DEPARTMENT OF ENTERPRISE, TRADE, AND INVESTMENT

REVIEW OF THE 2004 STRATEGIC ENERGY FRAMEWORK FOR NORTHERN IRELAND

January 2008

Contents

1 Introduction

1.1 The need for and use of energy is an integral and fundamental element of all sections of our modern society. Contemporary life would be near impossible without access to adequate supplies of electricity and gas for lighting, heating and cooking. The guaranteed regular production of relatively low cost energy is essential to us all, for preserving our standard of living and maintaining Northern Ireland as a competitive and enterprising region within the United Kingdom and the European Community.

1.2 It was against a historical background of small isolated energy markets, the absence of exploited indigenous energy and a limited choice of fuels that the Department's "Strategic Energy Framework" (SEF 2004) document was produced in June 2004 aimed at setting out the agenda, key priorities, and principles for the coming decade. This document acknowledged the extensive progress which had been made in the Northern Ireland energy sector in the previous decade up to 2004, including privatisation of the electricity network, the introduction of natural gas with a consequential widening of fuel choice, the initial progress in exploiting Northern Ireland's renewable energy potential, the sharpening of focus on improving energy efficiency, and the possibility of addressing energy issues on an "all-island" basis. However despite these note worthy achievements, SEF 2004 noted that many challenges still faced the energy sector and set as the primary objective for the Department: **"the achieving of a competitive, sustainable reliable energy market at the minimum cost necessary in an all-island, UK and European context".**

1.3 To help achieve this broad objective, SEF 2004 set four main goals for government policies:

- to reduce energy costs relative to other UK/EU regions:
- to build competitive energy markets;
- to protect our future by enhancing the sustainability of our energy supply and consumption; and
- to maintain the reliability of energy supplies.

1.4 The evaluation of these goals and the 40 associated actions to help achieve them, has formed the platform on which this review is structured. It provides an analysis of the appropriateness of these goals and the progress which DETI has made in achieving its energy objectives. It also presents recommendations on the way forward for energy policy, based on proposals suggested from within DETI, the Energy Regulator, and key industry stakeholders. The recommendations are intended to offer direction for the Northern Ireland

energy sector within the context of the energy markets in the UK, RoI, and Europe.

Compiling the Review

1.5 The review has been directed by a Steering Group, the membership of which is detailed at appendix 1. Questions to evaluate progress across the energy sector were formulated and agreed by the Group (see Appendix 2). Structured meetings took place with the Energy Heads of Branch, the Regulator, and key representatives from the energy industry (see Appendix 3). Those Northern Ireland Departments that were involved in shaping SEF 2004 were also contacted and asked for their views. These discussions provided the opportunity to assess changes in the energy sector since 2004, and to question and measure the extent to which the 4 policy goals have been achieved. An economic statement is provided at Appendix 8.

Terms of Reference (ToR)

1.6 The agreed Terms of Reference are as follows:

- Undertake an analysis of the challenges facing the energy sector in NI and assess the extent to which these have changed since 2004;

- Assess the extent to which the framework is fit for purpose in the context of the current energy sector in NI, identifying any gaps in coverage which need to be addressed, and make recommendations;

- Provide detailed consideration of the strategic context in which the Strategic Energy Framework operates, including its relationship and complementarity with UK and EU initiatives/policies;

- Report on the extent to which the 4 policy goals have been achieved, taking into account

  i the price differential between electricity prices in Northern Ireland, compared with the UK and RoI, including their impact on business competitiveness;

  ii competitiveness and choice of electricity supply for industry and domestic consumers;

  iii. the progress of developing an all-island energy market;

  iv. the balance of fuel diversity, cost and security of supply for power generation;

v. Northern Ireland's emergency planning process in respect of electricity, oil and gas in the context of security and reliability of energy supplies;

vi. the impact of market opening in the Phoenix Natural Gas licence area of Greater Belfast and Larne;

vii. the expansion of the natural gas network, including the extent of transmission and distribution network provision, and customer connections;

viii. the increase in the use of renewable energy;

ix. the level of carbon emissions and the application of energy efficiency by the domestic and industrial sectors; and

x. the contribution of DETI and respective energy providers to tackling fuel poverty.

- Make a high level assessment of the broad impact of each key intervention (drawing on individual evaluations if possible or flagging those which need / are scheduled for evaluation / PPE in due course);

- Advise in the light of the implementation of the framework, whether the goals and actions set were the right ones to achieve the overall objective, and make recommendations; and

- Examine and benchmark NI activity against the activities of other UK, RoI and EU regions, to identify best practice and learning opportunities for NI.

2 Context

2.1 The SEF 2004 was Northern Ireland's response to the 2003 UK Energy White Paper "Our energy future – creating a low carbon economy", which attempted to set a strategy to enable the United Kingdom to become a world leader in developing cleaner and greener energy. SEF 2004 reflected the key issues highlighted in the UK White Paper, and identified the energy challenges specific to Northern Ireland. It was also informed by the concerns raised by the Northern Ireland Assembly's ETI Committee report, "Inquiry into Energy", which was published in March 2002.

2.2 In addition the European Union Directives 2003/54/EC (Electricity) and 2003/55/EC (Gas), which introduced targets to reduce carbon emissions and national carbon footprints were taken into consideration. These European and national environmental strategies, together with the EU Directive on Emissions Trading which incrementally penalised the consumption of high carbon fossil fuels, focused Government attention on developing and using renewable energy and improving energy efficiency.

2.3 The document was produced against the background of a developing and expanding energy infrastructure in Northern Ireland (see map on page 8). Developments included the introduction of modern Combined Cycle Gas Turbine technology at Ballylumford power station to replace the old dual fired oil / gas generators, and the Northern Ireland Gas project taking natural gas outside of the Greater Belfast area to the towns in the North West and to the new gas fired power station at Coolkeeragh outside Londonderry. Plans were well advanced for the construction of the gas pipeline from Dublin to Antrim to link into the North West and Phoenix Natural Gas systems. Infrastructure to obtain energy from renewable sources was also on the increase with the construction of additional wind farms.

2.4 In light of these policy and infrastructure developments, DETI and the main industry stakeholders identified the main challenges then facing the Northern Ireland energy sector as:

- narrowing the differential between electricity prices in Northern Ireland and other regions of the UK and the EU, particularly the RoI;
- opening the markets in both electricity and gas which brings both competition and choice;
- developing an all-island energy market by pursuing greater harmonisation of energy systems with the RoI, aimed at providing substantial mutual economic and social benefits, notably in areas of investment planning, pricing and reliability of supply;

- ensuring a proper balance of fuel diversity, cost and security of supply for power generation;

- reducing emissions by securing the most efficiency from power generation and reducing demand for energy by enhancing energy efficiency in homes and businesses;

- efficiently expanding the gas network beyond the Greater Belfast area;

- increasing the use of renewable energy for heat and power generation; and

- tackling fuel poverty.

2.5 These challenges were summarised in SEF 2004 into the primary objective of :

"achieving a competitive, sustainable reliable energy market at the minimum cost necessary in an all-island, UK and European context".

2.6 To achieve this broad objective SEF 2004 set four main goals for government policy:

- reduce energy costs relative to other UK/EU regions;

- build competitive energy markets;

- protect our future by enhancing the sustainability of our energy supply and consumption; and

- maintain the reliability of energy supplies.

2.7 It is against these goals that the Department's activities during the past four years have been assessed

Figure 1 Northern Ireland Energy Infrastructure 2007

3 Evaluation

3.1 The following chapters of the Review provide an assessment of progress made within the energy sector in achieving these policy goals and consider what impact has been made in the last 3 years towards the achievement of the primary objective.

Reducing Energy Costs – see pages 11 – 24, Appendix 4

Building Competitive Energy Markets – see pages 25 – 29, Appendix 5

Enhancing Sustainability in Energy – see pages 30 – 37, Appendix 6

Reliable Energy Supplies - see pages 38 – 40, Appendix 7

Economic Statement (Market failure) - see pages 53 – 54, Appendix 8.

3.2 Our discussions with representatives of the energy industry and the Northern Ireland Authority for Utility Regulation (the Regulator) have indicated a broad general agreement that experience has shown that these goals were the correct and proper issues to be tackled and are still very relevant and should continue to be the focus of government policy for the short and medium term.

3.3 Of the 40 action points set out in SEF 2004 (see appendices 4 - 7), 90% have been fully achieved or have progressed significantly since the publication of the framework document. Major progress has been made especially in:

- the building of competitive markets with the complex legislation and governance structure for the All-island Single Electricity Market having been completed on schedule;

- the Northern Ireland gas network has been expanded with gas now available in the North West and South East areas through the construction of the North West and South North gas transmission pipelines;

- this project has also linked the gas network in the two parts of Ireland thereby greatly increasing the security of supply of fuel for both the gas and electricity industries;

- development has also been achieved on increasing the use of renewable energy, through the programme delivered by Action Renewables, the roll-out of the Environment and Renewable Energy Fund (EREF), plus supporting renewables energy projects with EU funding and the implementation of the NI Renewables Obligation;

- the funding towards Northern Ireland's energy efficiency programmes increased steadily over the years since 2004 with commensurate energy and carbon savings being achieved across all sectors;

- the cost of energy continues to be a concern, especially for industry. However, over the four years the differential between electricity prices in Northern Ireland compared with our immediate neighbours in Great Britain and RoI has shown a sharp decrease, and

- all these developments have assisted government to tackle the ongoing problem of fuel poverty.

3.4 Overall a significant amount has been achieved in the past four years to move towards the objectives set out in SEF 2004. However a number of complex difficulties still exist and these have been highlighted in the final chapter of this review (see pages 40 - 44) as areas which DETI, the Regulator and the industry will have to tackle in the future.

4 Reducing Energy Costs

4.1 Although in statistical terms energy costs in Northern Ireland represent a relatively small proportion of turnover for most companies (on average between 1 and 2 % of turnover[1]), the impact of relatively high energy costs, which in 2004 were significantly higher than elsewhere in the EU generally and in GB and RoI particularly, was seen by industry as a major impediment to their business competitiveness.

4.2 In SEF 2004 it was agreed that actions would be taken to reduce the impact of these high energy prices, particularly where it was not possible to achieve a significant reduction by improving energy efficiency. The Public Service Agreement (PSA) targets for the period 2005 – 08 included a proposal that by June 2007, the Department would ensure the delivery of a proposal to significantly reduce electricity costs.

4.3 High energy prices, along with poor housing and low incomes, were seen as a contributing factor to fuel poverty which in 2001 affected a third of households in Northern Ireland. Latest figures published in the Interim House Condition Survey state that 24% of households suffered from Fuel Poverty in 2004, a larger proportion than any other region in the UK. As a result SEF 2004 highlighted the need for government to achieve an early reduction in this energy cost differential and set this as one of the main policy goals.

Electricity

4.4 The SEF 2004 recognised that Northern Ireland electricity prices were substantially greater than in Great Britain and the RoI. This was mainly due to the legacy generation costs from privatisation and was likely to continue for a considerable period of time. Table 1 (page 14), as advised by NIE, shows that Northern Ireland industrial sector costs were between 20 - 30% greater than GB and 5% above costs in the RoI. As a response to this, Government proposed in September 2003 to attempt to bring about a decrease in electricity prices across the business sector and by doing so decrease this cost gap.

4.5 A formal State Aid notification was submitted by DETI to the European Commission in August 2005, and again during the first half of 2006/07, requesting permission to provide aid (£30m per year up to 2012) to bring about a decrease in electricity costs to business users of at least 10% below the levels they would otherwise have been. This notification was withdrawn in September 2006 following a review by DETI which concluded that even, in the event, of the proposal receiving State Aid clearance, the combined effect of the loss of the first 3 years' funding (2003 – 2006), and the expected requirement for the benefit of the

[1] Source – Economic Research Institute of NI Report "Measurement & Benchmarking of Competitiveness – the cost of doing business in NI" – December 2005

intervention to apply to all customers, would have substantially reduced potential impacts on business costs.

4.6 A further measure was taken by DETI to reduce electricity tariffs for customers by defraying the Energy Efficiency Levy (EEL). The EEL is a mechanism developed by the Regulator's office whereby an average contribution of approximately £6 per annum is charged on all electricity consumers, making available a sum in the region of £4.5m per annum for expenditure on approved energy efficiency schemes. The priority funding stream from the EEL (80%) is aimed at helping disadvantaged households likely to be at risk of fuel poverty. The remaining 20% is targeted at the non-priority domestic and industrial sectors. This relates to energy efficiency projects such as appliance trade-ins; energy efficiency light bulbs; and cavity and loft insulation cash-backs. The intervention by government to defray the EEL amounting to £8.8m over the 2004/05 and 2005/06 years resulted in a 1.5% reduction in electricity tariffs for all customers in the 2005/06 tariff year.

4.7 In addition to these government led initiatives, changes within the ownership of the Northern Ireland energy infrastructure have also contributed to downward pressure on costs throughout the industry. The purchase of the Moyle Electricity Interconnector in 2003 by Northern Ireland Energy Holdings, a locally based not-for-profit mutualised company, has had an important influence in creating downward pressure on the price of electricity from gas-fired generation. In our discussions, NIEH confirmed that it is estimated that mutualisation will result in £30m savings for customers over the lifetime of the Moyle Interconnector.

4.8 The Emissions Trading Scheme (ETS) is an EU-wide Scheme aimed at reducing the CO_2 emissions of large installations such as electricity generation, industrial processing and cement manufacture. It sets a cap on CO_2 emissions and the cap is determined by the number of free CO_2 allowances allocated to obligated installations in National Allocation Plans (NAPs) agreed with the EC. Those emitting in excess of their allowance are required either to purchase surplus allowances, or pay a penalty for each additional tonne of CO_2 emitted. The impact for NI is that, with electricity generators, any such cost is passed on to the consumer.

