIE SMART Programme			
Gas Industry Promotion			
The Energy Efficiency Levy			
Price Controls			
Key Pad Metering			
Energy Efficiency Advice Provision			
NIW Sustainability Report			
NIW Environment Management System			
NIW promotion of water efficiency			

Chapter 5

5.1 Respondents are asked to comment on the balance of the Utility Regulator’s duty to protect present and future customers.

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5.2 Respondents are asked to comment on the appropriate role of and nature of statutory guidance from Ministers to the Utility Regulator.

5.3 Respondents are asked to highlight actions that they consider might be appropriate or necessary, but that could not be taken under the Utility Regulator's existing powers.

5.4 Respondents are asked to comment on whether the Utility Regulator should seek to be designated under section 25 (1) of the Northern Ireland (Miscellaneous Provisions) Act 2006.

Chapter 6

6.1 Respondents are asked to comment on the three main roles for the Utility Regulator identified in chapter 6 of this paper as:

- gathering and publishing evidence,
- contributing to wider energy policy,
- regulating differently.

6.2 Respondents are asked to comment on data, which would be useful but, which is currently unavailable on a regular basis in Northern Ireland.

6.3 Respondents are asked to suggest innovative methods of developing and promoting the gas industry as a means of reducing Northern Ireland's carbon foot print.

6.4 Respondents are asked how the solid fuel and oil industries could contribute to social and environmental sustainability? In addition what approach will best achieve this aim?

6.5 Respondents are asked if the regulatory model used to develop the natural gas network could provide lessons for the promotion of efficient and coordinated heat networks? Do respondents believe that better regulation could aid the development of the community heat industry?

Chapter 7

7.1 The Utility Regulator considers that the following are important when assessing policy proposals. Respondents are asked to score each of the proposals in chapter 7 of this document from 1-10 on the basis of their potential in relation to the following measures:

- 1 Potential Certainty of Outcome**
- 2 Potential Cost effectiveness**
- 3 Certainty for investors**
- 4 Potential to provide equity for consumers**
- 5 Potential to encourage innovation**
- 6 Good fit with other NI government departments**
- 7 Good fit with competitive energy markets**

The proposals are summarised as follows:

	1	2	3	4	5	6	7
a. Cross utility licence condition requiring licensees to have in place environmental policies.							
b. Cross utility requirement to report annually of sustainability activities and initiatives.							
c. Requirements on licence holders to provide customers with environmental information in relation to fuel mix in a uniform and easy to understand format, on all bills and promotional literature.							
d. Strategic investigation into use of “Smart Meters” as a mechanism for delivering better quality and timely information to customers.							
e. Work with energy licence holders to assess current tariff structures.							
f. Continue to work with partners and stakeholders to ensure renewable generation can be equitably accommodated on the electricity network.							

	1	2	3	4	5	6	7
g. Ensure price control processes take into consideration the effect of climate change on electricity and gas networks.							
h. Carry out a full strategic review of energy efficiency delivery mechanisms							
i. Develop a strategy in relation to gas promotion, which considers the potential benefits of common arrangements for the transmission and distribution of gas on the island of Ireland.							
j. Developing sustainability within the NIW price control							
k. Improving our own practices and procedures.							

7.2 Respondents are asked to identify what they consider to be the top three priorities from the above list of proposals and rank them in order of importance.

7.3 Respondents are asked to list any further proposals which they think should be considered.

1. Introduction

Outline of Consultation Document

- 1.1 The Utility Regulator's main goal in publishing this consultation document is to gather views on how best we can contribute better to sustainable development.
- 1.2 The document therefore:
 - describes what is meant by sustainable development in the existing NI policy context and how the concept applies in the utility sectors¹;
 - assesses how sustainable is the existing development of utilities in NI, and therefore the extent of outstanding sustainable development challenges;
 - describes some of the existing policy responses to sustainable development challenges;
 - considers the duties laid on the Utility Regulator that must determine our response to sustainable development challenges, and what possible responses are available to us to further our duties;
 - sets out a range of possible policy measures that we could take forward.
- 1.3 In each case we are seeking views on our understanding of the current situation and possible ways forward.

Consultation

- 1.4 The Utility Regulator wishes to conduct this review in as open a way as possible and to consider the views of all interested parties. If you wish to express a view on these initial proposals or any related matter, we would like to receive your response by **1 August 2008**.
- 1.5 For administrative ease respondents are asked to complete the pro forma for responses (included in the executive summary). If necessary,

¹ For the purposes of this paper, "utilities or utility services" means the sectors that we regulate: electricity, gas and water. "Energy" will be taken to mean networked electricity and gas unless specified to the contrary. "Carbon emissions" will be taken to mean carbon dioxide and other greenhouse gases.

additional and general responses may also be submitted. Respondents are asked to include an executive summary with general responses.

- 1.6 Responses should be addressed to:

**Sarah Brady
Social & Environmental Branch
Utility Regulator
Queens House
Queen Street
BELFAST
BT1 6ER**

email: sarah.brady@niaur.gov.uk

- 1.7 Individual respondents may ask for their responses, in whole or in part, not to be published, or that their identity should be withheld from public disclosure. Where either of these is the case, we will ask respondents to also supply us with the redacted version of the response that can be published.
- 1.8 As a public body and non-ministerial government department, we are bound by the Freedom of Information Act which came into full force and effect on 1 January 2005. According to the remit of the Freedom of information Act (FOIA), it is possible that certain recorded information contained in consultation responses can be put into the public domain. Hence, it is now possible that all responses made to consultations will be discoverable under FOIA – even if respondents asked the Utility Regulator to treat responses as ‘confidential’. It is therefore important that respondents note these developments and in particular, when marking responses as ‘confidential’ or asking the Utility Regulator to treat responses as confidential, should specify why they consider the information in question to be confidential.
- 1.9 If you have any queries concerning the issues raised in this document, please contact Sarah Brady on 028 9031 6631 (sarah.brady@niaur.gov.uk).

Section 75 of the Northern Ireland Act 1998

- 1.10 As a public authority, NIAUR has a number of obligations arising from Section 75 of the Northern Ireland Act 1998. These obligations concern the promotion of equality of opportunity between:

- persons of different religious belief, political opinion, racial group, age, marital status or sexual orientation;
- men and women generally;
- persons with disability and persons without; and
- persons with dependants and persons without.

NIAUR must also have regard to the promotion of good relations between persons of different religious belief, political opinion or racial groups.

- 1.11 We consider that all the above equality groups are equally affected by the issues raised and there should not be a disproportionate effect on any such group. The implementation of a sustainability strategy should have a positive impact for all groups within the population. In addition, in the development of all its policies the Utility Regulator has a statutory duty to have due regard to the needs of vulnerable customers.
- 1.12 Initial screening has been carried out on this consultation paper to identify any equality impacts. No significant impacts were found and therefore it has been decided that this document should not be subjected to an Equality Impact Assessment. Respondents are asked to comment on the impact of this paper with regard to equality of opportunity and good relations. The decision not to carry out an equality impact assessment will be reassessed following the analysis of the consultation responses.

Questions for Consultation

- 1.1 Respondents to the consultation are asked to comment on whether or not they think any of the proposals in this paper would impact on equality of opportunity or good relations for any of the Section 75 Groups.**

2. What is Sustainable Development?

2.1 The Northern Ireland Government's sustainability strategy "First Steps towards Sustainability" was published in August 2006 by the Office of the First and Deputy First Minister (OFMDFM)². We take this to be the current reference document for NI Government policy in this area.

2.2 That strategy cites a definition of sustainable development drawn from the 1987 Brundtland report³:

"Sustainable development is development which meets the needs of the present without compromising the ability for future generations to meet their own needs."

2.3 The UK government strategy, "Securing the Future"⁴ includes a framework goal for sustainable development that was also adopted by the devolved administration:

"The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations."

... That goal will be pursued in an integrated way through a sustainable, innovative and productive economy that delivers high levels of employment; and a just society that promotes social inclusion, sustainable communities and personal wellbeing. This will be done in ways that protect and enhance the physical and natural environment, and use resources and energy as efficiently as possible.

... There is a clear obligation on more prosperous nations both to put their own house in order, and to support other countries in the transition towards a more equitable and sustainable world."

2.4 In addition, Northern Ireland's "Programme for government 2008-2011"⁵ published 28 January 2008, enshrines protecting the environment and natural resources as a priority. It also sets the target for reducing greenhouse gas emissions at 25% below 1990 levels by 2025.

² OFMDFM 2006

³ World Commission 1987

⁴ UK Government 2005

⁵ Northern Ireland Executive 2008

Application to the Utility Sectors

What Does it Mean to Have Sustainable Utilities?

- 2.5 The challenge of meeting today's needs without compromising those of tomorrow is at the heart of utility policy.
- 2.6 The goal of ensuring that the needs of today are met cannot be taken for granted. Northern Ireland has historically had high energy costs, and water costs are also high, these factors impede economic competitiveness.
- 2.7 There is also a clear desire in our society to protect the most vulnerable from the full consequences of their lack of financial or other resources. Which is why we, as Regulator, seek, where possible, to find synergies between our duties towards the vulnerable and our duties towards the environment.
- 2.8 One of the needs of the present, as well as of the future, is for good quality and reliable services. It is important to ensure that infrastructure is adequate, and maintained in good condition, so as to provide reliable service. This is particularly important in less visible areas like underground assets and highly-secured networks with multiple redundant layers. In such areas, neglect might not have any visible short-term effects although it is storing up a large long-term repair bill.
- 2.9 The utility sectors are capital intensive and characterised by long asset lives. Because the long-term future is difficult to predict, managing risks inherent in long time-scales has a significant impact on policy.
- 2.10 Risk-management is particularly important in ensuring that utility companies (especially the network monopolies that are fundamental to the delivery of public service) are sustainably financed. The ownership of utilities in NI has changed over time, and we have a mixed model encompassing public ownership, mutualisation, public limited companies and privately owned companies. Ensuring companies are sustainably financed is a goal in all these scenarios, and that includes preventing excessively risky leverage in network monopolies where such risks would be borne by consumers.
- 2.11 In the energy sector, it is also important to realise that fuel diversity has an important contribution to make to sustainability. We should therefore aim for a balanced generation portfolio, and avoid becoming over-reliant on any particular fuel or technology.

- 2.12 It has been a general aim of reform in the utilities, in Northern Ireland and indeed around the world, to aim for cost-orientation. This is because a system where those who cause a cost pay for it creates correct incentives to optimise the use of resources. In general, under-priced resources tend over time to be over-used. In this sense economics is a useful tool to avoid waste of today's and tomorrow's resources, which is a sensible practical goal for Northern Ireland's society.
- 2.13 Part of this general goal of cost-orientation is to create inter-generational equity, or correct allocation of costs over time. Where the benefits of an asset will be enjoyed by future generations, it is appropriate that those generations contribute to the costs of the asset. This is the reason most utility assets are financed over many years. Equally, it is important to ensure that costs are not held down artificially in the short term, using up the inherited legacy of infrastructure, and creating a steep future investment requirement.

The Utilities are Necessary for the Achievement of OFMDFM's Strategy

- 2.14 The utilities have an important role to play in the Northern Ireland Government's sustainable development strategy.
- 2.15 The main strategic sustainability objectives set out in OFMDFM's strategy for which the Utility Regulator will have a primary input to are:
- to reduce greenhouse gas emissions, principally by promoting energy efficiency and the use of renewables;
 - to establish Northern Ireland as a world class exemplar in the development and use of renewable energy technology;
 - to plan and prepare for climate change impacts in Northern Ireland;
 - to protect and enhance the freshwater and marine environment.
- 2.16 The measures which OFMDFM plan to use to demonstrate how Northern Ireland is performing against the first two objectives above, are measures of greenhouse gas emissions and measures of the amount of renewable energy.
- 2.17 The measure for the freshwater marine environment is the quality of our rivers, while taking into consideration the impact on greenhouse gas emissions from employing more energy-intensive treatment techniques.

2.18 The utility sectors are also fundamentally important to other objectives such as: increasing the economic well being of people in Northern Ireland, protecting and enhancing biodiversity and bringing about behavioural change. This is because utility services are vital to economic well being and because how water and energy services are planned and paid for can have a large impact on biodiversity, behaviour and overall wellbeing.

3. Are Northern Ireland's Utilities Developing Sustainably?

3.1 This chapter sets out some evidence which suggests that Northern Ireland's utility sector may not currently be developing sustainably. This chapter therefore reviews the evidence on current performance on:

- ecological footprint;
- climate change and inter-generational equity;
- Northern Ireland's energy sector;
- Northern Ireland's water sector; and
- social and economic sustainability.

Ecological Footprint

3.2 We begin with Northern Ireland society as a whole. In order to demonstrate Northern Ireland's current position, a useful shorthand is to examine its ecological footprint. The use of the ecological footprint as an indicator of environmental sustainability has risen to prominence in recent years. It is a comparison of human demand against nature's ability to regenerate and can be used as a tool by policy makers who wish to examine to what extent our lifestyle would be replicable world wide.

3.3 Northern Ireland's ecological foot print is 5.63 global hectares (GHA) per capita, 17% of which relates to direct energy used in the home and by commercial and public services. This is higher than any other region in the UK. According to the "Northern Limits" report⁶, the 1999 "Earthshare" for Northern Ireland – that is, the average footprint available if the earth's resources were shared equally across its population and based on 1999 data - was 1.90 GHA. To bring Northern Ireland's ecological footprint to within the 1999 "Earthshare" would require a reduction of approximately 66%. The main reasons for Northern Ireland's high ecological foot print are given as: our reliance on imported oil and coal for energy and imported food, our over reliance on the car as a mode of transport and poor waste management.

⁶ Arena Network Northern Ireland 2004

- 3.4 Given our high ecological footprint, it is evident that our resource-demand cannot be replicated by others around the world. It seems unlikely that we will be able to require the population of the developing world to accept indefinitely a lower standard of living, even if we wanted to. Therefore, it would appear that we (and they) will need to achieve a good standard of living with a lower resource-demand. Our existing resource-demands are unsustainable.

Climate Change and Inter-Generational Equity

Climate Change

- 3.5 A substantial body of scientific evidence has built up which demonstrates that our reliance on CO₂ emitting fossil fuels is unsustainable. This is not only because world stocks of fossil fuels are finite but because CO₂ is the main greenhouse gas and the majority of CO₂ emissions come from the burning of fossil fuels. The build up of greenhouse gases in the earth's atmosphere is responsible for climate change.
- 3.6 We do not intend to review here the science of climate change, since this scientific basis is accepted by policy makers at the Northern Ireland, UK, EU and international levels. In the context of Northern Ireland it has been accepted by policy makers in the Programme for Government and by OFMDFM who have overall responsibility for the Northern Ireland sustainability strategy. As a non-policy making department, it is not our role to challenge this settled policy stance.
- 3.7 Significant evidence is already available about the impact of climate change in Northern Ireland. A report published jointly by the Environment & Heritage Service, DOE, UK Climate Impacts and Scotland and Northern Ireland Forum for Environmental Research (SNIFFER)⁷, stated that: "the climate of Northern Ireland is already changing". The effects of climate change in Northern Ireland are expected to accelerate over the coming century, according to the report:
- average temperatures may rise by 3°C or more;
 - summer rain fall may decrease by up to 50%;
 - winters may be 25% wetter;
 - sea levels may rise.

⁷ SNIFFER UKCC12 2007

- 3.8 Further information about the impact on various aspects of life here, and notably about the impact on the utility sectors, is set out in Appendix 1. These impacts will be disruptive of settled patterns of life and work.
- 3.9 The most vulnerable members of society are likely to be disproportionately affected by climate change and it is of particular importance for these groups that we set out to adapt and protect against climate change. Figure 3.1 below lists vulnerable groups as set out in the Utility Regulator’s statutory duties and states why they may be disproportionately affected by climate change.

Fig 3.1 Vulnerable Groups as in Statutory Duties

Customers who are disabled, chronically sick or of pensionable age.	These customers are likely be disproportionately affected by the physical and mental health risks associated with flooding or excess heat in summer.
Customers on low incomes	These customers are less likely to be able to afford the increased insurance premiums associated with increased flood risk.
Customers living in Rural Areas	These customers are likely to be disproportionately affected by the adverse effects climate change may have on our agriculture. For example problems with field drainage and crop yields could affect incomes in rural communities.

Stern Review

- 3.10 The Stern Review on the Economics of Climate Change⁸, commissioned by the Chancellor of the Exchequer in July 2005, was set up to understand more comprehensively the nature of the economic challenges for climate change and how they can be met, both in the UK and globally. The review stated that increasing concentrations of greenhouse gases in the atmosphere will lead to a likely increase in extreme weather events and other impacts of increasing magnitude and severity. If no action is taken to reduce greenhouse gas emissions, global temperatures could rise by over 2⁰C from the pre-industrial levels by 2035, and greenhouse gas concentrations by the end of the century could result in a 50% chance that the temperature rise exceeds 5⁰C during the following decades. All countries would be affected by this change in temperature, with developing countries hit hardest.

