IOOA Submission on Security of Energy Supply Review

Irish Offshore Operators' Association

Introduction

1. Introduction

The Irish Offshore Operators' Association (IOOA) welcomes the opportunity to contribute to the public consultation on the Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems ('the Review'), published on 19th September 2022.

IOOA is the representative organisation for the offshore gas and oil exploration and production sector in Ireland. For more than half a century our industry has provided investment, employment, revenue to the Exchequer, and energy security through offshore exploration and gas production, with no financial exposure to the Irish State. Our industry and member companies have delivered four gas fields, the first of which (Kinsale Head) came on stream in 1978 and the fourth (Corrib) landed first gas in late 2015. The availability of Irish gas enabled the development of the national gas grid and helped the Irish economy, our citizens and industry in a transformative way by providing a safe, secure, low-emission, energy supply. IOOA's members fully support the Government's ambitions in moving rapidly to a low-carbon future while ensuring Ireland's energy security.

The Review acknowledges that indigenous sources of energy are considered as more secure than imported energy and that Ireland is one of the most energy import dependent countries in the EU. It documents the growth over recent years in electricity demand, natural gas consumption (there are over 700,000 connected customers) and import dependency, with these trends projected to continue for some years at least. Natural gas and renewables are the two dominant sources for electricity generation with natural gas providing the essential backup to support and enable the growth in renewables. The Irish Academy of Engineering has long stated[1,2] that natural gas will be required for decades to come to ensure a stable electricity supply at times of low wind generation. The Review comes at a time when Ireland's population and energy demands are growing but our energy supply is increasingly unreliable and dependent on rising imports. The most recent EirGrid and SONI Generation Capacity Statement[3] predicts a challenging outlook for Ireland, with capacity deficits identified during the 10 years to 2031. Ireland's energy security situation is becoming progressively more isolated. With significantly lower levels of diversity of energy sources and options than all neighbouring countries that are compared in the Review documentation, we have no gas storage, no LNG facilities, a prohibition of nuclear powered electricity generation plants, and a prohibition on the granting of new authorisations for gas exploration or extraction beyond those already in place.

In the face of the Russian invasion of Ukraine with the curtailment of Russian gas supplies to Europe and the resultant global scramble to secure alternative sources of gas supply, Ireland's gas and electricity security in the short or medium term is increasingly vulnerable.

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[1] Irish Academy of Engineering. 2018. Natural Gas – Essential for Ireland's Future Energy Security. http://iae.ie/wp-content/uploads/2018/08/IAE_Natural_Gas_Energy_Security.pdf

[2] Irish Academy of Engineering. 2022. Europe's Energy Crisis – Implications for Ireland. http://iae.ie/publications/europes-energy-crisis-implications-for-ireland/

[3] EirGrid and SONI. 2022. Ireland Capacity Outlook 2022-2031. http://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid_SONI_Ireland_Capacity_Outlook_2022-2031.pdf

We remain non-compliant on EU regulation 994/2010 on the infrastructure standard[4]; we have an exemption from aspects of the recent gas demand regulation and from the gas storage requirement because we are not directly connected to another EU Member State; and we rely increasingly on gas imports from a single source, the UK, that carries residual Brexit-related uncertainties. The Government's National Risk Assessment 2021/2022[5] highlighted that, notwithstanding the increased use of renewables and energy efficiencies in the period to 2030, the reliance on a single source of imported gas creates a significant risk for security of supply. Ensuring the security of our energy supply at present and into the future is of urgent and paramount importance for the country. Against that backdrop, the Review, comprising the Consultation document and supporting CEPA Technical analysis, provides an opportunity for discussion, engagement and action based on fully assessed and achievable mitigation options that will help safeguard Ireland's energy security into the future.

In our submission, IOOA provides feedback on our analysis of the Review documentation, highlights a number of omissions and inconsistencies, and presents recommendations on strategies and actions that we consider will best safeguard Ireland's energy security. We believe that Ireland should have the ambition of building a reliable energy system which meets the needs and aspirations of the nation. It should contain a wide range of diverse low-carbon energy sources, enabling us to become an energy independent island that avoids the reputational damage and cost of non-compliance fines and minimises reliance on EU derogations and imports from countries that themselves are energy importers. As requested in the Consultation document, we provide a response to the questions posed, under the categories of Risks, Mitigation Options and Policy Measures.