4.9 Phase 1 of ETS commenced on 1 January 2005 and ends in 2008. The allowances allocated for NI for the period 2008 – 2012 (phase 2), are expected to account for 65% of the actual emissions projected for 2010. They will not be sufficient therefore, to ensure a neutral impact on NI's electricity consumption tariff. The excess impact on prices will depend on the price of carbon. The introduction of the SEM from 1 November 2007 will involve the full price of carbon being included in the wholesale price of electricity from the 2008/09 tariff year. As a result, the benefits of ETS allowances are expected to be retained by electricity generators. However, the continued operation of the existing legacy contracts with

Kilroot and Ballylumford Power Stations enables the benefits of the ETS allowance to be passed to the consumer as opposed to the generator.

4.10 The Northern Ireland Renewables Obligation (NIRO) supports and encourages the generation of renewables electricity from indigenous sources. The Obligation level imposed on Northern Ireland electricity suppliers for the first 8 years of the NIRO up to 2012 has been decoupled from the renewables target in order to reduce the potential impact of the NIRO on the cost of electricity. The lower Obligation level (6.3% in 2012) has been made possible because of NIRO's links with the other Great Britain Obligations.

4.11 Invest Northern Ireland through their third party organisation the Carbon Trust has also contributed to reductions in electricity costs to local industry. The Carbon Trust has been engaged in a process of energy surveys within the business sector, which have identified annual energy cost saving opportunities in excess of £85m since 2004. Further details from our discussions with Carbon Trust are recorded at paragraph 6.24.

4.12 All these different initiatives have contributed to downward pressure on Northern Ireland electricity prices at the 2004 level and this plus a general increase in costs in GB and RoI have meant that the differential between Northern Ireland electricity prices and those in GB and RoI have in the main shown a reduction when compared with 2004.

Table 1 – Comparison of Electricity Costs in NI/GB/RoI – 2004 / 2007

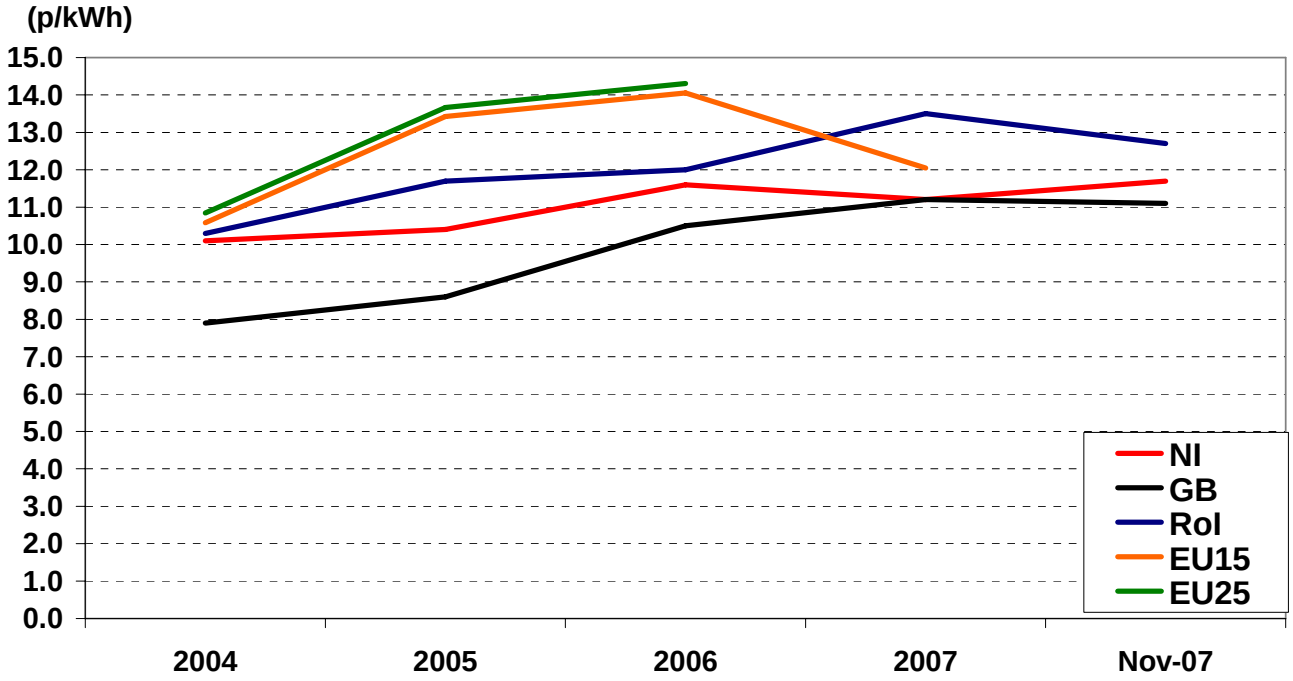
		Domestic		Small Medium Enterprises		Large Energy Users	
		3,300 kWh pa		15,000 kWh pa		10 GWh pa	
		p/kWh	vs NI %	p/kWh	vs NI %	p/kWh	vs NI %
2004	NI	10.1		10.2		5.9	
	GB **	7.9	-22%	7.1	-30%	3.6	- 39%
	RoI	10.3	+ 2%	9.5	-7%	5.2	- 12%
2005	NI	10.4		11.5		6.7	
	GB**	8.6	-17%	7.7	-33%	4.8	-28%
	RoI	11.7	+13%	10.4	-10%	6.3	-6%
2006	NI	11.6		12.7		7.2	
	GB **	10.5	-10%	9.5	-25%	7.3	+ 1%
	RoI	12.0	+ 3%	11.2	-12%	6.8	- 6%
2007	NI	11.2		12.4		7.7	
	GB **	11.2	Nil	8.5	-31%	6.8	-12%
	RoI	13.5	+ 20%	12.3	-1%	7.1	-8%
Nov 2007	NI	11.7		12.0		8.2	
	GB **	11.1	- 5%	8.5	-29%	6.9	-16%
	RoI	12.7	+ 8%	10.5	-12%	7.3	- 11%

** Great Britain average

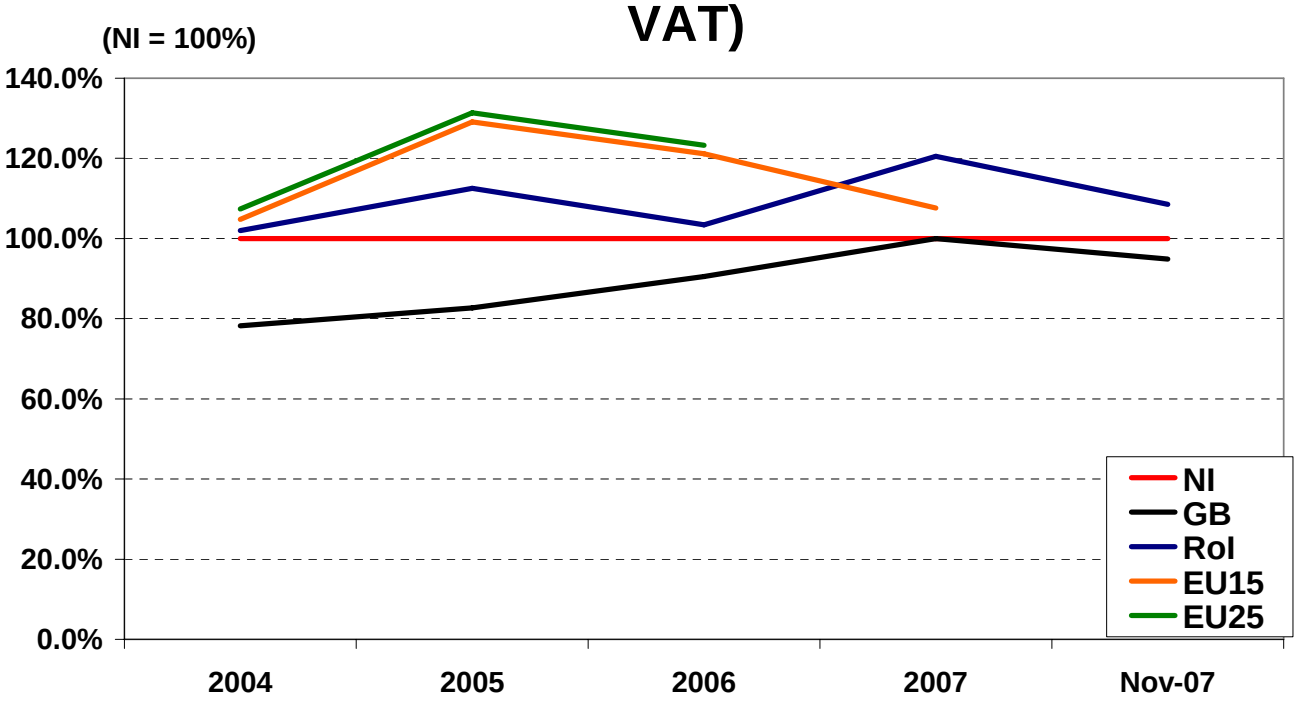
Exchange rate used for RoI was 1€ = £0.68

Source: NIE

Price of domestic electricity (including VAT)

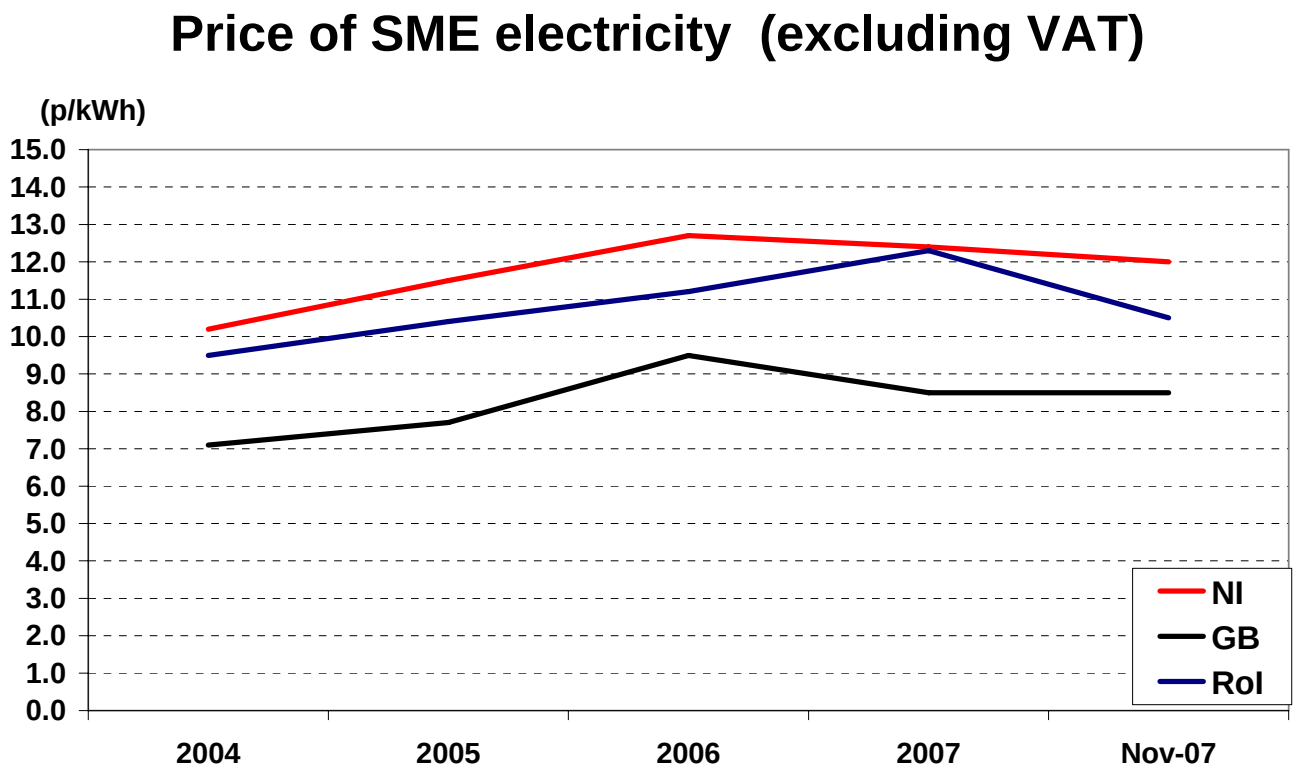


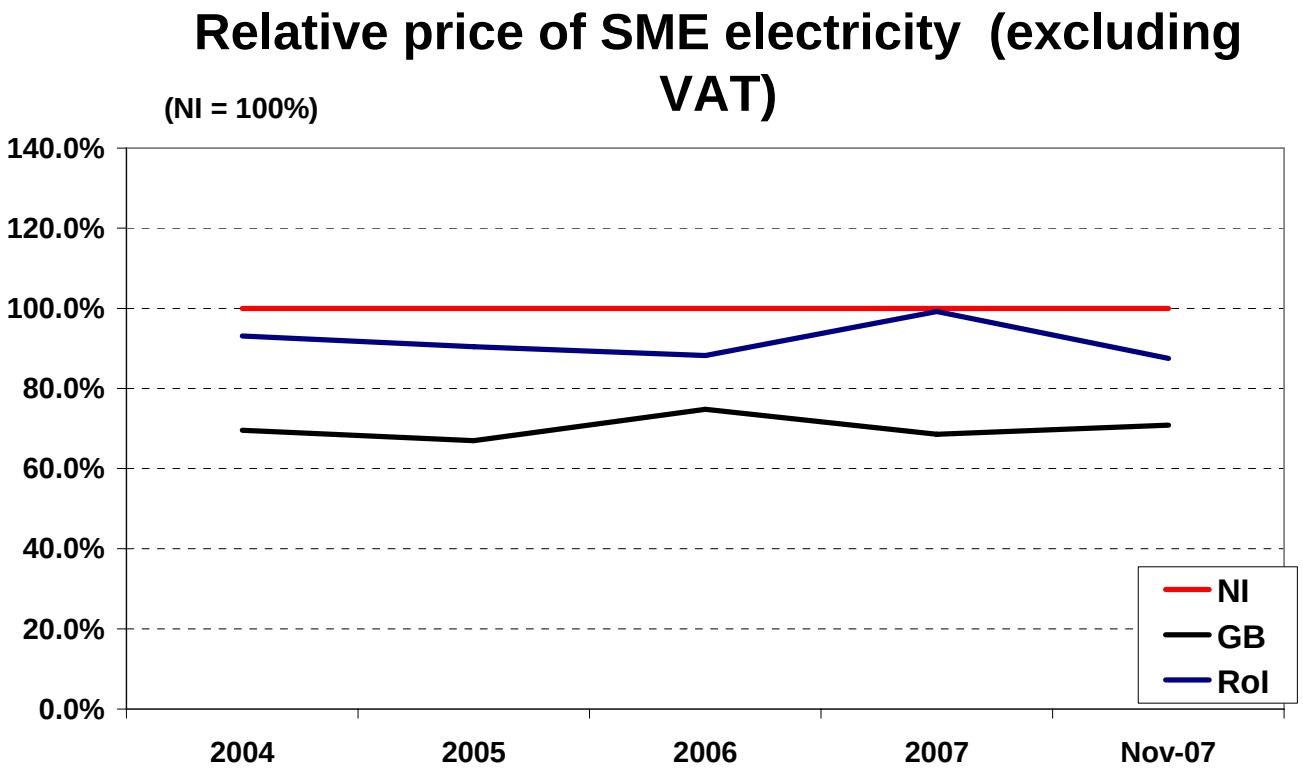
Relative price of domestic electricity (including VAT)



4.13 The price of domestic electricity, as shown in the graphs, has risen in all areas from 2004 to 2007. However, in NI the price rise has been less significant (14%) than in GB (29%) and RoI (19%). This has led to the NI price converging towards the GB level and remaining significantly below the price in RoI.