⁸ Stern 2006

- 3.11 The Review concluded that the benefits of bold and early international action far outweigh the economic cost of not acting. The Review estimated that the cost of not taking action could be equivalent to losing between 5% and 20% of annual global consumption whereas the cost of taking action can be limited to around 1% of annual global GDP if the world pursues the optimum policies.
- 3.12 The evidence and analysis set out in the Stern Review underlines the benefit to society and consumers of early action. The longer we delay, the more abatement measures we will have to take in the future if stabilisation levels of CO₂ are not to be exceeded. The more abatement measures that are required in future, the greater these abatement costs will be, as low-cost methods will not be enough and high-cost options will be required as well. Whilst abatement technology is likely to improve, this may not be sufficient to defray the amount of abatement that will be necessary. Furthermore, the sooner the stabilisation levels are reached, the less technologies will have improved. Hence the cost of taking action will increase, the longer we delay it.

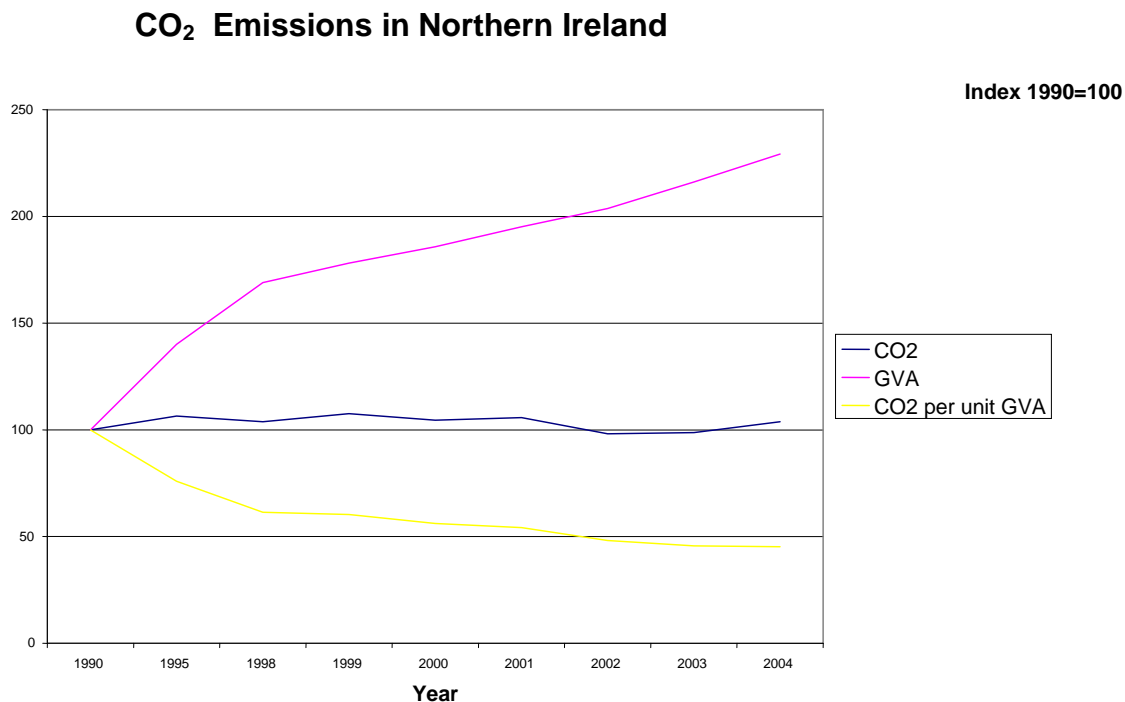
Inter-Generational Equity

- 3.13 As set out in the previous chapter, we take as a starting point that the costs of an activity should generally be borne by the party that generates the costs even if the costs of that activity don't arise until sometime in the future.
- 3.14 Two sets of costs are relevant in the context of global warming: the costs of adapting to climate change; and the costs of mitigating climate change. Both sets of costs are already being incurred and will increase over time. This is an argument for ensuring that these costs should be shared between existing consumers and future consumers.
- 3.15 The targets currently established by government are for delivery between 2010 and 2025, and may not themselves be sufficient to deliver an economy that is indefinitely sustainable. They may prove interim in character, with further targets necessary later. The current generation of consumers bears the costs of meeting these targets and the (perhaps larger) costs of achieving full sustainability will be met by a later generation.
- 3.16 This is important as Stern's assessment is that early action can reduce the total quantum of cost. However, as Regulator we do not have a role in setting the targets, our role is in helping to meet them.

Northern Ireland's Energy Sector

- 3.17 We now turn to apply this analysis more specifically to Northern Ireland and the energy sector.
- 3.18 As Figure 3.2 shows, 2004 levels of CO₂ and greenhouse gas emissions in Northern Ireland were roughly unchanged since 1990 (actually 3.6% and 0.7%, respectively, above 1990 levels). This is despite a substantial improvement in the carbon efficiency of our economy: in 2004 CO₂ emissions per unit of Gross Value Added (GVA) were 54.7% below 1990 levels.

Fig 3.2

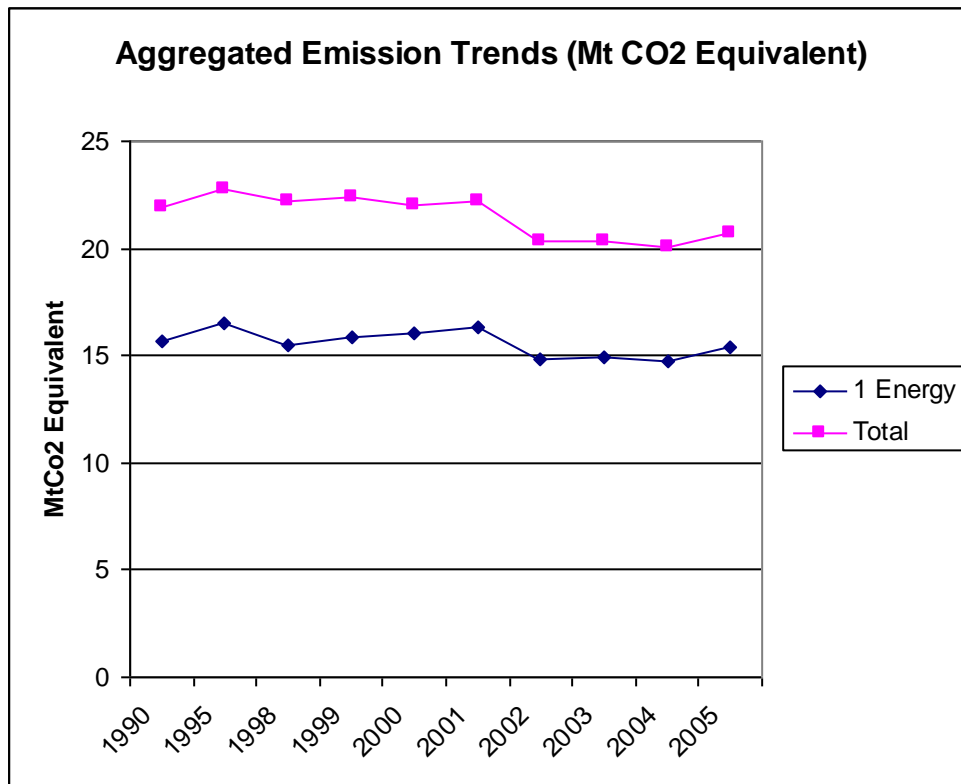


Source: National Atmospheric Emissions Inventory

- 3.19 Given the contribution of the energy sector to overall carbon emissions, it is important to assess critically whether this sector is developing sustainably.
- 3.20 Figure 3.3 below gives more detail on the changes in greenhouse gas emissions in Northern Ireland since 1990 (illustrated in Mt CO₂ equivalent),

with energy's share shown as a separate line⁹. The fall in greenhouse gas emissions in 1996 corresponds with the arrival of natural gas to Northern Ireland and the conversion of Ballylumford powerstation to natural gas firing. The 2001 fall corresponds with the conversion of Ballylumford to a highly efficient Combined Cycle Gas Turbine (CCGT). We expect that when the 2006 figures are available the benefit of the new CCGT at Coolkeeragh powerstation will become apparent. However there is no further scope for Northern Ireland to benefit from large conversions to CCGT. This illustrates that Northern Ireland will now need to find new and potentially more difficult ways to meet government targets.

Fig 3.3



Source: AEA Greenhouse Gas Inventories
(Aggregated Emissions Trends per Source Category for Northern Ireland)

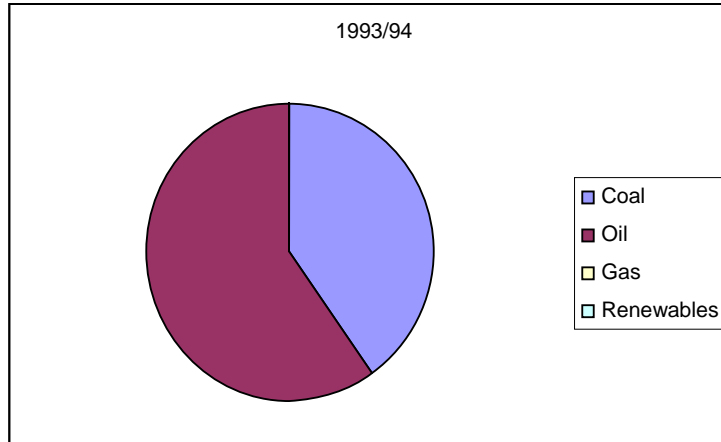
Fuel Mix

3.21 Figures 3.4 and 3.5 below illustrate how the Northern Ireland electricity generation fuel mix of coal, oil, gas and renewables has changed since 1993/94.

⁹Baggot et al. 2006

Fig 3.4

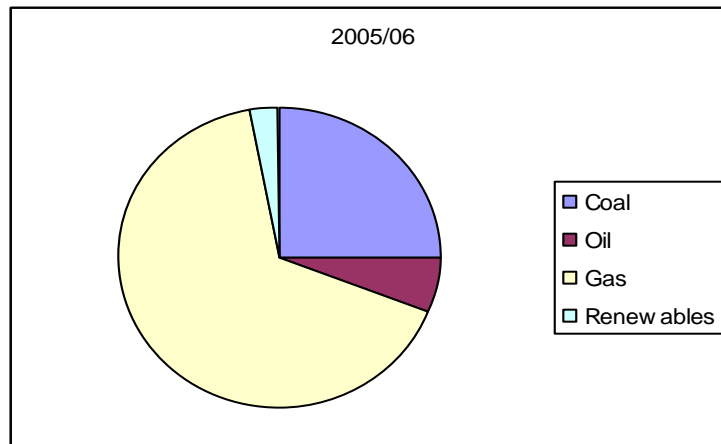
NI Electricity Generation Fuel Mix 1993/4



Source NIE Energy (Power Procurement Business Data)

Fig 3.5

NI Electricity Generation Fuel Mix 2005/6

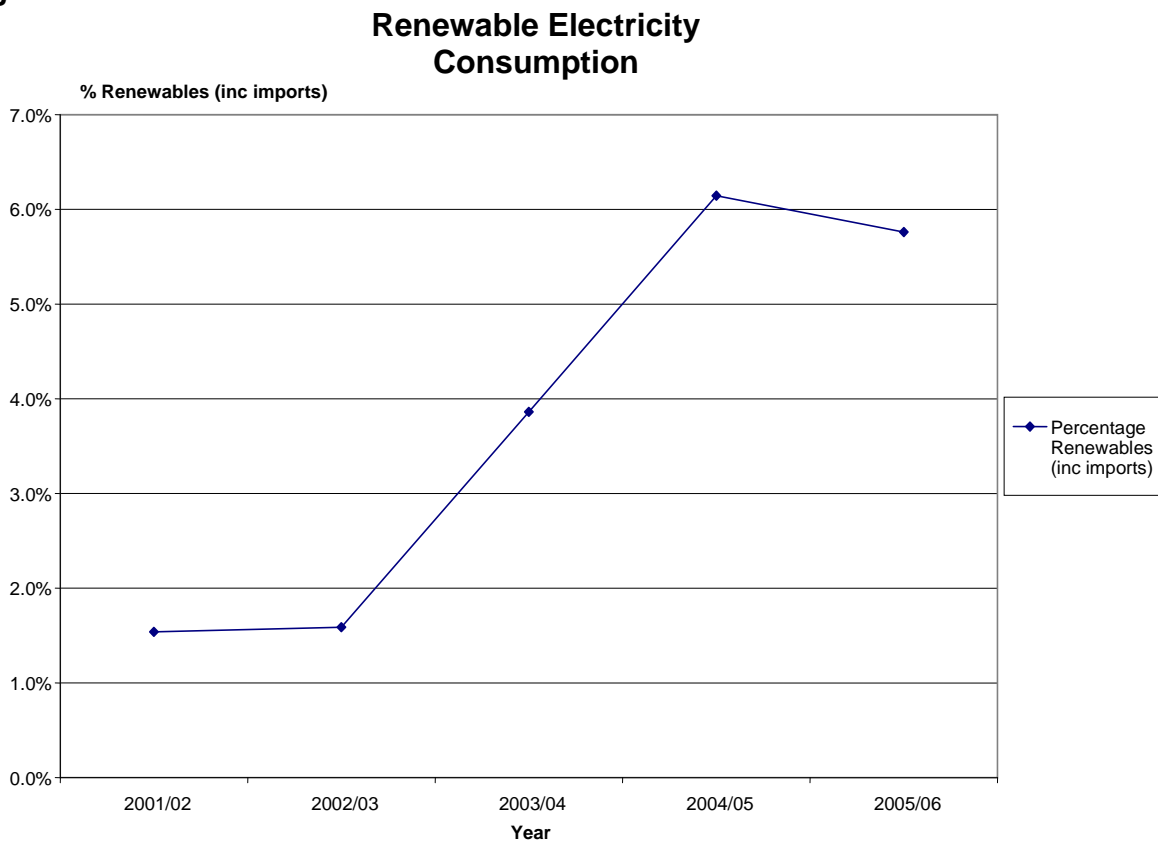


Source: NIE Energy (Power Procurement Business Data)

3.22 As can be viewed above, in 1993/94 the Northern Ireland generation mix consisted entirely of coal and oil. By 2005/06, the proportionate mix of fuels has changed with an increase in gas and renewables, and a decrease in oil and coal. The commissioning of CCGT generation in Northern Ireland has led to this increase in gas and decrease in oil and coal fired generation in Northern Ireland.

- 3.23 Growth in renewable generation has also helped to displace oil and coal as generation fuels.
- 3.24 Figures 3.4 and 3.5 illustrate how the proportion of lower carbon energy has increased in recent years. Figure 3.6 clearly illustrates the renewables contribution over time. Currently 5.6% of energy supplied in Northern Ireland is generated from renewables. As an indication of the make up of these renewable sources of energy, the various categories are illustrated in Figure 3.7 below.

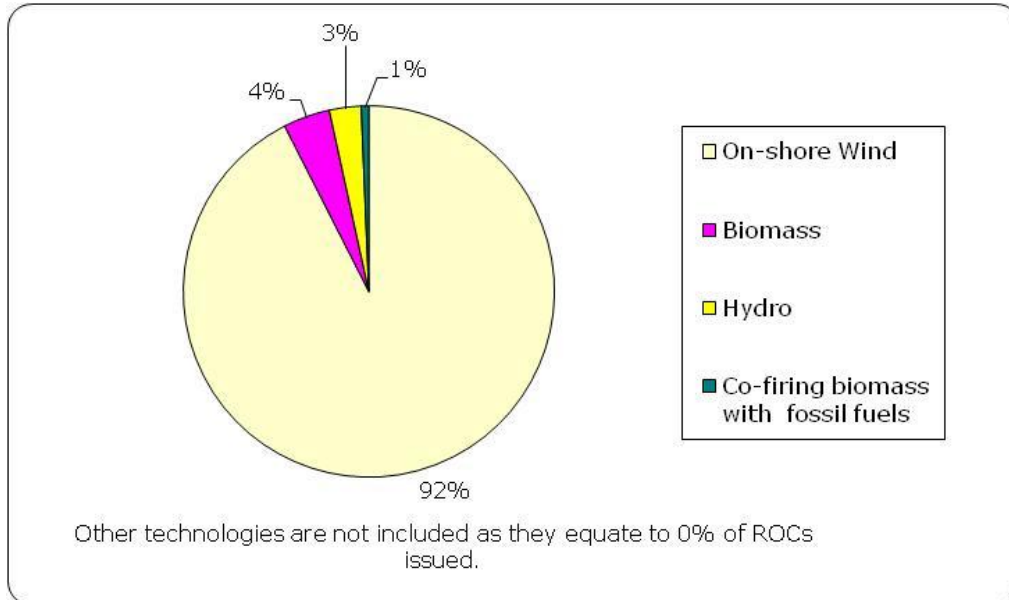
Fig 3.6



Source: DETI

Fig 3.7

Renewable Energy Breakdown



Source: Ofgem

(figures based on Renewables Obligation Certificates issued in 2008)

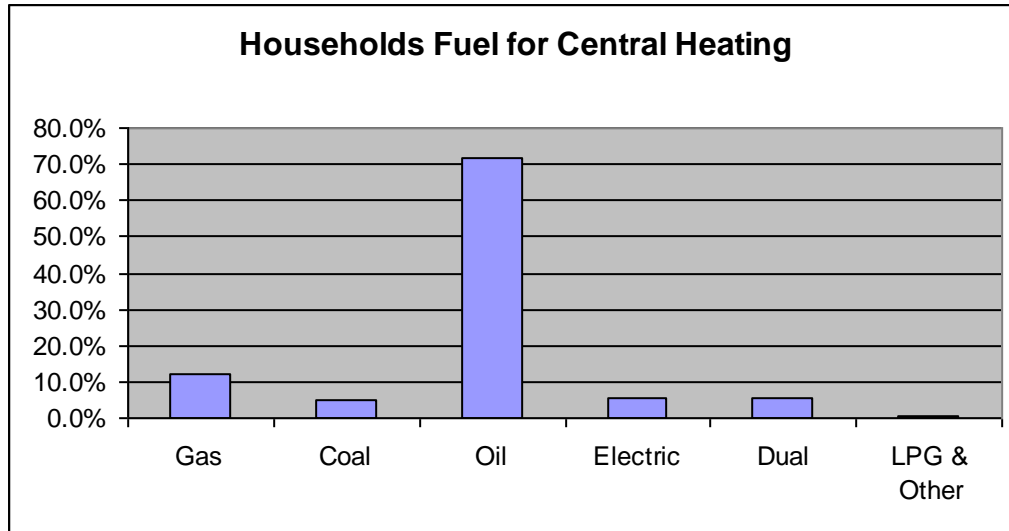
Carbon Emissions

- 3.25 Because oil and coal produce substantially more CO₂ per MWh than gas, the shifts in the generation mix, mentioned in the previous section, have reduced CO₂ emissions from the Northern Ireland electricity generation sector, this is illustrated in Figure 3.3 above.
- 3.26 The expansion of the Northern Ireland natural gas industry has played a key role in the energy sector's CO₂ reductions through fuelling CCGT generation. Currently, around 80% of Northern Ireland's natural gas requirements are used for this purpose.
- 3.27 The remaining 20% of natural gas supply meets end-use demand by customers, both for industrial & commercial use and households. The switch to natural gas has been mainly made away from fuels such as oil and coal. Natural gas produces around 25% less CO₂ than oil and around 45% less than coal. The Northern Ireland Energy Agency (NIEA) estimates that every thousand households which convert from oil to natural gas represent a potential reduction of 1000 tonnes of CO₂ per annum and that households switching from coal to gas make an even bigger contribution¹⁰. Over 110,000 customers have converted to natural gas, however this equates to only 44% of customers to whom gas is

¹⁰ NIEA 2007

available and only 12% of total households in Northern Ireland. Figure 3.8¹¹ below, illustrates the fuel used for central heating by households in Northern Ireland and shows that oil is the predominate fuel with 72% of households in Northern Ireland using oil for central heating. While significant reductions in CO₂ have been made much can still be done.