[4] EU regulation 994/2010 on the infrastructure standard requires that, in the event of a disruption to the single largest gas infrastructure, the capacity of the remaining gas infrastructure is able to satisfy total gas demand on a day of exceptionally high gas demand.

[5] National Risk Assessment 2021/2022. Overview of Strategic Risks. Government of Ireland. https://www.gov.ie/en/policy-information/795550-national-risk-assessment/

Feedback on the Review

2. Feedback on the Review

IOOA considers that the review of Ireland's energy security is very timely and we acknowledge the significant amount of analysis that has been undertaken. The importance of such a review, likely to guide fundamental changes in how we secure our economic future, makes it imperative that the review is comprehensive, objective and demonstrably transparent, both in terms of how it was carried out and how it is considered and acted upon. We are disappointed that the review appears to have been constrained in places by certain policies and regulations of the day that are not directly related to energy security. We consider that these inhibited the modelling, analysis and comparison of all possible mitigation options to the extent that would be expected in a modern functioning European economy and in the spirit of a truly independent and comprehensive analysis of Ireland's gas and electricity security.

In this section of our submission, we interrogate some of the assumptions underpinning the modelling, document our concerns around certain omissions from the analysis and question the rationale around the inclusion of some, and the exclusion of others, from the mitigation options presented in the Consultation document.

Assumptions

A stated main assumption underpinning the assessment of the mitigation options is that Ireland's targets with regard to electrification of demand, the delivery of offshore wind capacity, geothermal energy, district heating and energy efficiency are broadly achieved by 2030. In making the underlying assumptions on energy growth projections, the CEPA Technical Report states (page 8) "*In agreement with DECC, we have also assumed a low growth in gas demand to 2030, consistent with the Government's stated decarbonisation policies*". The CEPA report stated that If these targets are not achieved, this would likely impact on the security of supply shock modelling and it is likely that gas demand would be higher than is included in the CEPA baselines. Surprisingly however, the report does not quantify or model the likely impacts of any such increased gas demands.

The modelling was carried out using the baseline level of electricity demand for 2025 in line with the Median Demand scenario developed by EirGrid and SONI in the All-Island Generation Capacity Statement (GCS) for 2021-2030[6]. However, the recently published EirGrid and SONI Capacity Outlook 2022-2031[1] forecasts a significantly increased electricity demand from last year's estimates, with a 37% increase forecast to 2031 in the median scenario, bringing the latest estimates close to the High Demand scenario of the 2021-2030 forecast. This is compounded by the delayed rollout of offshore wind as proposed in the Programme for Government (PfG). The modelling also used (in agreement with DECC) the Low Demand scenario in Gas Network Ireland's (GNI) 2020 Network Development Plan

[6] EirGrid and SONI. 2021. All-island Generation Capacity Statement 2021-2030. http://www.eirgridgroup.com/site-files/library/EirGrid/208281-All-Island-Generation-Capacity-Statement-LR13A.pdf

(NDP)[7] as the baseline scenario for 2025 and extended this forecast by assuming the trend will remain the same to 2030. It also made a number of adjustments to the residential and Industrial and Commercial (I&C) gas demand to align them more closely to the PfG commitments. Given the GNI projections of continued gas growth at a significantly higher rate than the EU average, and also the latest EirGrid and SONI raised forecasts for electricity growth[1], IOOA contends that using such assumptions of low demand growth in a long-term energy security review, and the presumption that all stated decarbonisation targets are met without assessing the impact of failure to meet these targets, is a serious error. Using the most up to date Best Estimate (rather than Low Demand) scenario would have clearly been more realistic. The adoption of low assumptions could give rise to the suggestion that the review was constrained by climate aspirations and policy rather than being a wholly objective, realistic and independent analysis and assessment of current and future energy security issues and mitigation options.

Omissions from the analysis

IOOA notes, with disappointment, the omission of a Cost Benefit Analysis (CBA) on any of the mitigation options and especially on the short-listed options. Comparison of the options against one another through a full CBA would be expected in such an important review as this. Therefore, it is surprising to read in the Technical Report that this was explicitly out of scope of the project.

