



**Gas
Networks
Ireland**

**Draft National Risk Assessment 2016
(NRA)**

Overview of Strategic Risks

Gas Networks Ireland Response

8th July 2016

Introduction

Gas Networks Ireland (GNI) welcomes the opportunity to respond to the 'Draft National Risk Assessment 2016 – Overview of Strategic Risks' published by the Department of the Taoiseach. GNI was incorporated on the 13th of January 2015 as a fully owned subsidiary of Ervia (formally known as Bord Gáis Éireann). GNI owns, operates, builds and maintains the gas network in Ireland and ensures the safe and reliable delivery of gas to its customers. GNI is working to continually advance the utilisation of the gas network for the benefit of Ireland.

Ireland's Gas Network

Gas Networks Ireland (GNI) is responsible for the safe, reliable and efficient transportation of Ireland's gas demand (representing 30% of Ireland's primary energy) through the state-owned natural gas network. The network today consists of over 11,000 km of distribution pipelines and almost 2,500 km of transmission pipeline. The gas network has been developed since gas was established in the late 1970's, with network investment of over €2.8 billion, supplying energy to 14 power stations, more than 23,000 multi-nationals and businesses and over 647,000 homes. GNI has demonstrated foresight and prudence in building an efficient gas network with sufficient capacity to meet the gas demands of a modern Ireland competing in the global economy.

Transportation of gas is unobtrusive, with pipelines buried underground and particular attention taken to minimise impact on the local flora and fauna. Restoring the surrounding area to the original ecology and landscape in order to preserve local biodiversity is very important and being mindful of this has contributed to the successful construction of the transmission pipelines. GNI has an impeccable relationship with landowners, reflecting an excellent track record in stakeholder management, environmental compliance and first time approvals through the strategic infrastructure process. In addition, the transportation of energy through gas pipelines is considered the most efficient mode of transporting energy. The existing transmission network has the capacity to accommodate substantial new loads, with connection to the higher tier pressure pipelines being the optimal option for large consumers who consume large quantities of natural gas and require the delivery of high pressure at their site. Equally, the distribution network has capacity to accommodate new loads, albeit on smaller scale and at lower pressures than that of the transmission system.

Gas Networks Ireland has reviewed the draft National Risk Assessment for 2016 with a particular focus on Section 3: Environmental Risks and Section 4: Geo-political risks as these sections are deemed to be of most relevance to the company.

Section 3: Environmental Risks

In Section 3, climate change, extreme weather events and security of energy supply have been identified as environmental risks. These risks are significant and with an increase in extreme weather events in recent years, the seriousness of the consequences has already been seen. GNI is actively working to do its part in reducing these risks and to mitigate against any potential consequences.

Climate Change and Extreme Weather Conditions

Gas Networks Ireland is cognisant of the current and potential impact of climate change on the network. The implications of extreme weather conditions are carefully considered when planning the network. As part of GNI's third price control, remedial action on transmission pipes in floodplain areas was sought as part of the work plan for the period 2012-2017. This work will continue for the next period from 2017-2022 to ensure that transmission pipelines in floodplain areas are properly protected in extreme weather conditions. The existing gas pipelines have been designed to the highest standards and have proven their resilience to extreme weather conditions for over 40 years. Materials are specified for an operating temperature range of -20°C to 60°C. During periods of record sub-zero temperatures in January and December 2010, the natural gas network demonstrated resilience and robustness in maintaining energy security with record gas and electricity demands.

While the most recent winters have been milder, other types of severe weather events have occurred, with storm force conditions in Winter 2013/14 resulting in the widespread loss of electricity supplies. Ireland's natural gas network consists of buried pipelines, which are not subject to the vulnerability of storms that can impact the delivery of oil or the transport of electricity through overhead wires. In addition, the routing of the gas network is designed to take account of flood plains, avoiding areas prone to flooding wherever possible. If laying pipes in flood plains cannot be avoided, additional precautions are taken to ensure the pipes are not adversely affected by flooding. These include using a concrete coating as a buoyancy mechanism to prevent pipes from lifting. Extreme rainfall in November 2009 and Winter 2015/16 saw catchments and soils becoming increasingly saturated which led to widespread flooding. Despite millions of euros worth of damage to other infrastructure, the gas network remained resilient throughout, continuing to deliver gas to all customers.

