



Department of
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and Investment**
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**Consultation
Strategy
Progress**

Energy

**A STRATEGIC FRAMEWORK FOR NORTHERN IRELAND
September 2010**

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Ministerial Foreword



Without reliable and affordable energy, economies and communities will cease to function. Within Northern Ireland we are dependent on imported fossil fuels for most of our energy needs. That is why, looking to 2020 and beyond, I believe we must seek to shift the balance with regard to Northern Ireland's energy mix. In line with wider European policy we must also aim towards decarbonisation of our electricity supply as far as is practicable. While actually achieving this ambitious goal is outside the scope of this framework, I see this Strategic Energy Framework as laying firm foundations for the tremendous challenge that is ahead to 2050 and beyond.

At the time of writing, a number of other key Executive documents that relate to the energy goals being set out in this Framework have not yet been published. These include the Department of Regional Development's Regional Development Strategy and the Department of Environment's Waste Action Plan. Additionally, the Office of the First Minister and deputy First Minister's Sustainable Development Strategy was published on 27 May 2010. It is also the case that the ambitions of this new Strategic Energy Framework are set against a background of the stringent budget cuts facing the wider public sector over the coming years which will limit the extent of the work that DETI can undertake to drive the energy agenda forwards. And, in addition, consumers have been feeling the financial pain of recession. We must therefore be smart in how we focus our resources and priorities.

I believe that Government must send clear and timely signals of priorities now, signals that will guide market participants and encourage increased levels of renewable

energy and provision of the associated new infrastructure necessary to improve security and diversity of energy supply, and support economic activity while at the same time contributing to reduced carbon emissions.

My Department also supports the further extension of the natural gas network in Northern Ireland where it is economic to do so, to provide consumers with additional fuel choice and to benefit the environment through reduction of harmful emissions.

Maximising our natural renewable energy sources is of concern for us all in Northern Ireland because our oil and gas supplies in particular will have to be sourced from even further afield in years to come. This poses many risks for us. We have little control over the security of that energy supply; we are exposed to the volatility of world energy prices; and we are too heavily reliant on fossil fuels that are widely accepted as contributing to climate change.

Northern Ireland's current target is for 12% renewable electricity by 2012 and we are well on track to meet that target. Over the past five years the amount of electricity being produced from renewable energy sources has almost trebled and now accounts for nearly 10% of all electricity consumed in Northern Ireland.

I believe that Northern Ireland needs, and is able, to move rapidly to much higher levels of renewable electricity production and so am confirming that Northern Ireland will seek to achieve 40% of its electricity consumption from renewable sources by 2020. I see this new target as a real challenge. It is a cross cutting challenge impacting on a number of government Departments to ensure that the right conditions exist to achieve it, but it is also a challenge for those in the private sector involved in the supply and distribution of electricity. While onshore wind currently offers the most cost effective means of renewable electricity generation, I believe that, as with fossil fuels, a diverse mix of renewables is our overall objective as we look to the composition of Northern Ireland's energy portfolio in 2020.

Achievement of the target will also be challenging for energy consumers in Northern Ireland who will see new renewable installations being constructed as well as new power lines. This will bring both environmental and cost challenges which

will need to be weighed and balanced, not least because of the high levels of fuel poverty we face in Northern Ireland.

Energy efficiency will be required from two perspectives – from the generation, distribution and supply of energy to customers and through more efficient end use by customers. The development and management of our future electricity infrastructure is therefore a key opportunity for improving our energy efficiency. A vision of a smarter grid that encompasses not only smart meters but a myriad of new technologies that empower people to take responsibility for their own use of energy will be a crucial building block in developing an electricity system that is responsive to need and that is integrated across all sectors of our society. While the detailed outworking of this is not scoped in this document, grid development taking place now will lay the foundations for a robust and flexible smarter grid that will be fit for purpose for the next 40 years.

I also recognise the important contribution that renewable heat can make to Northern Ireland's sustainability, and that is why I am keen to explore the practical contribution that renewable heat can economically make to our energy environment in Northern Ireland.

I am committed to delivering an energy policy for Northern Ireland that will support a prosperous and sustainable future for all consumers and that seeks to maximise the economic opportunities and benefit for Northern Ireland. I recognise the opportunities from energy policy issues are pivotal to future economic growth in Northern Ireland, and my Department and Invest NI will work closely with the business community to ensure we are well placed to meet the energy challenges ahead.

In addition, transparent and independent regulation must complement government's ambitions, so we will continue to work closely with the Utility Regulator (NIAUR) to help deliver our objectives.

This new Strategic Energy Framework contains ambitious goals and challenging targets. But it is, ultimately, a blue print and does not include the detail of how targets could be achieved. Nor does it commit government, at a time of severe financial constraint, to investing public funds in particular initiatives. It is nevertheless, a firm signal of commitment to a Framework aimed at ensuring future access to secure, competitively priced and sustainable energy supplies for all in Northern Ireland.



ARLENE FOSTER MLA
Minister of Enterprise, Trade and Investment

Overview and Drivers

1

The Department of Enterprise, Trade and Investment's (DETI) strategic aim is for a more secure and sustainable energy system where:

- energy is as competitively priced as possible alongside robust security of supply;
- much more of our energy is from renewable sources and the resulting economic opportunities are fully exploited; and
- energy efficiency is maximised.

This new Framework, which flags the direction for Northern Ireland energy policy over the next ten years, concentrates on the key areas of electricity, natural gas, and renewable energy sources. It is set against what is undoubtedly a very harsh economic and financial climate with severe constraints on the public finances. It is also one where local businesses face higher costs than their counterparts in Great Britain and the region as a whole experiences the highest levels of fuel poverty in the United Kingdom. The framework has been developed following an 8 week pre-consultation phase during which the Department received over 50 responses, and a full public consultation during which 70 responses were received and considered.

The Strategic Energy Framework (SEF 2010) is the result of examining the drivers, strengths, opportunities and threats to Northern Ireland's energy landscape and attempting to balance many diverse social, environmental and economic issues alongside their associated risks. Several key factors such as the future cost of fossil fuels and the opportunities which new technology may bring in the area of power generation

are difficult to quantify but the cost of inaction is the greatest risk of all.

EU Policy

In keeping with United Kingdom and wider European Union policy, the Framework recognises that the focus of energy policy worldwide has shifted towards addressing concerns about security of energy supply and tackling the threats posed by climate change. It also recognises the significant changes that have taken place since DETI published its first Strategic Energy Framework document in June 2004.

In setting out Northern Ireland's strategic energy goals it is important to consider the European Union vision of a single European energy market alongside its overarching objective of seeking to decarbonise the European Union energy mix. The targets the European Union has set for Member States are challenging and include a minimum cut of 20% in greenhouse gases by 2020, with the United Kingdom setting itself the aim of achieving an 80% cut from 1990 levels by 2050. Specifically, the latest European Commission Renewable Energy Directive has set the United Kingdom a challenging 15% target for the amount of total energy (across electricity, heat and transport) that should come from renewable sources by 2020.

Northern Ireland's energy policy continues to be driven by Europe. The third European Internal Market for Energy package of Directives and Regulations (IME3), which came into force in September 2009, is due to be transposed into national law by March 2011. An important aspect of the new Directives relates to "unbundling" and the Department is committed to transposing all aspects of IME3 in the interests of achieving greater competition in energy markets. IME3 also aims to re-invigorate market integration and harmonise the powers and independence of regulators at a national and European Union level.

Regional Markets

A key tool to improve Northern Ireland's self-reliance in energy is through cooperation with neighbouring administrations. This is in line with the European Union's drive to build stronger regional markets. The Department is already working closely with the Scottish

Government, as well as with the Department of Energy and Climate Change (DECC) and the Irish Government, to promote development of renewable energy resources wherever joint action can maximise their potential.

An early example of this productive cooperation was agreement of the All-island Energy Market Framework with the Irish Government in 2004. The initial emphasis on market development within the European Union Internal Market has, in turn, led to joint action on marine energy and grid infrastructure. The latest collaboration on issues such as strategic environmental assessments, off-shore electricity grids and marine energy, clearly demonstrate the benefits of thinking strategically and regionally.

The British Irish Council's new Energy Workstream will help focus that strategic approach across marine energy and grid infrastructure, as well as in research and development of renewable technologies and the green economy. It will provide an extra regional lever to influence European Union policy and funding on these key issues.

Within the island of Ireland, the most significant policy intervention on electricity matters in recent years has been the creation of the Single Electricity Market (SEM), which began cross-border trading in wholesale electricity in November 2007. It is already promoting greater competition; enhancing security and diversity of supply; and bringing efficiencies and economies of scale. As a result Northern Ireland is now seeing increased investment in power generation and a greater number of electricity suppliers entering the market. Customer switching or "churn" among business consumers has been increasing steadily since 2007. The Single Electricity Market has also set a workable framework for cooperation between Member States and the development of regional markets in Europe.

However, the key to growing the market is a robust and stable electricity transmission system. This is critical to a modern economy and investment in electricity grid infrastructure is increasing across the world. The second North-South electricity interconnector will be crucial for increasing opportunities for trading wholesale electricity within the Single Electricity Market, as well as transmission of wind generation. It is very

important for Northern Ireland that this new infrastructure is delivered. While Northern Ireland already has the security of the Moyle interconnector with Scotland, the construction of the first East-West electricity interconnector between the Republic of Ireland and Wales by 2012 will have a further positive impact on regional market security and will signal the start of greater integration with the Great Britain market.