While the Technical Report notes that cyber security is likely to represent a source of risk going forward, cyber risks and cyber security were stated by CEPA, in a footnote, to be out of scope in this review in the sense that they have not assessed the energy system's cyber vulnerabilities or the impact that these might have. IOOA is concerned at the lack of any detailed analysis of the potential of cyber risks to the energy system and network, especially in light of the 2021 cyber-attack necessitating the shutdown of the Colonial pipeline system[8].

Exclusion from the short-listed mitigation options

IOOA is extremely disappointed at the exclusion of future indigenous gas from the short-listed options, and especially with the rather superficial and unsatisfactory justification behind its exclusion. This aspect is discussed in detail in Section 3 (response to Question 4) of the submission.

On an important and related point, IOOA notes the statement in the Technical Report (page 7) that "*…**exploration of new fields will not be allowed***". This would appear to be going beyond the published government policy on Petroleum Exploration and Production in Ireland and requires urgent correction and clarification.

[7] Gas Networks Ireland. 2021. Network Development Plan 2020. https://www.gasnetworks.ie/docs/corporate/gas-regulation/GNI-2020-Network-Development-Plan.pdf

[8] https://www.energy.gov/ceser/colonial-pipeline-cyber-incident

Inclusion in the mitigation options

IOOA is puzzled at inclusion (pages 43, 44) of an 'Onshore Energy Storage Project' option under the gas supply mitigation options in the Consultation document. This does not appear as one of the long-listed or short-listed gas supply mitigation options in the CEPA Technical Report. Instead, there is a mention (page 89) stating "*Following our analysis of mitigation options, GNI has developed a high-level option design for an onshore slow-liquefaction storage facility. This option was not proposed at the time of development of our long-list and remains at a very early stage of development. We have therefore not assessed it in detail in this study*". Despite the lack of any detail, analysis or justification, it is listed among the mitigation options in the Consultation document, suggesting a potential lack of objectivity in terms of the overall scope of the Review and the proper and detailed analysis of all relevant options.

Response to specific questions asked in the Consultation

3. Response to specific questions asked in the Consultation

In this section of our submission, we present a detailed justification for some of the issues raised in the previous section. In particular, we propose the inclusion of indigenous new natural gas resources as an important mitigation option. Allied to this, we highlight the important role the existing gas infrastructure, especially that associated with the Corrib gas field, can play in securing Ireland's energy security against shocks and potential gas import supply interruptions. This section is structured in accordance with the three headings (Risks, Mitigation Options and Policy Measures) and the 10 questions presented for consideration in the Consultation document.

Risks

Q.1: ***Are there any other security of supply risks that you can identify in addition to those set out in Section 6?***

IOOA agrees with the risks identified in Section 6 of the Consultation document. Here we provide additional comments on some of these risks, as well as outlining a number of other risks that we consider need to be addressed.

(a) Interruptions to imports from the UK. While it has been argued in the past that the twinning of the interconnector pipeline from the UK to Ireland has increased our security of gas supply, if an emergency occurs and gas is not available from the UK, then there is no security of supply benefit. As stated by Glynn et al. (2017)[9], when considering the future of Irish energy security it is important to realise that Irish energy security remains a function of UK energy security. The UK will continue to import the vast bulk of its gas needs for the foreseeable future from other countries, while Ireland continues to rely increasingly on our gas supplies from the UK. Although gas supply to the UK comes from several sources, all of these carry a risk of interruption in the event of accident or equipment/pipeline failure, industrial disputes, cyber-attacks/terrorist attacks, or diversion of supplies to other locations. Ofgem, the UK's energy regulator recently warned that "*there is a significant risk that gas shortages could occur during the winter 2022-23 in Great Britain*"[10]. The UK has, in common with all European countries, prepared contingency plans in the event of a shortfall in demand. If implemented, these would result in the gas supplies to Ireland being treated in a similar manner to UK industry with similar curtailments in supply, almost certainly at short notice. The spectre of Brexit-related issues around trade remain, especially in light of the UK withdrawal from the EU energy market and ongoing residual disputes that threaten to boil over into a trade war. With the UK no longer bound by EU internal market rules, the requirement to share gas under the EU Member 'solidarity principle', or the need to honour international agreements, creates uncertainty and poses a real and possible risk to gas supplies.