Security of Energy Supply - Gas

Indigenous sources of natural gas and renewable gas, combined with gas storage and the gas interconnectors, which are linked to the competitive and highly liquid UK gas market, provides Ireland with a secure energy future. The Corrib gas field came on stream in 2015 and is capable of providing over 50% of Ireland's total gas requirements with an indigenous gas supply. It will also further enhance Ireland's security of supply for the next ten years and make a significant contribution to generating Ireland's electricity, heating Irish homes and providing the energy for industry and businesses to drive the Irish economy.

Ireland is connected through two subsea interconnector pipelines to Great Britain which is one of the most competitive gas markets in the world. The two subsea interconnectors are up to 200 km in length and can be utilised as a storage facility and to provide backup to indigenous gas supplies. In addition, there are extensive sources of biogas (agricultural, waste water etc.) available in Ireland, with some biogas feed stocks either on or very close to the gas network. Biogas can be upgraded to biomethane and injected directly into the gas network where the network is close to the source of biomethane, or can be collected and centrally injected into the gas network. Biomethane provides diversity of supply, enhancing energy security and increasing penetration of renewables. Biogas and biomethane complement natural gas and provide a self-sustaining, clean, green and reliable source of energy. The development of Power to Gas, which converts excess wind energy into gas through electrolysis and methanation, will also provide a sustainable source of renewable gas into the future.

Security of Energy Supply - Transport

Transport in Ireland is 98% dependent on imported oil. In addition, there is just one oil refinery on the island of Ireland which is currently under review. There is a significant risk to the country if we do not dilute this dependency on oil in transport. GNI is actively supporting the development of Compressed Natural Gas (CNG) for use in transport vehicles. The rollout of a network of CNG refuelling facilities will provide an alternative to diesel for trucks, buses and vans and will reduce Ireland's reliance on imported oil. Initially using natural gas, CNG vehicles will see a reduction in CO₂ emission of up to 22% compared with their diesel counterparts and a huge reduction in other tailpipe emissions, such as nitrogen oxide, sulphur dioxide and particulate matter.

As the production of biogas/biomethane is scaled up and used in transport as bio-CNG, even greater lifecycle CO₂ emission reductions can be achieved. While CO₂ emission reductions contribute to climate change mitigation, the transportation of fuel through the existing gas network will also provide fuel security in all weather conditions and contribute to climate change adaptation. Furthermore, the financial benefits for truck and bus operators are significant with estimated fuel savings of between €10,000 and €20,000 per annum (20% to 50%) based on recent trials carried out in Ireland.

Security of Energy Supply - Electricity

Gas is used as a fuel in the power sector accounting for 44.1% of Ireland's electricity generation. Gas-fired power stations are a vital system component to accommodate sudden changes in electricity demand or supply. Ireland has one of the highest levels of wind penetration in Europe and requires the security of gas fired power plants and the gas network to back up this intermittent source of renewable energy. The aforementioned severe weather conditions experienced in both January and December 2010, demonstrated the need for significant backup to renewable generation. The temperatures in certain parts of the country plummeted to -18°C during those months and energy demand, for both gas and electricity, reached record highs. Winds were relatively light during these periods, with the low level of wind generation requiring conventional plant to generate almost all of the high levels of electricity required. For example, in December 2010 wind generation supplied 46 MW of electricity, on average, over the course of a day, despite 1,400 MW of wind capacity on the system. This accounted for 1% of electricity generation. The other 99% of electricity required was generated by conventional generation, the majority of which was from gas fired plants. GNI believes that an increase in installed wind capacity would not reduce the high dependency on conventional generation for backup, particularly during weather events similar to those experienced in December 2010. Any reduction in gas fired power stations could present a risk to the electricity system as a certain level of Ireland's electricity will need to be generated from conventional sources like natural gas.

Climate Change and the Economy

Heating and transport account for 69% of Ireland's energy-related CO₂ emissions due to the dependence of these sectors on oil as their primary fuel source (98% in transport and 44% in heating). Little has been done to sustainably address renewable energy in these key energy demand areas and Ireland is currently behind on meeting its targets for renewable energy which could result in referral to the European Court of Justice, with significant fines and sanctions likely. The adoption of renewable

gas and CNG will reduce CO₂ emissions, and assist Ireland in meeting the EU targets set out in a number of Directives. This will help reduce or mitigate the potential fines as well as having other economic benefits such as job creation and rural development.

Infrastructure Development

As outlined in the consultation the growing economy and population will place increased pressure on our infrastructure. However, Ireland's gas network has been designed with the foresight to facilitate substantial new loads. Gas has significant environmental benefits over other heating sources such as oil. It would be a risk to the Irish economy to ignore the benefits that Ireland's gas infrastructure provides. Developing and maintaining the gas network as a strategic asset is important for Ireland from an economic and environmental perspective.