Natural gas continues to fuel most of Northern Ireland's conventional power generation, with two of the region's three power stations currently powered by gas. Indeed, it is likely that Northern Ireland will remain largely dependent on gas fired plant for baseload generation until at least 2030. While DETI is encouraged by the continued growth in Northern Ireland's natural gas market, the isolation of the market, its immaturity and small customer base and our dependency on the Scotland-Northern Ireland Pipeline (SNIP) for our imports cannot be ignored. This all points to the need for Northern Ireland to develop new ideas about how to maximise security and diversity of energy supply, competitiveness and economies of scale.

Northern Ireland is not unique in facing these challenges. DETI has therefore developed close working relationships with both the Republic of Ireland and Scotland, aimed at exploring the mutual benefits from co-operation on projects that will advance the growth of a regional renewable energy infrastructure.

Following on from the success of the Single Electricity Market it is important to develop a stronger regional natural gas market. Harmonisation of natural gas transmission and trading arrangements with the Republic of Ireland under the Common Arrangements for Gas (CAG) project will bring greater effectiveness and transparency of operation and competition and enhance Northern Ireland's security of supply. This work is an important step towards greater regional integration of the British Isles within the North West Europe Gas Initiative.

Renewable Energy

There is general consensus that greater quantities of renewable energy are now an imperative for Northern Ireland. Our position on the western periphery of Europe with few fossil fuel resources creates a near 100% dependence on imports to meet our energy

needs. This dependency creates uncertainty in terms of security of supply and exposes Northern Ireland to the volatility of world energy prices. Similarly, the high proportion of fossil based fuels in our energy mix creates a significant carbon footprint which contributes to the problems of climate change. Northern Ireland must become more sustainable economically, environmentally and socially. A sustainable energy based economy which has a focus on renewable energy at its core can go a long way to meeting this goal.

By harnessing our abundant renewable resources to provide significantly higher levels of renewable energy generation, Northern Ireland has the potential to increase its security of supply and reduce harmful emissions. Ensuring that downward pressure on energy prices is maintained for both business and domestic customers remains a key objective. However, the era of cheap energy is past, and all consumers must realise that new infrastructure investment to facilitate renewables will present significant resource challenges. Failure to take action, on the other hand, would lock Northern Ireland into potentially even higher costs in the long term. While there will undoubtedly be many challenges in minimising the cost to the Northern Ireland economy and consumers, there will also be great opportunities for Northern Ireland businesses to benefit from the shift to a more sustainable energy system.

Affordability

This document is a strategic framework aimed at signalling the priorities for, and direction of, Northern Ireland's energy policy over the coming decade. While the key forces driving energy policy change are in the social, economic and environmental arena, it is imperative that any policy decisions made now are assessed for their impact on energy costs. This is not a responsibility solely for DETI and getting co-ordinated action, including mitigation measures to address social policy goals, will be a challenge for the Executive.

It will also be important to ensure that policy changes which could impact on energy costs do not have an adverse effect on business competitiveness. At a time when significant investment in new power generation and electricity networks in both Great Britain and the Republic of Ireland will be necessary, Northern Ireland will also be considering the

need to minimise costs to consumers in relation to electricity grid investment and increasing levels of renewable generation. We recognise that investment is needed in the short to medium term in order to deliver long term benefits, including net savings to consumers.

As Northern Ireland has the highest levels of fuel poverty in the United Kingdom we must ensure that our desire to develop a more sustainable and secure energy supply is not detrimental to energy consumers. The cost of integrating more renewable energy onto the network and hence improving the security and sustainability of our energy system whilst reducing our carbon emissions in the longer term, confronts us with a tension between decarbonising our electricity supply while balancing energy affordability issues for consumers, especially in the short to medium term. Improving domestic energy efficiency and seeking to make household renewable energy systems a cost effective, affordable choice for consumers will go some way to addressing energy affordability issues. But in the longer term we must ensure that all consumers are equipped to use energy as efficiently as possible, through more accessible technology, smarter choices and a culture of energy saving. Ensuring suitable protection for vulnerable customers, while harnessing the technological advances that a smart grid can offer will remain a challenge, but one that must have affordability at its core.

Looking at many of the key actions in this Framework we can quantify some of the costs of making sure we have secure, sustainable, competitive supplies of energy over the next decade. For example:

- NIE estimates that around £1 billion of grid investment is likely to be required to support a target of 40% renewable electricity.
- The cost to consumers of renewable electricity to 2020 will depend on a number of factors, including the exact mix of technologies at that date. Working with consultants, DETI has estimated that the combined cost of renewable electricity installations, together with the cost of the grid investment necessary to meet the 40% target, could be between £49 and £83 per household on an annual basis at current prices. These costs would only arise incrementally however as new

grid and new generation is installed. The relative cost to consumers could reduce significantly in favour of renewables if the rise in fossil fuel costs, due to increasing demand and reducing supply, transpires as many commentators predict.

- A recent study by the Department and NIAUR has concluded that, to extend the natural gas network to the west and remaining areas of the north-west of Northern Ireland, is likely to require investment of around £170 million for transmission and distribution.
- An underground gas storage facility in the east Antrim area, utilising salt caverns created by solution mining techniques, has been estimated to cost in the region of £250 million.
- The introduction of a Feed-in Tariff (FIT) and/or a Renewable Heat Incentive (RHI) would also have cost implications and work is ongoing in the Department to scope the costs and benefits of such proposals.
- A roll out of smart meters to all households in Northern Ireland could cost up to £280m.

Choices about energy priorities will have to be made balancing often competing strategic versus immediate, environmental, social and economic factors. This will be an iterative and ongoing process as we seek to implement the various aspects of this framework in collaboration with other key stakeholders. DETI will work with the Utility Regulator, the private sector, the Strategic Investment Board (SIB) and other Northern Ireland Departments as well as maintaining close liaison with the Consumer Council for Northern Ireland, to assess the implications for customers and seek to minimise and mitigate these costs. However, given the significant pressures on government budgets, there can be no commitments made in this document that public resources will necessarily be provided for any specific project.

Strategic Energy Framework 2010 Goals

This new Framework sets out four key energy goals of:

- building competitive markets;
- ensuring security of supply;
- enhancing sustainability; and
- developing our energy infrastructure.

It also sets new and ambitious renewable energy targets for 2020, while also recognising there are significant implications for investment in new energy infrastructure. There are opportunities to achieve local economic benefit from the deployment of renewables and achievement of these goals will help Northern Ireland become a leading region for the research, design, manufacture and deployment of renewable energy and energy efficient technologies.

Many of the key policy drivers that influence wider energy policy issues do not come under the legislative authority of DETI and will require joined up working across the public sector and with the private sector, not least when it comes to balancing affordability issues. It is the Department's goal therefore to champion a joined up approach to all energy issues.

DETI is committed to working with all Northern Ireland Government Departments, the Northern Ireland Authority for Utility Regulation (NIAUR), the Consumer Council for Northern Ireland (CCNI), Invest Northern Ireland (Invest NI) and with colleagues in Great Britain and Ireland, and other key stakeholders to deliver on the energy goals set out in this Framework.

DETI is mindful that achievement of these energy goals will also provide the opportunity for local businesses to seek and take up opportunities to deliver within the sustainable energy supply chain as well as within delivery of the necessary infrastructure.

Building Competitive Markets

2

GOAL 1 - BUILDING COMPETITIVE MARKETS

European Union vision of a single energy market

Promoting competition to reduce energy costs continues to be a major energy market policy driver. The creation of a competitive internal market for energy is one of the European Union's priority objectives and has been progressively implemented throughout the European Union since 1999. Building competitive markets is a key step in driving down costs, therefore, increasing competition is a means to an end rather than an end in itself.

The Department is engaged in work to transpose the third European Internal Market for Energy package (IME3) into national law by 2011. An important aspect of the new directives relates to "unbundling" and the Department is committed to transposing all aspects of IME3 in the interests of achieving greater competition in energy markets. IME3 also aims to re-invigorate market integration and harmonise the powers and independence of regulators at a national and European Union level.

DETI is committed to the ongoing development of the Single Electricity Market and further regional market integration. The Department views increased levels of competition in both the Single Electricity Market and retail markets as vital to ensuring energy prices are as competitively priced as possible.

European success on market integration has been varied so far but initiatives such as the all-island Single Electricity Market demonstrate that integration works and brings benefits. Closer coupling of the Single Electricity Market with the British Electricity Trading and Transmission Arrangements (BETTA) and future regional integration will be driven by European Union and regulatory measures on market integration, security of supply and competition. It will require efficient interconnection and extra capacity from the building of the Wales – Dublin interconnector in 2012, linked to the development of market rules that facilitate inter-market trading and coordination of capacity allocation. The growth in the number of market participants and much larger volume of wind capacity that will be fed into the market by 2020 and the potential for export to Great Britain will also play an important role in creating a dynamic regional trading environment.