[9] Glynn, J., Chodi, A. & Ó Gallachóir, B. 2017. Energy security assessment methods: Quantifying the security co-benefits of decarbonising the Irish Energy System. Energy Strategy Reviews, 15, 72-88. http://dx.doi.org/10.1016/j.esr.2016.11.005

[10] https://www.ofgem.gov.uk/publications/p448-decision-urgency

The possibilities of accident or equipment/pipeline failure at the Moffat interconnector system, or in UK and Norwegian sectors which could reduce UK supply with a corresponding knock-on effect to Ireland, also require risk assessment.

A further potential constraint may arise at the compressor station installations on the Moffat interconnector pipelines as gas demand continues to rise. This needs to be considered in any risk analysis being carried out on security of supply.

(b) Ireland is lacking a solid post-2030 planning base. While the focus of the present Review is the medium-long term, i.e. to 2030, it is essential that any resultant strategy from the Review should be valid for some years beyond 2030. Unfortunately, integrated planning on gas, electricity and wind is unavailable post-2030 and as a result, recommendations and mitigations can only be discussed in broad visionary terms with no guarantee of being appropriate for the longer term.

(c) Other countries' Programme for Government. Because of our dependence on gas imports from the UK, Irish energy security is heavily influenced by UK energy security and Norwegian supply. Changes in the UK Programme for Government around maintaining gas supply or reducing exploration because of a change in policy (as has happened in Ireland), perhaps through a switch to nuclear, a decision to preserve stocks for indigenous use or Climate Action Plan considerations will have a direct influence on Ireland's energy security situation. This could impact adversely on gas flows to Ireland through the Moffat interconnector system. Similar changes in Norway's Programme for Government, for example curtailment of exploration thereby allowing reserves to deplete and moving more towards hydro or nuclear, would also negatively impact Ireland's situation.

(d) Geopolitical risks. Following the curtailment of Russian gas supplies, there is a global shortage of available alternative gas supplies, and also of specialist tankers, with customers chasing limited supplies of LNG. Many of the major supply sources lie in countries where there is the potential for interruptions, either related to geopolitical issues, war, sabotage or to the capacity to supply contracted and growing demands.

(e) Conflict and War. The Russian invasion of Ukraine has highlighted the fragile nature of Europe's energy security and its vulnerability to disruption by conflict and war. In this context we should recognize that this war may continue for some time and that the longer it continues, the more nations may begin to focus on their national supply, resulting in reduced exports for a prolonged period. In addition, Europe weaning itself off Russian gas may become more dependent on southern supply routes through Turkey and North Africa. Since the 1990s there have been a number of conflicts to the east of Turkey which could reignite, whilst the 2011 NATO intervention in Libya resulted in continued civil war and instability in North Africa that continues to this day. There is no indication that these areas are quietening down and the current instability could continue into the post 2030 period both across the Maghreb and to the east of Turkey resulting in disrupted gas flows to the EU - in essence a repeat of today's Russian gas crisis. In addition, with continued

tensions in the Middle East and rising tensions in the Indo-Pacific region there is a distinct possibility of disruptions to Middle East and Australian LNG supplies in the same period.

(f) EU sentiment to Ireland. There is a potential risk around EU sentiment that could impact adversely on Ireland. We are unlikely to continue to receive sympathetic treatment if we remain in breach of EU infrastructure Regulation 994/2010 requiring that the necessary measures are taken so that in the event of a disruption to the single largest gas infrastructure, the capacity of the remaining gas infrastructure is able to satisfy total gas demand on a day of exceptionally high gas demand, i.e., a one-in-20 gas day. This is compounded by our exemption from aspects of the recent gas demand regulation and from the gas storage requirement because Ireland is not directly connected to another EU Member State. In addition, we have failed to implement any storage or LNG options, and have effectively banned new exploration for indigenous gas as well as banning nuclear power generation, all of which offer mitigation to energy security risks. The latter two options are brought into sharper focus by the recent inclusion of nuclear energy and natural gas in the EU sustainable finance taxonomy. At a time of crisis, Ireland should not be seen as a country that is seeking continuous assistance from others without putting our own house in order by proactively doing our fair share, in common with other EU countries, to maximise our own energy security.