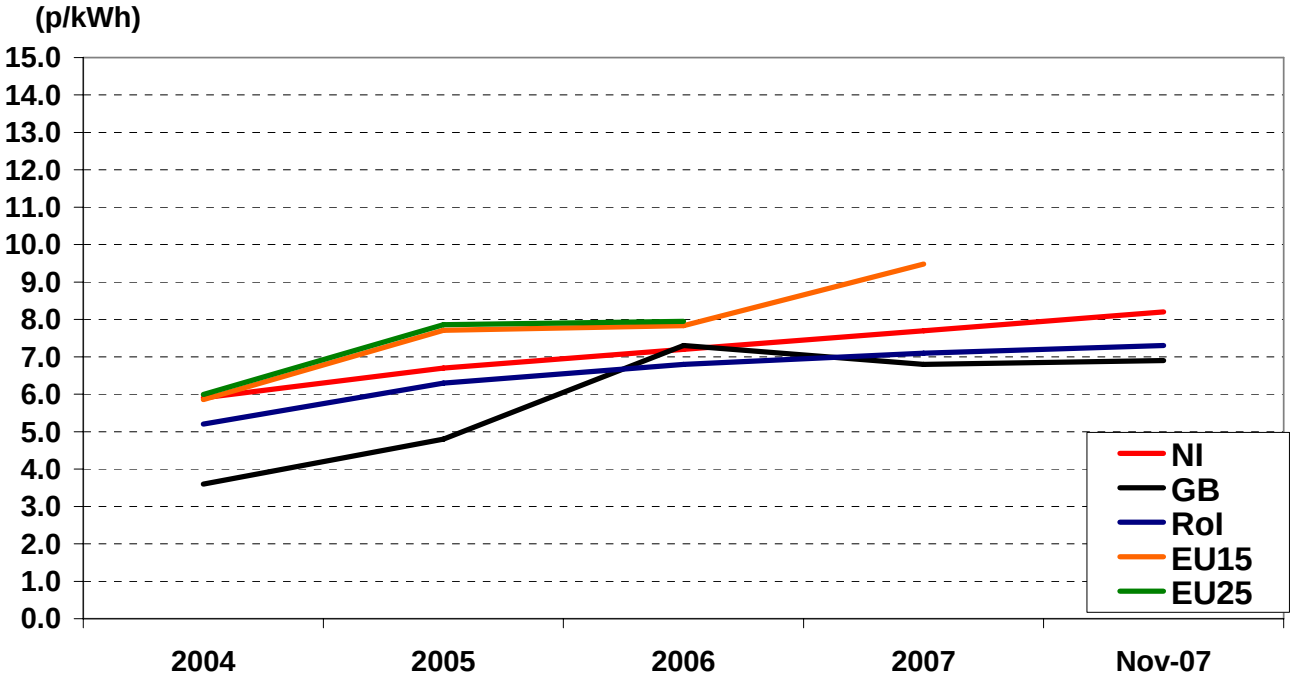
4.14 The price of electricity to Small and Medium Enterprises (SME) has risen markedly from 2004 to 2007. The price rise in Northern Ireland has been 15% compared with a 17% increase in GB and 10% in the Republic of Ireland. This has led to a current NI price 12% above the RoI level, with the local price remains some 30 percentage points above the GB level.



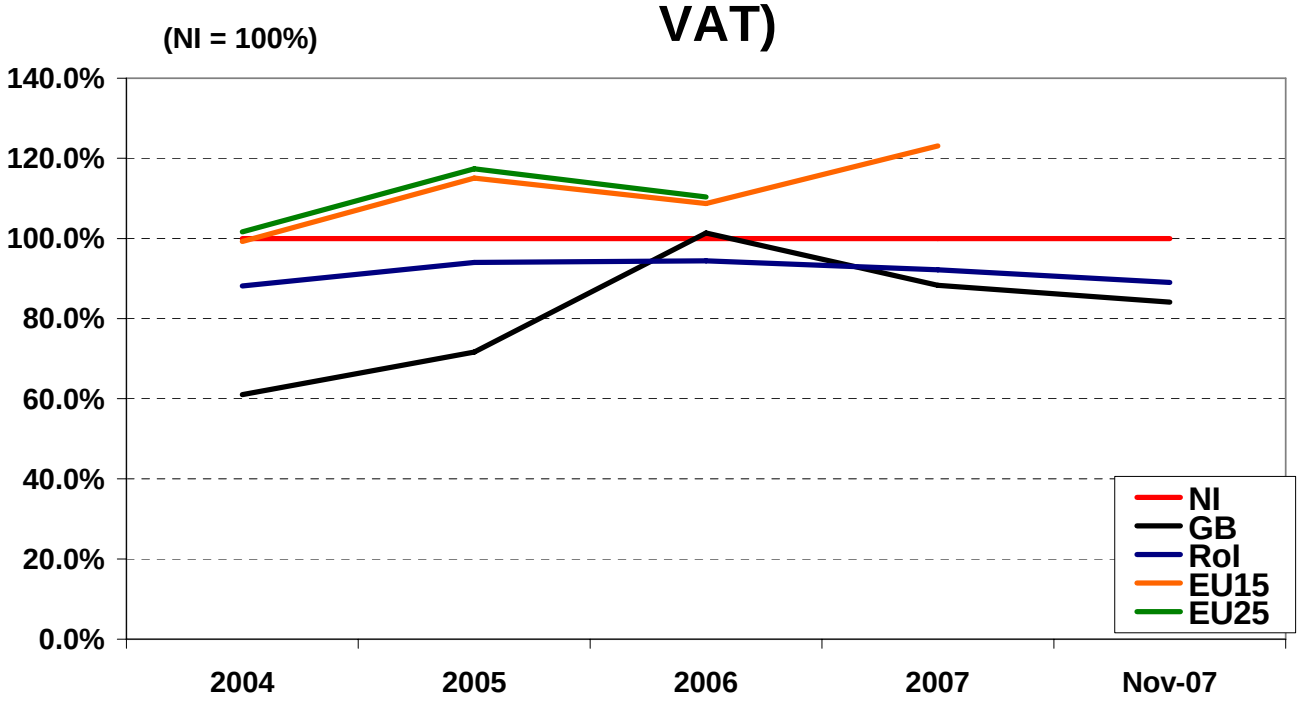


4.15 Whilst the price of electricity to Large Electricity Users (LEU) has risen by the greatest amount from 2004 to 2007, it is still the lowest of the three groups. Yet again, the price rise in Northern Ireland has been less significant (28%) than in GB (48%) and the Republic of Ireland (29%). This has led to the NI price converging with both the GB and the RoI levels but still being on average 13% more expensive.

Price of LEU electricity (excluding VAT)



Relative price of LEU electricity (excluding VAT)



4.16 To summarise these tables, which reflect our discussions with NIE, the price of domestic electricity has converged towards the GB level and remains below the RoI level. The current price of electricity consumed by SMEs is some 12% behind that sold in the RoI and nearly 30% above the GB level. In comparison with GB Large Energy Users, prices have

improved by 23%, however the difference with the RoI remains broadly the same. It is therefore reasonable to conclude that the policy framework in place over the past 4 years has assisted in bringing Northern Ireland electricity prices closer in line with those currently operating in Great Britain and in the RoI. However continued effort will be required.

4.17 During the review it was noted that DETI has not introduced, as was suggested in SEF 2004, any internal procedures to monitor the relative prices of energy commodities in Northern Ireland compared to those in the UK, RoI and EU. Although action was initiated through the All-island Energy Market Joint Steering Group to coordinate the collection of a range of economic and statistical information on energy, the resource constraints on both sides of the border prevented this being pursued. Information on electricity prices is obtained on an ad-hoc basis from NIE, with gas prices being obtained from the companies by a similar method. Details on the prices of heating oil and coal are extremely difficult to obtain.

Gas

4.18 A further challenge of SEF 2004 was to develop an efficient gas network that is compatible with neighbouring markets. Since 2004 there have been significant developments in Northern Ireland with natural gas supplies now being available outside the Greater Belfast area. Government subvention totalling £38m has contributed to the development of the transmission network to the North West and interconnection with the RoI gas infrastructure making gas available to both industry and domestic consumers in ten towns along the route of these pipelines.

4.19 In line with the SEF 2004 aim of seeking to ensure the appropriate regulatory provisions to allow the efficient recovery of investments in gas network infrastructures, the Department, in cooperation with the Regulator and the General Consumer Council for Northern Ireland, has, over the past three years, put pressure on Phoenix Natural Gas (PNG) to lower its prices. This has led to PNG and the Energy Regulator coming to a mutual agreement (November 2006), on the terms and conditions of a new licence which will stabilise the distribution element of the overall gas price to consumers. The new licence allows costs to be recovered over a longer period (extends the previous licence period by 30 years to 2046), and helps prevent large future distribution price increases, provides regulatory certainty, and contributes to increasing investor confidence.

4.20 The purchase of the Scotland – NI Gas Pipeline (SNIP) by Northern Ireland Energy Holdings (NIEH), a company limited by guarantee with the objective of owning and operating energy infrastructure in the island of Ireland for the long-term benefit of the energy consumers of Northern Ireland, has also influenced a downward pressure on the price of

electricity from gas-fired generation. NIEH estimated that this mutualisation will result in a saving of £41m over the lifetime of SNIP. Further mutualisation, namely the purchase of the Phoenix Natural Gas transmission pipeline from its parent company Terra Firma, is currently under negotiation and should result in further savings (estimated at around £12 million on capital and £3 million on operating costs) for the Northern Ireland consumer.

4.21 The implementation of the EU Gas Directive by the Department (see Chapter 5, page 27), has also opened up the market in the PNG area (Greater Belfast and Larne) to full competition which in time may lower prices.

4.22 For its part, *firmus energy,* the Bord Gais Eireann subsidiary developing the gas markets along the route of the North/West and South/North gas pipelines, has had to take a different approach to PNG in order to try and build up its market share. In our discussions with *firmus energy*, we were reminded that the Company had announced a 12 month extension to its current 2-year gas price cap, which means that its customers will not pay higher gas prices until 1 January 2009. The Company has also announced a reduction in prices for smaller business customers. This policy, while welcome, is likely to be temporary, and *firmus energy* will be forced at some time in the future to price its gas in line with world prices.

4.23 Despite the best efforts by all parties to reduce gas prices, global circumstances outside the control of the Department, Regulator and the local gas companies, have conspired to influence prices upwards. Over the past few years, and, in particular, during the winter of 2005/2006, gas prices worldwide have increased sharply due to increased global demand. At our meeting with PNG, the Company described how this led to PNG increasing their prices by 29.9% in September 2005; by 17.3% in January 2006 and by a further 14.5% in October 2006. Recently there has been an easing in world wholesale gas prices and this, coupled with a mild winter in 2006/2007 and new gas interconnection between Britain and Norway, has led to PNG announcing a reduction in their prices by 14.6% in March 2007 with a further price review anticipated early in 2008.