Fig 3.8



Source: HECA

3.28 The promotion of energy efficiency is also a vital tool in CO₂ abatement. Energy efficiency initiatives reduce the overall demand for both electricity and natural gas and therefore reduce CO₂ emissions from any non renewable energy source. Substantial effort is under way to promote energy efficiency. The existing Energy Efficiency Levy Scheme, set up under NIE's licence, achieves energy savings of around 430 GWh (NPV total life time savings of measures installed) each year. The Carbon Trust also works towards reducing CO₂ by a combination of renewable technology and energy efficiency, however the Carbon Trust report their results in terms of tonnes of carbon saved rather than GWh of energy saved.

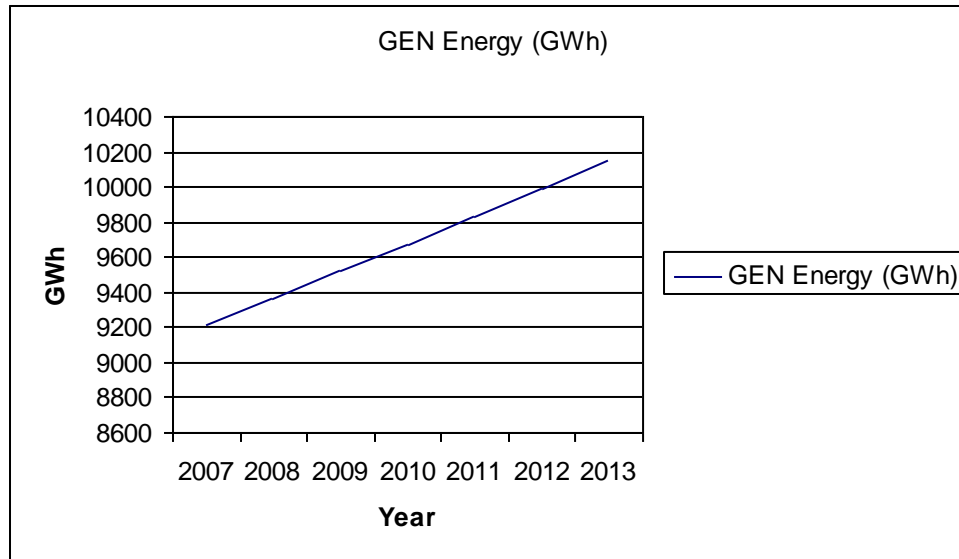
3.29 The promotion of energy efficiency is particularly important given the underlying pressures of a growth economy. Figure 3.9 illustrates SONI's (System Operator Northern Ireland) generation energy forecast¹². It is clear from this graph that although energy efficiency might be reducing the pace of demand growth, it is not reducing demand. SONI expect an

¹¹ HECA 2006

¹² SONI 2006

average increase in demand of 156GWh per year between 2007 and 2013.

Fig 3.9 **Generation Energy Forecast**



Source: SONI

Price Elasticity

- 3.30 Energy efficiency – and other actions that might reduce energy demand or the growth of energy demand – can be analysed as a response to price.
- 3.31 In order to assess the impact of price signals over time in Northern Ireland, the Utility Regulator commissioned the University of Ulster to conduct economic analysis into the elasticity of demand for energy in Northern Ireland¹³. This is the responsiveness, in Northern Ireland, of the demand for energy to changes in price and income. This is an important piece of research as it set out the implications of using demand side levers aimed at reducing total demand for energy. Economic theory suggests that as prices rise the quantity of energy demanded should fall (holding all other factors constant) and that as incomes rise the overall quantity of energy demanded should rise.
- 3.32 Current government policy is aimed at holding energy prices down (where possible) and promoting growth. At the same time we are introducing

¹³ Smyth & Bailey 2008

- targets for improvements in energy efficiency and increased up take of renewable energy.
- 3.33 The University of Ulster analysis finds that overall price elasticities are relatively low: a 10% rise in fuel prices will lead to a 2.1% fall in energy demand in the short run and a 1.8% fall in the long run. Some sectors are much more responsive to price changes. In the case of the non domestic sector demand for electricity, a 10% rise in prices will lead to a 3.3% fall in demand in the short run and a 2.9% fall in the long run.
- 3.34 The research also suggested that a 10% rise in real income will lead to a 2.7% or 2.8% increase in electricity demanded. This suggests that price effects and income effects are of a similar order of magnitude and that rising levels of prosperity in Northern Ireland need not lead to serious problems with CO₂ emissions. The report's authors concluded that (all other things being equal and assuming a 1% rise in real GDP) in Northern Ireland, the level of annual real price change to reduce total electricity demanded by 25% by 2025 is in the order of 6% per annum.
- 3.35 The research highlights the important fact that policies on energy prices and growth need to be joined up with policies and targets for reductions in greenhouse gases, energy efficiency and increased uptake of renewable energy.
- 3.36 Limitations with the research include the fact that customer groups are not homogenous, that is we might expect to find different levels of elasticity among the more affluent domestic customers and those in fuel poverty. The report was able to look at domestic and non domestic customers as separate groups but there are insufficient statistics available to allow the researchers to break the customer groups into further subdivisions. Also due to limitations in the available data authors of the report were unable to say categorically if the effect (of prices on total energy demanded) in the non domestic sector is due to businesses becoming more energy efficient in response to price changes or is due to businesses moving to regions with lower cost energy in response to price changes.

Security of Supply

- 3.37 Security of energy supply is crucial for the economy and society. This is why the Utility Regulator has a duty to have regard for security and diversity of supply. With the exception of indigenous renewable energy, Northern Ireland relies entirely on imports of fossil fuels. The prices of these imports are often affected by world political, economic or natural events, which are outside our control. The promotion of energy efficiency improves security of supply as it reduces overall energy consumption and therefore the overall need to import fuel. The promotion of indigenous

renewable energy helps to broaden the supply base, reducing the need for imported coal and oil, and improving security and diversity of supply. At the same time it helps to lower carbon emissions.

- 3.38 As we can see from Figures 3.4 and 3.5, the introduction of gas fired generation has led to an improvement in the diversity of the Northern Ireland fuel mix. However, this does not necessarily aid overall security of supply, as Northern Ireland is still almost totally reliant on imports of fuel.
- 3.39 This high reliance on fuel imports (except for the current levels of indigenous renewables) will raise increasing concerns over future security, given that the world faces depleting available resources and rising demand from developing countries. Along with the depletion of natural resources, the supply of fossil fuels on global markets is also threatened by increasing reliance on geopolitically unstable regions.
- 3.40 Despite the security benefit from increased indigenous renewables, the increasing levels of renewable energy do pose some security of supply issues and other system issues. In Northern Ireland the transmission network was originally designed to accommodate dispatchable generation plant and the accommodation of variable embedded generation can present particular problems. This is particularly important in the case of wind (which makes up a high proportion of Northern Ireland's renewables). By its nature, wind energy is variable and difficult to predict. This presents a challenge for system operators given that electricity cannot be economically stored. In addition, the wind resource in Northern Ireland tends to be located in more remote areas and to the west of the province where there are also a number of Areas of Outstanding Natural Beauty. The particular system issues posed by renewable generators can be broken down into three categories:
- a. System Security Management**
- 3.41 Due to its variable and uncertain nature, wind can be difficult to manage at high levels of penetration. This means there is a need to maintain available traditional generation, held in readiness to compensate for any sudden change in wind output. Other techniques can also be used to manage the variability of wind including restricting the output of wind onto the system and making better use of neighbouring interconnected systems.
- 3.42 The Utility Regulator considers that the operation of the Single Electricity Market (SEM) in Ireland, should improve security and diversity of supply because the larger market means generation capacity both north and south of the Border can be called upon when needed. This ability will be improved further by the building of a second interconnector between Northern Ireland and the Republic of Ireland (ROI).

b. Network Reinforcement

3.43 Much of Northern Ireland's wind resource is to the west of the Province, where the grid is less strong and was designed mainly to deliver power to domestic customers. This creates a problem for the accommodation of renewable generation. In addition, grid reinforcement plans would need to consider the impact network reinforcement could have on the visual amenity in affected areas. The Utility Regulator will continue to work with NIE to examine the need for network reinforcement required to facilitate renewables.

c. Connection Processes

- 3.44 The main issues in relation to the connection process are when generators will be permitted to access the market through being given a connection and how much they are charged for such access.
- 3.45 In Northern Ireland, Northern Ireland Electricity (NIE) recently consulted with wind farm developers and, as a result, introduced a system whereby developers require planning approval as a pre condition to receiving a connection offer. The advantage of this system is that it provides a degree of certainty in relation to connection timescales after a connection is requested. However, there remains a problem in relation to wind farm developers not being able to commit at the same time so as to share the cost of connection infrastructure. Other arrangements have been introduced to mitigate these problems which require customers to bear the shared connection costs until timing issues are worked out.
- 3.46 In ROI there is a "Gate Processing" approach in which applications are stacked until it can be determined how groups should be connected as "clusters". The advantage is that the infrastructure is easier to plan, the disadvantage is that there could be difficulties with timing and transparency as to the order of processing.
- 3.47 In short, we can say of the NI energy sector:
- the displacement of oil and coal by gas as the main fuel for electricity generation can no longer be relied upon to deliver reductions in carbon emissions;
 - renewables have contributed to displacing carbon emissions from the generation sector, and have the potential to improve our fuel security. However, a number of issues remain to be resolved to ensure the continued growth of this sector. Some of these issues, if not resolved, would create some threat to supply security;

- energy efficiency has been vital to de-couple carbon emissions from economic growth. However, efficiency is not improving at a rate sufficient to hold demand steady, let alone reduce it.

Northern Ireland's Water Sector

- 3.48 Water industry services are one of the key foundations of normal life for society and it is within everyone's interest to see that the water environment is protected to ensure public health, maintain a healthy, natural ecology and provide recreational opportunities. These societal aspirations are fundamental to the regulations governing the UK water industry (many of which derive from EU legislation).
- 3.49 The water industry's materials and services are both affected by and have a direct effect on the climate and the environment. Water treatment and pumping, and the treatment of waste water, all consume energy. In fact, increasingly stringent environmental standards have required Northern Ireland Water (NIW) to implement ever more energy consuming treatment processes in recent years. In reviewing options for the way forward, it is important to ensure that an appropriate balance is struck between protecting the local environment and minimising adverse global impacts through increased CO₂ emissions.
- 3.50 Just less than 1% of UK CO₂ emissions (5M tonnes / annum and rising) are from the water industry. This results from energy used in water abstraction (7,900 GWh in 06/07), treatment and supply of water (39%), wastewater services (collection, treatment and disposal, 56%) and administration and transport (5%). This figure has the potential to grow due to increases in population, per capita consumption and measures required to implement higher treatment standards. Water UK has given a voluntary commitment that UK water companies will seek to ensure that at least 20% of all energy used by the UK water industry comes from renewable sources by 2020.
- 3.51 Use of water also contributes an additional 35M tonnes CO₂ / annum indirectly through water heating for washing, bathing and cooking (excluding central heating). Measures to reduce the quantity of hot water used in homes can have a disproportionate benefit in mitigating carbon emissions, compared to measures that directly reduce the emissions of NIW itself.

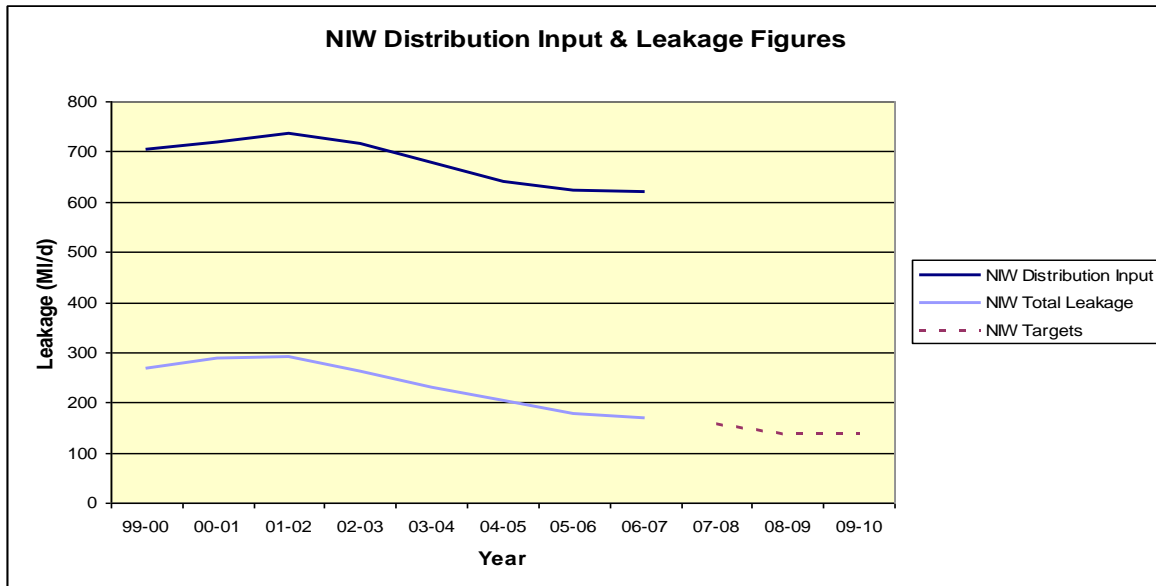
Water Resources

- 3.52 Although NI does not suffer the degree of water stress experienced in the South of England, it is evident that the weather is slowly changing

resulting in wetter winters and drier summers, just as climate change models are predicting. These two changes create difficulties for the water network requiring a degree of resilience to be developed to ensure adequate storage and network transfer capacity to meet demand during drier periods.

- 3.53 Water demand in GB is also rising due to increases in domestic per capita consumption generally reflecting an increasingly affluent society. This results from the installation of more water consumption appliances, greater volumes of water being used by power showers and water used for watering gardens during dry spells. Also, reducing household size has an impact with the per capita consumption of a single occupancy householder being approximately 40% greater than in a 2 person house. Comparable figures for Northern Ireland show a relatively stable per capita consumption rate of approximately 145 litres/head/day over the last 5 years.
- 3.54 The quality of water available from reservoirs is also expected to be adversely affected by higher temperatures.
- 3.55 As Figure 3.10 illustrates, the total water into distribution in Northern Ireland decreased from 735 MI in 2001/02 to 619 MI in 2006/07, and the leakage dropped from 291 MI in 2001/02 to 169 MI in 2006/07.

Fig 3.10



Source:NIW

- 3.56 The industry will need to be forward looking to control pressure on consumption and leakage and NIW's next Water Resources Management Plan will provide more robust data on this issue, as well as proposing approaches to manage it. It is expected that measures such as implementing more aggressive leakage management and policies to help manage customer consumption will form part of a coherent strategy to minimise total demand.
- 3.57 Ofwat, the regulator for the water industry in England and Wales, has been undertaking a review of leakage since 2006 addressing variations in per capita consumption; inclusion of externalities in the 'economic level of leakage' (ELL) calculation¹⁴; and consideration of alternatives to the current use of ELL as a means for setting targets (including the use of 'frontier' companies). Incidentally, the emissions associated with the water lost through leakage in England and Wales are equivalent to around 10% of the industry's total greenhouse gas emissions.
- 3.58 The Utility Regulator will be considering the results of this work, since at the next pricing review for NIW we will have an opportunity to review NIW's existing ELL in support of better sustainability.
- 3.59 The potential roll out of domestic metering in Northern Ireland would also impact on demand with industry generally estimating a reduction of approximately 10% in household consumption after a meter is fitted.