Q.2*. If there are other risks that you have identified, could you outline some mitigation options to address the risk(s)?*

In addition to the mitigation options identified in the Review to address these additional risks, an obvious additional mitigation option is to minimise gas imports through the development of indigenous natural gas supplies in order to supplement the Corrib gas field. This should be supplemented by an increased focus on developing the potential of the existing Corrib gas infrastructure, and also of the now abandoned Kinsale Head reservoir. Further details are provided in the answer to Q.4 below.

With a view to strengthening the planning base, there is an urgent need to develop an integrated Energy Plan 2023 – 2050. This should cover the base case for all sectors (wind, electricity, gas, other renewables) and a high/low scenario. This plan should align grid capacity projections and wind projections for the period 2023 to 2050 with a view to identifying the makeup required from other sources including gas. Recognizing the importance of the PfG offshore wind aspirations of 7GW to 2030 and 30 GW post 2030, review the offshore wind projections against the offshore spatial planning timelines to inform the competent authorities of rolling capacity requirements.

Q.3. *Are the five shock scenarios that were considered, and the additional scenarios related to the Russian invasion of Ukraine, sufficiently broad?*

IOOA considers that the shock scenarios are appropriately broad for this Review and we have no further detailed views to offer on this question.

Mitigation Options

Q.4. *Do you have any additional mitigation options that you think should be considered?*

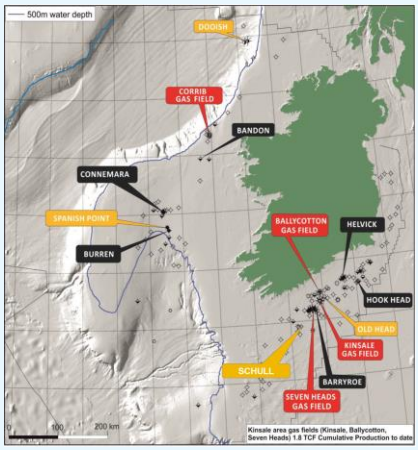
Indigenous Gas: IOOA considers the exclusion of future indigenous gas (additional gas reserves from existing exploration licences) from the short-list of mitigation options to be unjustified. Future indigenous gas was rejected for short-listing on the grounds that "*Additional domestic production of natural gas above forecasted demand could lock Ireland into a high-gas energy market*" and "*The volume of any potential additional natural gas discoveries cannot be known*". We question the two reasons for its exclusion following what appears, from the published review documentation, to have been a superficial and incomplete screening process.

The first point ("…lock Ireland into a high-gas energy market") fails to acknowledge or appreciate the security value of replacing rising imported gas with indigenous natural gas, despite the widespread acknowledgment that gas will be essential for the coming decades to support the energy transition and as the main backup for the intermittent renewable energy from wind and solar.

The second point ("The volume of additional natural gas discoveries cannot be known") merits further discussion here. The CEPA Technical Report acknowledges that delivery of gas from existing exploration licenses is possible, but that this was not included in the modelling as "*it remains uncertain and is unlikely to be of a significant magnitude relative to Irish gas demand requirements*". In contrast, and seeming contradiction, to this assumption of additional potential gas resources not being significant, the Technical Report elsewhere states that the ban on the granting of new licences is "*potentially leading to substantially lower future indigenous production of natural gas".* It is also worth noting a previous Ministerial Oireachtas statement (2011)[11] referring to a 2006 analysis that "*Recent assessments of yet-to-find potential based on a Petroleum Systems Analysis of the Rockall and Porcupine Basins indicate a total reserve potential in the order of 10 billion barrels of oil equivalent (oil and/or gas) for the offshore frontier basins west of Ireland. This divides roughly into 6.5 billion barrels of oil and 20 trillion cubic feet of gas*". While this clearly refers to an unrisked resource potential rather than established reserves, it points to the significant gas potential in the Irish offshore. This estimate was also referenced in a briefing note prepared by the Secretariat for the Climate Advisory Council in late 2019[12]. We are unaware of any more recent robust and reliable assessment that downgrades this potential.