Following on from creation of the Single Electricity Market, DETI will also work with the NIAUR and counterparts in the Republic of Ireland to establish more efficient cross border transmission and trading arrangements for natural gas under the European Union's drive to develop regional gas markets. This should lead to greater competition, greater openness and transparency in system operation, a more attractive investment environment and improved security of supply. Work being undertaken through the Common Arrangements for Gas project should realise quantifiable net benefits of over £10m in the next decade. The Department also recognises the need to work closely with the Utility Regulator to accelerate supply competition and facilitate customer switching in the electricity and gas domestic retail markets.

Additionally, DETI recognises the benefits to business consumers and to development of the natural gas industry in Northern Ireland, of the exemption from the Climate Change Levy (CCL) from 2001 for natural gas. The exemption expires at 31 March 2011, and DETI is currently attempting to secure a further 31 month (the maximum period allowed) extension of the CCL exemption for

gas through liaison with Her Majesty's Revenue and Customs (HMRC), other Great Britain and Northern Ireland Departments and Brussels.

In developing a competitive market environment the Department is conscious of the benefits of attracting additional generation and supply companies into the Single Electricity Market. There is also significant potential for Northern Ireland to capitalise on the increased economic opportunities presented by developments in sustainable energy, as outlined in **Section 4**.

Challenge and Actions in relation to building competitive markets

Challenge

To work with the Utility Regulator (NIAUR) to create the right environment to support effective competition and the regional growth of energy markets.

DETI will:

- Encourage more companies to enter the gas and electricity supply markets, particularly the domestic market, through continued market liberalisation.
 - Help create conditions which more readily facilitate customer switching.
 - Agree a strategy to incentivise gas connections and increase gas uptake in existing and future licensed areas.
 - Encourage extension of the natural gas network, where it is technically possible and economically feasible, to enhance diversity of fuel supply and customer choice, and bring about reductions in CO2 emissions, as part of a low carbon energy strategy.
- Ensure relevant European Union Directives are transposed and implemented to develop competitive regional markets and promote continued market liberalisation in accordance with the European Union vision for greater transparency and efficiency within electricity and gas markets.
 - Ensure the Single Electricity Market continues to encourage investment and is flexible enough to meet changing generation and demand patterns, with the aim of securing the lowest possible wholesale electricity price.
 - Promote the longer term integration of the Single Electricity Market within a British Isles and European wholesale electricity market.
 - Ensure there is transparency in the setting of electricity/gas retail prices.
 - Put in place legislation to establish arrangements for efficient cross border regulation and management of transmission and trading of gas by end 2011.

Ensuring Security of Supply

3

GOAL 2 - ENSURING SECURITY OF SUPPLY

Our overarching objective

While the European Union's emphasis on creating an internal energy market continues to focus on the delivery of competitive market structures, pressures on international gas supplies in recent years, along with volatile price fluctuations and declining United Kingdom gas stocks, have highlighted the risks facing European gas and electricity markets. This has signalled the growing importance of securing reliable sources of fuel supplies for the future.

A more diverse energy mix is a more secure energy mix, less vulnerable to fluctuations in the availability of any one fuel. Northern Ireland needs to ensure that new investment provides greater security of energy supply through a range of fossil fuels and low carbon technologies. Securing an energy mix that will help deliver security of energy supply will require action to agree infrastructure plans and financing, develop supply chains and smart grid technologies without putting an excessive financial burden on consumers.

As outlined in **Section 1**, driving down costs and ensuring reliable and sustainable energy supplies are key DETI objectives. These will be difficult to achieve with prevailing economic conditions and the current grid infrastructure. The success of the Single Electricity Market has pointed the way towards cooperation on more competitive and efficient regional gas transmission and trading arrangements that potentially could

deliver further long term security of supply benefits to Northern Ireland consumers.

The United Kingdom, including Northern Ireland, is committed to the development of competitive single European gas and electricity markets. DETI has, in turn, been working closely with the Utility Regulator and the industry to identify how to secure these benefits within the work on harmonising gas transmission arrangements with the Republic of Ireland. This will include making the transportation from Great Britain and the buying and selling of gas around the network more efficient. A key benefit will be the potential for enhancing security of gas supply. The European Union's action on security of supply will also have an impact on reducing Northern Ireland's exposure to external fuel market forces. This in turn assists with issues of competitiveness, dealt with in more detail in **Section 2**.

Gas storage would provide additional security of supply for electricity generation and domestic and commercial gas consumption. It would help mitigate winter price spikes in Northern Ireland, but also has the potential to benefit both parts of the island and even the United Kingdom mainland, should a suitably large storage facility be constructed. Given concerns over security of our natural gas supply DETI has been encouraging work aimed at realising the potential for gas storage provision in Northern Ireland and this has seen continued commercial interest in developing a facility in the Larne/Islandmagee area of County Antrim. Additionally, DETI, in cooperation with the Geological Survey of Northern Ireland (GSNI) and the British Geological Survey, has carried out a study aimed at determining the technical and economic feasibility for underground energy storage, with a focus on the off-shore area in East Antrim. Investment in new infrastructure to improve security of supply is explored in **Section 5**.

The Department recognises the need to maintain access to alternative fuel supplies, namely oil and coal. Oil will continue to be a major source of domestic heating in rural areas that do not have access to gas. Coal, while it has declined as a source of domestic heating, still plays a role in electricity generation.

DETI, in fulfilling its responsibility for security of supply, will maintain a watching brief on the future role of nuclear energy in both the European Union and United Kingdom's energy mix. This also applies to any future role that indigenous fuel sources such as local sources of gas and lignite might play, bearing in mind the environmental issues surrounding these fuels.

As long as Northern Ireland's energy mix relies on imported fossil fuel to generate electricity, then there will be security of supply concerns. The new renewable energy targets will make a significant contribution towards making Northern Ireland less reliant on imported fossil fuels and DETI continues to promote the need to use our energy resources more efficiently.

There is increasing recognition that both indigenous and imported biomass could have a significant role as a renewable energy power generation source within the overall future power generation mix in Northern Ireland. Biomass power generation offers a predictable and reliable load in terms of network management and therefore could bring stability to the grid. DETI will work with the Utility Regulator, Northern Ireland Electricity (NIE) and the System Operator for Northern Ireland (SONI) to explore the potential of a 300 MW contribution from biomass by 2020.

Energy efficiency and demand side management also offer opportunities to local businesses to develop markets for energy saving technologies and services and will clearly contribute to improving Northern Ireland's competitiveness and security of supply. Crucially however, an energy supply system that is built on efficient use of energy as a prerequisite will influence future levels of generation required and will underpin security of supply issues going forward. Efficient use of energy both on the supply and demand side is an important issue and one which is explored in **Section 4**.

Challenge and Actions in relation to Security of Supply

Challenge

To deliver an efficient generation and supply system that yields greater resilience and security of supply from a diverse mix of energy resources.

DETI will:

- Support the development of a range of renewable technologies to ensure the most cost-effective and reliable mix of generation which maximizes Northern Ireland's sustainable energy resources.
- Implement European Union Directives in a timely and pragmatic manner in order to promote and enhance regional energy infrastructure and security of gas supply.
- Work with other Northern Ireland Departments, and partners in DECC and the Scottish and Irish Governments to achieve an efficient and coordinated regional approach to planning for electricity, gas and oil emergencies.
- Stimulate and encourage investment in research for underground energy storage, including natural gas storage.
- Work with NIAUR to encourage investment in an appropriate level of conventional power generation to support higher levels of renewable electricity generation.
- Work with NIAUR, NIE and SONI to explore the need for provision of up to 300MW of biomass power generation.

Enhancing Sustainability

4

GOAL 3 – ENHANCING SUSTAINABILITY

Energy Efficiency

DETI recognises the pivotal role that energy efficiency plays in maximising the value we get from the energy we use. Everyone benefits when energy is used more efficiently – consumers save money, demand is reduced and environmental impacts are minimised. At present a number of Northern Ireland government Departments and agencies have clear statutory roles in relation to energy efficiency, including the Department of Finance and Personnel (DFP), the Department for Social Development (DSD) and Invest Northern Ireland (Invest NI). DETI has sought to play a co-ordinating role.

DETI will continue to work with the Department of Energy and Climate Change to ensure the targets in the United Kingdom's National Energy Efficiency Action Plan are met, and will work with Northern Ireland government Departments to ensure that the contribution from all Northern Ireland programmes is maximised.

DFP will continue to amend building regulations to progressively improve the thermal performance of buildings. This move towards low or zero carbon standards for new buildings will assist in reducing emissions and will encourage the use of micro-generation as a means of demonstrating compliance with the regulations. The introduction of Energy Performance Certificates will also, over time, help to improve energy efficiency by increasing awareness of poor performance and provide a source of advice on cost

effective measures to enhance energy efficiency. Both policies will contribute to sustainability and diversification in energy supply. Invest NI will continue to provide services to help business identify and implement significant energy efficiencies. For those companies that have not yet addressed this issue it is estimated that on average 20% energy savings can be achieved using existing technologies. Invest NI will explore further to help realise these savings whilst, at the same time, achieving value for money for the public purse.

DETI recognises the important role of smart metering and will work closely with the Utility Regulator to ensure that a cost effective smart metering solution for Northern Ireland is developed within the framework of the Internal Market for Energy 3 Directive. In addition, DETI will continue to explore a vision for a smart grid and will work with all key stakeholders in this arena.