Drainage Systems

- 3.60 The anticipated changes to rainfall patterns will also impact on NIW's sewerage system as a considerable volume of storm water is carried by the combined elements of its sewerage network. The network has to deal with greater volumes of storm water due to climate change, increases in impermeable surfacing due to property development and a popular trend to convert soft landscaping to hard landscaping. These changes, coupled with the more unpredictable nature of storm events, places a load on parts of the sewerage network well beyond what it was designed to accommodate. This can result in unacceptable discharges from the network through storm overflows, bypasses to pumping stations and treatment works, and even internal sewer flooding. It also contributes to NIW's energy consumption (and consequent carbon generation) due to associated pumping and treatment etc.
- 3.61 Addressing this issue is not straightforward as solutions are likely to involve several different bodies, subject to differing regulatory frameworks. However, there are solutions which NIW and developers may be able to

¹⁴ The Economic Level of Leakage is the point at which the costs to reduce leakage are outweighed by resultant cost savings.

implement. Surface water drainage methods that take account of quantity, quality and amenity issues are collectively referred to as Sustainable Drainage Systems (SUDS). These systems are more sustainable than conventional drainage methods because they:

- manage runoff flow rates, reducing the impact of urbanisation on flooding;
- protect or enhance water quality;
- are sympathetic to the environmental setting and the needs of the local community;
- provide a habitat for wildlife in urban watercourses;
- encourage natural groundwater recharge (where appropriate).

3.62 They do this by:

- dealing with runoff close to where the rain falls;
- managing potential pollution at its source now and in the future;
- protecting water resources from point pollution (such as accidental spills) and diffuse sources.

3.63 They may also allow new development in areas where existing sewerage systems are close to full capacity, thereby enabling development within existing urban areas. The potential to adopt this approach will be explored more fully as the Utility Regulator develops guidance for future price reviews.

Quality of the Water Environment

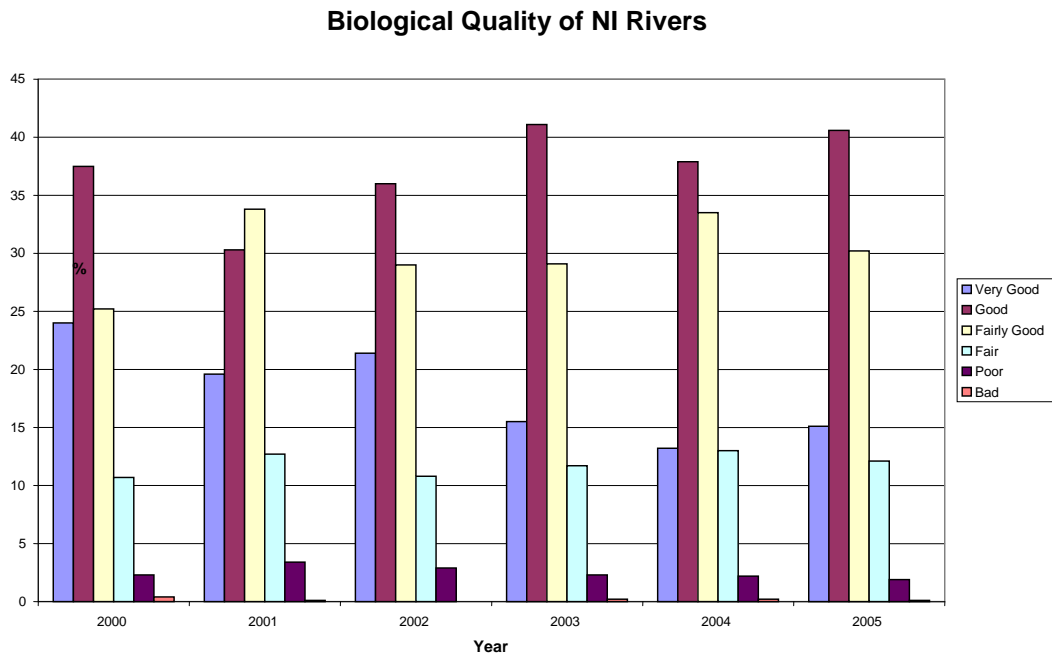
3.64 The proportion of rivers of good or very good biological quality in NI, as shown in Figure 3.11, has dropped from 62% in 2000 to 56% in 2005. In 2005, 56% of rivers in NI were of good or very good biological quality compared with 71% in England and 80% in Wales. Rivers in NI fare better in terms of chemical quality with 63% of rivers in good chemical quality in 2003-2005 compared with 56% in 2000-2002.

3.65 The EU Water Framework Directive¹⁵ will be a key driver for the industry in coming years. This sets standards using the concept of ecological quality, which captures most aspects covered by previous policies. The Directive

¹⁵ European Commission Directive 2006/32/EC

also brings into play all those who interact with the water environment, whether by abstracting from it or disposing into it, not just water companies. It requires all inland and coastal waters to reach at least 'good' status by 2015. NIW will have a part to play in achieving this ambitious target.

Fig 3.11



Source: Environment and Heritage Service

3.66 Good progress has been made in reducing the volumes of water used in Northern Ireland, and addressing leakage. Nevertheless, the Northern Ireland water industry faces serious challenges in order to achieve sustainability:

- the quality of the water environment is poor compared to the rest of the UK and in some ways is declining. The Water Framework directive will pose major challenges to achieve good ecological status;
- the industry is a major user of energy and must improve its energy efficiency;
- climate change will require significant changes to drainage systems and pose challenges for water resource management.

Social and Economic Sustainability

3.67 Price and quality of service are the key dimensions we consider in assessing the consumer interest. The Utility Regulator aims to achieve cost reflective prices and the best possible quality-price trade-off, while allowing companies to finance their activities. We do this through the mechanisms of regulation of networks and promotion of competitive markets. Both of these mechanisms operate to exert downward pressure on prices and upward pressure on quality of service.

Prices

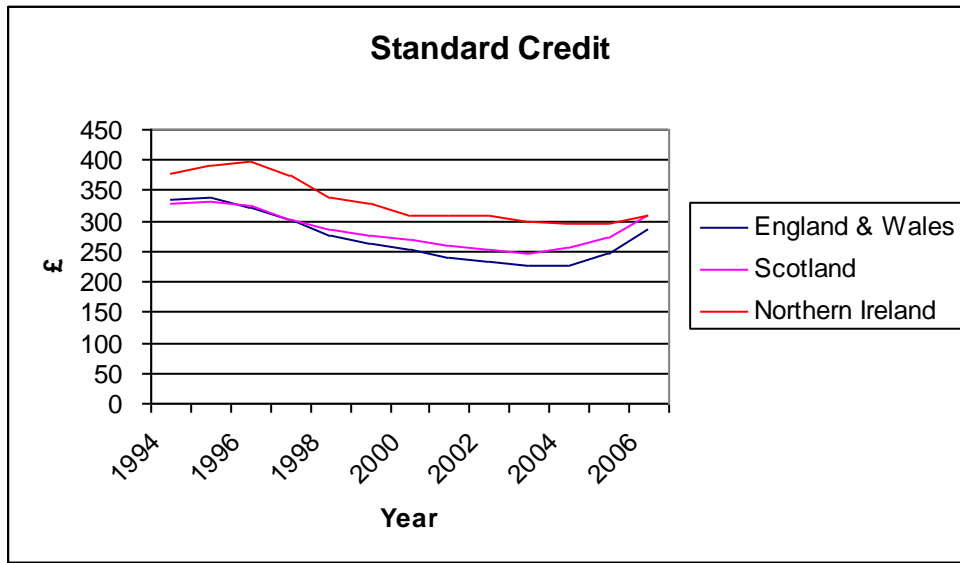
3.68 Price is a particular concern to energy consumers in Northern Ireland due to the high levels of fuel poverty. Historically prices have been higher in Northern Ireland than in the rest of the UK.

3.69 Figures 3.12, 3.13, and 3.14¹⁶ below show average standard UK domestic electricity bills¹⁷ and illustrates for electricity how Northern Ireland has not only lowered the price of electricity since 1994, but has controlled the growth in the real average domestic bills at a lower rate than other regions in the UK in more recent years. Northern Ireland electricity bills are now broadly comparable with other regions in the UK, and in some cases even lower. The tables show that Northern Ireland is now the cheapest region for prepayment customers and cheaper than Scotland for standard credit and direct debit customers. The Utility Regulator is particularly pleased with Northern Ireland's performance in relation to prepayment customers, as many of our most vulnerable customers choose the prepayment option.

¹⁶ All figures in real terms.

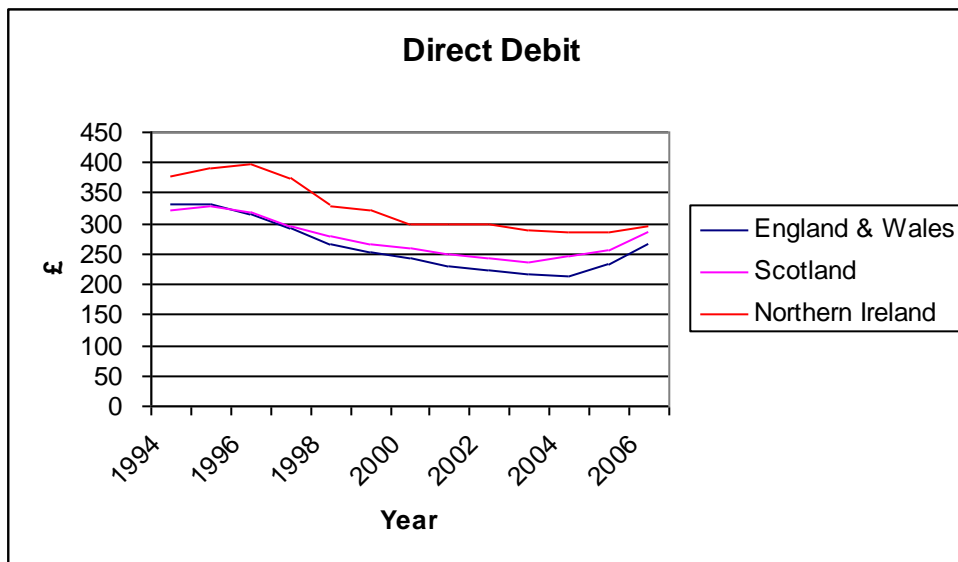
¹⁷ DBERR Quarterly Energy Prices - Electricity

Fig 3.12 Average Domestic Electricity Bills Paid by Standard Credit



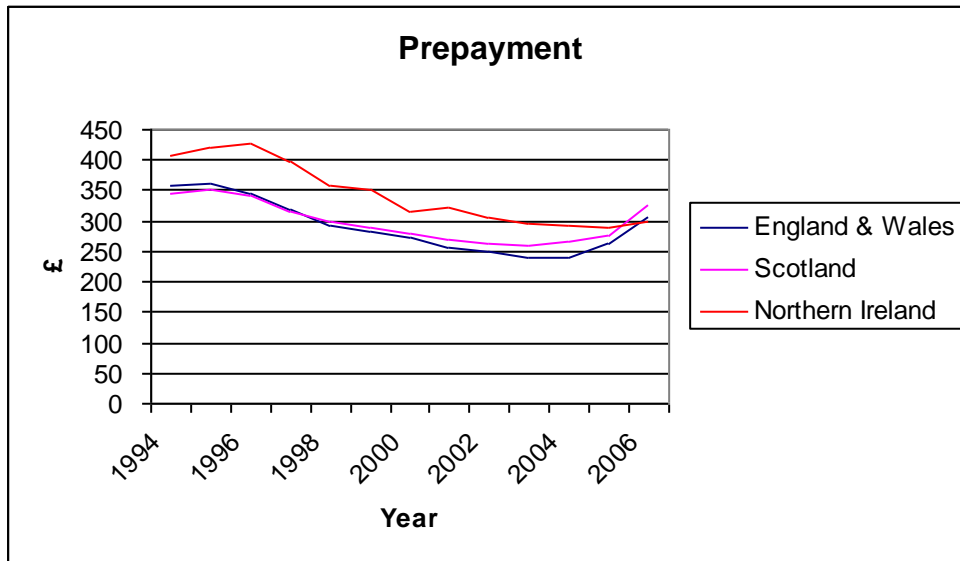
Source: DTI Energy Trends

Fig 3.13 Average Domestic Electricity Bills Paid by Direct Debit



Source: DTI Energy Trends

Fig 3.14 Average Domestic Electricity Bills Paid by Prepayment



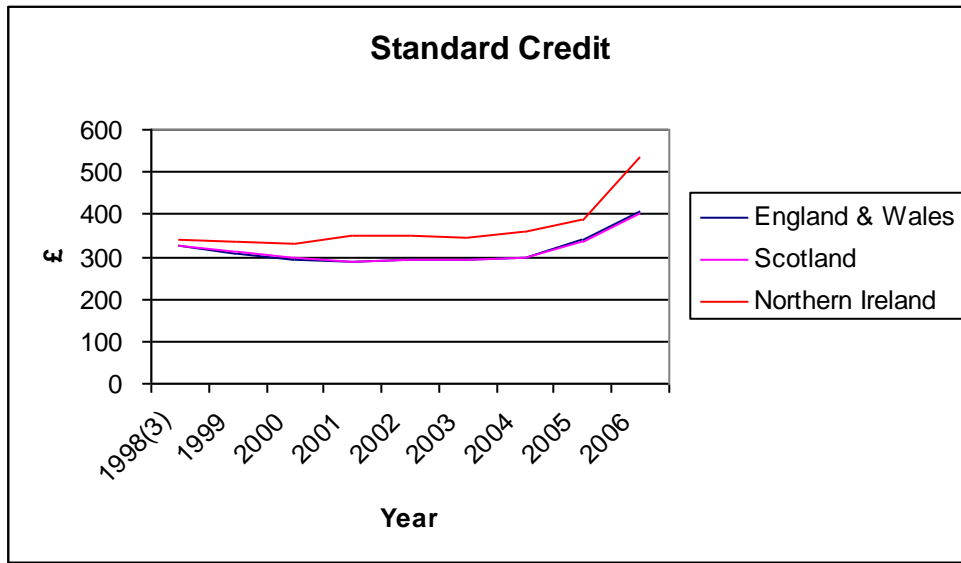
Source: DTI Energy Trends

3.70 Figures 3.15, 3.16, and 3.17¹⁸ below show average standard UK domestic gas bills¹⁹, these graphs illustrate the fact that for the same amount of energy, Northern Ireland Gas customers will face higher bills each year. These higher prices reflect the fact that Northern Ireland gas customers must pay the extra cost of transporting gas here. In addition, in Great Britain, where gas is available, around 90% of customers are connected to the network. In Northern Ireland the connection rate is closer to 1 in 3, therefore there are fewer customers supporting the cost of the network. However, it should be noted that the figures are based on a customer consuming 18000 kWh per year. In Northern Ireland customers tend to benefit from the fact that their domestic heating systems are newer and likely to be more efficient. Therefore, although annual bills are higher when comparing the same amount of energy, Northern Ireland customers tend to use less energy. The Utility Regulator continues to work with Phoenix and firmus energy through price controls and other initiatives to ensure that gas customers receive the best possible value for money.

¹⁸ All figures in real terms.