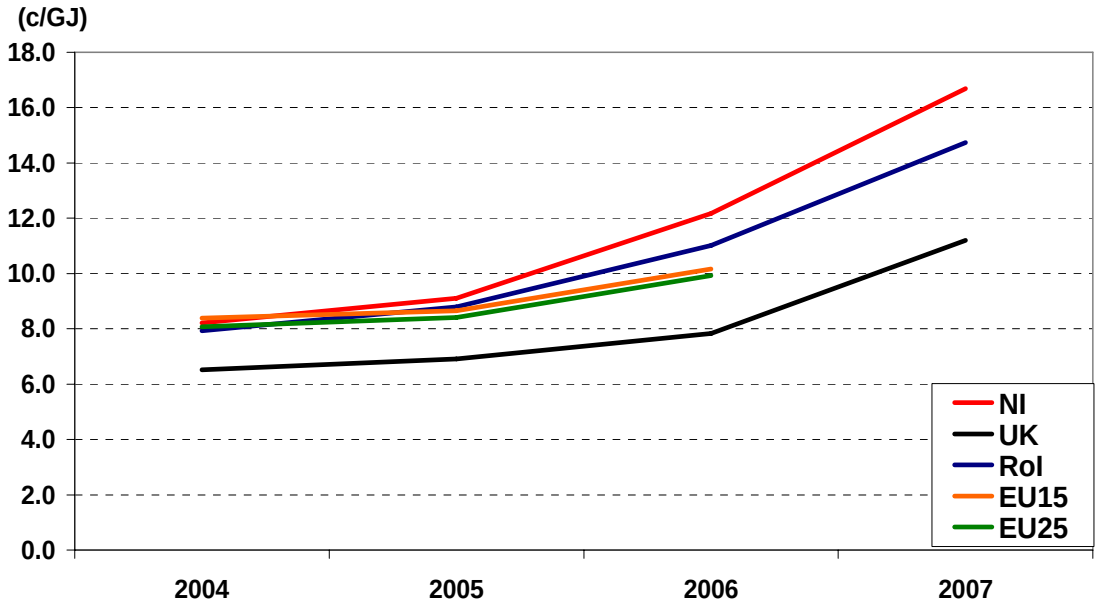
Table 2 – Comparison of Gas Prices in NI/GB/RoI - 2005 / 2007

		Domestic		Industrial	
		c/GJ	vsNI%	c/GJ	vsNI%
2004	Northern Ireland	8.22		6.61	
	United Kingdom	6.52	-21%	4.70	-29.90%
	Republic of Ireland	7.93	-3.53%	5.4	-18.31%
2005	Northern Ireland	9.11		7.90	
	United Kingdom	6.91	-24.15%	5.81	-26.46%
	Republic of Ireland	8.80	-3.40%	6.24	-21.01
2006	Northern Ireland	12.18		13.02	
	United Kingdom	7.84	-35.63%	8.92	-31.49%
	Republic of Ireland	11.02	-9.52%	7.81	-40.02
2007	Northern Ireland	16.69		10.00	
	United Kingdom	11.20	-32.89%	10.55	+ 5.5%
	Republic of Ireland	14.74	-11.68%	9.41	-.5.9%

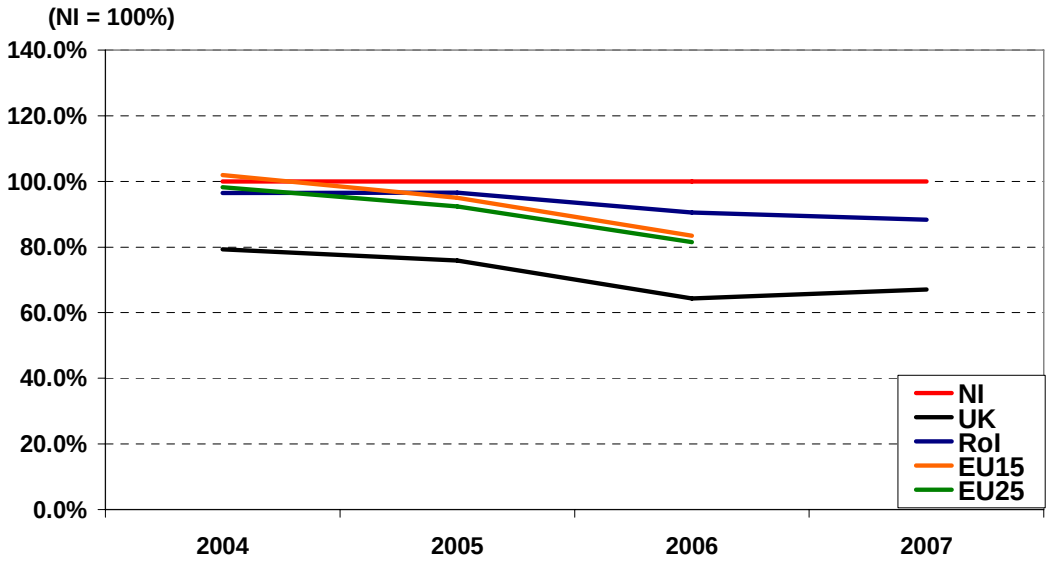
These figures represent indicative costs only, as the market opening in Great Britain and RoI and the entry of new suppliers to the respective markets, means that it is difficult to provide a unit statistic across each sector.
Source: Eurostat; Phoenix Natural Gas and CER

4.24 The price of domestic gas, see graphs below (page 22), has risen very rapidly from 2004 to 2007, and more than doubling in price in NI based on figures provided by PNG. The rise in UK and RoI prices has also been rapid, 71.8% and 85.9% respectively, but NI's relatively high price in 2004 and the rate of price growth over the period has exacerbated the gap. UK prices are 67.1% of the NI price and RoI prices are 88.3%. The price was marginally above the EU15 and EU15 average in 2004, but since then, the gap has widened.

Price of domestic gas



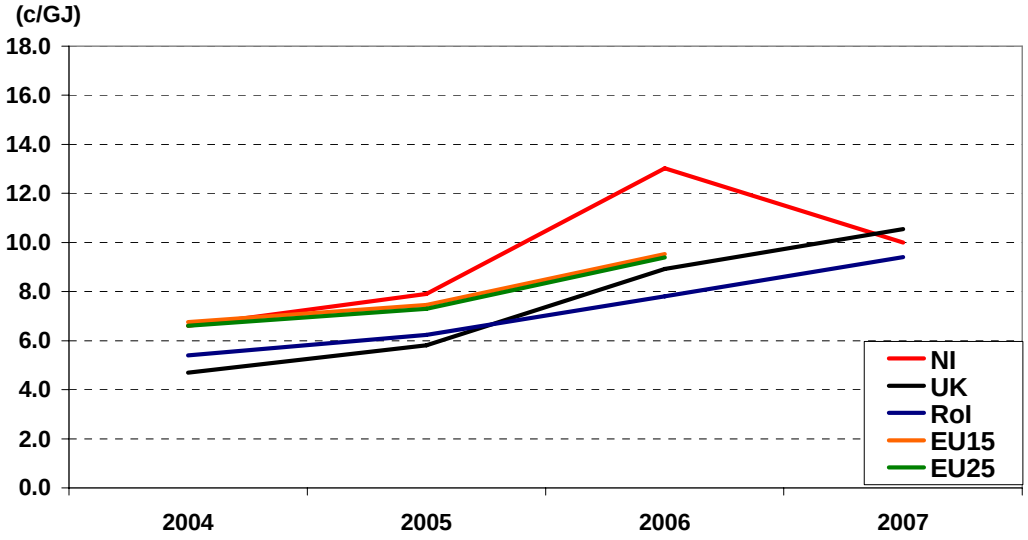
Relative price of domestic gas



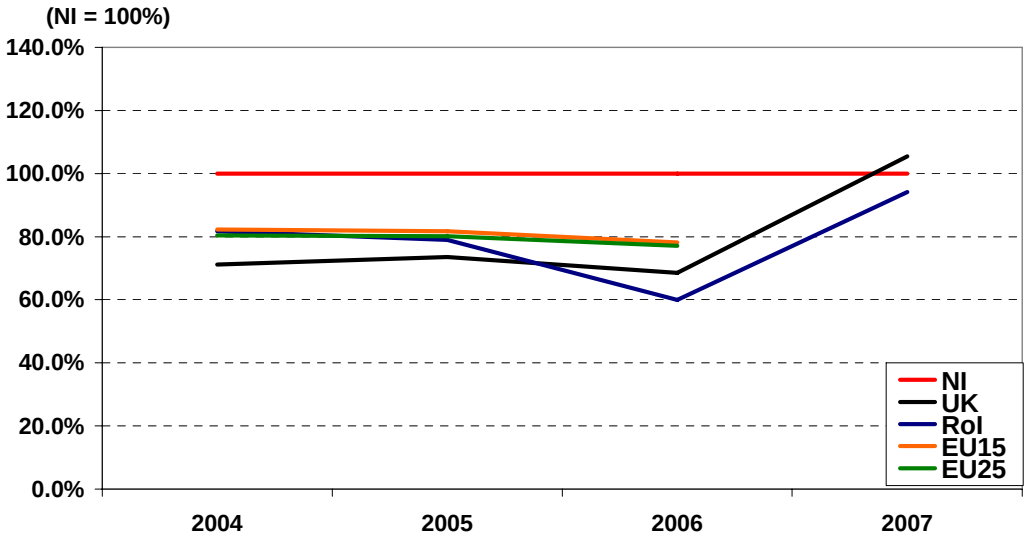
Source: Phoenix, Eurostat. **NB:** EU15 price are calculated using UK/EU15 or EU25 differential and applying it to PNG UK price.

4.25 The rate of price growth for industrial gas has also been rapid, although due to a decline between 2006 and 2007, NI's industrial gas price has converged toward the RoI and UK levels (see graphs on page 23 below). Whilst prices in the EU15 and EU25 have also increased, in relative terms, they have remained at roughly 80% of the NI level.

Price of industrial gas



Relative price of industrial gas



Source: Phoenix, Eurostat
Note: EU15 and EU15 prices are calculated using UK / EU15 (or 25) differential and applying it to the Phoenix UK price.

4.26 In summary, the price of gas has increased very rapidly for both domestic and industrial users, placing them under sudden price pressure. Whilst the cost differential has widened for domestic users in NI relative to the UK, RoI and rest of the EU, the events of 2006 appear to have moved industrial gas users onto a level playing field with their UK and RoI counterparts[2]. However, prices remain consistently higher than the EU average.

[2] In addition to the significant fluctuations in gas costs over the period, Phoenix, at the end of 2005, changed the way it purchased natural gas from a fixed price contract to the IPE (International Petroleum Exchange) monthly system. These contracts reflect market conditions and mean that gas costs are now passed through to customers.

Conclusions

4.27 Over the past 4 years the differential in Northern Ireland electricity prices relative to other UK regions and the Republic of Ireland has shown a marked decrease especially in the domestic and large energy user sector. This has been in the main due to NI prices remaining relatively flat and increases in the electricity prices in the other regions.

4.28 Due to State Aid regulations it has not been possible to introduce assistance to bring about the desired decrease in electricity costs to small and medium sized business users and therefore the current differential particularly with GB remains high. Further work is necessary in this area.

4.29 The cost of gas to all consumers has increased significantly over the past four years due to major increases in international prices. However, the world wholesale price of gas is now stabilising and the local gas companies have managed to start to reduce or maintain their prices.

4.30 The following has also been achieved in relation to reducing prices:

- Maximising the opportunities for efficiencies and competition through a larger wholesale electricity market (SEM), which should lead to a long term downward pressure on prices. However, the small size of even an all-island market will limit the number of new generation and supply companies wanting to enter the market;

- The appropriate regulatory provisions in relation to the Phoenix and *firmus* gas licences to allow efficient recovery of assets, are in place;

- The introduction of the above Government and regulatory initiatives has helped to maintain downward pressure on energy costs in order to contribute to the implementation of DSD'S Fuel Poverty Strategy;

- Under the Emissions Trading Scheme the optimum allocation of emissions credits has been awarded to Northern Ireland; and

- The Department has introduced a Renewables Obligation as an acceptable cost to the consumer.

4.31 The review has indicated that DETI has not set in place structures to monitor the prices of energy commodities in UK, RoI and EU and it is recommended that this should be reviewed.

5 Building Competitive Markets

5.1 In 2004, the European Commission introduced Electricity Directive 2003/54/EC and Gas Directive 2003/55/EC which the Department was required to implement by July 2007. These Directives required full market opening by the creation of competitive, single markets that were non-discriminatory, transparent and fairly priced. In addition DETI was also working in consultation with the Department of Communications, Energy and Natural Resources (DCENR) in Dublin to create an all-island energy market that would be mutually beneficial to both Northern Ireland and RoI.

5.2 The development of an All-island Energy Market on the island of Ireland as well as being in line with EU policy, offers the prospect, in time, of helping to address many of the challenges identified in SEF 2004:

- high energy costs and prices;
- narrowing price differentials with other regions of the UK, EU and RoI;
- creating an attractive environment for investment;
- improving security, diversity and continuity of energy supply in both NI and RoI; and
- ensuring the full opening of the market to supply competition for all consumers by 2007.

5.3 This pressure from Europe and the increasing North / South co-operation have, over the past three to four years, provided a climate conducive to the building of competitive markets within the whole island of Ireland. However it must be remembered that due to the relatively small size of the combined Northern Ireland and RoI wholesale electricity markets, we are unlikely to see the major benefits in price reduction which have been experienced by the opening of the Great Britain market to full competition.

5.4 It is also worth noting that effective consumer protection has an important part to play in ensuring that energy markets are competitive. In recognition of this, new arrangements giving responsibility to the General Consumer Council NI (GCCNI) for all energy consumer issues and strengthening GCCNI's powers, were put in place by the Energy NI Order 2003. These changes also strengthened the relationship and sharing of information between GCCNI and the Northern Ireland Authority for Utility Regulation (the Regulator), and help to ensure that as energy markets open to competition, customers are empowered to take advantage of the greater choice afforded by these developments. In order to enhance consumer representation, quarterly meetings take

place between GCCNI and the Head of Energy Division, with an annual meeting with the whole Council.

Electricity

5.5 The Departmental PSA for 2005-08 set a target that by July 2007, the Northern Ireland electricity market would be open to all consumers. The baseline for this target was that in October 2004, 40% of the market was open. In addition, a PSA target was also established that the Department would bring forward, by the same date, legislation which would enable the introduction of a Single Electricity Market (SEM) for wholesale electricity on an all-island basis.

5.6 DETI, DCENR and the two energy Regulators (Northern Ireland Authority for Utility Regulation and the Commission for Energy Regulation), have worked together through an All-island Energy Market Development Framework Programme, to achieve the introduction of an all-island wholesale electricity market (Single Electricity Market). The Electricity (Single Wholesale Market) (NI) Order 2007, plus corresponding legislation in the Irish Parliament, was introduced and came into operation from 1 November 2007. This ground breaking and very complex project was delivered on schedule. It included licensing of market participants, new regulatory arrangements, and the separate licensing of the System Operator for Northern Ireland (SONI).

5.7 The SEM will, in the long term, bring improved economic and social benefits for NI electricity customers. However, start-up costs are likely to contribute to a short term increase in electricity prices.

5.8 Linked to the introduction of the SEM is the complete opening to competition of the Northern Ireland retail electricity market from 1 November. Under Directive 2003/54/EC this should have been introduced by July 2007. However, in recognition of the interactions between the changes required to implement full market opening (i.e. to systems, licences, contracts, and processes), and those required to implement the SEM, the Department considered it appropriate to align full retail market opening with SEM implementation on 1 November. Once new suppliers enter the market, consumers will have the opportunity to obtain their electricity supplies from sources other than NIE. However, as has been noted above in the reducing energy costs section, due to the size of the Northern Ireland markets, it is unlikely that large numbers of suppliers will come in and thereby force down prices.