[11] https://www.oireachtas.ie/en/debates/question/2011-04-05/214/

[12] https://www.climatecouncil.ie/media/climatechangeadvisorycouncil/Briefing%20note%20on%20Irish%20Offshore%20Exploration%20for%20Hydrocarbons.pdf



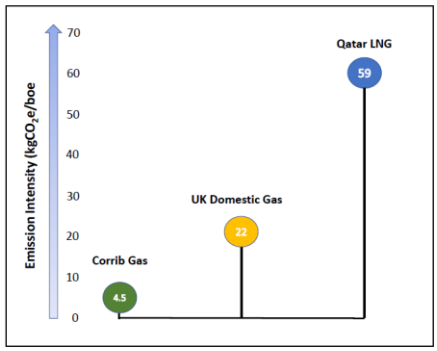
- The Irish offshore basins are underexplored.
- Four commercial fields have been found, with only the Corrib field still in production.
- There have been 10 other significant gas, condensate or oil discoveries.
- Recent and improved seismic data quality, combined with a better understanding of the geological evolution of the basins, has increased the likelihood of exploration success.
- All the geological ingredients for gas and oil generation and trapping appear to be present in the Irish offshore basins.
- There is significant remaining potential for the discovery and production of both gas and oil in the vicinity of the existing licences.

Figure 1. *Map showing the location of the four gas fields (red), and the 10 significant gas/ condensate (yellow) and oil (black) discoveries*[13] in the Irish offshore.

To date, four gas fields (Kinsale Head, Seven Heads, Ballycotton and Corrib) have been discovered and produced from the Irish offshore, with Corrib, off the west coast of Ireland, being the only one still producing gas. In addition, there have been a number of significant gas/condensate and oil discoveries made (Figure 1), although none have yet been deemed to be commercial. There is clear evidence of the presence of all the geological ingredients for gas accumulations in the Irish offshore basins. The potential in the currently licenced areas, especially those in the vicinity of the Corrib gas field and also in the Celtic Sea in the environs of the Barryroe oil and gas accumulation, provides a clear indication that Ireland has the potential to become self-sufficient in natural gas, thereby eliminating many of the risks of being an island, devoid of any gas storage facilities and increasingly reliant on gas imports via a single interconnector system to the UK.

We are also puzzled as to why no consideration appears to have been given to the very low emission intensity of indigenous gas compared to imported gas and especially LNG in this Review. For example, the Corrib subsea production system, combined with the short distance to the national grid, means that the Corrib gas currently has an extremely low emission intensity that is currently approximately **one fifth** of the emission intensity for produced natural gas in the UK North Sea and **one thirteenth** of that from LNG imported from Qatar (Figure 2) to Europe. It is highly probable that any further gas discoveries in Irish waters would have similarly low emission intensities. This makes a compelling argument for the support of indigenous natural gas as a significant mitigation option. Future indigenous gas would therefore replace imported gas, resulting in a triple benefit of increasing energy independence, decreasing gas imports and decreasing emissions.

[13] Morgan, C. 2018. Exploration Update Offshore Ireland. Atlantic Ireland 2018. Dublin. https://www.pip.ie/page/410



- The emission intensity of gas from the Corrib field is significantly lower than all imported gas, especially LNG.
- Emission intensity increases with distance from the gas source due largely to the energy requirement necessary to pump the gas through pipelines.
- In the case of LNG, the emission intensity is very high. In addition to the efficiency of the production infrastructure in the country of origin, the transport energy, leakage, energy required to liquify and to regasify, all add to the emission intensity of the gas.

Figure 2. *Emission intensity comparison of Corrib gas (2020) with UK domestically produced gas and imported Qatar LNG. The UK and Qatar data are taken from OGA (2020)*[14]

The Government has stated that 'One of the greatest *global challenges* for this and future generations is how we address climate change'[15]. IOOA members agree with this statement. The accepted international response to the climate crisis is global decarbonization via a 'Just Transition'. In this transition, it is accepted that poorer societies will most likely decarbonize slower than more affluent ones such as our own. In order to spread the burden and to support the concept of a 'Just Transition' it is incumbent on us to minimize our impact on the global carbon footprint. However, Ireland's proposed response of seeking to mitigate our security of supply through additional imports of UK/Norwegian gas and US/Middle East/Australian LNG, without attempting to minimize these imports through exploration and development of local natural gas resources at no cost to the State, is at loggerheads with the sentiment of Climate Action and the concept of a 'Just Transition', and unnecessarily increases the global greenhouse gas burden.