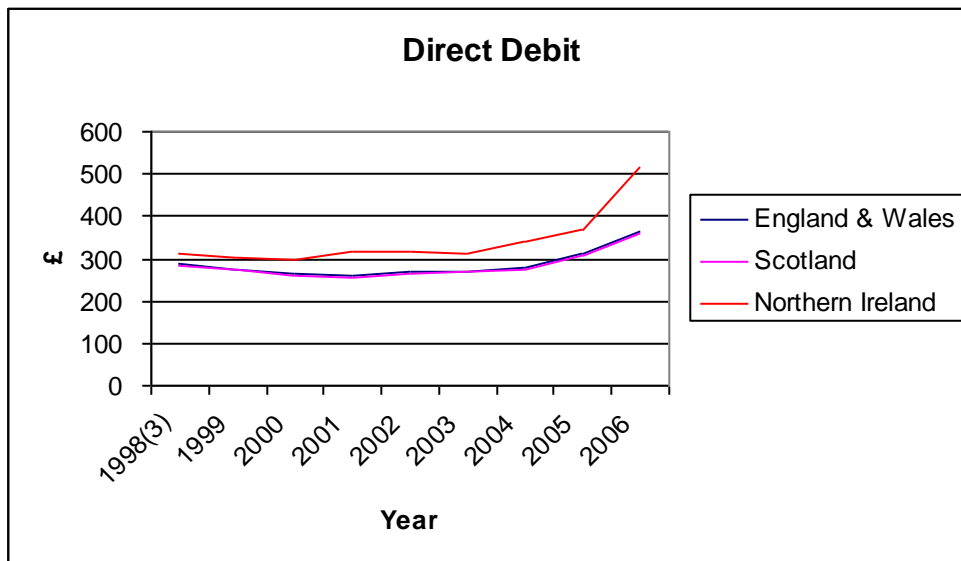
¹⁹ DBERR Quarterly Energy Prices

Fig 3.15 Average Domestic Gas Bills Paid by Standard Credit



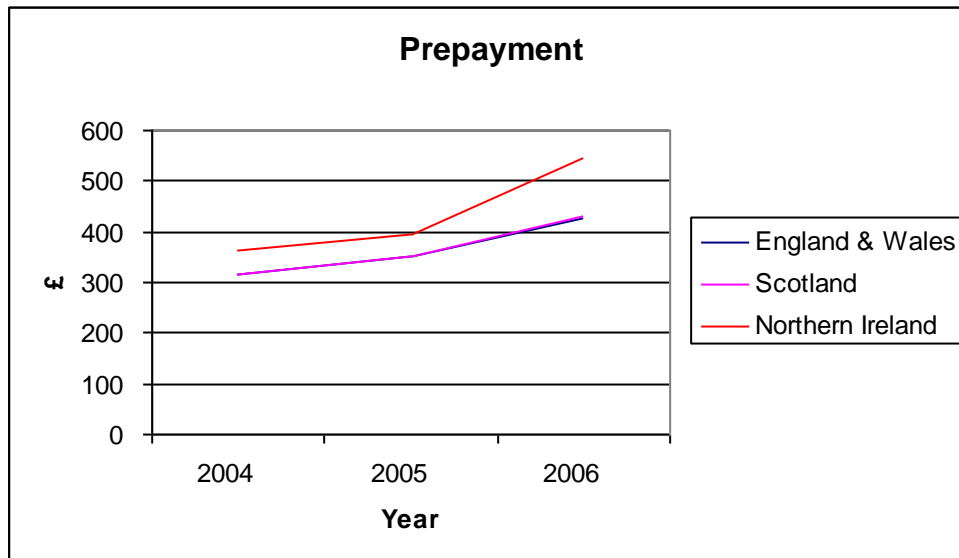
Source: DTI Energy Trends and Phoenix Natural Gas

Fig 3.16 Average Domestic Gas Bills Paid by Direct Debit



Source: DTI Energy Trends and Phoenix Natural Gas

Fig 3.17 Average Domestic Gas Bills Paid by Prepayment



Source: DTI Energy Trends and Phoenix Natural Gas

Fuel and Water Poverty

3.71 The Northern Ireland Housing Executive in its role as Home Energy Conservation Authority (HECA) provided the following figures on the number of households in fuel poverty in different regions of the UK:

England	-	12%
Scotland	-	23%
Wales	-	21%
N Ireland	-	34%

3.72 The figures show that Northern Ireland suffers from particularly high rates of fuel poverty. HECA define fuel poverty as where householders need to spend more than 10% of their income to heat their home to an adequate standard, with the main causes of fuel poverty as being poor thermal efficiency of the dwelling, low household income and high fuel prices.

3.73 This highlights the balance that needs to be achieved between policies aimed at reducing energy consumption and policies aimed at helping the vulnerable. In considering the implications of reflecting the total environmental cost in prices, the impact on fuel poverty must be considered. It should also be noted that there are wider policy instruments that may have a larger impact on fuel poverty, those of

increased energy efficiency and increasing incomes. The 2004²⁰ HECA Report suggests that fuel poverty levels can be reduced by half through energy efficiency improvements, and a 10% rise in household income will lead to a greater decrease in fuel poverty levels than a 10% reduction in the price of either electricity or gas.

- 3.74 The Independent Water Review Panel Strand 1 report²¹ observed that without an affordability tariff, some 14.4% of Northern Ireland households would experience water poverty (based on 3% of income) under the charging proposals proposed at that time. Of those in poverty, over one-fifth were single female pensioners and another 17% were pensioner couples or couples with children. The proposed affordability tariff would reduce this figure to 10.5%.
- 3.75 As noted previously, vulnerable customers are likely to be disproportionately affected by climate change and it is of particular importance for these groups that we set out to adapt and protect against climate change. At the same time, careful planning and consideration is necessary to ensure that any costs associated with climate change prevention or mitigation measures do not adversely impact on vulnerable customers.
- 3.76 Sustainability measures can also provide benefits in terms of fuel poverty. Increased energy efficiency will act to reduce the consumption of all consumers and help raise some above the fuel poverty threshold. Expansion of the Northern Ireland gas industry will help consumers from the vulnerable groups as natural gas suppliers are required to put in place a number of measures aimed at addressing fuel poverty issues. By Northern Ireland becoming a world leader in renewable technology, this could impact the fuel poor by creating better jobs in technology, raising income levels and thus possibly helping to bring more people out of fuel poverty.

Competitiveness

- 3.77 Comparatively high energy prices could potentially act to put Northern Ireland businesses at a competitive disadvantage, due to higher input prices. The historic electricity price differentials are highlighted in Figures 3.12, 3.13, and 3.14 and by DETI²² who quoted electricity prices to industrial customers as being on average some 35-60% higher than in GB and 5-15% higher than in ROI in May 2004.

²⁰ HECA 2004

²¹ Independent Water Review Panel 2007

²² DETI 2004.

- 3.78 However, the sustainability agenda could potentially bring opportunities for local business in innovation and technology for lower carbon energy sources and energy efficiency measures, driven by increased market demand.

Price and Cost-reflectivity

- 3.79 Emissions of carbon and other greenhouse gases are an externality, which is a classic form of market failure. This means that those who produce do not face the full consequences and costs of their actions themselves. Pricing in all or part of the social and environmental cost of carbon, through markets or taxes, sends price signals that can act to reduce consumers' demand for CO₂ intensive energy and increase demand for more innovative and energy efficient products. It can also act on the supply side by making low carbon technologies more competitive and by improving the business case for low carbon projects. This can aid in the drive towards government targets on energy efficiency and renewable energy.
- 3.80 A number of organisations have carried out research into the level at which carbon and other greenhouse gases should be priced. The Department for Environment Food and Rural Affairs (DEFRA) recently published a report²³ on the Social Cost of Carbon (SCC) and the Shadow Price of Carbon (SPC) and how carbon should be used in economic appraisal in the UK. The SCC measures the full global cost today of an incremental unit of carbon emitted now and calculates the full global cost of the damage it imposes over the whole of its time in the atmosphere. It measures the scale of the externality which needs to be incorporated into decisions. The SCC signals what society should, in theory, be willing to pay now to avoid the future damage caused by incremental carbon emissions. Because the amount of damage done by each incremental unit of carbon in the atmosphere depends on the concentration of atmospheric carbon today, the SCC varies depending on which emissions trajectory the world is on.
- 3.81 The report estimates an appropriate shadow price of carbon equal to the social cost of carbon of \$30/tCO₂e (£19/tCO₂ or £68tc) in the year 2000. This rises to £25.5/tCO₂ (£93.5tc) in 2007 (2007 prices) to account for inflation and rising marginal damage over time. The report shows that the SCC rises the longer it takes for corrective action to be taken and recommends that for the purpose of government appraisals the SPC should increase at 2% per annum. This reflects the Stern Review assessment of the rising incremental damage of each unit of carbon as temperatures rise.

²³ DEFRA 2007

- 3.82 The SCC and SPC differ from the traded cost of carbon which is set by the EU ETS (European Union Emissions Trading Scheme). As stated, the SCC rises over time as the marginal damage to the environment increases. If policy makers, either at national or European levels, come under pressure to introduce policy instruments to “price in carbon” at an ever increasing rate to the point where the full SCC is reflected in energy prices, this could have important implications for decisions taken by investors and the Utility Regulator now. If we assume that over time the level at which carbon will be “priced in” will rise then the viability of high carbon investments begins to weaken and the viability of low carbon investments improves.
- 3.83 In short, Northern Ireland consumers have historically paid high prices for energy. Although the gap with GB domestic electricity prices has recently narrowed or closed, the opposite is true for gas. Northern Ireland has high levels of fuel poverty. These reflect high energy costs, but also low incomes. High energy costs also have an impact on competitiveness. However, given the certainty that over time carbon costs will be reflected in energy costs, it seems likely that industry in Northern Ireland would be unprepared and uncompetitive if shielded from these costs in the short term.

How Sustainable are Northern Ireland’s Utility Industries? - Summary

- 3.84 There is evidence to suggest that Northern Ireland’s Utilities need to do more in order to develop sustainably. A substantial body of evidence has built up which demonstrates that our (and the world’s) reliance on CO₂ emitting fossil fuels is unsustainable. This is because of the impact of climate change, which has both global and local consequences. According to the Stern Review the overall quantum of the cost of adapting to climate change will be lower the earlier action is taken. Therefore it is in Northern Ireland’s interests to act now. Northern Ireland’s emissions of CO₂ and other greenhouse gasses have been held in check by the conversion of our powerstations to highly efficient CCGT’s. However as we can no longer count on large scale conversions to deliver the reductions we now need, we must look to energy efficiency and lower carbon energy, such as renewables.
- 3.85 Energy efficiency has multiple benefits in terms of security of supply, carbon reductions and its ability to help the vulnerable avoid the worst effects of price rises. Renewable energy also has multiple benefits in terms of security of supply and carbon reduction. However it requires careful planning and accommodation on our electricity network.

- 3.86 Social and economic sustainability are also of vital importance to present and future well being in Northern Ireland. Within this, price and quality of service are key dimensions particularly in relation to the well being of the vulnerable. This is why it is necessary to have a level of joined up thinking in relation to mitigation and adaptation to climate change.

Questions for Consultation

- Q3.1 Respondents are asked to comment on the balance between present and future climate change costs.**
- Q3.2 Respondents are asked to give their views on the relationship between sustainability and security and diversity of supply.**
- Q3.3 Respondents are asked to give their views on the degree to which sustainability issues should drive the Utility Regulator's first NI water price review.**
- Q3.4 Respondents are asked to consider whether a monetary value of CO₂ equivalent or shadow price of carbon ought to be included within guidance on use of business cases.**
- Q3.5 Respondents are asked to indicate their preference for inclusion of "carbon footprint" monitoring and target setting within the new regulatory contract at the first NIW price review.**
- Q3.6 Respondents are asked to consider the benefits of going beyond the "Economic Level of Leakage", possibly by the inclusion of the carbon shadow price in calculations.**
- Q3.7 Respondents are asked to consider the degree to which NIW should be incentivised to increase its uptake of renewable energy and reduce its non-CO₂ gas emissions and mechanisms by which this might be achieved.**

4. Existing Policy Responses to Sustainability Challenges

- 4.1 The Utility Regulator's response to the challenges posed in the previous chapter must take account of the policy context. This chapter therefore sets out the existing targets and policy instruments already in place. It closes by focusing specifically on the measures for which we are responsible and sets out consultation questions about the effectiveness of our current approach.

Targets

- 4.2 As a non-ministerial government department, the Utility Regulator is independent of direct ministerial control. This independence is long-standing and is essential to maintain the stability of regulation and so reduce the cost of investment in capital intensive sectors. Nevertheless, the Utility Regulator's duties and powers are set by statute. These duties and powers can be amended by the Northern Ireland Assembly and, for this reason, we consider that our role involves implementing ministerial policy, as laid down in statute. Our regulatory sustainable development strategy will therefore be developed and implemented in the context of Northern Ireland government strategy.
- 4.3 Northern Ireland is committed to reducing greenhouse gas emissions by 25% below 1990 levels by 2025 (Programme for Government). A wide range of targets at the global, European, UK and Northern Ireland levels are in place, and indeed the complexity of existing targets is one factor to consider in setting regulatory strategy. The key points are:
- the European Directive on the Promotion of Electricity from Renewable Energy²⁴ culminated in the adoption of national targets for renewable energy. A recent proposal from the European Commission would see the UK adopt a target of 16% of all energy (networked or not) being renewable by 2020, which if adopted would be likely to suggest a target around 30%-35% for electricity generation. The existing UK renewables target arising from the Directive is for 10% of electricity to be provided by renewables by 2010 and the government has declared an aspirational target to supply 20% of electricity from renewables by 2020.

²⁴ European Commission. Directive 2001/77/EC

- In Northern Ireland the current target contained in the Department for Enterprise Trade and Industry's Strategic Energy Framework is 12% of electricity to be generated from indigenous renewable sources by 2010.
- 4.4 In order to make progress towards these targets, a number of policy instruments are already in place at all levels. This chapter sets out the main instruments which affect the energy and water industries in Northern Ireland. As the instruments which affect energy and water are very different, they will be covered in separate sections.

Energy

- 4.5 According to the Stern Review there are three essential elements to climate change mitigation:
- tackling market failure in relation to externality via carbon pricing;
 - tackling market failure in relation to technology;
 - tackling market failure in relation to behavioural change.

Carbon Pricing

- 4.6 The Stern Report states that greenhouse gases are a particularly complicated form of externality in that the negative effect of the externality is felt in the long term (once released, CO₂ remains in the atmosphere for up to 100 years) and there is uncertainty about the timing and scale of the impacts.
- 4.7 The main way in which the price of carbon is accounted for in Northern Ireland is through the EU ETS. In the UK there are also a number of different taxes and duties on different types of energy. For the purposes of this paper, we will concentrate on the Climate Change Levy (CCL) which is a tax on energy (not carbon). Although the CCL is not a carbon tax it is included in this section of the paper because its effect is to encourage those affected (it does not cover transport or domestic use) towards the use of alternative fuels and energy efficiency.

EU ETS

- 4.8 In January 2005 the European Union Greenhouse Gas Emissions Trading Scheme (EU ETS) commenced operation as the largest multi-country, multi-sector Greenhouse Gas emission trading scheme world-wide. The EU ETS is the UK's principal carbon pricing instrument. The scheme is

based on the European Directive ²⁵ which entered into force on 25 October 2003. It is essentially a cap and trade scheme, where national allowances for greenhouse gases are allocated to industry. Allowances can then be traded so that the price of carbon is determined by the supply of and demand for allowances. In addition, Certified Emissions Reductions certificates can be purchased from outside the EU.

The Climate Change Levy

4.9 The Climate Change Levy (CCL) is not a carbon tax. It is a tax on energy delivered to non-domestic users in the United Kingdom. The aim is to provide an incentive to increase energy efficiency and reduce carbon emissions and it is part of the UK's overall Climate Change Programme. It was introduced on 1 April 2001 under the Finance Act 2000. The following are covered by the levy:

- electricity;
- natural gas as supplied by a gas utility. (Except in Northern Ireland until March 2011);
- petroleum and hydrocarbon gas in a liquid state;
- coal and lignite;
- coke and semi-coke of coal or lignite;
- petroleum coke.

The following are not taxable commodities for levy purposes:

- oil;
- road fuel gas;
- heat;
- steam;
- low value solid fuel (e.g. coal tailings and sweepings) with an open market value of no more than £15.00 per tonne;
- waste as defined in statute.

²⁵ European Commission. Directive 2003/87/EC

- 4.10 Currently the levy is charged at a rate of £4.41/MWh of electricity. Electricity generated by qualifying renewable technologies such as wind is exempt from the levy. The Utility Regulator is responsible for the administration of Levy Exemption Certificates (LECs) which can be issued to accredited generators. Part of the revenue from the levy is used to fund a number of energy efficiency initiatives, including the Carbon Trust.
- 4.11 In Northern Ireland, natural gas is exempt from the CCL until 2011. This is because the natural gas industry in Northern Ireland is still developing and increased penetration of natural gas in Northern Ireland should displace more polluting fossil fuels such as coal and oil.

Technology

- 4.12 There are a number of instruments and programmes in Northern Ireland aimed at incentivising investment in renewable technology and lower carbon technology or aimed at removing barriers to renewable technologies. In addition, the All Island Single Electricity Market has been designed to facilitate the accommodation of renewable technologies on the electricity system.

Technology - The Single Electricity Market (SEM)

- 4.13 The Utility Regulator and the SEM Committee²⁶ have a duty to secure a diverse, viable and environmentally sustainable long term energy supply in Northern Ireland and ROI. They also have a duty to promote the use of energy from renewable sources.
- 4.14 The framework for the SEM²⁷ has been developed to implicitly accommodate a range of mechanisms that have been introduced to help achieve the renewables targets. In addition, the SEM has been developed with explicit market rules to facilitate the contribution of renewable generation. For example:
- market size – due to the larger size of the market, renewable generators will have more options to trade output and hedge risk. In addition, system operators can access generation north and south of the island of Ireland to enable them to manage system security;
 - connections – generators now pay shallow connection charges and this should facilitate the connection of renewable generators to the transmission network.

²⁶ The SEM Committee is defined in the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007

²⁷ All Island Project 2004

4.15 Throughout 2007, the Utility Regulator worked as part of a joint steering group (which included a number of partner organizations) to produce a Grid Study aimed at examining the policy options and issues in relation to accommodating more renewables on the electricity grid on the island of Ireland. The study²⁸ was commissioned jointly by the Department of Enterprise Trade and Investment (DETI) and its counterpart in ROI, the Department of Communications, Energy and Natural Resources (DCENR). The Utility Regulator is now working closely with DETI to consider the Grid Study and its implications for future policy arrangements in relation to renewable energy. The Utility Regulator is also working closely with the Commission for Energy Regulation (CER) in consultation with industry on the treatment of wind in the SEM. The objective of this consultation is to ensure that no undue barriers exist to the entry of wind generation into the SEM while longer term policies are developed.”