5.9 To maximise the benefits from SEM and improve security of supply, an investment of approximately £120m is being planned by NIE and ESB for the construction of a second North/South electricity interconnector which will more than double the current cross-border electricity trading capacity. This interconnector, which will enhance diversity and security of electricity supply and further growth of renewable generation, is expected to be operational by 2012. It will have a lifespan of some 40

years and its cost is expected to be recouped by system usage charges over its life. In our discussions with the Regulator, the construction of a second North/South electricity interconnector was viewed as a significant element of the SEM.

Renewables

5.10 The market for renewable energy in Northern Ireland is still very much at the developmental stage. Elements such as wind and tidal generation are associated directly with the electricity market. While green electricity is currently available, one of the main difficulties in further developing renewable energy sources is connecting them to the electricity grid system. At present the Department in co-operation with DCENR and the two Regulators has commissioned a study on the impact of renewable energy systems and the linkages to the Grid. This resulted from the joint "2020 Vision" exercise for renewable energy on the island of Ireland, which pointed towards the development of a joint strategy for the provision of electricity sourced from renewable energy leading up to 2020 and beyond. This electricity Grid Study Report, which reported in late 2007, will help inform strategic policy issues on renewable energy and infrastructure investment.

5.11 DETI is also in the early stage of discussion with the Scottish Government and DCENR in the Republic on the feasibility of common infrastructure measures to facilitate the exploitation of marine renewable energy sources.

5.12 Developments have been made in promoting the renewables market. To support DETI's 'renewables' policy, a NI Renewables Obligation (NIRO) was introduced with effect from 1 April 2005. The main purpose of the NIRO is to increase the proportion of electricity consumption from renewable sources, and to encourage the development of indigenously generated 'green' electricity. The NIRO operates in tandem with similar Obligations in GB and is based on a system of Renewable Obligation Certificates (ROCS), which are mutually recognised and traded freely throughout the UK. The NIRO is regarded as successfully incentivising renewables development - in its first year, planning applications in respect of new wind farms increased by 60%. The NIRO was amended with effect from 1 April 2007, to facilitate extension of its benefits to microgenerators, although there is a recognition that microgeneration may need some separate handling. These changes complement the assistance provided under the Environment and Renewable Energy Fund (EREF), to support small scale generation. In addition, DETI has funded an extensive renewable energy promotion campaign aimed at winning hearts and minds during the period of the Strategic Energy Framework. Latest consumer research undertaken through focus groups during June 2007 shows that awareness of renewable energy is high.

Gas

5.13 With regard to gas, Directive 2003/55/EC has been implemented. The gas market in Greater Belfast and Larne is now fully open, with derogation from the Directive for a 10 year period for the developing market outside Belfast. While the market opening is to be welcomed, like electricity, it is unlikely to have any immediate significant effect on prices because in relative terms the Northern Ireland gas market is very small (at present approximately 110,000 customers as per Industry figures), and at this stage, it would seem improbable that large numbers of suppliers will enter the market and thereby force down prices.

5.14 Similar to the electricity sector, a method of increasing the size of the market and thereby making it more competitive, would be to maximise the opportunities for harmonisation of gas arrangements with the Irish Republic, linked to GB.

Conclusions

5.15 Considerable development has been achieved over the past three years to build competitive energy markets. The EU Directive on Electricity has been fully implemented, and since 1 November 2007 the electricity retail market has been fully open in Northern Ireland. However, due to the relatively small size of the market it is unlikely that large numbers of suppliers will come in and thereby significantly force down prices.

5.16 Effective consumer protection has an important part to play in ensuring that energy markets are competitive and regular meetings are taking place between the Head of Energy Division and the GCCNI.

5.17 From 1 November 2007 the Single Electricity Market will promote competition throughout the whole of the island of Ireland. In the medium to long term this will produce cost savings for the Northern Ireland consumer however start up costs will contribute to a short term increase in electricity prices.

5.18 Building a robust grid infrastructure to support future growth in the renewables energy market, is at the developmental stage with investment policy having to be determined in the light of the results from the Grid Study.

5.19 The EU Gas Directive has also been introduced and the gas market in the Greater Belfast / Larne area is 100% open to supply competition. The other areas of Northern Ireland where natural gas is available (North / West and South / East), have a 10-year derogation from the EU Directive and are therefore a monopoly.

5.20 Like the electricity market, due to the relatively small number of consumers, it is unlikely that large numbers of suppliers will come in and thereby force down prices significantly. Initial consultations are

underway to consider the benefits of common arrangements for gas between NI and RoI;

5.21 The construction of a second North/South electricity interconnector, was viewed as a significant element of the SEM that will help maximise the benefits of the SEM.

6 Enhancing Sustainability in Energy

6.1 The EU defines renewable energy as “non-fossil fuel energy sources (wind, solar, geothermal, marine [wave and tidal], hydro and bio-energy)”. At present generation from wind represents 97% of renewable energy sources in Northern Ireland. However, bio-energy, which includes all forms of bio-mass, bio-fuels, bio-gases and landfill gas, is an increasing and developing form of renewable, sustainable and carbon-neutral form of energy.

6.2 SEF 2004 identified that the development of renewable energy was important for Northern Ireland, to comply with EU Directives, and other national measures directed at tackling climate change:

- Climate Change Levy;
- Renewables Obligation;
- Emissions Trading Scheme,
- but also to reduce the dependency on imports of finite fossil fuels, and Northern Ireland’s (relatively high) ecological footprint.

6.3 Key challenges identified in the SEF 2004 included:

- maximising the potential of indigenous renewable energy sources;
- mainstreaming the use of a broad range of renewable electricity and heat sources, at an acceptable cost; and
- managing the demand by setting energy efficiency targets and promoting energy efficiency services.

6.4 We are currently aiming to increase from 4.3% in 2006/07 to 12% by 2012/13, the percentage of our electricity consumption that is generated from indigenous renewable sources. The Northern Ireland Renewables Obligation (NIRO), which is part of the successful UK-wide certificate trading scheme, is the main support mechanism to help us reach this target. The NIRO is complemented by other initiatives. In particular, the Reconnect Programme within the Environment and Renewable Energy Fund (EREF) supports investment in non-wind renewables and microgeneration.

6.5 A major cross border electricity grid study has very recently completed. This will help determine the investment needed to ensure the grid networks, north and south, are sufficiently robust to accommodate the growth in renewable electricity generation to 2020 and beyond.

6.6 Within the main 12% renewable energy target, we are working towards a 15% generation of that element from non-wind sources. There are

currently 15 wind farms of capacity greater than 1MW operating in Northern Ireland with a total capacity of 169MW; a further 2.7 MW of smaller stations is also operating including a 1MW turbine at Slievenahanagan near Ballymoney and the 0.6MW turbine at Antrim Area Hospital. In addition, the 13MW wind farm at Snugborough Co. Cavan is linked directly and exclusively to the NI grid. However, its location in the Republic of Ireland excludes it from eligibility under the NIRO and, in addition, its output is not counted towards our 12% target.

Table 3 - Electricity Generated from Indigenous renewable sources

01/02	02/03	03/04	04/05	05/06	06/07	**Target 2012**
1.5%	1.6%	2.7%	2.8%	3%	4.3%	**12%**

(Currently, a further 1.5% of renewable electricity is being imported from RoI / GB).

6.7 Current installed and operational wind farm capacity for large scale projects stands at 169MW. Planning approval has been given for 13 others involving almost 200MW and these projects have been accepted by NIE on to the electricity grid system to become operational over the next 2-3 years. The completion of these projects as planned, would therefore be expected to meet the 2012 target regardless of the 38 applications currently in the planning process with a further potential capacity of 1038MW.

6.8 However, progress beyond the 12% target could be limited by the ability of the grid system to accommodate significant amounts of wind generation given the intermittency of the wind resource and the concentration of that resource in the west where the grid is weakest. The system operator for Northern Ireland has noted that the maximum wind capacity which the grid system can manage is 400MW. DETI and the Regulator are engaging with NIE to consider how best to handle future growth. The recently completed Grid Study will be critical in informing future decisions on the optimum renewables penetration and how they can be implemented to address grid constraints taking account of the associated cost implications.

6.9 Grid constraints also represent the most immediate threat to development beyond 2012.

6.10 DETI is the lead Department for sustainable energy issues and chairs an Inter Departmental Group to develop and implement a more integrated and strategic approach to the promotion and support of the bioenergy sector in NI. An example of development in this area is the major renewables CHP plant opened by Balcas in Enniskillen in November 2005. This has a 2.5MW electricity generation capacity, produces heat and a biomass energy product, and is a world class exemplar of sustainable energy.

6.11 The NI Renewables Obligation (NIRO) as mentioned in 5.12 above, supports and encourages the production / generation of electricity from indigenous sources, and indeed is the main plank in NI Renewables policy.

6.12 Northern Ireland has a valuable offshore energy potential in terms of its wave or tidal power resource. Development of the offshore resource and in particular wave and tidal power will contribute significantly to our renewable target. However these technologies are not as yet at full commercial stage and are not therefore expected to contribute in the short term. The MCT project at Strangford Lough is at the leading edge of tidal stream technology and, if successfully installed, will be an exemplar renewables project in world terms, providing 1MW of marine-based electricity to the NI Grid. Plans to install the turbine in August had to be aborted due to technical difficulties outside the developer's control. A revised installation date will have to take account of seasonal environmental issues and the availability of the necessary installation equipment.

6.13 SEF 2004 set a target of a 1% reduction in the upward trend in electricity consumption annually from 2007 to 2012, without compromising economic growth. The EU Energy Efficiency Action Plans published in October 2006 and the more recent Strategic Energy Review (the Stern Report), set targets to improve energy efficiency by 20% by 2020. In addition, the implementation of the EU Energy Services Directive by May 2008 sets a clear policy direction. The 1% reduction in electricity consumption that is outlined in DETI's recently published implementation plan ("Delivering Northern Ireland's 1% Energy Efficiency Target" [August 2007]), will be a significant part of the Northern Ireland contribution to the UK total.

6.14 DETI undertook an extensive scoping exercise in 2005 across the public sector to identify all Government funded energy efficiency activity across Northern Ireland. It identified expenditure on energy efficiency in 2004/05 of almost £70 million across 7 organisations through over 40 different schemes. These included Government departments (e.g. DFP, DSD), which were working in isolation from each other and without a structure; Invest NI (an NDPB supported by DETI); the Carbon Trust; and the NI Housing Executive. The support ranged from financial assistance to educational programmes and promotional activity.

6.15 The many schemes and programmes were achieving energy savings, but the combined impact of the total energy savings was not being measured. The implementation plan sets out, for the first time, in a holistic and comprehensive way, an agreed methodology as to how energy savings data can be captured and reported, so that the combined impact of all of the energy efficiency work ongoing in Northern Ireland is captured. Measurement will be by using information in relation to the quantity of energy savings fed back from energy efficiency programme deliverers, utilities and energy service companies on an annual basis.

This method maintains control within the stakeholder departments, and allows DETI to convert all the data received on a consistent basis. In addition this data collection method will allow savings to remain clearly attributable to specific programmes and will allow future programmes to add electricity savings at the design stage. DETI will sum together the savings delivered, on an agreed basis, and publish these annually.

6.16 Sustainability in Energy can also be enhanced through Microgeneration. This is defined in the Energy Act 2004 as the small-scale production of heat and/or electricity from a low carbon source, which can include renewable technologies and micro combined heat and power (micro CHP). In a 2004 study by the Energy Saving Trust, it was estimated that by 2050 microgeneration could supply 30-40% of the UK's electricity needs. In 2006, the UK Microgeneration Strategy was introduced to ensure:

- Reliability of energy supplies
- Promotion of a competitive market
- Ensure every home is adequately and affordably heated

6.17 DETI is a partner in a pilot micro CHP scheme. The collection of data from this pilot installation of up to 50 natural gas fired micro CHP plants is ongoing with the Carbon Trust responsible for reporting the performance. The interim results suggest that by replacing a standard high efficiency natural gas fired condensing boiler with a micro CHP plant there are both CO_2 and cost savings.

6.18 In light of the EU Directive on Cogeneration, a small steering group was formed to look at the potential for and barriers to CHP. Comprehensive reports on "Potential for high-efficiency cogeneration (CHP) in Northern Ireland" and "The Barriers to Combined Heat and Power in Northern Ireland" were produced. These were a necessary requirement of the Directive, and will help to inform policy decisions in the future.

6.19 A significant development in the 3 years since the publishing of SEF 2004 has been the introduction of the Environment and Renewable Energy Fund (EREF). The Fund, launched in 2006 by the then Secretary of State Peter Hain, is a ring-fenced amount of £59.2m to accelerate development of renewables in Northern Ireland during the period 2006 - 2008.

6.20 The Fund is intended to support action in the following programmes:

- Research and Demonstration;
- Accelerated Deployment of renewable energy, and
- Underpinning Knowledge / raising awareness.

The Fund is expected to leverage a further £300m of private investment in the local energy infrastructure.

6.21 In 2006/07 just under £1.3m was spent on DETI's Reconnect Scheme (grants to support installations of renewable energy systems in up to 4000 homes). A further £2.6m has been spent in 2007/08[3], with just over another £2.1m committed. To date, 3265 applications have been received.

Installations supported by Reconnect	Number Actual installations to date
PV Panels	31
Wind Turbines	51
Solar Water Heating	545
Water Source Heat Pump	4
Air Source Heat Pump	27
Ground Source Heat Pump	132
Wood fuelled Stoves	13
Wood Fuelled Boilers	455
Total	**1258**

6.22 The Fund is also supporting a significant research project into the impact of renewable energy on the all-island electricity grid, and further analysis of the geology of Northern Ireland in relation to identifying locations for underground energy storage (see paras 5.10 & 7.4). In our discussions with Invest NI, it was further confirmed that the Fund plans to support the introduction of a small number of energy from waste flagship projects. A short-listing process has been completed, and final consideration of prospective projects will be concluded by the end of the current financial year.