A key part of this work will be to ensure that consumers are inspired and motivated to change their behaviour. DETI sees the need for a Northern Ireland Executive - endorsed message in relation to sustainable energy issues being pivotal to achieving behavioural change. Northern Ireland consumers need a positive message that will inspire them to embrace energy efficient solutions and accept renewable energy as part of a sustainable present and future. With that in mind, DETI is driving a cross departmental approach to deliver sustainable energy messages that change behaviour on the ground and will work with other Departments and stakeholders to deliver a marketing approach that will be endorsed by the Executive. Industry, including representative organisations like the Irish Wind Energy Association (IWEA) and Renewable UK, will also have a key role to play.

One area of work that offers the potential to enhance the role of energy suppliers in maximising energy efficiency is that of a mandatory domestic energy supplier obligation. A supplier obligation could offer significant demand reduction opportunities. Such a proposal would require that electricity and gas suppliers with more than 50,000 domestic customers meet household carbon emission saving targets. Suppliers could achieve their targets by

promoting, typically with subsidy, a range of energy efficiency and low carbon measures to households including cavity wall and loft insulation. This would help households across Northern Ireland to reduce carbon emissions and to reduce energy consumption, help in the fight against climate change and allow consumers to heat their homes for less.

A supplier obligation of this nature could also have a role in market transformation and in encouraging activity by suppliers to promote innovative measures or approaches. Recent DETI research which looked at the economic opportunities from carbon reduction targets recommended the introduction of a supplier obligation as a significant opportunity for job creation, given its potential ability to generate demand for domestic energy efficiency products and services – but it is also recognised that the retrofit of existing building stock with energy saving technologies has a cost implication which must be minimised as far as possible for consumers.

The current voluntary mechanisms in place through the Utility Regulator, such as the Northern Ireland Sustainable Energy Programme, have been successful to date, but DETI will now investigate whether a supplier obligation, such as operates in Great Britain through the Carbon Emissions Reduction Target would offer a higher level of benefit to consumers than the existing voluntary schemes.

Although it is recognised that there may be limited good quality opportunities, DETI will seek to maximise, alongside our renewable heat work, the deployment of combined heat and power (CHP) projects in Northern Ireland. Currently CHP is promoted in accordance with the European Directive 2004/8/EC. In 2006, the Department commissioned studies of the potential for and barriers to high-efficiency cogeneration CHP in Northern Ireland yet despite this uptake in the region has been limited.

The use of fossil fuel or renewable fired CHP not only offers significant opportunities for carbon reduction through more efficient use of electricity and heat but could also bring benefits from the distributed (or embedded) nature of CHP. The Department will continue to assess the contribution of CHP to the energy mix in Northern Ireland and to the potential for economic activity in the design of CHP equipment by local businesses.

Renewable Electricity

Northern Ireland needs to move rapidly to much higher levels of renewable electricity consumption and this Strategic Energy Framework confirms the Executive's target of 40% renewable electricity to 2020. This challenging target is the cornerstone of DETI's strategy to increase the security of our energy supplies and reduce Northern Ireland's carbon emissions from the electricity sector.

The precise mix to be deployed will depend on specific decisions made by energy companies operating within an effective regulatory framework with strategic interventions from DETI. The need for renewable electricity brings with it challenges to the electricity transmission system and to the planning process. These include, for example, the need to gain public acceptance of new renewable energy developments and access to the electricity grid network. These issues are dealt with further in **Section 5** on infrastructure.

The success of our renewable electricity development over these past few years has, in large part, been due to the support provided by the Northern Ireland Renewables Obligation (NIRO) which operates in tandem with similar Obligations in Great Britain. The Department will review the support mechanisms available and will continue to ensure that renewables development is supported in ways which are tailored to the needs of the region.

Wind

Electricity generated by onshore wind farms is the most established, large-scale source of renewable energy in Northern Ireland. Wind farms will play a vital role in meeting the new renewable electricity target. There will, however, continue to be concerns around planning and the infrastructure required to deal with increased wind generation. It must be recognised that the integration of renewable technologies will incur additional costs in terms of new grid network management requirements as a result of the intermittency of some renewable technologies. There will be a continuing requirement for a responsive conventional generation portfolio to be in place to deal with the intermittency issues as the level of renewable generation increases.

DETI is committed to working with all key stakeholders in order to facilitate the necessary investment for the benefit of all consumers. Planning Policy Statement 18 (PPS 18) sets out the Department of the Environment's (DOE) supportive stance on planning for renewable energy development, and makes an explicit link to the need to meet the targets set out in this Framework.

Offshore Renewables

DETI believes that offshore renewable electricity can make a significant contribution to the generation mix in Northern Ireland to 2020 and beyond. On foot of the Strategic Environmental Assessment (SEA) of our plans to optimise the sustainable development of offshore renewable electricity in Northern Ireland waters, DETI will shortly finalise and publish the Offshore Renewable Energy Strategic Action Plan 2010-2020. The Plan identifies a range of operational regulatory and legislative actions to develop this resource and the associated business opportunities for Northern Ireland companies, ports and harbours and universities and colleges. A key element of the Plan will be the launch by The Crown Estate of a competitive call for offshore renewable energy projects later in 2010-11. Increasing the offshore generation capacity will have implications for grid development and this will be considered as part of the grid development outlined in **Section 5**.

Bioenergy

DETI is keen to see bioenergy making an increasing contribution to the energy mix in Northern Ireland. DETI leads a cross-departmental group on bioenergy which has developed the first five-year bioenergy action plan, the overall aim of which is to increase the sustainable deployment of bioenergy in particular on renewable heat and electricity.

The plan aims to: raise awareness of bioenergy; create a supportive policy and regulatory framework; facilitate and support targeted investment in key areas of the overall bioenergy supply chain to stimulate growth; and undertake focussed and Northern Ireland relevant research into bioenergy. DETI will work with other departments to implement the plan, in particular the Department of Agriculture and Rural Development (DARD) which will have a key role in delivery as part of its land based renewables activity.

While the potential development of a large scale biomass power station in Northern Ireland would require significant imports of biomass, in the initial stages, it would create higher visibility for biomass deployment. It would also build confidence in the local indigenous supply chain for biomass to make an increasing but sustainable contribution to this demand. The environmental impact of increased growing of energy crops will need to be examined and DETI will work with the Department of Agriculture and Rural Development to ensure that biomass production can be optimised.

Energy from waste can also make a contribution to the overall energy mix and DETI continues to work strategically with the Department of the Environment on a number of cross cutting issues to ensure that policies are aligned. This is particularly relevant in relation to energy and waste which, as well as offering waste management solutions, can also contribute to security of supply.

Renewable Heat

The absence of a region – wide gas infrastructure in Northern Ireland and a heavy reliance on fossil fuels such as oil (which is delivered by a large number of mainly small suppliers with no central collation of consumption data), presents a challenge to establishing the market for renewable heat generation in Northern Ireland. Oil will continue to be a major fuel source for the domestic heating market for many years and opportunities exist to use fossil fuels more efficiently. However, the reliance on oil, especially in rural areas does provide a significant opportunity for promoting renewable heat technologies as an alternative choice for consumers.

The current heat demand in Northern Ireland has been estimated at 17.4 TWh, of which around 300 GWh, or 1.7%, is met from renewable sources, with a significant element of this existing renewable heat coming from biomass fuelled boilers. The requirements of the EU Renewable Energy Directive set out goals for the development of not only renewable electricity but heat and transport as well. This being the case DETI wishes to develop a specific heat target, and from work completed to date it appears that a 10% target could be achievable and a number of ways to stimulate this will be considered.

Taking into consideration improvements in energy efficiency as well as new developments it can be assumed that there will be net reduction in heat demand to 16.7 TWh by 2020, that would mean that a 10% target equates to 1.6TWh. A strategy to meet this target would need to include supporting the uptake of technologies in the large industrial sector, domestic scale technologies and new developments. The support of industrial and domestic district heating schemes, geothermal extractions and biogas generation may also have a role in extending the application and take up of renewable heat.

The majority of Northern Ireland's heat demand comes from the domestic sector. We must now consider how to target the deployment of renewable heat efficiently and economically.

There will be less opportunity to impact significantly on any target by focussing on the commercial and public sector where overall heat demand is estimated at 13% and 5% respectively. For example, around 17% of the Northern Ireland housing stock would need to be entirely heated by renewable technologies to meet a 10% target. Interestingly this would equate to modifying the housing stock at a rate of 1.7% per year for 10 years; this is less than the existing rate of boiler replacement that is currently under way in social housing.

The industrial sector has a significant potential to contribute to an ambitious renewable heat target. Invest NI will continue to explore and highlight ways in which industry might make greater use of renewable heat where it is economic to do so.

We must be mindful, of course, that a growth in the take up of renewable heat technologies will have a direct impact on the demand for renewable fuels, and the current levels of indigenous biomass available in Northern Ireland may present a limiting factor, and imports may be necessary to drive local markets at initial stages of development. In addition, the cost of switching to renewable heat will determine take up rates. Further investigation of the environmental and economic impacts of significantly increasing the growing of crops for widespread biomass deployment is necessary.

Once the evidence base has been established, DETI will develop a route map for renewable heat to ensure that the contribution from renewable heat can be maximised. This will also consider how best to encourage new entrants into the market. The route map will need to take account of work on extending the gas network to ensure that a coherent low-carbon strategic path is developed.

This may require new primary legislation, including the potential for regulatory changes.