Technology – Northern Ireland

4.16 Within Northern Ireland, we will outline:

a) the Northern Ireland Renewables Obligation (NIRO);

b) the Non Fossil Fuel Obligation (NFFO);

c) the Smart Programme;

d) Micro Generation Export Arrangements;

e) Gas Industry Promotion.

a) The Northern Ireland Renewables Obligation (NIRO)

4.17 The NIRO is a market based support mechanism for the development of renewable generation technology in Northern Ireland. The provisions of the NIRO broadly mirror the provisions of the Renewables Obligation in the UK and Scotland.

4.18 Under the Provisions of the NIRO all electricity suppliers must provide evidence (in the form of Renewable Obligation Certificates or ROCs) each year that a certain proportion of their total sales can be accounted for by output from accredited renewable electricity generating sources such as wind power. (For Northern Ireland in 2006/7 this was 2.6% and will rise to 6.3% by 2012). If they cannot satisfy all or part of that obligation by producing ROCs, they must pay a “buy out”. At the end of each year the “buy out” fund is returned to those suppliers who have produced ROCs in proportion to the number of ROCs held. ROCs are issued to qualifying generators and traded to energy suppliers.

²⁸ DETI 2008

b) The Non Fossil Fuel Obligation (NFFO)

- 4.19 NFFO is a provision in legislation which required NIE to make arrangements in relation to generating capacity from non-fossil fuel generating stations. The first NFFO order in 1992 was for 16MW (declared net capacity), rising to 45MWs by 2005. There will be no further rounds of NFFO to support renewables.

c) The NIE SMART Programme

- 4.20 The Sustainable Management of Assets and Renewable Technologies (SMART) programme was developed by the Utility Regulator and NIE to encourage environmentally-friendly approaches to the provision of electricity network infrastructure to meet consumer demand in Northern Ireland and to support emerging renewable technologies. In the SMART1 category (support for emerging technologies) funding has been committed for 34 renewable programmes and projects. Technologies targeted for support include photovoltaics, solar water heating, biomass, domestic CHP, marine current turbine and hydro-electric power, with £1m committed. In addition, over £3m of additional funding from the public and private sector has been secured. Under SMART2 (alternatives to conventional network reinforcement) £2.27m has been committed to three renewable generation facilities based on biomass, CHP and marine current turbine technologies and a study into the feasibility of an energy from waste facility.

d) Micro Generation Export Arrangements

- 4.21 NIE has worked to encourage the installation of micro renewables and CHP in Northern Ireland by helping customers to realize the value of electricity generated by these sources. NIE Energy offers customer rewards for both ROCs and the electricity that is generated but not used on the premises.

e) Gas Industry Promotion

- 4.22 The natural gas industry arrived in Northern Ireland in 1996. As discussed in Chapter 3, this has allowed much of Northern Ireland's power generation to move towards highly efficient CCGT technology and thus facilitated improvements in emissions from electricity generation
- 4.23 In addition, the development of downstream distribution networks has brought similar benefits to homes and businesses. Natural Gas produces around 25% less carbon than oil and about 45% less than solid fuel. Phoenix customers are currently saving over 260,000 tonnes of CO₂ a year, based on fuel switching alone²⁹, and firmus energy estimates that 14,000 tonnes of CO₂ was displaced in the North West last year. New gas boilers tend to be much more efficient technology than the systems they

²⁹ Figures obtained from Phoenix natural gas and based on the difference between carbon produced by gas consumed and what would have been produced by the alternative fuel.

replace and at the point of installation many customers take the opportunity to install additional energy efficiency measures in their home. Therefore, the figure for carbon savings could be higher if the energy efficiency improvements were taken into account.

- 4.24 Both Phoenix and firmus energy have also worked on the promotion of gas fired CHP and domestic CHP. In addition, Phoenix and firmus energy ensure that all their field representatives are trained to advise on energy efficiency.

Behavioural Change

- 4.25 Behavioral change can either be in the form of more acceptance of renewable technology or in the form of increased energy efficiency activity. Regulatory energy efficiency programmes have been running in Northern Ireland since 1996 when Ofreg (now the Utility Regulator) began. Throughout this time the Utility Regulator has worked closely with all stakeholders including: the regulated companies, government and agencies such as the Energy Saving Trust, the Northern Ireland Energy Agency and others. Through a number of partnerships, the Utility Regulator has developed a number of mechanisms and instruments aimed at affecting behavioural change. These include:

- a) the Energy Efficiency Levy;
- b) price controls;
- c) green tariffs;
- d) key pad metering for prepayment customers in electricity;
- e) energy efficiency advice and provision (Gas industry and Electricity industry).

a) The Energy Efficiency Levy

- 4.26 The Energy Efficiency Levy (EEL) was introduced as part of the NIE (Transmission and Distribution) price control in 1997. In 2002, in recognition of the wide spread problem of fuel poverty in Northern Ireland, it was decided that 80% of the fund should be spent on schemes which concentrate on alleviating fuel poverty. The levy is now equivalent to £7 per customer or approximately £7m. The overall aggregate energy saving target forecast for each year is illustrated in Figure 4.1.

Fig 4.1

Overall Energy Saving Targets (NPV lifetime energy savings)

Year	GWh/a
2008/9	431.751
2009/10	429.517

Source: NIAUR

(Energy Efficiency Levy Framework Document)

- 4.27 The EEL is similar to the Energy Efficiency Commitment (EEC) which operates in GB. The differences between the EEL and the EEC are highlighted in Figure 4.2 below.

Fig 4.2

Energy Efficiency Levy & Energy Efficiency Commitment Comparison

	Energy Efficiency Levy	Energy Efficiency Commitment
Primary Objective	(i) To alleviate Fuel Poverty (ii) To promote energy efficiency	To reduce carbon emissions – although requires suppliers to direct 50% of energy savings towards a priority group of low-income customers
Total Amount per Customer	£7 Collected from electricity customers only	Total £18 Collected from electricity and gas customers (£9 electricity £9 gas).
Overseen by	The Utility Regulator	Ofgem
Supplier Involvement	Voluntary – suppliers are offered incentives.	Mandatory
Partner Contribution	Schemes aimed at fuel poor. Partners contribute around 30% of the total cost of schemes. For non fuel poor related schemes partners can contribute up to 70% of the total cost of schemes.	Unknown

4.28 From April 2008, the EEC will be replaced with the Carbon Emissions Reduction Target (CERT). This will be similar to the EEC except that carbon reduction targets will double and, in addition to energy efficiency measures, CERT suppliers will be able to promote micro-generation measures, biomass, community heating and CHP. Suppliers must direct 40% of carbon savings to a priority group of low income and/or elderly customers.

4.29 The main differences between the system in GB and the Northern Ireland EEL are the primary objective, the scale of the commitment and the legislative underpinning (in Northern Ireland the EEL scheme is voluntary while the GB schemes are enshrined in legislation).

b) Price Controls

4.30 All price controls carried out by the Utility Regulator are undertaken with due regard for the environment. For example NIE T&D capex allowances have due regard for the need to maintain and develop the networks so that they can cope with changing demand profiles and increased renewables. In addition, there are a number of mechanisms built in aimed at promoting energy efficiency. For example, the NIE Supply price control incentivises energy efficiency rather than increased volumes. The NIW price control when complete will also have due regard for the environment.

4.31 There are a number of allowances built into both the gas and electricity price controls. In addition, the Phoenix Natural Gas and firmus energy price controls currently incentives the companies to increase volumes of natural gas sold in Northern Ireland. The rationale for this is that the natural gas is displacing more polluting fossil fuels. The Phoenix and firmus energy price controls contain allowances for gas promotion activity which are also linked to energy efficiency.

c) Green Tariffs

4.32 It is interesting to note that Northern Ireland electricity consumers have some experience of responding to 'green' tariffs. Under NIE's Eco Energy tariff, electricity consumers can elect to take their energy from renewable sources. This is not as a result of price signals as the price is the same as that for non-green energy, but it does illustrate that there is an appetite in Northern Ireland for green products and demands, particularly as initially some consumers chose the green option while it was still more expensive than the standard tariff.

d) Keypad Metering

4.33 One of the best and most valuable ways to encourage customers to change their behaviour (and become more energy efficient) and to protect customers at the same time, is to give customers good quality information. One of the ways this can be achieved is by so called "smart metering"

which gives both suppliers and customers continuous information on the amount of energy they are consuming and the cost. NIE's Keypad prepayment meter is a semi-smart meter, in that it provides customers with good quality information although no information is provided to the supplier.

- 4.34 These meters have led to overall lower costs to prepayment customers, with the result that Northern Ireland prepayment customers now face lower bills than their counterparts in the rest of the UK (see graphs in Chapter 3). When used with NIE's Keypad time of day tariff, these time of day cost reflective price signals incentivise consumer's to shift demand from peak to off-peak times. This leads to a lower peak generation requirement and cost savings for customers.

e) Energy Efficiency Advice and Provision

- 4.35 Currently there is a wide range of energy efficiency advice and provision available with NIE and the Energy Saving Trust Advice Centre working together to provide home energy checks. Phoenix and firmus energy also ensure that all their field representatives are trained to advise on energy efficiency.

Water

- 4.36 As noted earlier the main focus of the energy parts of this paper relate to carbon reductions. The sections on water are necessarily wider. Carbon reductions are a consideration due to the fact that Northern Ireland Water is one of the largest users of electricity in Northern Ireland, but other important issues for consideration include water conservation and biodiversity. This section of the paper will concentrate on some of the main programmes and policies that NIW has already put in place in relation to sustainability. For further information NIW has in place a sustainability statement.³⁰
- 4.37 NIW produces a sustainability report each year which reports on the following indicators: Governance, Environment, Society, Employees, Assets and Financial. It also has a dedicated Environment Management System (EMS) and an EMS team which provides guidance on legislative and environmental matters. The EMS Team work with the Environment and Heritage Service (EHS) Biodiversity Officer to develop and implement a Biodiversity action plan which builds biodiversity into capital projects.

³⁰ NIW – Environmental Policy

4.38 NIW is also a member of the Northern Ireland Sustainability Construction Group. They make quarterly returns based on the following indicators:

- recycling of aggregates;
- waste management;
- energy efficiency.

4.39 NIW drives sustainability within the environmental management system and sets yearly targets in their business plan to increase sustainability. Such targets for 07/08 include:³¹

- reuse/recycle 70% of excavated material on above ground capital works projects;
- install 90% of new water mains (those which are achievable by length) using trench-less technologies;
- install 90% of new sewers (those which are achievable by length) using trench-less technologies;
- continually improve NIW's Environmental Management System and maintain ISO 14001 status;
- increase the use of green energy which already runs 10% of the total and look at opportunities in the market for additional renewable sources of power;
- improve environmental compliance with waste water treatment works discharge standards;
- reduce pollution incidents and untreated discharges from the sewerage system;
- improve the constancy of water supply and reduce leakage of treated water.

Water Conservation

4.40 NIW has a Water Efficiency Plan³², which has set a target to reduce leakage in their infrastructure of over 20% to be achieved by 2010. To date, NIW has reduced leakage from 291 MI/d in March 2002 by over 124

³¹ NIW 2007 - Strategic Business Plan

³² NIW 2007 – Water Efficiency Plan

MI/d to 166.6 MI/d in June 2007. NIW actively encourages customers to play their part in eliminating leakage. Where a leak is detected in a private property NIW has in place a procedure for notifying customers and asking them to remedy the leak within a specified timescale. NIW introduced in 2004 a "Leakline 08000 282011" which is a free phone number for customers to report any visible leaks.

- 4.41 In addition to leakage information being provided, NIW promotes water efficiency to its customers through distribution of leaflets, public events, exhibitions and presentations, identifying how they can use water more wisely in their homes, schools, businesses and agricultural premises. Over the past few years water efficiency leaflets have been issued to every property in Northern Ireland.

Energy Sustainability in Water

- 4.42 NIW has a target to source 8% of its energy from green sources by 2008. It is currently exceeding this target and is looking at the options available to produce more energy in-house, through use of hydro and wind turbines.

Questions for Consultation

Q4.1 Respondents are asked to rate the following existing instruments:

- 1 The NIE SMART Programme**
- 2 Gas Industry Promotion**
- 3 The Energy Efficiency Levy**
- 4 Price Controls**
- 5 Key Pad Metering**
- 6 Energy Efficiency Advice Provision**
- 7 NIW Sustainability Report**
- 8 NIW Environment Management System**
- 9 NIW promotion of water efficiency**

from 1-10 (1 being poor 10 being excellent) for the following characteristics;

- A Profile (do enough people know about the work)**
- B Ability to protect customers**
- C Ability to influence consumers to be more energy / water efficient or change to a lower carbon fuel**

5. Statutory Duties of the Utility Regulator

- 5.1 The Utility Regulator exists to give effect to our statutory duties and achieve our statutory objectives. Our response to the challenge and context set out in the previous chapters will therefore be actions to best deliver these duties and objectives. This chapter begins by summarising these duties and objectives, particularly highlighting those most relevant to sustainability issues.
- 5.2 The chapter then sets out at a high level the range of choices available to best deliver our duties and objectives.

Statutory Duties and Objectives

- 5.3 The water, gas and electricity industries are at different stages in their development. In recognition of these differences the Utility Regulator's duties differ in respect of each industry.
- 5.4 The Utility Regulator's objectives and duties are set out in primary legislation. In relation to electricity and gas our duties are contained in the Energy (Northern Ireland) Order 2003. In relation to water they are set out in the Water and Sewerage Services (Northern Ireland) Order 2006. The relevant parts of the Utility Regulator's duties are summarised below. They are also set out in full in Appendices 2, 3, 4 and 5.

Water

- 5.5 The general duties of the Utility Regulator in respect of water are set out in Article 6 in The Water and Sewerage Services (Northern Ireland) Order 2006, which is included in Appendix 2 of this document. The Utility Regulator must carry out its functions in the manner it considers best calculated to:
- protect the interests of consumers of water and sewerage services, where appropriate by the promotion of effective competition;
 - ensure that water and sewerage undertakers properly carry out their functions in all areas of Northern Ireland;
 - ensure that water and sewerage companies can properly finance their activities.

5.6 In doing so the Utility Regulation shall have regard to (among other things) the interests of:

- individuals who are disabled or chronically sick;
- individuals who are of pensionable age;
- individuals on low income;
- individuals residing in rural areas.

5.7 Subject to these, the Utility Regulator must also (among other secondary duties) contribute to the achievement of sustainable development.

Gas

5.8 The general duties of the Utility Regulator in respect of gas are set out in Article 14 of the Energy (Northern Ireland) Order 2003, which is included as Appendix 3 of this document. The principle objective of the Utility Regulator in respect of gas is to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland. The Utility Regulator must also have regard to (among other things) the interests of consumers of gas and the need to ensure that gas licence holders can properly finance their activities and the interests of:

- individuals who are disabled or chronically sick;
- individuals of pensionable age;
- individuals on low incomes.

5.9 Subject to these duties, the Utility Regulator must have regard to (among other things) the need to secure a diverse and viable long term energy supply and the effect on the environment of activities connected with the conveyance, storage or supply of gas.

Electricity

5.10 The duties of the Utility Regulator in relation to electricity are set out in Article 12 of The Energy (Northern Ireland) Order 2003, included as Appendix 4 of this document. The principal objective of the Utility Regulator, in respect of electricity, is to protect the interests of consumers of electricity, wherever appropriate by promoting effective competition. In

performing its duties the Utility Regulator must have regard to (among other things) the interests of:

- individuals who are disabled or chronically sick;
- individuals of pensionable age;
- individuals with low incomes;
- individuals residing in rural areas.

5.11 Subject to the above, the Utility Regulator shall promote the efficient use of electricity, promote efficiency and economy on the part of licence holders, secure a diverse and viable long-term energy supply and shall have regard to the effect on the environment.

Single Electricity Market

5.12 The Utility Regulator also has a number of duties which apply to all-island wholesale electricity, included in Appendix 5. The Single Electricity Market (SEM) on the island of Ireland went live on 1 November 2007, and is governed by the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007. This Order, provided for a sub-committee of our board to be created, called the SEM Committee, with a parallel sub-committee of the Republic of Ireland's Commission for Energy Regulation (CER) also being created. Both sub-committees contain representatives of the Utility Regulator and of CER, as well as an independent member and deputy. Collectively, these parties operate as the SEM Committee in each jurisdiction and the Utility Regulator has an obligation to give effect to the decisions of the SEM committee in relation to SEM matters. In terms of forming policy, therefore, it is the duties and objectives of the SEM Committee that are most important for SEM matters.

5.13 The principal objective of the SEM committee is to protect the interests of consumers in both Northern Ireland and ROI. The SEM Committee has a duty to secure a diverse, viable and environmentally sustainable long-term energy supply in Northern Ireland and ROI. In addition, it must promote the use of energy from renewable sources.

5.14 The SEM will enhance cooperation between Northern Ireland and ROI in relation to energy policy. In ROI the issue of sustainability has also grown in importance. The ROI government white paper "Delivering a Sustainable Energy Future for Ireland"³³ contains the goal to progressively

³³ DCENR

achieve 33% of electricity consumption from renewable sources by 2020, with 15% being the target for 2010.