Existing Infrastructure: The existing infrastructure associated with the Irish gas fields (Corrib and its extensive facilities, and Kinsale Head with its subsurface storage potential and proximity to the gas network and to significant port and industrial energy users) can play a vital role in the helping to ensure a secure energy system for Ireland. This is best illustrated by the existing Corrib infrastructure, a critical component in Ireland's energy security. It is the hub for the production and distribution of gas from the offshore Corrib field to the national grid. It is also the likely landing point for any future gas to be discovered and produced from the existing licences in the Corrib gas field region. It has the potential to be a critical hub for LNG import and distribution. Into the future, the infrastructure could be used for hydrogen distribution and has the potential to be developed for Carbon Capture and Storage (CCS) or storage of natural gas.

[14] Oil & Gas Authority, 2020. UKCS Natural Gas Footprint Analysis. OGA Publication, May 2020. https://www.ogauthority.co.uk/news-publications/publications/2020/ukcs-natural-gas-carbon-footprint-analysis/

[15] https://www.gov.ie/en/policy-information/eb6988-climate-action/

Q.5. *Which gas supply mitigation options, if any, should be considered for implementation?*

IOOA considers that the exploration and development of indigenous gas resources (additional gas reserves from existing exploration licences) should be an immediate priority for implementation. The EirGrid-GNI Long Term Resilience Study 2018[16] notes that the discovery of a new indigenous gas source would reduce Ireland's import dependency and diversify its gas supplies, thereby strengthening Ireland's gas supply. The Irish Academy of Engineering has also advocated[2] the benefits of indigenous offshore gas, urging in particular the removal of any disincentives to development of gas resources, especially in the vicinity of the Corrib field. Indigenous gas would minimise exposure to external shocks, support the growth of renewable energy and decrease emissions by replacing higher emissions gas imports. In addition, this option can be implemented at no financial risk or cost to the State. We also see merit in the offshore gas storage and offshore LNG Floating Storage and Regasification Unit (FSRU) options for implementation, subject to the satisfactory result from a full Cost Benefit Analysis. Aspects of the gas mitigation package options, e.g., renewable gas and green hydrogen, are at an embryonic stage of development, or with limited impact on improving energy diversity or security at scale during the present decade.

Q.6. *Which electricity supply mitigation options, if any, should be considered for implementation?*

IOOA has no views to present on this question.

Q.7. *What measures should be considered on the demand side to support security of supply of electricity and gas?*

IOOA has no views to present on this question.

Q.8. *Do you have any views on how the mitigation options should be implemented?*

Mitigation 1: Indigenous gas resources. Exploration and development of indigenous gas resources (additional gas reserves from existing exploration licences) should be an immediate priority for implementation. Given the security of supply and climate benefits of indigenous natural gas, remove the ban on awarding new gas exploration licences, and encourage a renewed focus on gas exploration in areas within tieback distance the Corrib infrastructure and Kinsale pipeline.

Mitigation 2: Offshore gas storage. Develop terms for a national gas storage facility at Corrib or Kinsale. In the case of Corrib consider a tariffing structure with the current owners. In the case of Kinsale consider publishing commercial conditions to attract new owners.

[16] EirGrid-GNI. Long Term Resilience Study 2018. https://www.gasnetworks.ie/docs/corporate/gas-regulation/Long-Term-Resilience-Study-2018.pdf

Mitigation 3: Offshore LNG Floating Storage and Regasification Unit (FSRU). Open a discussion with interested parties for provision of a facility to fulfil this need, including a detailed comprehensive consideration of the costs, benefits and feasibility of whether it should be a strategic or a commercial venture.

Policy Measures

Q.9. ***Do you support the policy measures proposed in section 8 of the consultation paper?***

IOOA is in general agreement with the policy measures proposed, especially the regular, periodic reviews of energy security but considers it essential to involve the key industry sectors in the planning and in the reviews.