Geothermal Energy

The rural nature of many parts of Northern Ireland could be a key factor in the distribution of any future heat networks. Shallow geothermal energy is now being exploited in an increasing number of commercial, public sector and housing developments in Northern Ireland where it can be used as a sustainable low carbon energy source for both heating and cooling systems.

The potential for district heating is heavily dependent on the heat density of an area, with high heat density areas generally being more suitable and more economic than low density areas. There has been considerable commercial interest in the development of deep geothermal heating schemes in recent years and DETI is aware of the importance of financial incentives and an effective regulatory framework to the promotion of emerging renewable energy sectors such as geothermal energy, and will work with the Geological Survey of Northern Ireland to assess the best methods to implement these in a timely manner.

Wider Economic Opportunities/Green Jobs

Increasing renewable energy deployment worldwide presents significant opportunities for local companies, bringing additional economic benefits to Northern Ireland and creating skilled employment within the sustainable energy sector. We need to ensure that Northern Ireland maximises the economic and employment opportunities presented by the huge drive towards renewable energy both within the region and across the world. Invest NI has been enthusiastically developing and raising awareness of this opportunity to assist Northern Ireland companies to supply into these markets.

Business and employment opportunities within the renewables sector will continue to be explored. In 2009/10, Invest NI clients within the renewables sector received financial assistance amounting to more than £5 million against total project investment costs of £25 million for a range of activities. These include, research and development, training, job creation and the development of Collaborative Networks to develop offshore wind, marine and bioenergy business and supply chain opportunities for Northern Ireland companies. DETI will continue to work closely with Invest NI in this regard to create the best enabling environment to incentivise the market sufficiently not only to create a demand for renewable energy technologies in Northern Ireland, but also to maximise the opportunities from associated supply chain development. This is key to developing a market led approach to renewable energy.

An example of innovative R&D currently being undertaken on a regional basis is DETI's support for a £5 million regional research project under the EU's INTERREG IV Programme into the future use of local marine algae and seaweeds as a source 3rd generation bio-fuels. The BioMara project has the potential to generate further "green economy" opportunities for Northern Ireland and reduce reliance on fossil fuels. In more general terms Northern Ireland's universities possess world class expertise in a range of sustainable energy technologies which Invest NI will seek to harness to encourage greater design, development and testing activity for equipment or component manufacturers.

The energy sector in general is facing unprecedented challenges with regard to the workforce skills needed by employers. This situation will be exacerbated by the roll out of low carbon technologies and the expansion of low carbon jobs with an increased demand for 'green skills'. While some encouraging progress has been made, DETI and Invest NI recognise the need to work with employers across Northern Ireland to ensure a demand - led approach is developed to support current and future skills needs. Much work has already been initiated by the local colleges and universities to enhance the take up and delivery of sustainable energy skills.

Regulation and Incentivisation

Section 1 set out the reasons why Northern Ireland must move to more sustainable systems of energy production and consumption. That aim is currently not fully supported by the narrow statutory powers of the Department and the Utility Regulator, particularly in relation to energy efficiency, which are primarily charged with responsibilities around electricity and gas. There is arguably a need for an enhanced role for sustainability in the statutory powers to reflect the increased importance: we will work to ensure that the powers of both DETI and the Utility Regulator are fit for the long term needs of Northern Ireland. The energy modelling work on which the Strategic Investment Board is engaged with DETI should also help inform decision making about priorities around sustainable energy and wider energy policy.

Achieving the ambitious renewable energy goals set out in this framework will require significant investment. While renewable energy costs remain higher than those of conventional energy, consideration will need to be given to the best way to encourage the levels of investment that the region will need. This will, of course, have to be with the context of minimising, as far as practical, the cost to consumers.

We have already adapted the Northern Ireland Renewables Obligation to ensure that it meets the needs of our region by raising the level of support given to landfill gas and to small-scale renewable electricity generators. This year, we have looked again and are consulting on the support given to anaerobic digestion to ensure commercial uptake of a technology that is likely to be important here.

We will learn from our five years' experience of the Northern Ireland Renewables Obligation as we consider the costs and benefits of both a Feed-in Tariff and a Renewable Heat Incentive in line with that brought in to support small-scale renewables and microgeneration in Great Britain.

Challenges and Actions in relation to Sustainability

Energy Efficiency

Challenge

To embed energy efficiency across all sectors in Northern Ireland.

DETI will:

- Contribute to the 1% year on year energy saving targets identified in the United Kingdom's National Energy Efficiency Action Plan by working with other Departments who have responsibility for energy efficiency activities, and other key stakeholders such as the Consumer Council and Northern Ireland Energy Agency.
- Consider increasing end user efficiency through a Carbon Emissions Reduction Target style supplier obligation.
- Work with other Departments and key players to develop a cohesive, Executive endorsed, framework for sustainable energy messaging in Northern Ireland;
- Optimise the work of the Energy Services Agreement Forum to support energy efficiency.
- Work with the NIAUR to develop a cost effective smart metering solution for Northern Ireland.
- Encourage greater scope for combined heat and power in Northern Ireland.
- Work with appropriate Matrix panels and their sectoral bodies to ensure sustainable energy research is correctly targeted and mindful of wider strategic goals.

Invest NI will:

- Provide appropriate support for industry to increase its productivity through the deployment of sustainable energy technologies.

Renewable Electricity

Challenge

To create the relevant conditions for an increase to 40% electricity consumption from renewable sources by 2020.

DETI will:

- Consult and, if necessary, legislate on the Department's and the NIAUR's statutory duties so that sustainability is given a higher priority in relation to other duties.
- Ensure that support mechanisms for renewable electricity are tailored and appropriate to Northern Ireland's needs, within the context of the wider wholesale electricity market. (i.e. NIRO)
- Work with developers, planners and those responsible for environmental consents to ensure that the need for renewable energy to address the environmental impacts of climate change is recognised, that good quality applications are made and that clear, consistent and proportionate procedures are in place for the consenting of renewable installations;
- Ensure that relevant Northern Ireland Departments transpose and implement the requirements of the European Union Renewable Energy Directive;
- Implement the Offshore Renewable Energy Strategic Action Plan 2010-2020;
- Work with other relevant departments in the implementation of the first Bioenergy Action Plan over the period to 2015 and any subsequent plans to promote the ongoing sustainable development of bioenergy.

Invest NI will:

- Promote and raise awareness of supply chain opportunities in sustainable energy technologies both locally and further afield.
- Support the growth of suitable manufacturing or tradeable service companies operating in the sustainable energy field.

Renewable Heat

Challenge

To set the conditions for maximising the contribution of renewable heat in the Northern Ireland energy mix by 2020.

DETI will:

- Consider how best to encourage new entrants into the renewable heat market.
- Publish a Renewable Heat Route Map by March 2011 setting out key actions to achieve a 10% contribution from renewable heat by 2020, including opportunities for geothermal energy.
- Promote opportunities for switching to lower carbon fuels such as natural gas and biomass, where it is cost effective to do so.
- Work with other relevant Government Departments to manage the impact of the increase in the uptake of renewable heat and associated demand for renewable fuels.

Developing our Energy Infrastructure

5

GOAL 4 - DEVELOPING OUR ENERGY INFRASTRUCTURE

Planning for the Future

Northern Ireland faces a major energy challenge over the next decade and needs to overhaul the energy infrastructure to ensure it will be fit for purpose through to 2050 and beyond. Energy infrastructure should feature strongly in the new Regional Development Strategy and be seen as an integral component of wider regional economic planning and development across Northern Ireland. Increasingly, decisions about energy policy matters are being made by a range of Northern Ireland Departments and these need to be prioritised and appropriately co-ordinated.

Electricity

Extensive investment in electricity grid improvements must happen if Northern Ireland is to maximise its use of onshore and offshore renewable electricity resources. In addition, a robust and stable electricity transmission system is an essential prerequisite for a competitive electricity market and is critical to a modern economy. Northern Ireland needs to ensure that investment delivers an electricity grid with greater capacity and the resilience to manage larger fluctuations in supply and demand. The damage to Northern Ireland's electricity system from the ice storm of March 2010, and its impact on homes and businesses, vividly illustrates the need for a resilient electricity infrastructure.

DETI is working with Northern Ireland Electricity, the System Operator for Northern Ireland and the Utility Regulator to deliver the strategic electricity grid development needed to deliver the target of 40% renewable electricity by 2020 and beyond. Alongside this, more flexible conventional generation plant will be required to complement much higher levels of variable wind generation in particular. Not only must we ensure a grid capable of managing increasing levels of renewable generation but we must also plan for a smart grid to deliver more efficient management of the electricity transmission and distribution networks and provide for expected changes in information, communication and other technologies.

Enhancing North-South interconnector capacity is part of a package of measures to improve the robustness of the transmission and distribution grid networks on an all-island basis. The second North-South electricity interconnector that is currently seeking planning approval will bring greater security and resilience of electricity supply, will increase transmission capacity and encourage competitiveness in the Single Electricity Market for the benefit of all consumers. Importantly, it will also facilitate growth in renewable energy generation. This new transmission line is only the first part of the strategic overhaul of the Northern Ireland electricity grid network – a system that has been in place since its last major development in the 1960's and which needs significant new investment if it is to be fit for purpose to support economic growth over the coming decades. This cannot be delivered without visual impact.