Summary of Duties

5.15 As can be seen, the Utility Regulator's principal objective in the electricity and water industries is the protection of customers, where possible by the promotion of competition, while in the gas industry the protection of customers is subject to the promotion of the industry. The Water, Energy and SEM Orders are explicit that the "customers" includes both present and future consumers.

Are These Duties Appropriate?

5.16 The Utility Regulator cannot, of course, amend its own duties and we will work to deliver whatever statutory goals are set for us at any given time. Nevertheless, we consider that it is useful for us to consider whether the existing duties constrain us from carrying out actions that might contribute better to the sustainable development of Northern Ireland's utility sectors.

5.17 The Sustainable Development Commission (SDC) has recently published a report³⁴ reviewing regulatory policy in GB and proposing that Ofgem's primary duty "be changed to reflect the compelling need to move to a decarbonised energy system." The report states:

- *"The most important driver for Ofgem has been the delivery of its primary duty... This has been interpreted as "the affordability, availability, security and quality of gas and electricity supplies." In practice, it is the affordability and availability of energy for present consumers that has been given the most weight, to the detriment of future consumers."*
- *"We are therefore recommending a new primary duty for Ofgem to include the reduction of greenhouse gases. This would align Ofgem's goals with the goals of government energy and environment policy."*

5.18 The SDC set out options for how this change could be carried out. Each option embeds environmental objectives into the primary duty but with variations in whether this environmental duty would be superior to, subordinate to, or on a level with other duties to consumers.

³⁴ Sustainable Development Commission. 2007

- 5.19 The SDC recommendation addresses GB arrangements. As there are important practical and legal differences between GB and Northern Ireland, there can be no straightforward copying of GB arrangements.
- 5.20 Nevertheless, the SDC report touches on a concern about institutional weakness that might be relevant to Northern Ireland as well as GB. The regulatory regime should not be seen as being set up over and against the achievement of government policy. We have set out above our view that independent regulation works within overall government policy.
- 5.21 In general, we would not consider ourselves to have a mandate to take forward approaches that involve taking a view of the future which cannot be clearly tracked back to market signals. Equally, we would consider that measures that deliver substantial economic transfers between industry players or between customer groups or generations would normally derive from government policy, not from regulatory decisions.
- 5.22 We have some concerns that the SDC proposals would internalize within the (non-elected) Regulator the policy tensions that are better played out between elected representatives who are directly accountable to citizens.
- 5.23 Where regulatory decisions have a role to play in delivering government policy, there should be a legally robust and transparent mechanism for linking our work into wider policy, which is subject to public consultation.
- 5.24 The GB water industry has a long tradition of using statutory guidance for this purpose. Over the last two decades, very large investment programmes have been delivered using this mechanism with broad political guidance provided under the close scrutiny of an independent economic regulator. We expect that the Regional Development Minister will play a similar role in future Northern Ireland water price reviews.
- 5.25 Until recently there has been no requirement for statutory guidance in the energy sector to play a similar role. However, it may be that given the scale of sustainability challenges, DETI should consider whether statutory guidance would be appropriate.
- 5.26 The Utility Regulator's duties to sustainable development have been set out above and in Appendices 2, 3, 4 and 5. At present, unlike Ministerial departments, we are not subject to the specific sustainable development duty under section 25 (1) of the Northern Ireland (Miscellaneous Provisions) Act 2006. Given that we already have a variety of such duties, we are unclear what practical difference such a designation might make, but seek views on this question.

Questions for Consultation

- Q5.1 Respondents are asked to comment on the balance of the Utility Regulator's duty to protect present and future customers.**
- Q5.2 Respondents are asked to comment on the appropriate role of and nature of statutory guidance from Ministers to the Utility Regulator.**
- Q5.3 Respondents are asked to highlight actions that they consider might be appropriate or necessary, but that could not be taken under the Utility Regulator's existing powers.**
- Q5.4 Respondents are asked to comment on whether the Utility Regulator should seek to be designated under under section 25 (1) of the Northern Ireland (Miscellaneous Provisions) Act 2006.**

6. How Can a Regulator Contribute to Sustainable Development?

- 6.1 In the light of the concerns raised by previous chapters about the current sustainability of the Northern Ireland utility sector, the Utility Regulator considers that it is necessary for us to develop a comprehensive sustainable development strategy.
- 6.2 We also consider that a comprehensive sustainability strategy is necessary for the fulfilment of our separate duties to have regard for the environment and the achievement of a diverse and long term energy supply and to have regard for sustainability.
- 6.3 We consider there are three main means by which we can contribute to the more sustainable development of Northern Ireland's utilities. These are:
- gathering and publishing evidence;
 - contributing to wider energy policy;
 - regulating differently.

The first two of these are discussed in the rest of this chapter, with the third being covered in the next chapter.

Gather and Publish Evidence

- 6.4 While developing this consultation we became aware that the debate on energy issues such as environmental sustainability, fuel poverty and competitiveness, could benefit from improvements in the level of detail, frequency and availability of data.
- 6.5 It would be extremely useful to see an annual breakdown of Northern Ireland's total energy consumption by energy source and sector (Domestic, Large Commercial, Small and Medium Enterprises and Transport) and also by energy type (Solid fuel, Petroleum, Natural Gas, Heat and Waste).
- 6.6 This type of data is essential for estimating and monitoring the effectiveness of measures aimed at reducing energy consumption and encouraging the shift to lower carbon energy.

- 6.7 More frequent and detailed information on average energy prices, by energy type and sector, would also help to inform on Northern Ireland's relative position to the rest of the UK. For example, it is extremely difficult to obtain up to date comparisons on energy prices and availability of energy types in the industrial and commercial sector. Much of the information which is in the public domain is somewhat outdated. This is particularly true in relation to coal and oil. It would be helpful if the information was provided to show comparisons between Northern Ireland and other regions.
- 6.8 It would also be useful to be able to view this type of information broken down by geographical areas of Northern Ireland, ideally at ward level. This would help to build up a picture of, for example, the effect that the availability of gas in an area has on the price of alternative fuels. Potential variations in consumption and pricing patterns between urban and rural areas could also be identified.
- 6.9 The Utility Regulator may be in a position to collect and publish more data from electricity and natural gas licence holders. We already publish information on domestic prices and could consider collecting more information from licence holders on an annual basis, for example, information on the uptake of different types of meter and average consumption per type of meter.
- 6.10 We are aware of the balance that needs to be struck between providing quality and useful information and placing an administrative or cost burden on licence holders. However the Utility Regulator has good reasons for gathering data from the many market participants to use for its own purposes. We would welcome comments on whether the public interest in our gathering and publishing this type of data would justify the cost.

Draw on Our Experience to Contribute to Policy

- 6.11 Regulation must fit into the wider policy context. We accept that as a constraint on our freedom of action, but consider the *quid pro quo* to be that we should contribute from our experience to this wider policy.
- 6.12 We give below three examples where lessons might be learned from the regulated sectors, or where regulation has highlighted questions that must be addressed by wider energy policy.

The Solid Fuel and Oil Industries

- 6.13 These industries are not regulated in the way that the natural gas and electricity industries are. There are good reasons for this. Whereas gas and electricity are delivered through natural monopoly networks, oil and solid fuel are sold in generally competitive markets, and no regulator has been required.
- 6.14 However, measures to improve energy efficiency and reflect the cost of carbon have generally been developed within the regulated sectors. Because of the lack of a readily available legal vehicle, these measures have not generally been transferred into the non-network energy sectors. This means that opportunities to improve energy efficiency in the coal and oil sectors may be missed.
- 6.15 For example, only companies registered with Corgi can install natural gas equipment and, in addition, Phoenix and firmus energy insist that all their field representatives are trained to give advice on energy efficiency. Coal and oil system installers tend to be independent and compete with each other on the basis of the cost of installing the heating system rather than on the cost of running the system after it has been installed. This could act as an incentive to the installation of inefficient heating systems. This problem has been highlighted by the Fuel Poverty Advisory Group which has called for more regulation of new solid fuel and oil systems.
- 6.16 The Energy Services Directive³⁵ applies to all energy suppliers, networked and non-networked. It therefore represents an opportunity to “level the playing field” by ensuring that similar standards of consumer protection and similar requirements to contribute to sustainability apply to all suppliers of energy. This would be of particular importance in the domestic sector.
- 6.17 We understand that DETI currently intend to transpose this Directive by use of voluntary agreements. This is the approach being taken in Great Britain. However, the task in Great Britain may be less challenging due to the fact that in GB non-networked energy is fairly marginal in the domestic sector whilst in Northern Ireland it covers the main domestic fuels.
- 6.18 For the time being, we are waiting to see whether the voluntary agreements proposed will be sufficient to deliver the standards of consumer protection and contribution to sustainability in the non-networked sector that are considered to be a minimum in the networked energy sector.

³⁵ European Commission. Directive 2006/32/EC.

Renewable Heat and Community CHP

- 6.19 Combined Heat and Power (CHP) is a very efficient form of power generation whereby the heat is put to some good use rather than simply wasted. The Utility Regulator has worked with NIE and with Phoenix Natural Gas and firmus energy to promote CHP. Renewable heat is where renewable energy sources are used to generate heat rather than electrical power. In Northern Ireland we have yet to see any major development of coordinated heat networks where heat (either from renewable or CHP sources) is distributed through networks in communities and towns.
- 6.20 The Utility Regulator has experience of developing a networked industry from the ground up and one that is based primarily on private investment i.e. the gas industry. Our experience of developing an efficient and coordinated gas industry could be utilised to develop heat networks. For example, one of the key elements for the development of any networked industry is stable regulation. This provides investors with the confidence that they can earn reasonable returns on their investment and at the same time provides consumers with confidence that their interests are being protected.

Development of the Gas Network

- 6.21 The principle objective of the Utility Regulator, in respect of gas, is to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland. Natural gas has brought many benefits to Northern Ireland, primarily gas has reduced the level of CO₂ by displacing higher polluting fuels. As discussed in Chapter 3, natural gas produces around 25% less carbon than oil and around 45% less than solid fuel and we are already seeing the benefits of cleaner electricity production from more efficient CCGT generation at Coolkerragh and Ballylumford. The introduction of natural gas to Northern Ireland has created an effective fuel choice for homes and businesses. Natural gas has also helped to alleviate fuel poverty through the installation of more efficient heating systems replacing old inefficient systems.
- 6.22 Our duty to promote the development of the natural gas network relates only to the development so far as it is economic to do so. However given the evidence to date regarding the benefits of natural gas, the Utility Regulator believes there is a case for extending the natural gas network further and would seek to work with DETI to devise a strategy for the further extension of the network. Replacing heating oil with gas as the fuel of choice for the domestic sector could potentially be the largest single policy action possible to reduce Northern Ireland's carbon footprint.

6.23 Currently gas is relatively expensive in Northern Ireland compared to GB due to three main reasons:

- the GB network was privatized at a discount whereas Northern Ireland's network is being built by private companies;
- take-up rates are lower than expected (in GB, where gas is available, 95% of customers are connected whilst in Northern Ireland the figure is approximately 44%);
- Northern Ireland customers have to pay for the extra transport costs incurred in bringing the gas to Northern Ireland.

The faster we see new connections in Northern Ireland, the faster the infrastructure cost-per-home will fall. Promoting take-up can therefore benefit existing customers as it will result in the cost of the infrastructure being divided between an increasing number of users.

Other Policy Considerations

Transport

6.24 The Northern Limits report highlighted our over reliance on the car as one of the reasons for Northern Ireland's high ecological footprint. The Utility Regulator is not responsible for transport. However, we note that the potential of natural gas for transport could be better explored in Northern Ireland. There is a great opportunity for natural gas transport in the Belfast area as we have a high pressure network with gates at convenient locations. In order to develop a project on natural gas for transport, it would be necessary for a high volume user to commit to the project, e.g. Translink, Royal Mail or Belfast City Council.

Building Regulations

6.25 Energy efficiency is one of the best ways of protecting our environment as it allows us all to enjoy more comfort for less waste and cost. One way to improve energy efficiency in buildings is through building regulations. The Department of Finance and Personnel (DFP) is responsible for the development of policy and legislation relating to building regulations for Northern Ireland.

Nuclear Energy

6.26 We would be happy to contribute to any discussions relating to nuclear energy, although the policy lead on this issue does not lie with the Regulator.

Questions for Consultation

- Q6.1** Respondents are asked to comment on the three main roles for the Utility Regulator identified at the beginning of this chapter.
- Q6.2** Respondents are asked to comment on data, which would be useful but, which is currently unavailable on a regular basis in Northern Ireland.
- Q6.3** Respondents are asked to suggest innovative methods of developing and promoting the gas industry as a means of reducing Northern Ireland's carbon foot print.
- Q6.4** Respondents are asked how the solid fuel and oil industries could contribute to social and environmental sustainability? In addition what approach will best achieve this aim?
- Q6.5** Respondents are asked if the regulatory model used to develop the natural gas network could provide lessons for the promotion of efficient and coordinated heat networks? Do respondents believe that better regulation could aid the development of the community heat industry?

7. Regulating for Sustainable Development

- 7.1 This chapter will set out a range of possible new approaches to how we regulate, along with any further work to be carried out. It will not be within the scope of this consultation to carry out a full investigation of each potential further work stream. It will identify what further work could be done and ask respondents for their views on which are likely to bear most fruit.
- 7.2 A key question will be priorities, given our limited resources, and comments are sought on this.

Create Clarity for Licence Holders and Customers Regarding Licence Holder Duties

- 7.3 The Utility Regulator will consider the idea of a cross utility licence condition requiring licensees to have in place an environmental policy. The Utility Regulator believes that such a condition should take into consideration the overall regulatory burden on licence holders. Therefore any such condition should be consulted upon and should be carefully drafted to minimise unnecessary regulatory burden.
- 7.4 The Utility Regulator will also consider the usefulness of a cross utility requirement to report annually on sustainability activities and initiatives and on energy efficiency initiatives. This report would cover sustainability and energy efficiency activities carried out in the preceding 12 months and activities planned for the next 12 months. The report would also contain details of the results of energy efficiency activities in terms of the amount of energy saved.

Giving Better Information to Customers

- 7.5 The Utility Regulator considers that consumer choice is of vital importance. In order to choose to become more “green”, consumers must first be given sufficient information allow them to make informed choices on the type of energy to use and on how much energy they consume for example, customers may want to know if it is more cost effective to take action on energy efficiency or continue to consume in their current manner.
- 7.6 The Utility Regulator proposes to work as part of the SEM to ensure that an effective mechanism for Fuel Mix Disclosure is adopted on an all Island

basis. Further, the Utility Regulator proposes to work with electricity supply licence holders to develop a system of delivering environmental information in relation to fuel mix in a uniform and easy to understand format.

- 7.7 In conjunction with the licence holders, the Utility Regulator plans to consider all options in relation to presenting environmental information on bills. For example a simple green star rating system could be adopted.
- 7.8 The Utility Regulator also proposes to carry out a full strategic investigation into the use of Smart Meters as a mechanism for delivering better quality and timely information to customers.
- 7.9 This combination of actions should empower customers and arm them with the information they need to make choices in relation to both energy efficiency and the type of energy they consume.

Sending the Right Signals to Customers

- 7.10 Signals to customers could take the form of tariffs and connection charges
- 7.11 The Utility Regulator will consider working with energy licence holders in order to carry out an assessment of tariff structures. Tariff structures should not encourage or incentivise the consumption of increased volumes. With this in mind, the Utility Regulator proposes to ask licensees to examine their tariff structures and report on the following:
- Do current tariff structures encourage increased consumption?
 - Can tariff structures be improved in order to reward energy efficiency activity? For instance, could we implement a “rising block” tariff system which creates progressively higher unit-rates for higher levels of consumption? Alternatively, could each household have a “baseline” level of consumption (defined relative to historic consumption) and a higher unit-rate above that baseline? When considering how tariff structures can be improved we will take due consideration of any competition implications.
 - How can tariff structures be improved in order to protect vulnerable customers? The Utility Regulator will engage with Licence Holders with regard to social tariffs. In addition, social tariffs will be considered within the Utility Regulator’s forthcoming Social Action Plan which will be subject to public consultation.

- 7.12 The Utility Regulator proposes to work with NIE and NIW in order to develop a transparent connection charging system for new dwellings and commercial premises. Any connection charging system should encourage greater energy efficiency and the use of renewable technology. It could be based on increased connection charges but with large discounts or rebates available for energy or water conservation measures or for the use of renewable technology.

Electricity Networks & Access for Renewables

- 7.13 The Utility Regulator will continue to work with the electricity system operator, DETI, NIE (Energy) T&D, and the SEM Committee in order to ensure that processes and procedures equitably accommodate renewable generation.
- 7.14 As part of all future electricity and gas price control processes the Utility Regulator plans to ensure that capital expenditure profiles take due consideration of the effects of climate change on networks.

Encouraging Energy Efficiency

- 7.15 The Utility Regulator proposes to carry out a full strategic review of energy efficiency delivery models, including the Energy Efficiency Levy.
- 7.16 The Utility Regulator considers that the Energy Services Company (ESCo) model should be further developed in Northern Ireland in order to ensure that barriers to energy efficiency are removed. The ESCo model is where energy companies, rather than simply supplying energy to individual homes, supply energy services such as better energy efficiency measures or help to get access to renewable technology.
- 7.17 The Utility Regulator also proposes to work with DETI and other stakeholders in relation to the implementation of the Energy Services Directive. In particular the Utility Regulator proposes to work with supply licence holders to ensure that they follow and fulfil the requirements of the Directive:
- 7.18 If necessary the Utility Regulator will bring forward licence modifications.