6.23 The Fund supports other Northern Ireland Departments as follows:

- DFP advised that it is working through a pilot project of installation of PV panels, biomass boilers, and solar thermal technology at a number of government estate buildings. DFP confirmed that changes to Building Regulations changed in November 2006 to improve energy efficiency by around 40% in new builds. A further amendment is expected in 2010 requiring a further 25% improvement;

- OFMDFM was allocated 300K in 07/08 for the development of the sustainable development communications strategy and resourcing of actions recommended in the strategy.

- DSD confirmed that it is supported in the installation of solar hot water systems in social housing, and has completed extensive installation of these panels thereby assisting the fuel poor; and

[3] Amount confirmed early 3 January 2008.

- DARD is progressing with the anaerobic digester at their Centre of Excellence in Hillsborough, which produces methane gas to be used as a source of renewable energy.

6.24 Other organisations to receive financial support from the Fund include the Carbon Trust in Northern Ireland and Action Renewables. In 2006/2007, £1.5m of EREF funding was provided to the Carbon Trust for a renewable energy interest-free loans scheme for small and medium sized enterprises. In our communications with Carbon Trust, we were advised that since the publication of SEF 2004, the Carbon Trust has identified annual energy cost saving opportunities in excess of £85m, and CO_2 reductions of over 664k tonnes, from over 1000 surveys of businesses and public sector bodies. The actual implemented energy savings over the period 2004 – 2007 ranges between £19.6m and £34.4m and represents tCO2 savings pa ranging between 199,456 – 380,801[4]. Carbon Trust also advised that the EREF funding for the loan scheme was specifically used to support 18 loans to NI businesses, to implement a range of renewable energy projects including biomass boilers; bioenergy CHP systems; wind turbines; and a hydro-electric scheme. This funding leveraged an additional £1.54m private sector funding in 2006/07, and the projects will save these businesses £609,470 pa in reduced energy costs, and reduce carbon emissions by 6,162 tCO2 pa. The loan scheme generated actual savings of £2.4m pa and 20,080 tCO2 pa (2004 – 2007).

6.25 Action Renewables (AR), confirmed that almost £1m of EREF funding was provided in 2006/2007 to deliver advice and information on renewable energy to all sectors. In 2007/2008 AR was funded through the EREF to continue these activities and in addition, it commenced the delivery of a schools educational programme for renewable energy. During our meeting with AR, it was confirmed that AR had visited almost 100 schools raising awareness of renewables amongst school children, their extended families and educationalists.

6.26 In its two years of being established, AR has, through investigation and research projects, ddelivered evidence based recommendations that will inform and support Government policy for the development of renewable energy. It facilitated and managed the All Island Grid Study; acted as managing agent for the Reconnect Programme; provided support and advice to renewable energy developers, farmers, community groups, construction sector etc; provided technical support to DETI; and jointly administered the Renewable Energy Installers Academy.

6.27 The Renewable Energy Installers Academy (REIA), was established with a central aim to develop, implement, test, and certify a training programme for the main commercial renewable energy technologies, which can support a self-sustaining Academy post 2010. Its main aim

[4] Carbon Trust provided a low and a high range figure due to the methodology used in conducting their annual impact assessment.

was to increase the pool of professional installers and engineers who can undertake the design, installation, and maintenance of RE technologies with the right skills and know-how. It also aimed to continually develop high quality standards among these practitioners to ensure customer satisfaction and increase consumer confidence.

6.28 The efforts will apply to both the residential and non-residential sectors of the built environment. The Academy sets out to focus its programme on the following RE technologies:

- Green Heat systems – wood boilers and stoves; solar water heaters and solar combi-systems; and ambient energy heat pumps; and
- Small scale green electricity systems – solar photovoltaic; small hydro-power; and small scale wind generators

6.29 The REIA is providing training in renewable energy installations through the following colleges:

- Dundalk Institute of Technology
- North West Institute
- East Down Institute
- Lisburn Institute

The project had an original target of training 450 installers by the end of 2007. By the end of June 2007 a total of 642 installers had been trained:

- 282 trained in solar water heating
- 239 trained in biomass
- 101 trained in heat pump
- 20 trained in wind.

Work is also planned to further develop the wind and PV labs to facilitate further training in these areas.

6.30 In our discussions, INI advised that the Invest NI Energy Development Programme encourages NI businesses to develop and install energy efficient technologies to assist their competitiveness. This includes Research & Development programmes; SME energy grant schemes; and promotion of business opportunities in Low Carbon and Sustainable energy technologies. The Programme is managed by Invest NI, and although the base funding is from the Climate Change Levy, DETI supplements this through EREF funding.

6.31 DETI has administered both Interreg IIIa and BSP funding to projects specialising in Renewable Energy and/or Energy Efficiency. A total of €5.1m of Interreg funding was allocated to a variety of projects including hydro-electricity, biomass, solar and energy efficiency. The Renewable Energy Installers Academy has received over €1m from Interreg IIIa to provide a training and accreditation service for renewable energy

installers. The project has been a success and has played an important role in the increase in the number of microgeneration installations in Northern Ireland as well as accelerating capacity within the industry. BSP funding has been paid to several energy demonstration schemes focusing largely on biomass, heat pump and wind technologies.

Conclusions

6.32 The goal of enhancing sustainability in energy was relevant in 2004 and it remains even more so today with the increased emphasis on climate change mitigation. Over the past three years, there have been significant international and national changes that have given an impetus to the need for more use of renewable energy generation including, most recently, the agreement of EU Member States to work towards a target of 20% for the renewable element of total energy by 2020.

6.33 Progress is being made towards the target of at least 12% of electricity generated from indigenous renewable sources. Indications are that there is sufficient generation from wind projects either currently existing or at planning stage to meet the target. The results from the Grid Study will be used to consider how the electricity transmission and distribution system is sufficiently robust and flexible to effectively manage the increasing contribution from renewable energy.

6.34 In addition the following has been achieved:

- The Renewables Obligation has been implemented and is proving successful in stimulating renewables development and especially large scale wind generation;

- Installer capacity and expertise in the area of renewable energy technology has been significantly improved;

- Action Renewables has raised public awareness of renewable energy, and through monitoring and evaluation, has promoted better understanding of the potential of renewables technologies and their effectiveness;

- The development of the DETI Energy Efficiency Plan, to ensure that all stakeholders are clear where their own objectives fit when contributing to the strategic objective of reducing electricity use by 1% each year from 2007-2012;

- Increased awareness and uptake in microgeneration through the Reconnect Programme.

7 Reliable Energy Supplies

7.1 Northern Ireland has only very limited indigenous energy resources and therefore is heavily dependent on oil and gas imports from GB and Europe. SEF 2004 identified that uncertainty of supply in times of national and international crisis required government to explore options to improve resilience. Key issues such as electricity generation margins, interconnection, primary fuel mix, and the availability of, and access to adequate storage facilities, especially for gas, would therefore, be required. As these difficulties apply equally across the island of Ireland it was accepted that any approach to these problems should where possible, be addressed in co-operation with DCENR in Dublin.

7.2 With regard to adequate electricity generation, the Department and NIE, through the published SONI 7-year capacity statement, monitor the adequacy of electricity supply, the generation adequacy margins, and the primary fuel mix used by generators. Regulations were introduced in 2005 to ensure that the power stations provide an adequate and reliable electricity supply. A further measure will be the implementation of the new Security of Supply Directive in February 2008.

7.3 A Departmental PSA 2005-08 target was to have completed by December 2006, the South / North gas pipeline project. This large component of the gas infrastructure has now been commissioned and has gone a considerable way towards strengthening the security of supply within the Northern Ireland energy sector.

7.4 There is however, increasing concern about security of gas supply, accentuated by volatility in world wholesale gas prices and political unease in Eastern Europe and the Middle East. Both Northern Ireland and RoI are dependent on a single source of gas supply to the island (via the Moffat distribution centre in Scotland), and are therefore geographically vulnerable in the event of a threat to the GB supply. A concern voiced by the Regulator during our meetings was the degree of reliance on gas and volatility of gas prices. DETI, working with DCENR, has recently awarded a tender to carry out feasibility studies into the demand and potential for Gas Storage and the construction of a Liquefied Natural Gas facility. The findings of this report, which issued late 2007, will help inform and shape the future of security of gas supply on an all-island basis. In addition, the Department has tasked the Geological Survey of Northern Ireland (GSNI) to carry out a comprehensive assessment of the geology in the Larne and Islandmagee areas of East Antrim, with a view to assessing the potential for energy storage in underground salt caverns. This report is expected in August 2008.

7.5 From 2004 emergency planning procedures in the energy sector have been enhanced particularly since the replacement of the 1924 Emergency Powers Legislation with the Civil Contingency Act, 2004. The Civil Contingencies Policy Branch of OFMDFM has overall

responsibility for emergency planning in Northern Ireland. DETI has a seat at the NI Oil Infrastructure Emergency Committee, the Infrastructure Emergency Planning Forum (IEPF), and Belfast Resilience. Representatives also attend regular 3-monthly meetings with BERR and the devolved administrations on emergency planning issues.

7.6 DETI has drawn up contingency plans for emergencies in gas, electricity and oil and during 2006/2007 it developed, in conjunction with DCENR, an all-island inter-departmental Emergency Communications Plan. Further work on updating this plan will continue.

7.7 DETI is also in discussion with DCENR on the merits of co-operating on security of supply for electricity and gas, especially due to the introduction of the SEM and EU Security of Supply Directive. This would be tied in with enhanced liaison with GB on security of supply. Revision of the Fuel Security Code is being undertaken in conjunction with the introduction of the Single Electricity Market from 1 November 2007.

7.8 There is a strong emphasis on contingency exercises within the gas and electricity industries in Northern Ireland, not least because of the significant developments in the gas infrastructure with the N/W and S/N gas pipelines and the roll-out of the gas connections to towns along the respective routes. Both industries have Business Continuity Emergency plans which have been tested to ensure that systems remain functional (i.e. that the lights stay on), in the event of sabotage or other state of emergency (e.g. flu pandemic). A number of exercises were carried out over the course of the last year to test emergency planning.

7.9 DETI has developed a new energy emergency oil plan for Northern Ireland that will be compatible with plans being put in place by BERR and the Scottish Government.

7.10 In addition to the above, the successful opening of the Single Electricity Market ("SEM") on 1 November 2007 will not only enhance competition, but will improve security of supply for Northern Ireland and the Republic of Ireland.

7.11 Enhancing Northern Ireland's security of electricity supply is a key aim, and the new arrangements should deliver a more efficient and stable market environment which will help consumption and investment decisions. Both NI and RoI share a ccommon concern to provide security of reliable and sustainable energy supplies for consumers and economies. Security and continuity of supply will be enhanced by the greater number and efficiency of generators operating in the single Market, coupled with the planned increase in grid interconnection. The Market will provide for a more diverse generation mix, including facilitating the growth in renewable electricity.

7.12 Within the context of the SEM, as well as UK and wider regional EU policy aims, the extent to which Northern Ireland and the Republic can

benefit in the future from these shared arrangements and proposals will be further determined.

Conclusions

7.13 Due to its lack of indigenous energy sources Northern Ireland is vulnerable to sudden politically driven reductions in fuel supplies (particularly gas), or to increases in international oil and gas prices and there is little that can be done to insulate the consumer from these developments. However, the recent construction of additional elements of energy infrastructure e.g. the South / North Gas Pipeline providing natural gas interconnection with the Republic of Ireland, modernisation of the power stations at Ballylumford and Coolkeeragh, plus the introduction of the all-island Single Electricity Market, and plans for a second North / South electricity interconnector will strengthen the reliability of Northern Ireland's energy market.

7.14 Closer liaison has been established with GB and RoI to ensure the reliability and adequacy of both electricity and gas supplies. Robust contingency plans have been drawn up to deal with emergencies in the energy sector.

7.15 A revision of the Fuel Security Code is being undertaken in conjunction with the introduction of the Single Electricity Market from 1 November 2007.

7.16 The SEM will enhance security and continuity of supply by the greater number and efficiency of generators operating in the single Market, coupled with the planned increase in grid interconnection.

8 Overall Conclusions and Forward Look

8.1 The following recommendations relating to the 4 key goals in SEF 2004 provide a direction for future energy policy, as suggested by the key stakeholders.

Reducing Prices

8.2 This evaluation of what has and has not developed in the first 3 years of the SEF 2004, has, along with the current Programme for Government target "to reduce energy costs relative to UK/EU regions by 2011", signalled the need for price reduction to remain a priority goal in our future strategic energy policy. In particular, lower prices will attract investment, augment our economy, and help alleviate fuel poverty. However, this objective has to be set against other priorities such as increasing use of renewable energy sources (including the significant grid investment that will be required to facilitate more wind), and ensuring security of supply. In our discussions with the Regulator and the energy industry, several areas for future consideration by the Department were suggested:

- the possibility of further mutualisation;
- the fact that the introduction of the Single Electricity Market will contribute to increased energy prices in the short term;
- further introduction of SMART metering in both the electricity and gas sectors;
- the introduction of electricity interconnection both North/South and East/West between RoI and GB, will have an effect on Northern Ireland electricity prices through the SEM;
- more emphasis on energy efficiency.

Competitive Markets

8.3 A priority of the current Portuguese Presidency of the EU, is making single markets in Europe for gas and electricity a reality. This is strongly supported by the UK Government which believes that a truly competitive, integrated, EU-wide energy market will have major benefits for EU competitiveness, as well as increasing security of supply. However, it must be remembered that the introduction of the Single Electricity Market will contribute to increased energy prices in the short term.

8.4 In terms of the domestic market, further liberalisation of the Northern Ireland gas market was supported by the stakeholders we spoke to, although the Regulator voiced concern about gas dependency and the volatility of the single exit/entry point at Moffatt in Scotland. Stakeholders strongly suggested the need to:

- proceed with the possibility of introducing common gas arrangements on the island of Ireland; and

- encourage gas suppliers from outside Northern Ireland to become licenced gas suppliers in the Greater Belfast and Larne gas market, thus providing gas supply competition.