Smart Grid

Building a smarter grid in Northern Ireland will facilitate the transition to a low carbon economy by changing the way energy is supplied and used.

Integrating more information and communications technology coupled with the associated use of active, or smart, devices such as smart meters in homes will facilitate energy efficiency, improved services for consumers, reduced costs and carbon emissions and improvements in retail competition.

A smarter grid will also help co-ordinate variable renewable energy inputs with improved demand management and so help maximise the contribution sustainable energy can make. We are likely to see a shift towards electrification in the transport sector over the next decade as well, and smart grid technologies will be available to enable this and minimise the amount of costly new infrastructure needed.

Wider Market Infrastructure

Northern Ireland needs to develop the electricity system to support future regional and European Union wide integration of electricity markets. The all-island Single Electricity Market marked the way forward for harmonising competitive trading and management of the two transmission systems on the island of Ireland. Wider regional market integration will require close collaboration with the Great Britain transmission system and the British Electricity Trading Transmission Arrangements wholesale market.

The work to develop our off-shore renewable energy resources will be informed by ongoing research funded through the European Union INTERREG IV Programme. DETI is working with Scotland and the Republic of Ireland in the tripartite ISLES feasibility study into an offshore grid system linking Western Scotland, Northern Ireland and the Republic of Ireland. This study will make a significant contribution to the European vision of a more interconnected European energy region and help shape the concept of an offshore super grid as part of the integration of Europe's electricity infrastructure.

Natural Gas and Other Measures

Natural gas is the least polluting fossil fuel, and DETI recognises the scope for both deepening and further development of the natural gas network. In cooperation with the Utility Regulator, DETI has completed a study to explore the possible extension of the gas network to towns in the west and remaining areas of the north-west of Northern Ireland without current access to natural gas. DETI is also aware of interest in extending the gas network into east Down, and believes that extending the provision of natural gas to new areas would bring greater consumer choice and help shift dependence on coal/oil for household heating (which is currently unregulated) as well as increase the potential for businesses to use this cleaner more efficient fuel. Our dependence on

heating oil remains a problem - economically, socially and environmentally - and the Department will continue work with the Utility Regulator and consumer organisations to address the issues this dependence raises while seeking to encourage alternative choices for consumers.

DETI will also encourage innovative proposals aimed at increasing our security of energy supply but also diversifying Northern Ireland's reliance on fossil fuel generated electricity and to that extent welcomes the ongoing commercial interest being shown in developing gas and compressed air energy storage facilities in the East Antrim area.

The Department will consider the potential for electricity storage, such as pump storage using wind power, to complement increasing levels of variable renewable power generation in Northern Ireland.

Planning and Consents

Significant penetration of renewable electricity brings with it significant grid management issues - in the short term from the number of onshore wind applications that are seeking planning approval and access to the grid, and in the longer term from offshore wind, wave and tidal developments.

The planning system depends on public consent. That is why the planning process is the arena in which different views on renewables and infrastructure development will be weighed. Planning will therefore be key to achieving the 40% target and, under the terms of PPS 18, planners must have regard to the new renewable electricity target when considering applications for renewable energy development. The design and build of energy infrastructure typically has a long lead-in time, including a robust statutory planning and consent process. DETI will work with the Department of the Environment to ensure the planning and consent process can facilitate and support the strategic upgrading of the infrastructure - both grid and renewable installations - within the challenging targets that have been set. There will also be significant implications for DETI's wayleave and consenting process.

The Department is also very aware of the impact on the Northern Ireland environment and on local communities of improving the grid infrastructure and will complete a

Strategic Environmental Assessment for increasing levels of land based renewable generation and associated electricity grid transmission and distribution networks.

The upgrading of the electricity grid will involve more overhead power lines and power installations, and this can understandably be an issue for those who live close to areas where grid upgrading will be required. DETI recognises that making our energy mix more sustainable will inevitably lead to issues around public acceptance of an increasing number of renewable energy installations of every type as well as enhanced grid infrastructure. DETI will work with all stakeholders in this area, while being mindful of the wider economic and social benefits that will accrue from this work and the need to meet the 40% target that is driven by wider European Union Directives.

Challenge and Actions in relation to developing our energy infrastructure

Challenge

To provide Northern Ireland with a robust and flexible energy infrastructure that will support economic development, facilitate an increasing level of renewables and provide security of energy supply to 2050.

DETI will:

- Ensure that electricity and grid development plans are future proofed to facilitate a more decarbonised energy mix beyond 2020.
- Ensure co-operation between the Utility Regulator, NIE and SONI to deliver new electricity grid infrastructure.
- Complete a Strategic Environmental Assessment and associated Strategic Action Plan by June 2011 in relation to land based renewable electricity generation and associated grid infrastructure for onshore and offshore generation.
- Support construction and commissioning of the new North-South electricity interconnector by 2013-14.
- Work with stakeholders to ensure a strategic fit with smart grid initiatives and the efficient use of energy by all consumers.

- Work with regional partners to develop a supportive policy, regulatory and consent environment for commercial offshore grid investment.
- Extend the availability of natural gas as a lower carbon fuel, displacing more polluting fossil fuels, thus providing environmental benefits and enhancing fuel choice, where it is economically viable to do so, and where not, seek to maximise other alternatives such as renewable heat and/or biomass.
- Work with the Strategic Investment Board to develop an energy model for Northern Ireland that will help prioritise and facilitate policy planning and investment decisions by all the Northern Ireland Departments about energy proposals, taking into account the financial constraints facing government spending.

Conclusion and Summary of Key Actions



This Strategic Energy Framework will therefore be a dynamic document which will inform ongoing energy policy development ahead of a new Programme for Government and Comprehensive Spending Review in 2011/12 and it will almost certainly need to be reviewed and refreshed within 5 years.

A summary of all the key actions in this Framework is shown overleaf.

Conclusion

This Strategic Energy Framework will influence the future direction and development of specific energy policies in Northern Ireland – primarily those of DETI but also those of many of the other NI Departments with whom DETI has been working closely. It is not a fixed or prescriptive document but aims to set the direction of travel for the next decade and beyond and commit to a series of key actions aimed at moving strategic energy policy forward.

The Strategic Energy Framework 2010 will be supplemented over the coming year with a number of more specific DETI action plans including:

- the cross departmental Bioenergy Action Plan;
- a Renewable Heat Route Map;
- the Offshore Renewable Energy Strategic Action Plan;
- an onshore Grid Strategic Environmental Assessment and associated Strategic Action Plan; and
- development of a Sustainable Energy Action Plan.

Summary of Actions

Goal 1 – Building Competitive Markets

ACTION NUMBER	OBJECTIVE	TIMEFRAME
SEF 1:	Ensure relevant European Union Directives are transposed and implemented to develop regional markets and promote continued market liberalisation in accordance with the European Union vision for greater transparency and efficiency within electricity and gas markets.	Ongoing. Work to 2020 10-year development plans for regional and EU-wide networks.
SEF 2:	Ensure the Single Electricity Market continues to encourage investment and is flexible enough to meet changing generation and demand patterns, with the aim of securing the lowest possible wholesale electricity price.	Ongoing in co-operation with NIAUR and the energy industry
SEF 3:	Promote the longer term integration of the Single Electricity Market within a British Isles and European wholesale electricity market.	Ongoing. Support work by Regulators on short and medium term links between SEM and BETTA to advance longer term 2020 10-year development plans for regional and EU-wide networks.
SEF 4:	Ensure there is transparency in the setting of electricity and gas retail prices.	Ongoing in co-operation with NIAUR
SEF 5:	Put in place legislation to establish arrangements for efficient cross border regulation and management of transmission and trading of gas.	Enact by end 2011.
SEF 6:	Encourage more companies to enter the gas and electricity supply markets, particularly the domestic market, through continued market liberalisation.	Ongoing
SEF 7:	Help create conditions which more readily facilitate customer switching.	Ongoing in co-operation with NIAUR and the gas industry
SEF 8:	Agree a strategy to incentivise gas connections and increase gas uptake in existing and future licensed areas.	Ongoing consideration within the Gas Strategic Development Group
SEF 9:	Encourage extension of the natural gas network, where it is technically possible and economically feasible, to enhance diversity of fuel supply and customer choice, and bring about reductions in CO2 emissions, as part of a low carbon energy strategy.	Completion of gas network extension study in spring 2010, and development of a natural gas development strategy by end of March 2011

Goal 2 – Ensuring Security of Supply

ACTION NUMBER	OBJECTIVE	TIMEFRAME
SEF 10:	Support the development of a range of renewable technologies to ensure the most cost-effective and reliable mix of generation which maximises Northern Ireland's sustainable energy resources.	Ongoing
SEF 11:	Implement European Union Directives and Regulations in a timely and pragmatic manner in order to promote and enhance regional energy infrastructure and security of gas supply.	Ongoing in relation to IME3 with a transposition target date of March 2011
SEF 12:	Work with other NI Departments, and partners in DECC and the Scottish and Irish Governments to achieve an efficient and coordinated regional approach to planning for electricity, gas and oil emergencies.	Agree an initial protocol by March 2012
SEF 13:	Stimulate and encourage investment in research for underground energy storage, including natural gas storage.	Ongoing through DETI Energy Storage Study completed in Spring 2010
SEF 14:	Work with NIAUR to encourage investment in an appropriate level of conventional power generation to support higher levels of renewable electricity generation.	Ongoing
SEF 15	Work with NIAUR, NIE and SONI to encourage provision of up to 300MW of biomass power generation.	Within 5 years