Gas Promotion

- 7.19 The Utility Regulator proposes to develop a strategy in relation to gas promotion to take into consideration the advantages of gas as a low

carbon fuel. It will look at issues such as developing the gas network, natural gas for CHP and the benefits of common arrangements for natural gas transmission and distribution on the island of Ireland.

- 7.20 With regard to expenditure allowances in the industry price controls, the Utility Regulator proposes to consult on how market development can best be promoted and funded into the future for the natural gas industry as a whole. This review will include how any expenditure can be linked to energy efficiency initiatives.
- 7.21 The Utility Regulator also plans to use lessons learned as part of the SEM to assess regulatory arrangements for gas across the island of Ireland, to the benefit of all customers.

Water

- 7.22 The Utility Regulator plans to work with NIW and other environmental regulators, such as the Environment and Heritage Service (Northern Ireland), to consider the impact of climate change and identify risks and mitigating factors which can be developed into targets for the industry. This approach will be further defined during the Regulator's process for setting prices from 2010.
- 7.23 NIW's Economic Level of Leakage is another instrument whereby reductions in leakage are achieved over the longer term. The analysis does not at present include any environmental costs of CO₂ or other emissions (or the benefits of avoiding future emissions). The Regulator will consider appropriate inclusion of a monetarised cost of CO₂ and other emissions within the Economic Level of Leakage and its guidance to NIW on business cases.

Keeping Our Own House in Order

- 7.24 The Utility Regulator proposes to demonstrate leadership in incorporating sustainability principles into our every day work. We will:
- adopt an internal Sustainability Policy;
 - establish an internal Sustainability Steering Group, to be staffed by representatives from each of the utility directorates and the corporate affairs directorate. This steering group will have the role of co-ordinating and over-seeing all sustainability related work streams within the organisation;

- publish an Annual Sustainability Report for NIAUR, as part of our Annual Report.

Questions for Consultation

Q7.1 The Utility Regulator considers that the following are important when assessing policy proposals. Respondents are asked to score each of the above proposals from 1-10 on the basis of their potential in relation to the following measures:

- 1 Potential Certainty of Outcome**
- 2 Potential Cost effectiveness**
- 3 Certainty for investors**
- 4 Potential to provide equity for consumers**
- 5 Potential to encourage innovation**
- 6 Good fit with other NI government departments**
- 7 Good fit with competitive energy markets**

Q7.2 Respondents are asked to identify what they consider to be the top three priorities from the proposals in Chapter 7 and rank them in order of importance.

Q7.3 Respondents are asked to list any further proposals which they think should be considered.

Appendix 1: The Effects of Climate Change on Northern Ireland

A report published jointly by the Environment & Heritage Service, DOE, UK Climate Impacts and Scotland and Northern Ireland Forum for Environmental Research (SNIFFER), stated that “the climate of Northern Ireland is already changing.” The effects of climate change in Northern Ireland are expected to accelerate over the coming century and according to the report:

- average temperatures may rise by 3°C or more,
- summer rain fall may decrease by up to 50%,
- winters may be 25% wetter,
- sea levels may rise.

The report examined the impacts of climate change on a number of areas including:

- a) Threats to our natural environment, which could include:** threats to our wildlife, biodiversity and natural habitats and to fisheries, agriculture and forestry. These threats could include problems with field drainage, with a potential impact on crop yields and animal health, adverse impacts on fish stocks, increased risk of forest fires and changing incidence of insect pest and disease out breaks.
- b) Threats to our built environment, which could include:** flooding and costal erosion and subsidence risks in summer.
- c) Threats to our economy, which could include:** business risks such as potential changes in demand for seasonal goods, potential increases in insurance claims and transport problems caused by the effects of floods, fires or subsidence on our roads and bridges. A changing climate could also affect tourism.
- d) Threats to our social well being, which could include:** risk to physical or mental health resulting from flooding, health problems caused by increased exposure to high temperatures or UV in summer, increase in problems caused by pests or bacteria and threats to outdoor sport and recreation caused by adverse weather conditions.

As well as being contributors to climate change, the energy and water sectors face possible threats from climate change including:

Energy

- heightened risk of damage to infrastructure and structures caused by subsidence and heave,
- changes in the demand profile for energy – e.g. increased summer demand caused by increased use of air conditioners,
- greater risk of damage to power supply infrastructure (e.g. trees coming into contact with power lines).

Water

- Increased temperatures could cause problems with river and reservoir water quality.
- In winter, more intense storms could cause increases in discharges from combined sewer overflows.
- In summer, reductions in the volume of the sewer base flow may result in blockages, leading to environmental problems or flooding.
- Lower flows may cause problems for users in relation to abstraction, the ability to dilute effluent, aquatic ecology and recreation.
- Drier, hotter summers would lead to increased demand for water.
- Increased rainfall can cause soil erosion and leaching of agrochemical and agricultural wastes leading to problems for aquatic life, abstractions and river users.
- Lower summer runoff could lead to reduced flushing of estuaries and lakes with implications for shell fisheries, lake ecology and abstractors.
- In summer higher evaporation and lower inflows may lead to reductions in open water storage e.g. Lough Neagh, which may include marginal habitats and abstraction.
- Increased risk of pests and change in the life cycle of aquatic and land based organisms.
- Summer storms, following dry periods, may lead to high pollutant loads, damaging aquatic habitats.

Appendix 2: Water Duties

General Duties With Respect to the Water Industry

6. (1) This Article shall have effect for imposing duties on the Department and the Authority as to when and how they should carry out the following functions—

(a) in the case of the Department, its functions under the provisions of this Order relating to the regulation of relevant undertakers; and

(b) in the case of the Authority, its functions under the provisions of this Order relating to:

(i) the regulation of relevant undertakers;

(ii) the financial conditions of requisitions; or

(iii) the movement of certain pipes.

(2) The Department or, as the case may be, the Authority shall carry out the functions mentioned in paragraph (1) in the manner that it considers is best calculated—

(a) to protect the interests of consumers in relation to the supply of water by water undertakers and the provision of sewerage services by sewerage undertakers, wherever appropriate by facilitating effective competition between persons engaged in, or in commercial activities connected with, the supply of water and the provision of sewerage services;

(b) to secure that the functions of a water undertaker and of a sewerage undertaker are properly carried out as respects every area of Northern Ireland; and

(c) to secure that companies holding appointments under Chapter I of Part III as relevant undertakers are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of the functions of such undertakers.

(3) For the purposes of paragraph (2)(a) the Department or, as the case may be, the Authority shall have regard to the interests of:

(a) individuals who are disabled or chronically sick;

(b) individuals of pensionable age;

(c) individuals with low incomes; and

(d) individuals residing in rural areas,

but that is not to be taken as implying that regard may not be had to the interests of other descriptions of consumer.

(4) The Department and the Authority may, in carrying out any of the functions mentioned in paragraph (1), have regard to—

(a) any interests of consumers in relation to electricity supplied by authorised suppliers (within the meaning of the Energy Order);

(b) any interests of consumers in relation to gas supplied by authorised

suppliers (within the meaning of that Order);
(c) any interests of consumers in relation to communications services and electronic communications apparatus (within the meaning of the Communications Act 2003 (c.21), which are affected by the carrying out of that function.

(5) Subject to paragraph (2), the Department or, as the case may be, the Authority shall carry out the functions mentioned in paragraph (1) in the manner that it considers is best calculated—

- (a) to promote economy and efficiency on the part of companies holding an appointment under Chapter I of Part III in the carrying out of the functions of a relevant undertaker;
- (b) to secure that no undue preference is shown, and that there is no undue discrimination, in the fixing by such companies of water and sewerage charges;
- (c) to secure that consumers are protected as respects benefits that could be secured for them by the application in a particular manner of any of the proceeds of any disposal (whenever made) of any of such a company's protected land;
- (d) to ensure that consumers are also protected as respects any activities of such a company which are not attributable to the exercise of functions of a relevant undertaker, or as respects any activities of any person appearing to the Department or, as the case may be, the Authority to be connected with the company, and in particular by ensuring—
 - (i) that any transactions are carried out at arm's length;
 - (ii) that the company, in relation to the exercise of its functions as a relevant undertaker, maintains and presents accounts in a suitable form and manner;
- (e) to contribute to the achievement of sustainable development.

(6) In carrying out any of the functions mentioned in paragraph (1) in accordance with the preceding provisions of this Article, the Department and the Authority shall have regard to the principles of best regulatory practice (including the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed).

(7) In this Article the references to water and sewerage charges are references to—

- (a) any charges in respect of any services provided in the course of the carrying out of the functions of a relevant undertaker; and
- (b) amounts of any other description which such an undertaker is authorised by or under any statutory provision to require any of its customers or potential customers to pay.

(8) For the purposes of this Article—

(a) subject to paragraph (9), the reference in paragraph (1) to the provisions of this Order relating to the regulation of relevant undertakers is a reference to the provisions contained in Part III (except Article 45), or in any of Articles 66, 69 to 73, 150, 152, 214, 243, 244, 253, 254 and 259 to 261;

(b) the reference in that paragraph to the provisions relating to the financial conditions of requisitions is a reference to the provisions contained in Articles 77, 83, 88 and 155; and

(c) the reference in that paragraph to the provisions relating to the movement of certain pipes is a reference to the provisions of Article 247.

(9) Paragraphs (2) to (6) do not apply in relation to anything done by the Authority in the exercise of functions assigned to it by Article 29(3) (Competition Act functions).

(10) The Authority may nevertheless when exercising any Competition Act function, have regard to any matter in respect of which a duty is imposed by any of paragraphs (2) to (6) if it is a matter to which the OFT could have regard when exercising that function.

(11) The duties imposed by paragraphs (2) to (6) do not affect the obligation of the Department or, as the case may be, the Authority to perform or comply with any other duty or requirement (whether arising under this Order or another statutory provision, by virtue of any Community obligation or otherwise).

Appendix 3: Gas Duties

The Principal Objective and General Duties of the Department and the Authority in Relation to Gas

14.(1) The principal objective of the Department and the Authority in carrying out their respective gas functions is to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland.

(2) The Department and the Authority shall carry out those functions in the manner which it considers is best calculated to further the principal objective, having regard

to—

- (a) the need to protect the interests of consumers of gas;
- (b) the need to secure that licence holders are able to finance the activities which are the subject of obligations imposed by or under Part II of the Gas Order or this Order;
- (c) the need to secure that the prices charged in connection with the conveyance of gas through designated pipe-lines (within the meaning of Article 59) are in accordance with a common tariff which does not distinguish (whether directly or indirectly) between different parts of Northern Ireland or the extent of use of any pipe-line; and
- (d) the need to protect the interests of gas licence holders in respect of the prices at which, and the other terms on which, any services are provided by one gas licence holder to another.

(3) In performing that duty, the Department or the Authority shall have regard to the interests of—

- (a) individuals who are disabled or chronically sick;
 - (b) individuals of pensionable age; and
 - (c) individuals with low incomes;
- but that is not to be taken as implying that regard may not be had to the interests of other descriptions of consumer.

(4) The Department and the Authority may, in carrying out any gas functions, have regard to the interests of consumers in relation to electricity.

(5) Subject to paragraph (2), the Department and the Authority shall carry out their respective gas functions in the manner which it considers is best calculated—

(a) to promote the efficient use of gas;
(b) to protect the public from dangers arising from the conveyance, storage, supply or use of gas;
(c) to secure a diverse and viable long-term energy supply; and
(d) to facilitate competition between persons whose activities consist of or include storing, supplying or participating in the conveyance of gas;
and shall have regard, in carrying out those functions, to the effect on the environment of activities connected with the conveyance, storage or supply of gas.

(6) In this Article “gas functions” means—
(a) functions under Part II of the Gas Order; and
(b) functions under this Order relating to gas.

Appendix 4: Electricity Duties

The Principal Objective and General Duties of the Department and the Authority in Relation to Electricity

12. (1) The principal objective of the Department and the Authority in carrying out their respective electricity functions is to protect the interests of consumers of electricity supplied by authorised suppliers, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the generation, transmission or supply of electricity.

(2) The Department and the Authority shall carry out those functions in the manner

which it considers is best calculated to further the principal objective, having regard

to—

(a) the need to secure that all reasonable demands for electricity are met; and
(b) the need to secure that licence holders are able to finance the activities which are the subject of obligations imposed by or under Part II of the Electricity Order or this Order; and

(c) the need to secure—

(i) that the prices charged to tariff customers by public electricity suppliers for electricity supplied under Article 19(1) of the Electricity Order to premises in any area specified in an order made by the Department are in accordance with tariffs which do not distinguish (whether directly or indirectly) between different parts of that area; and

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PART II

(ii) that public electricity suppliers are not thereby disadvantaged in competing with other persons authorised by a licence or exemption to supply electricity to such premises.

(3) In performing that duty, the Department or the Authority shall have regard to the interests of—

(a) individuals who are disabled or chronically sick;

(b) individuals of pensionable age;

(c) individuals with low incomes; and

(d) individuals residing in rural areas;

but that is not to be taken as implying that regard may not be had to the interests of other descriptions of consumer.

(4) The Department and the Authority may, in carrying out any electricity functions,

have regard to the interests of consumers in relation to gas.

(5) Subject to paragraph (2), the Department and the Authority shall carry out their respective electricity functions in the manner which it considers is best calculated—

(a) to promote the efficient use of electricity and efficiency and economy on the part of persons authorised by licences or exemptions to supply or participate in the transmission of electricity;

(b) to protect the public from dangers arising from the generation, transmission or supply of electricity;

(c) to secure a diverse and viable long-term energy supply;

(d) to promote research into, and the development and use of, new techniques by

or on behalf of persons authorised by a licence to generate, supply or participate in the transmission of electricity; and

(e) to secure the establishment and maintenance of machinery for promoting the health and safety of persons employed in the generation, transmission or supply of electricity;

and shall have regard, in carrying out those functions, to the effect on the environment

of activities connected with the generation, transmission or supply of electricity.

(6) In this Article “electricity functions” means—

(a) functions under Part II of the Electricity Order; and

(b) functions under this Order relating to electricity

Appendix 5: SEM Duties

Principal Objective and Duties of Department, the Authority and SEM Committee in relation to SEM

9. (1) The principal objective of:

- (a) the Department in carrying out its electricity functions in relation to matters which it considers materially affect, or are likely materially to affect, the SEM;
- (b) the Authority in giving effect to any decision of the SEM Committee;
- (c) the SEM Committee in carrying out its functions under Article 6(2), is to protect the interests of consumers of electricity in Northern Ireland and Ireland supplied by authorised persons, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the sale or purchase of electricity through the SEM.

(2) The Department, the Authority and the SEM Committee shall carry out those functions in the manner which it considers is best calculated to further the principal objective, having regard to:

- (a) the need to secure that all reasonable demands for electricity in Northern Ireland and Ireland are met; and
- (b) the need to secure that authorised persons are able to finance the activities which are the subject of obligations imposed by or under Part II of the Electricity Order or the Energy Order or any corresponding provision of the law of Ireland; and
- (c) the need to secure that the functions of the Department, the Authority, the Irish Minister and CER in relation to the SEM are exercised in a coordinated manner,
- (d) the need to ensure transparent pricing in the SEM; (e) the need to avoid unfair discrimination between consumers in Northern Ireland and consumers in Ireland.

(3) The Department, the Authority and the SEM Committee may, in carrying out any of the functions mentioned in paragraph (1), have regard to the interests of consumers in Northern Ireland and Ireland in relation to gas.

(4) Subject to paragraph (2), the Department, the Authority and the SEM Committee shall carry out the functions mentioned in paragraph (1) in the manner

which it considers is best calculated:

- (a) to promote efficiency and economy on the part of authorised persons;
- (b) to secure a diverse, viable and environmentally sustainable long-term energy supply in Northern Ireland and Ireland; and
- (c) to promote research into, and the development and use of:
 - (i) new techniques by or on behalf of authorised persons;

(ii) methods of increasing efficiency in the use and generation of electricity.

(5) Subject to paragraph (2), in carrying out any of the functions mentioned in paragraph (1) the Department, the Authority and the SEM Committee shall have regard to:

- (a) the effect on the environment in Northern Ireland and Ireland of the activities of authorised persons, and
- (b) the need, where appropriate, to promote the use of energy from renewable energy sources.

(6) In carrying out any of the functions mentioned in paragraph (1) the Department, the Authority and the SEM Committee shall not discriminate unfairly

- (a) between authorised persons; or
- (b) between persons who are applying to become authorised persons.

(7) In carrying out any of the functions mentioned in paragraph (1) in accordance with the preceding provisions of this Article, the Department, the Authority and the SEM Committee shall have regard to

- (a) the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed;
- (b) any other principles appearing to it to represent the best regulatory practice.

(8) In this Article:

“authorised person” means the holder of a licence or exemption granted under Part II of the Electricity Order or any corresponding provision of the law of Ireland;

“electricity functions” means:

- (a) functions under Part II of the Electricity Order;
- (b) functions under the Energy Order relating to electricity;
- (c) functions under Part IV of the Electricity Order 1992 (Amendment) Regulations (Northern Ireland) 2005 (SR 2005/ 335); and
- (d) functions under this Order;

“environmental sustainability” includes the need to guard against climate change; and

“renewable energy sources” has the same meaning as in the Directive.

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