Sustainability

8.5 Energy generated from renewable sources and further promotion and implementation of energy efficiency, remain key priorities for Northern Ireland's energy strategy for some time. By following this policy, not only will we be making a contribution towards tackling climate change, but there are targets to meet to ensure the UK complies with relevant EU Directives on the generation of energy from renewable sources. Microgeneration, district heating schemes, combined heat and power, and biomass-fuelled heating at community and industry level, are at the cutting edge of further diversification of our energy mix. Issues that DETI needs to consider in this area of energy policy include:

- The NI Renewables Obligation – continuing work necessary to ensure Northern Ireland meets its "green" target while reducing potential price impact on consumers;

- Further development in Bioenergy and Marine technology – more focus for future strategy;

- R&D into the capacity of renewable energy as a fuel for electricity generation in NI, including effective demonstration of commercially viable options;

- Energy Efficiency - improving energy efficiency coupled with renewable energy technology, where economically viable, will deliver significant reductions in the use of fossil fuels. Compliance with the EU Energy End Use Efficiency and Energy Services Directive, will be a significant driver, and will help move the UK as a whole and specifically NI forward in terms of SMART metering technology, and more accessible energy efficiency services for both net bound and non net bound energy suppliers. This will lead to medium and longer term quantifiable energy savings. In addition, the ongoing promotion of the benefits renewable energy technology will continue. The Directive is being implemented on a UK-wide basis and will be transposed by May 2008;

- Combined Heat and Power – educational and information programmes on support mechanisms needed to encourage the development and installation of CHP technologies;

- The outcome of the joint Northern Ireland / Republic of Ireland study into the strengthening of the electricity grid to accommodate increased generation from renewable sources.

Reliability

8.6 In today's world where fossil fuel deposits are increasingly becoming sourced only in less stable and far away areas, it is of paramount importance that Northern Ireland works towards securing reliable energy supplies for future generations. Storage of energy, and electricity production from renewable sources have already been noted. In addition, it is important that our continued participation in UK security assessments and trials, remain a constant focus in our energy strategy. Further ways of guaranteeing reliability of future energy supplies could include:

- provide gas storage or a Liquefied Natural Gas plant to hedge against volatile fluctuations in world gas prices or the shortage of gas from Eastern Europe;

- research and development of technologies that will provide a diverse energy mix;

- development of East/West linkages with mainland Europe;

- maximising the production of energy from renewable sources, together with better execution of energy efficiency, will reduce our energy demand and dependence on energy imports;

- strengthening of the electricity grid to accommodate increased generation from renewable sources; and

- development of a second North/South electricity Interconnector.

8.7 Not all of the recommendations are complementary - there are particular tensions between many of them and the objective of reducing energy costs. Achieving a balance which has the interests of consumers at its heart will continue to be the priority for energy policy.

The Future

8.8 Energy policy for Northern Ireland is now of course a transferred matter (with the exception of nuclear power), but it will not be able to evolve in isolation, and will be driven by European legislation and significantly influenced by GB and RoI policy. Since the identification in SEF 2004 of the major challenges facing the local energy sector, there have been significant international developments which have identified additional real threats from climate change and security of energy supply. Recent publications such as the report "Economics of Climate Change" by Sir Nicholas Stern, Head of the Government Economics Service, and Al

Gore's book and film "An inconvenient Truth", have highlighted the growing international concern of the effects of global warming.

8.9 Climate change threatens the stability of the world's economy and population. It is essential that Northern Ireland's energy policy of tomorrow focuses on the promotion and encouragement of energy efficiency in a bid to reduce energy demand. In so doing, it must make a concerted contribution to the UK targets for reduction in CO_2 emissions. In addition, continued support for renewable energy will accelerate Northern Ireland's transition to a low carbon economy, and, whilst recognising the environmental agenda, will lend to the diversification of our energy mix.

8.10 The depletion of the indigenous oil and gas reserves in the North Sea means that Northern Ireland (and GB / RoI) will, in the near to medium term future, become more and more dependent on imports of fossil fuels. These supplies are concentrated in less stable regions, therefore we will need to manage this risk and secure our energy supply for the continued future support of our economic and contemporary life. This is particularly significant for Northern Ireland and RoI, being geographically exposed at the periphery of Western Europe. Further strengthening of competitive markets on a North/South and East/West tri-partite basis within and between the island of Ireland, the UK, and mainland Europe, presents an opportunity for managing and diluting the risk of reliance on imported fossil fuels.

8.11 Currently the local energy industry is developing proposals for several major infrastructure proposals, which will help tackle these international challenges. Plans are presently being formulated to improve North/South electricity links by the construction of a second interconnector, and the publishing of the Grid Study will point the way forward for the greater use of electricity from indigenous sources. Studies are also being undertaken into the siting of off-shore wind farms and the use of marine tidal applications, both of which could contribute to the use of less fossil fuel in the production of electricity. The further development of the Northern Ireland gas network to provide local consumers with additional fuel choice will also be an ongoing area for consideration.

8.12 In addition to these infrastructure projects, DETI will be involved in the continual development of new energy policies in light of a number of forthcoming EU Directives; the eminent publication of the UK Energy Bill with the prospect of allowing renewed development of further nuclear generating capacity; the RoI White Paper on Energy; the mounting pressures from the climate change lobby; the developments relating to energy security of supply; and reviewing the priorities set out in the 2004 All-island Energy Market Development Framework.

8.13 These will all produce many difficult and challenging energy issues for the future which DETI, the Regulator, and the local energy providers will

have to consider and overcome. However, the overwhelming view of all the stakeholders involved in this review, is that the Department in formulating the Strategic Energy Framework in 2004, set the correct challenges and goals for the local energy sector. Their overall view also confirms that these goals with the additional challenges of climate change and security of energy supply, remain central to DETI's future energy policy for Northern Ireland. The challenge for DETI is to achieve a successful, sustainable, long term future for energy through innovative and ambitious actions, involving a shared vision with industry, and through negotiating and maximising the benefits for Northern Ireland with regard to EU Directives and levys.

8.14 In conclusion, future energy policy must continue to focus on:

- Energy Prices – establishing and maintaining downward pressure on energy costs by implementing and further developing a range of measures to include: more emphasis on energy efficiency; exploration for common gas arrangements to improve competition and price reduction; encouragement of more suppliers into SEM to enhance competition and price reduction; more diversity in the NI energy mix; continued development into sustainable / renewable energy; possible further mutualisation. Appropriate and independent monitoring of energy prices is a necessary control on the progress being made to achieve this goal. Further consideration will be given as to how best to take this forward;

- Common Energy Markets – developing further the EU priority of Single Energy Markets. To include further exploration into feasibility of common gas arrangements on the Island of Ireland, and continued work with DCENR, NIAUR and CER on maximising the benefits of the SEM. The construction of a second North/South electricity interconnector is essential in order to maximise the benefits of the SEM;

- Sustainable Energy – there is now a greater emphasis on researching and developing renewable and sustainable forms of energy, as an alternative to and a future replacement for our hitherto reliance on fossil fuels. Continued support in this ever-developing area is essential, with a clear focus on energy capture, storage, and use;

- Reliability of Energy Supplies – continued development into alternative forms of energy, to increase the NI energy mix and to enhance reliability and security of supply. Continued and further R&D with RoI, GB, and mainland Europe on the capture and storage of energy sources that will increase reliability and diversity of supply. Investment and continued further research into the capability of the infrastructure to manage a more diverse mix of energy.

Each of these inextricably linked goals remains key to the strategic direction of future energy policy.

8.15 It would be the Department's intention to initiate a new Strategic Energy Framework during 2008 which will update the context for Northern Ireland's energy policy not least in light of the Single Electricity Market and the new UK Energy strategy and EU policy directives.

Appendix 1

Members of Steering Group for the Review of the 2004 Strategic Energy Framework

Noel Cornick	Chair
Alistair Pyper	Policy Evaluation and Development Unit, DETI
Ann-Marie Anderson	Policy Evaluation and Development Unit, DETI
John Boyd	Energy Division, DETI
Celine Murray	Energy Division, DETI
Richard Johnston	Economics Division, DETI
Sarah Shakespeare	Economics Division, DETI

Appendix 2

Questions for Industry

Q1 What have been the significant changes in your sector of the energy industry since 2004?

Q2 From your perspective, were the goals and challenges set out in the 2004 Strategic Energy Framework for your sector of the energy industry correct and are they still relevant?

Q3 What do you see as the likely future direction for your sector and the energy industry as a whole over the next 5 to 7 years?

Q4 How do you see Government involvement in the energy industry over the next 5 to 7 years?

Appendix 3

Participants in the Strategic Energy Framework Review

- Northern Ireland Authority for Utility Regulation
- Northern Ireland Electricity
- Phoenix Natural Gas
- *firmus energy*
- Northern Ireland Energy Holdings
- Carbon Trust
- Invest Northern Ireland
- Department of Regional Development
- Department of Agriculture and Rural Development
- Department of Social Development
- Department of Environment
- Department of Finance and Personnel

Appendix 4

Summary of measures taken to reduce energy costs

Measure	Target	Comment	Action & Status
Electricity Contract Buy-Out	To decrease electricity costs to business of at least 10% below the levels they would otherwise have been.	Due to State Aid regulations it has not been possible to introduce assistance to bring about the desired decrease in electricity costs to small and medium sized business users and therefore the current differential particularly with GB remains high.	Implement the proposal aimed at offsetting Public Service Obligation charges (including appropriate monitoring and audit procedures) in order to bring about a decrease in electricity costs to business users of at least 10% below the levels they would otherwise have been, commencing 2004/05 –not achieved (4.5)
Defrayal of Energy Efficiency Levy.	Reduction in electricity tariffs.	Resulted in approximately 1.5% reduction in tariffs for all customers in 2005/06, and approximately 1% reduction in tariffs for all customers in 2007/08.	Reassess and implement alternative cost reduction options for long term generation contracts - achieved (4.6)
Mutualisation	Not a DETI measure	The purchase of the Moyle Electricity Interconnector in 2003 and the Scotland – NI Gas Pipeline (SNIP) by Northern Ireland Energy Holdings, has influenced a downward pressure on the price of electricity from gas-fired generation. It is estimated that mutualisation will result in £30m savings for customers over the lifetime of Moyle Interconnector, and £41m savings from SNIP.	Promote the development of an efficient gas network in Northern Ireland that is compatible with those in neighbouring markets and consistent with EU Directives - achieved (4.18, 4.22)
Emissions Trading Scheme (ETS)	To optimise allocation of emissions credits for NI.	Phase 1 of ETS commenced on 1 January 2005 and ends in 2008. The allowances allocated for NI for the period 2008 – 2012 (phase 2), are expected to account for 65% of the actual emissions projected for 2010. They will not be sufficient therefore, to ensure a neutral impact on NI's electricity consumption tariff. The excess impact on prices will depend on the price of carbon. The introduction of the SEM from 1 November 2007 will involve the full price of carbon being included in the wholesale price of electricity, and the benefits of ETS allowances are expected to be retained by generators. However, the continued operation of the existing legacy contracts with Kilroot and Ballylumford Power Stations enables the benefits of the ETS allowance to be passed to the consumer as opposed to the generator.	Ensure that the optimum allocation of emissions credits is awarded to the Northern Ireland electricity supply industry and that this is managed to the maximum benefit of Northern Ireland consumers -achieved (4.8)
Carbon Trust activities	Save costs for business sector.	Invest Northern Ireland and their third party organisation the Carbon Trust have been engaged in a process of energy surveys within the business sector which have identified opportunities for estimated savings of £85m.	Empower and require those involved in the energy sector to focus on the provision of energy services and energy efficiency as a means of reducing overall end user costs of consumption - ongoing (6.12 et seq)
DETI to monitor energy prices	To reduce costs relative to UK, RoI and EU.	Not introduced due to resource constraints.	Monitor the relative prices of energy commodities to maintain similar pricing structures to those in the UK, RoI and EU - not achieved (4.17, 4.31).
PNG - new gas licencing arrangements	To help prevent large future distribution price increases.	Phoenix and the Energy Regulator came to a mutual agreement, in November 2006, on the terms and conditions of a new licence which will stabilise the distribution element of the overall gas price to consumers. The new licence allows costs of investments in network infrastructures to be recovered over a longer period (extends the previous licence period by 30 years to 2046), and helps prevent large future distribution price increases, provides regulatory certainty, and investor confidence.	Seek to ensure that the appropriate regulatory provisions are in place to allow the efficient recovery of investments in network infrastructure - achieved (4.19). Maintain downward pressure on energy costs in order to contribute to the implementation of the Department for Social Development's Fuel Poverty Strategy - ongoing (4.30).
firmus energy extension to two year gas price cap.	To encourage customers in the North West and South East areas to change to gas.	Customers will not pay higher gas prices until 1 January 2009. The Company has also announced a reduction in prices for smaller business customers. This policy is likely to be temporary, and the company will, at some time in the future, have to price their gas in line with world prices.	Promote the development of an efficient gas network in Northern Ireland that is compatible with those in neighbouring markets and consistent with EU Directives - achieved (4.18, 4.22)
NIRO	To introduce a Renewables Obligation as an acceptable cost to the consumer.	The Obligation level imposed on NI electricity suppliers for the first 8 years of the NIRO up to 2012, has been decoupled from the renewables target in order to reduce the potential impact of the NIRO on the cost of electricity. The lower Obligation level (6.3% in 2012) has been made possible because of NIRO's links with the other GB Obligations.	Implement a Renewables Obligation in Northern Ireland from April 2005 (rising to 6.3% of consumption by 2012) with the Renewable Obligation Certificates being mutually recognized and traded freely throughout the UK - achieved (5.12)