Goal 3 – Enhancing Sustainability

ACTION NUMBER	OBJECTIVE	TIMEFRAME
SEF 16:	Contribute to the 1% year on year energy saving targets identified in the United Kingdom's National Energy Efficiency Action Plan by working with other Departments who have responsibility for energy efficiency activities and other key stakeholders, such as the Consumer Council and Northern Ireland Energy Agency.	Ongoing until 2016
SEF 17:	Consider increasing end user efficiency through a Carbon Emissions Reduction Target style supplier obligation.	By December 2011
SEF 18:	Work with other Departments and key players to develop a cohesive, Executive endorsed, framework for sustainable energy messaging in Northern Ireland.	By September 2010
SEF 19:	Optimise the work of the Energy Services Agreement Forum to support energy efficiency.	By December 2010
SEF 20:	Work with the Northern Ireland Authority for Utility Regulation to develop a cost effective smart metering solution for Northern Ireland.	By December 2011
SEF 21:	Encourage greater scope for CHP in Northern Ireland.	Ongoing
SEF 22:	Work with appropriate Matrix panels and their sectoral bodies to ensure sustainable energy research is correctly targeted and mindful of wider strategic goals.	Ongoing
SEF 23:	Provide appropriate support for industry to increase its productivity through the deployment of sustainable energy technologies.	By March 2011
SEF 24:	Consult and, if necessary, legislate on the Department's and the Northern Ireland Authority for Utility Regulation's statutory duties so that sustainability is given a higher priority in relation to other duties.	2012/13 Legislative Programme
SEF 25	Ensure that support mechanisms for renewable electricity are tailored and appropriate to Northern Ireland's needs, within the context of the wider wholesale electricity market (i.e. NIRO).	Ongoing
SEF 26:	Work with developers, planners and those responsible for environmental consents to ensure that the need for renewable energy to address the environmental impacts of climate change is recognised, that good quality applications are made and that clear, consistent and proportionate procedures are in place for the consenting of renewable installations.	Ongoing
SEF 27:	Ensure that relevant Northern Ireland Departments transpose and implement the requirements of the European Union Renewable Energy Directive.	By December 2010
SEF 28:	Implement the Offshore Renewable Energy Strategic Action Plan 2010-2020.	Through to 2020, with appropriate reviews.

ACTION NUMBER	OBJECTIVE	TIMEFRAME
SEF 29:	Work with other relevant departments in the implementation of the first Bioenergy Action Plan over the period to 2015 and any subsequent plans to promote the ongoing sustainable development of bioenergy.	By 31 March 2015, with appropriate reviews.
SEF 30:	Promote and raise awareness of supply chain opportunities in sustainable energy technologies both locally and further afield.	Ongoing
SEF 31	Support the growth of suitable manufacturing or tradeable service companies operating in the sustainable energy field.	Ongoing
SEF 32:	Consider how best to encourage new entrants into the renewable heat market.	By December 2011
SEF 33:	Publish a Renewable Heat Route Map by March 2011 setting out key actions to achieve a 10% contribution from renewable heat by 2020.	By March 2011
SEF 34:	Promote opportunities for switching to lower carbon fuels where it is cost effective to do so.	Ongoing
SEF 35:	Work with other relevant government Departments to manage the impact of the increase in the uptake of renewable heat and associated demand for renewable fuels.	Ongoing

Goal 4 – Developing our Energy Infrastructure

ACTION NUMBER	OBJECTIVE	TIMEFRAME
SEF 36	Ensure that electricity grid development plans are future proofed to facilitate a more decarbonised energy mix beyond 2020.	Ongoing
SEF 37:	Ensure co-operation between the Utility Regulator, NIE and SONI to deliver new electricity grid infrastructure.	Ongoing
SEF 38:	Complete a Strategic Environmental Assessment and associated Strategic Action Plan by June 2011 in relation to land based renewable electricity generation and associated grid infrastructure for onshore and offshore generation.	By June 2011
SEF 39:	Support construction and commissioning of the new North-South electricity interconnector by 2013-14.	Agree procedures for handling wayleaves for strategic projects that meet the needs of landowners and developers, by end 2010.
SEF 40:	Work with stakeholders to ensure a strategic fit with smart grid initiatives and the efficient use of energy by all consumers.	Ongoing
SEF 41:	Work with regional partners to develop a supportive policy, regulatory and consent environment for commercial offshore grid investment.	Ongoing
SEF 42	Extend the availability of natural gas as a lower carbon fuel, displacing more polluting fossil fuels, thus providing environmental benefits and enhancing fuel choice where it is economically viable to do so, and where not, maximise other alternatives such as renewable heat and/or biomass.	Ongoing
SEF 43	Work with the Strategic Investment Board to develop an energy model for Northern Ireland that will help prioritise and facilitate policy planning and investment decisions by all the Northern Ireland Departments about energy proposals, taking into account the financial constraints facing government spending.	Ongoing

Appendices

Appendix 1: Statutory duties

Appendix 2: Energy Efficiency Activities by Departments

Appendix 3: Abbreviations

DETI'S STATUTORY DUTIES IN RELATION TO ENERGY

The Energy (Northern Ireland) Order 2003

PART III EXTRACT

OBJECTIVES OF REGULATION OF ELECTRICITY AND GAS

Electricity

The principal objective and general duties of the Department and the Authority in relation to electricity are:

11. –

- (1) The principal objective of the Department and the Authority in carrying out their respective electricity functions is to protect the interests of consumers of electricity supplied by authorised suppliers, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the generation, transmission or supply of electricity.
- (2) The Department and the Authority shall carry out those functions in the manner which it considers is best calculated to further the principal objective, having regard to -
 - (a) the need to secure that all reasonable demands in Northern Ireland or Ireland for electricity are met; and
 - (b) the need to secure that licence holders are able to finance the activities which are the subject of obligations imposed by or under Part II of the Electricity Order or this Order.
- (3) In performing that duty, the Department or the Authority shall have regard to the interests of -
 - (a) individuals who are disabled or chronically sick;
 - (b) individuals of pensionable age;
 - (c) individuals with low incomes; and
 - (d) individuals residing in rural areas;but that is not to be taken as implying that regard may not be had to the interests of other descriptions of consumer.
- (4) The Department and the Authority may, in carrying out any electricity functions, have regard to the interests of consumers in relation to gas and in relation to water or sewerage services.
- (5) Subject to paragraph (2), the Department and the Authority shall carry out their respective electricity functions in the manner which it considers is best calculated -
 - (a) to promote the efficient use of electricity and efficiency and economy on the part of persons authorised by licences or exemptions to supply or participate in the transmission of electricity;

- (b) to protect the public from dangers arising from the generation, transmission or supply of electricity;
 - (c) to secure a diverse and viable and environmentally sustainable long-term energy supply;
 - (d) to promote research into, and the development and use of, new techniques by or on behalf of persons authorised by a licence to generate, supply or participate in the transmission of electricity; and
 - (e) to secure the establishment and maintenance of machinery for promoting the health and safety of persons employed in the generation, transmission or supply of electricity;
- and shall have regard, in carrying out those functions, to the effect on the environment of activities connected with the generation, transmission or supply of electricity.
- (6) In carrying out their respective electricity functions the Department or the Authority shall not discriminate between persons whose activities consist of or include generating, supplying or transmitting electricity as regards either rights or obligations.
- (7) In this Article –
“electricity functions” means functions under Part II of the Electricity Order and functions under this Order relating to electricity; and
“environmental sustainability” includes the need to guard against climate change.

Gas

The principal objective and general duties of the Department and the Authority in relation to gas are:

14. –

- (1) The principal objective of the Department and the Authority in carrying out their respective gas functions is to promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland.
- (2) The Department and the Authority shall carry out those functions in the manner which it considers is best calculated to further the principal objective, having regard to -
 - (a) the need to ensure a high level of protection of the interests of consumers of gas;
 - (b) the need to secure that licence holders are able to finance the activities which are the subject of obligations imposed by or under Part II of the Gas Order or this Order;
 - (c) the need to secure that the prices charged in connection with the conveyance of gas through designated pipe-lines (within the meaning of Article 59) are in accordance with a common tariff which does not distinguish (whether directly or indirectly) between different parts of Northern Ireland or the extent of use of any pipe-line; and

- (d) the need to protect the interests of gas licence holders in respect of the prices at which, and the other terms on which, any services are provided by one gas licence holder to another.
- (3) In performing that duty, the Department or the Authority shall have regard to the interests of -
- (a) individuals who are disabled or chronically sick;
 - (b) individuals of pensionable age; and
 - (c) individuals with low incomes;
- but that is not to be taken as implying that regard may not be had to the interests of other descriptions of consumer.
- (4) The Department and the Authority may, in carrying out any gas functions, have regard to the interests of consumers in relation to electricity and in relation to water or sewerage services.
- (5) Subject to paragraph (2), the Department and the Authority shall carry out their respective gas functions in the manner which it considers is best calculated -
- (a) to promote the efficient use of gas;
 - (b) to protect the public from dangers arising from the conveyance, storage, supply or use of gas;
 - (c) to secure a diverse, viable and environmentally sustainable long-term energy supply; and
 - (d) to facilitate competition between persons whose activities consist of or include storing, supplying or participating in the conveyance of gas;
- and shall have regard, in carrying out those functions, to the effect on the environment of activities connected with the conveyance, storage or supply of gas.
- (5A) In carrying out their respective gas functions the Department or the Authority shall not discriminate between persons whose activities consist of or include storing, supplying or participating in the conveyance of gas as regards either rights or obligations.
- (6) In this Article "gas functions" means -
- (a) functions under Part II of the Gas Order; and
 - (b) functions under this Order relating to gas.
- (7) For the purposes of paragraph (5)(c) environmental sustainability includes the need to guard against climate change.