Q.10. ***What further tools and measures do you think would contribute the most to Ireland's energy security of supply?***

In view of the importance of the Review, and especially of the selection and implementation of the most appropriate mitigation options, further analysis and consideration is required. The omissions and limitations outlined in the earlier sections of this submission need to be addressed. There is a need for a full Cost Benefit Analysis of all potential mitigation options, together with full and careful screening of all options. The pathway(s) chosen will have profound implications for Ireland's energy future – getting it wrong or rushing into ill-prepared options will be potentially disastrous.

Despite being long overdue in its completion, the findings of the Review, together with the responses and suggestions from the public consultation, would benefit from detailed consideration, and analysis, carried out in a timely manner, beyond the commissioning Department. This should be in a wider forum at interdepartmental and government level, with relevant industry representation, in order to fully evaluate and implement the optimum mitigation measures to be taken. It would also benefit from detailed consideration at Oireachtas committee level. This would be a prudent investment in order to help select and implement the most appropriate, feasible and impactful gas and electricity mitigation options that will safeguard Ireland's energy security into the future.

IOOA will be pleased to provide any further information required. We are ready, willing and able to play our part in safeguarding Ireland's energy security into the future and thereby to protect our citizens, our economy and our wellbeing.

Conclusions and Key Messages

4. Conclusions and Key Messages

1. Ireland is one of the most energy import dependent countries in the EU. With a growing population and energy demand, we have no gas storage or LNG facilities, have increasing gas imports through a single interconnector system from the UK (who are no longer participants in the EU single energy market), carry a ban on nuclear energy production and a prohibition on the granting of new authorisations for gas exploration or extraction beyond those already in place. In light of these challenges, IOOA considers the Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems to be a timely and important step in moving to safeguard and future-proof our country's energy systems, subject to it considering all available options that we have at our disposal.

2. IOOA considers that further clarity is required around some of the assumptions made in the technical assessment, specifically on the gas demand assumptions used by CEPA, and also on the rationale and assessment process leading to the inclusion of some mitigation options and especially on the exclusion of others.

3. IOOA has identified a number of shortcomings, omissions and exclusions in the Review documentation. We recommend that a full Cost Benefit Analysis be carried out on all the long-listed mitigation options prior to short-listing and implementation. We also recommend the inclusion of a more detailed assessment of the potential for interruption of energy supplies through a range of risks including cyber-attacks, infrastructure failure through accident, war or sabotage, or failure by international suppliers to meet contracts amid the growing demand and the scramble to replace Russian gas supplies.

4. In addressing a number of the questions posed in the Consultation document, IOOA proposes that future indigenous gas (additional gas reserves from existing exploration licences) should be included among the short-list of mitigation options. In light of the considerable potential for further gas discoveries in the Irish offshore, the fact that all exploration and development is carried out at no cost to the Irish State, that indigenous gas has low emission intensity, and the potential to replace higher emission imported gas sources, makes it an obvious and very significant mitigation option. It is incumbent on Ireland, as a developed nation, to minimise our impact on the global carbon footprint in order to combat the climate crisis, while accepting that poorer countries will decarbonize more slowly. Mitigating our security of supply through additional UK/Norwegian gas and US/Middle East/Australian LNG, without striving to minimise these gas imports though the development of indigenous natural gas, is at odds with the sentiment of Climate Action and the concept of a global 'Just Transition'.

5. IOOA considers that the existing infrastructure associated with the Irish gas fields can play a vital role in helping to ensure a secure energy system for Ireland. This is best illustrated by the Corrib infrastructure. It is the hub for the production and distribution to the national grid of gas from the offshore Corrib field; the likely landing point for any future gas to be discovered and produced from the existing licences in the Corrib gas field region; and has the potential to be a critical hub for LNG import and distribution. Into the

future, the infrastructure could be used for hydrogen distribution and has the potential to be developed for Carbon Capture and Storage (CCS) or storage of natural gas.

6. In view of the critical nature of Ireland's energy security, IOOA recommends that the results of the Review, together with the submissions from the public consultation, need to be analysed in a timely manner in a wider forum at interdepartmental and government level, with relevant industry representation, in order to identify and implement the optimum mitigation measures to be taken.