Appendix 5

Summary of Measures to introduce Competitive Energy Markets

Measure	Target	Comment	Action & Status
Single Electricity Market (SEM)	Address high costs & prices; narrow price differentials with other UK regions, RoI, and EU; attract investment; improve security, diversity & continuity of energy supply.	The Electricity (Single Wholesale Market) (NI) Order 2007, plus corresponding legislation in the Irish Parliament, has been introduced to bring into operation of an all-island wholesale electricity market with effect from 1 November 2007. DETI has worked closely with colleagues in the RoI government, the Utility Regulators and within the electricity industry to ensure that this complex exercise is fully operational and introduced on schedule. This includes the separate licensing of the System Operator for Northern Ireland (SONI).	Fully implement Electricity Directive 2003/54/EC and Gas Directive 2003/55/EC, including full market opening, by July 2007 - achieved (5.1 et seq). Ensure 60% electricity market opening, including separate licensing of the System Operator Northern Ireland, by December 2004 - achieved (5.6). Develop common regulatory measures during the period 2004-2006 that facilitate all-island trade and promote competition in electricity and gas markets - achieved for electricity (5.6), ongoing for gas (5.20). Address implications for cross border trade arising from RoI's new market arrangements in electricity (due for implementation by February 2006) - achieved (5.1 et seq). Enhance the consumer representation arrangements provided for in the Energy (Northern Ireland) Order 2003 and monitor the closer relationship between GCCNI and NIAER - achieved (5.4, 5.16). Where appropriate, develop competition in electricity and gas supply in line with EU Directives - achieved (5.1 et seq). Maintain downward pressure on energy costs in order to contribute to the implementation of the Department for Social Development's Fuel Poverty Strategy - ongoing (4.30).
EU Electricity Directive 2003/54/EC	100% market opening of Northern Ireland's retail electricity market to supply competition for all consumers.	This should have been introduced by July 2007. However, in recognition of the interactions between the changes required to implement full market opening (i.e. to systems, licences, contracts, and processes), and those required to implement the SEM, the Department considered it appropriate to align full retail market opening with SEM implementation on 1 November 2007.	Fully implement Electricity Directive 2003/54/EC and Gas Directive 2003/55/EC, including full market opening, by July 2007 - achieved (5.1 et seq).
Electricity Interconnector 2	To maximise the benefits from SEM	This additional interconnector will enhance diversity and security of electricity supply, and will aid further growth of renewable generation, it is due to be operational in 2011/12.	Improve electricity systems interaction and integration during period 2004-2006, with particular regard to early alignment of planning and control standards and methodologies, and addressing interconnection constraints and requirements in light of the findings of NIE/ESB interconnection studies and proposed east-west (RoI-GB) interconnector - ongoing (5.9).
All-island Grid Study	To inform strategic policy issues on renewable energy and infrastructure investment.	As part of the joint "2020 Vision" exercise for renewable energy on the island of Ireland, the Department, DCENR and the two Regulators, is undertaking a study on the impact of renewable energy systems and the linkages to the Grid. One of the main difficulties in further developing renewable energy sources is connecting them to the electricity grid system. The report is anticipated late 2007.	Seek to incentivise the growth in the green electricity market as a means of underpinning competitiveness - achieved (5.12) & grid study recently completed - report to issue (6.5).
Northern Ireland Renewables Obligation	To promote the 'renewables' market.	The NIRO is regarded as successfully incentivising 'renewables' development: in its first year planning applications in respect of new wind farms increased by 60%. The NIRO was amended from 1 April 2007, to facilitate extension of its benefits to micro-generators.	Seek to incentivise the growth in the green electricity market as a means of underpinning competitiveness - achieved (5.12).
Gas Directive – 2003/55/EC	Full market opening through creation of competitive, single markets that are non-discriminatory, transparent, and fairly priced.	Gas market in Greater Belfast and Larne fully open, with derogation from the Directive for 10 years for the developing market outside Belfast. It is a very small market, and initial consideration to expand to common arrangements for gas might reduce costs to consumers and would enhance competition.	Promote gas systems interaction and interoperability, including harmonisation of gas tariff principles - achieved (4.18), ongoing (4.19 et seq). Establish measures to facilitate progressive harmonisation of all-island and GB energy markets during the period 2005-2010, in line with EU-wide integration of regional markets - ongoing (5.1 et seq).

Appendix 6

Summary of Measures taken to Enhance Sustainability in Energy

Measure	Target	Comment	Action & Status
Electricity generated from indigenous renewable sources	By 2012, 12% of electricity consumption will be from indigenous, renewable sources, and 15% of that will be from non-wind sources.	Currently 3.8% of NI electricity is generated from indigenous renewable sources. Capacity of about 400MW of wind is needed to meet the 2012 target of 12%, and approximately 110MW has currently been deployed. A further 250 MW has received planning permission and is awaiting construction, and 1000 MW is being considered by the Planning Service. If these projects are all able to connect to the electricity grid, then Northern Ireland will be able to meet the target. The electricity interconnector 2 and the results of the grid study offer further support to a growing renewables energy future.	Require that by 2012 at least 12% of all electricity consumed in Northern Ireland is obtained from indigenous renewable energy sources - at least 15% of which must be generated by non-wind technologies - ongoing (6.6 et seq). Implement a Renewables Obligation in Northern Ireland from April 2005 (rising to 6.3% of consumption by 2012) with the Renewable Obligation Certificates being mutually recognised and traded freely throughout the UK - achieved (5.12). Ensure the electricity transmission and distribution system is sufficiently robust and flexible to effectively manage an increasing contribution from renewable energy - ongoing (6.5). Provide effective educational and information programmes on the benefits of renewable energy and CHP - achieved (6.27). Develop support mechanisms to encourage enhanced programmes of renewable energy, CHP and energy efficiency and build installer capacity to increase consumer choice, competition and quality in the provision of renewable energy and CHP technologies - ongoing (6.16, 6.17, 6.18).
Balcas plant in Fermanagh	Development of bio-energy technology and usage.	This has a 2.5MW electricity generation capacity, produces heat and a biomass energy product, and is a world class exemplar of sustainable energy.	Continue to support research into the capacity of renewable energy as a fuel for electricity generation in Northern Ireland and the effective demonstration of commercially viable options - ongoing (6.1 et seq, 6.10)
Marine Current Turbine tidal stream project in Strangford Lough	Development of tidal power generation technology.	The Company, one of the world's leading developers of tidal stream energy, is carrying out a multi-million pound pilot project generating electricity from the strong currents in Strangford Lough. It had intended to begin installation in late August 2007 but difficulties in getting access to the jack-up barge have delayed these plans until later.	Continue to support research into the capacity of renewable energy as a fuel for electricity generation in Northern Ireland and the effective demonstration of commercially viable options - ongoing (6.1, 6.12)
Energy Efficiency Plan - "Delivering Northern Ireland's 1% Energy Efficiency Target".	From 2007, consumption of electricity in NI is reduced by 1% annually until 2012.	Implementation plan published by DETI, August 2007 – "Delivering Northern Ireland's 1% Energy Efficiency Target". This plan will report electricity savings on an annual basis using 2006/07 as base year.	Without compromising economic growth potential, take action to reduce the upward trend in electricity demand to the extent that from 2007 consumption of electricity in Northern Ireland is reduced by 1% annually until 2012 - ongoing (6.13 et seq). Develop an effective framework with agreed strategic objectives for energy efficiency in Northern Ireland and co-ordinate promotional, educational and financial support activities aimed at enhancing energy efficiency in collaboration with other Departments with statutory responsibility for energy efficiency and on an all-island basis - ongoing (6.13 et seq).
Environment and Renewable Energy Fund	During 2006 – 2008 to accelerate development of renewables in NI.	The £59.2m fund supports R&D; Accelerated deployment of renewable energy; and Underpinning knowledge and raising awareness	In collaboration with the Department of Agriculture and Rural Development, promote centralised and embedded generation which is fully integrated into the rural economy offering enhanced opportunities for diversification and wealth creation - ongoing (6.23). Work with the Department of Finance and Personnel to secure significant improvement in the energy efficiency standards of new and modernised buildings in Northern Ireland, and develop a framework for encouraging and facilitating the integration of renewable energy technologies into the design and construction of buildings - ongoing (6.23). Provide effective educational and information programmes on the benefits of renewable energy and CHP - achieved (6.27).

Appendix 7

Summary of Measures taken to Ensure Reliable Energy Supplies

Measure	Target	Comment	Action & Status
Monitoring of adequate electricity supply; electricity generation margins; and fuel mix.	To ensure that power stations provide adequate and reliable electricity supply.	The transposition of EU Directive on security and supply in February 2008, will further aid security of adequate electricity generation. This will supplement the 2005 Regulations which were brought in to ensure that the power stations generated adequate and reliable electricity supply.	Implement new Security of Electricity Supply Directive 2005/89/EC (this was made in January 2006 and must be transposed by February 2008) - on track (7.2). Monitor the reliability and adequacy of electricity supply - ongoing (7.2). Consider the case for energy legislation to intervene if, despite the financial incentives of either the Power Purchase Agreements or the market, the power stations fail to provide an adequate and reliable electricity supply - achieved (7.2). Complete a revision of the Fuel Security Code by March 2005 - likely to be achieved but with some delay (7.7). Develop an all-island approach to reliability of energy supplies e.g. common market mechanisms and a consistent approach to issues such as generation adequacy and infrastructure, in line with the timeframes set by the All-island Development Framework for energy and EU Directives to safeguard security of electricity and gas supplies - ongoing (7.13). Agree and publish generation adequacy margins by March 2005 - achieved (7.2). Ensure that new electricity generation decisions take full account of fuel diversity as well as cost and environmental considerations - achieved (7.7.1 et seq). Support research and development activity aimed at securing a diverse and viable long-term energy supply including that which will assist in maximising energy efficiency and economy - ongoing (5.10, 5.11, 5.12).
S/N gas pipeline	2005-08 PSA target to have S/N pipeline completed by Dec 2006.	Project completed with report on “fit for purpose” received and verified.	Ensure a consistent approach, where possible, to the implementation of Directives 2003/54/EC and 2003/55/EC on electricity and gas - achieved (5.6, 5.13, 7.3).
Gas storage studies	Commissioned in 2007.	The All-island LNG / Gas storage study – findings due to be presented late 2007.EREF funded geological study (salt caverns) – due for completion August 2008	Undertake a review of the risks to security and continuity of supply in Northern Ireland by December 2004 - achieved & continues (7.5 et seq).
Emergency planning processes and procedures	To ensure electricity generation remains functional in the event of sabotage or other state of emergency.	Contingency plans in operation for electricity, gas, and oil. During 2006/07, a Plan Communications Framework was drawn up in conjunction with DCENR.	Review emergency plans for oil, electricity and gas interruptions on a biennial basis to ensure they are adequate to deal with all reasonable eventualities - ongoing (7.5 et seq). Continue to progress discussions with key stakeholders aimed at taking forward an awareness initiative that aims to highlight oil installation safety and quality issues and will also encourage the industry to introduce a voluntary registration scheme for installers - ongoing (7.6).

Appendix 8

Economic Statement

Market Failure / Need

Sustainability

1 The SEF 2004 found that Northern Ireland's energy system should "satisfy present and future economic and social needs while minimising environmentally damaging activity". The use of fossil fuels diminishes the scarce amount available for the future and its use does not minimise the risk to the environment. For this reason the use of non-fossil fuels (renewable energy) needs to be encouraged.

2 In economic terms, the use of fossil fuels creates a 'negative externality'. A negative externality occurs when the production or consumption of a good, affects someone other than the producer or consumer of that good. The production and consumption of fossil fuels cause damage to the environment and this damage is a cost to society. Consumers are only concerned with the cost or price to themselves, not the wider effects of consuming fossil fuels and so the cost of environmental damage is not reflected in the price of energy.

3 The cost to society of creating environmental damage could be reflected in the price of fossil fuels though a tax or levy on emissions. This would discourage the production and consumption of this type of energy. The substitution of fossil fuels for renewable energy keeps the damage to the environment to a minimum and therefore reduces the cost to society.

Reliability

4 Northern Ireland is heavily dependent on oil and gas imports from GB and Europe and has very limited indigenous energy resources. The use of domestic energy is socially and economically desirable due to increasing concerns over the security of supply. However, at this point in time, there appears to be a limited incentive for Northern Ireland's private sector to operate in this market, making local energy production a merit good. Government assistance is often needed in the case of a merit good because what is beneficial for the economy is not always the preference of individuals or firms.

5 Over the past four years, projects have been completed to strengthen the supply and reliability of the energy market and research is currently being undertaken to assess the possibility of further strengthening the reliability of Northern Ireland's energy market.

Competitiveness

6 Energy markets are often monopolistic markets and in Northern Ireland this is especially true for the gas and electricity sectors. Higher prices

are charged to consumers in monopolistic markets and as energy is a necessity to the consumer, government intervention is needed to ensure prices remain reasonable. Economic theory shows that opening the market and encouraging more firms to compete should improve efficiency and lower prices, reducing the future need for government intervention in this area.

7 An all-Island Single Electricity Market (SEM) will take effect from 1 November 2007. Simultaneously, the Northern Ireland retail electricity market will be opened up to competition and consumers will then be able to choose alternative electricity providers. The gas market in Greater Belfast and Larne has also been fully opened to competition and renewable energy is freely traded throughout the UK.

Minimising Costs

8 Research carried out by the Economic Research Institute of Northern Ireland (December 2005) found that "energy costs in Northern Ireland represent a relatively small proportion of turnover for most firms (on average between one and two per cent of turnover)". However, when the SEF was launched, energy costs were relatively high compared to the Republic of Ireland and the rest of the UK. Most firms believe that the relatively high cost of energy in Northern Ireland is detrimental to their competitiveness. However, focus on energy costs have to some extent been replaced by a focus on the fiscal regime, primarily the rate of Corporation Tax in the UK.

9 Another effect of high energy prices is fuel poverty. Improved competition in the energy market should improve the efficiency of energy producers, give consumers greater choice, reduce prices and therefore reduce fuel poverty. At present, the structure of the electricity and gas markets are either monopolistic or oligopolistic (few firms in the market), and although progress has been made towards greater competition, there is still a view that prices need to be lower.