ENERGY EFFICIENCY ACTIVITIES BY DEPARTMENTS

DEPARTMENT	DESCRIPTION	SPECIAL ACTIVITIES
Agriculture and Rural Development	<p>DARD's main support mechanism for energy efficiency in the agricultural sector is the Farm Modernisation programme which provides funding to contribute to the competitiveness of existing farm businesses allowing them to improve the overall performance of their farm through modernisation under six key priority investment areas including increased energy efficiency.</p> <p>In addition, DARD through its agencies undertakes significant collection of data to monitor and reduce energy consumption within the CAFRE Estate and within agriculture and horticulture primary production.</p>	NIRDP 2007-13: Farm Modernisation Programme
Culture, Arts and Leisure	Through participation in the Carbon Reduction Commitment Energy Efficiency Scheme, DCAL will become more resource efficient and minimise unsustainable impacts on consumption.	<p>Completion of waste audits at its sites during 2010/11.</p> <p>Introduction of an essential car user policy by March 2011.</p>
Education	<p>DE's efforts in this area focus on energy consumption monitoring, analysis and reporting at over 1200 sites in accordance with the Public Sector energy efficiency campaign.</p> <p>DE continues to develop and implement energy efficiency projects designed to achieve CO₂ reduction as funding permits. It has also set a target for all new schools to meet the BREEAM (environmental assessment method) excellent standard.</p> <p>DE also provides education for Sustainable Development through the Carbon Detectives website as well as providing training, advice and guidance to energy users across the whole schools' estate.</p>	Eco Schools programme Carbon Detectives website.

DEPARTMENT	DESCRIPTION	SPECIAL ACTIVITIES
Employment and Learning	DEL provide strategic policy guidance in relation to energy efficiency of Colleges of Further Education and promote skills development in the renewable and energy efficiency sectors.	DEL provide funding to the Further Education colleges to deliver courses and programmes on energy efficiency and renewable energy. Five colleges have dedicated renewable energy laboratories to improve installer skills
Enterprise, Trade and Investment	<p>DETI lead on energy policy in Northern Ireland and in relation to energy efficiency specifically are responsible for ensuring the implementation of the Energy End Use Efficiency and Energy Services Directive as well as collecting data to monitor DETI's contribution to the 1% year on year energy saving target in the UK Energy Efficiency Plan.</p> <p>DETI, in conjunction with Invest NI, is developing work on the economic opportunities arising from sustainable energy activities. In addition, DETI is currently developing a policy approach to smart metering.</p>	<p>Publication of progress against yearly energy consumption targets.</p> <p>Work with NIAUR/Utility Regulator on smart metering.</p>
Finance and Personnel	<p>DFP is responsible for promoting energy efficiency throughout the public sector, mainly through the Central Energy Efficiency Fund (CEEF). DFP also monitors and publishes energy consumption data for the public sector on a yearly basis.</p> <p>In addition, DFP promotes sustainable procurement and is responsible for Building Regulations in Northern Ireland, including the Energy Performance of Buildings Regulations, both of which impact on improving energy efficiency in buildings.</p>	Central Energy Efficiency Fund. Public Sector Energy Efficiency Campaign.

DEPARTMENT	DESCRIPTION	SPECIAL ACTIVITIES
Health, Social Services and Public Safety	<p>DHSSPS's key activity on energy efficiency is to ensure that all capital development and estates and facilities management functions undertaken by Health, Social Care and Public Safety (HSCPS) organisations comply with best practice guidance on sustainable development. Improving the energy efficiency of the HSCPS Estates will continue to be an important strand of delivering carbon emission reductions in order to meet the projected challenge of climate change, leading to lower costs and the reinvestment of savings in front line services.</p>	<p>Encouraging HSCPS organisations to refocus their efforts through a carbon emission reduction approach to improving energy performance through the publication of <i>"Carbon Emission Reduction & Energy Efficiency: Healthy budgets through further energy efficiency in Health, Social Care and Public Safety"</i> which puts a renewed focus on improving the energy performance of the operational estates.</p> <p>Proposing to commission a HSCPS Carbon Footprint to allow development of a HSCPS Carbon Emission Reduction Strategy.</p> <p>In relation to new capital projects, the application of the HEIG Sustainable Development Design Brief and achievement of BREEAM excellent rating will deliver further energy efficiencies.</p>
Environment	<p>DOE are responsible for climate change in Northern Ireland. This includes energy efficiency improvements driven by the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme in business and public sectors. DOE also administer the EU Emissions Trading scheme.</p>	<p>Carbon Reduction Commitment Energy Efficiency Scheme EU Emissions Trading Scheme</p>

DEPARTMENT	DESCRIPTION	SPECIAL ACTIVITIES
Justice	<p>DOJ currently participate in both the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme and Public Sector Energy Campaign (PSEC)</p> <p>A Sustainable Development Group within the Department meets on a regular basis to help ensure a consistent approach for reducing energy consumption within the Department and its Agencies. The Group reports regularly to the DOJ Board.</p>	<p>Participation in DFP Contract for Recycling of Dry Office Waste.</p> <p>Procurement exercise for replacing out of contract copiers within the Department with Multi Functional Devices. This exercise will help rationalise a number of photocopiers, scanners and printers throughout DOJ.</p> <p>DOJ Board is keen to ensure staff are engaged in the Sustainability Agenda and awareness events will be run during the year.</p>
Regional Development	<p>DRD collects data to monitor current energy usage in DRD occupied buildings. The Department is currently formulating an action plan to meet the requirements of the Carbon Reduction Commitment Energy Efficiency Scheme legislation.</p> <p>NI Water, the largest energy consumer, is working on several projects to reduce energy usage and associated costs in line with their own internal objectives. NI Water is represented on UK wide water utility working groups to ensure industry best practice is adopted across its own systems.</p> <p>DRD also encompasses the Roads Service who provide street lighting. DRD has actively been promoting lower lighting levels to the appropriate minimum standard, while still complying with requirements of the British Standard.</p>	<p>Installation of on-line half hour metering at around 90% of NI water sites.</p> <p>Installation of photo-electric cells that switch street lights on later and off earlier, and more efficient lanterns and electronic control gear. Diming and LED trials.</p>

DEPARTMENT	DESCRIPTION	SPECIAL ACTIVITIES
Social Development	<p>DSD is responsible for energy efficiency activity in the domestic sector. Energy Efficiency in the housing sector is managed through the Northern Ireland Housing Executive who are the Home Energy Conservation Authority.</p> <p>In addition, DSD provides substantial funding for the Warm Homes scheme and runs advertising campaigns in co-operation with partners such as the Energy Savings Trust and the Northern Ireland Energy Agency to promote energy saving in the home.</p>	<p>Warm Homes Scheme - £20m</p> <p>NIHE Heating Programme £1.6m - 363 dwellings</p>
Office of the First Minister and Deputy First Minister	OFMDFM co-ordinates sustainable development activities across all the Northern Ireland departments.	Northern Ireland sustainable development implementation plan

ABBREVIATIONS

BETTA	-	British Electricity Trading and Transmission Arrangements
CAG	-	Common Arrangements for Gas
CCL	-	Climate Change Levy
CCNI	-	Consumer Council for Northern Ireland
CHP	-	Combined Heat and Power
CRC	-	Carbon Reduction Commitment
DARD	-	Department of Agriculture and Rural Development
DCAL	-	Department of Culture, Arts and Leisure
DE	-	Department of Education
DECC	-	Department of Energy and Climate Change
DEL	-	Department for Employment and Learning
DETI	-	Department of Enterprise, Trade and Investment
DFP	-	Department of Finance and Personnel
DHSSPS	-	Department of Health, Social Services and Public Safety
DOE	-	Department of Environment
DOJ	-	Department of Justice
DRD	-	Department for Regional Development
DSD	-	Department for Social Development
FIT	-	Feed-in Tariff
GB	-	Great Britain
GSNI	-	Geological Survey of Northern Ireland
GWh	-	Giga Watt hours
HMRC	-	Her Majesty's Revenue and Customs
IME	-	Internal Market for Energy

IWEA - Irish Wind Energy Association

MW - Mega Watt

NI - Northern Ireland

NIAUR - Northern Ireland Authority for Utility Regulation

NIE - Northern Ireland Electricity

NIRO - Northern Ireland Renewables Obligation

OFMDFM - Office of the First Minister and Deputy First Minister

PPS - Planning Policy Statement

RHI - Renewable Heat Incentive

R&D - Research and Development

SEA - Strategic Environmental Assessment

SEF - Strategic Energy Framework

SEM - Single Electricity Market

SNIP - Scotland-Northern Ireland (Gas) Pipeline

SONI - System Operator for Northern Ireland

TWh - Terra Watt hours



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