Section 4: Geopolitical Risks

The consultation document has highlighted Brexit and the uncertainty over the UK's relationship with EU as a geopolitical risk. The UK voted in the EU Referendum on the 23rd of June and the result was a 52/48 majority in favour of leaving the European Union. The announcement of the result has set in motion significant political upheaval in the UK, with a number of resignations from some of the main political parties. The general uncertainty in the UK with regard to its relationship with the EU has played a major role in the negative economic repercussions that have occurred since the result was announced.

From an energy perspective, Ireland and the UK are heavily interconnected. Ireland is connected to Great Britain through two subsea interconnector gas pipelines. Great Britain is one of the most liquid and transparent natural gas markets in the world and has a diverse range of natural gas sources from indigenous production to Liquefied Natural Gas (LNG) and subsea interconnector pipelines to Europe, i.e. Belgium, the Netherlands and Norway. Ireland's two sub-sea gas interconnectors transport natural gas from Scotland to Ireland. The interconnector system is made up of an onshore system in Scotland and two high pressure gas interconnectors that come to shore just north of Dublin. The interconnector system has transported 93% of Ireland's natural gas demand in recent years. The close proximity of the subsea Interconnectors to Dublin ensures increased security of supply and a high level of system capacity in the area. Northern Ireland owns and operators a pipeline that is connected to the onshore Scotland section of the Irish interconnector system and relies heavily on this connection for its supply of natural gas. Northern Ireland (NI) also has a pipeline of over 150km in length that runs from Dublin into the North which provides security of supply as an alternative route for gas to NI. The Isle of Man (IOM) is also supplied natural gas via Ireland's second sub-sea interconnector (IC2).

Gas Networks Ireland believes that the result of the United Kingdom's EU membership referendum poses some potential risks from an energy perspective but is committed to working with industry partners to ensure that there will be little or no impact on the operation of the gas network, particularly in terms of security of supply. The Ireland / UK inter-governmental gas treaty, which was signed in 1993, governs the operation of the interconnectors and still remains in place today. In addition, NI and IOM are both connected to Great Britain's gas supplies via Gas Networks Ireland infrastructure and so there is a shared interest in maintaining and developing the interconnector infrastructure as it is beneficial to a number of parties.

Conclusion

As outlined in the consultation, climate change, extreme weather events and security of energy supply pose significant risks to the country. Extreme weather events are expected to become more frequent as a result of climate change. Transportation of energy through gas pipelines is the most efficient mode to transport energy and Ireland's gas network has proven its resilience for over 40 years in particular withstanding extreme weather conditions in recent years. Transportation of gas is unobtrusive, with pipelines buried underground which ensures that the gas network is less vulnerable to extreme weather conditions than energy infrastructure which is above ground and directly exposed to the full impact of such weather conditions i.e. high winds, substantial rainfall and extreme temperatures.

Production of biogas/biomethane is being scaled up, lowering the overall greenhouse gas emissions associated with the use of gas for energy which will help address the climate change mitigation challenge. Agricultural wastes can be used to produce biogas which can then be upgraded to biomethane and injected into the gas grid. The gas network can facilitate the reduction of emissions from the agricultural sector and a reduction in the carbon footprint overall. In addition, biomethane can be transported through the existing gas network which is designed to withstand extreme weather conditions. The use of CNG and Bio-CNG as a transport fuel provides diversity of supply in the transport sector and added security of fuel supply as CNG and Bio-CNG are transported through the existing gas network.

The existing network has the capacity to accommodate substantial new loads and as part of the climate change adaptation strategy, increased use of the gas network can provide enhanced energy security at a relatively low cost. There is a risk that the contribution that the gas network makes to Ireland's energy, economic and environmental needs is underestimated or misunderstood. This could create a situation in which the network is not maintained properly due to underfunding. If the gas network is not maintained to a high safety standard this could result in interruptions which could have a negative impact on electricity generation. A fully functioning gas network is essential to ensure that electricity generation is stable and not subject to blackouts.

From a geopolitical perspective, Gas Networks Ireland believes that the Brexit result poses some potential risks from an energy perspective. However, it is difficult to assess the exact risks given the uncertainty around the UK exit from the EU and the different options open to the UK should they formally leave the European Union. Gas Networks Ireland is currently assessing the potential risks from an energy perspective and is maintaining an open dialogue with the UK and the EU to minimise any potential impact.

GNI would welcome the opportunity to engage with all relevant departments on the National Risk Assessment for 2016.