



# Consultation on the review of the security of energy supply for Ireland's gas and electricity systems

Submission from the Sustainable Energy Authority of Ireland

## Introduction

The Department of the Environment, Climate and Communications is carrying out a review of the energy security of Ireland's gas and electricity systems, which is focused on the period to 2030, and is considered in the context of a sustainable transition to net zero emissions by 2050. As part of this review, the department launched a consultation to seek views from interested parties.

In response to this, SEAI have considered the proposed questions and areas of interest to DECC in this consultation when compiling our response. This security of energy supply review considers potential risks to both our natural gas and electricity supplies and examines a range of measures to mitigate these risks, including policy tools, the need for additional capacity to import energy, to reduce energy use, energy storage, fuel diversification and renewable gases (such as biomethane and hydrogen).

DECC has advised this review does not seek to address the expected tight margins in electricity supply over the coming winters; these are being addressed through other measures.

### **Sustainable Energy Authority of Ireland**

SEAI is Ireland's national energy authority investing in, and delivering, appropriate, effective and sustainable solutions to help Ireland's transition to a clean energy future. We work with the public, businesses, communities and the Government to achieve this, through expertise, funding, educational programmes, policy advice, research and the development of new technologies.

SEAI is funded by the Government of Ireland through the Department of Communications, Climate Action and Environment.

© Sustainable Energy Authority of Ireland

Reproduction of the contents is permissible provided the source is acknowledged.

## Opening Comments

SEAI welcome the opportunity to respond to the consultation on the review of the security of energy supply for Ireland's gas and electricity systems. As Ireland's sustainable energy authority, we note that the review is focused on 2030 targets, considering security of access, and that this must all be considered in the context of sustainably reaching net zero by 2050.

SEAI firmly agree with the perspective illustrated in the consultation documents that *"the most secure energy is the energy that we do not use and therefore, energy efficiency should always form part of our response to energy security."* SEAI would add, as reflected in the document, that a shift to locally produced renewables, substituting for energy imports, is the best way to supply remaining demand, after energy efficiency (EE) and energy sufficiency options are considered and implemented.

SEAI observe that references are made to the need for residential retrofit early in the document, and the need for energy efficiency across all sectors. SEAI has a broad range of case studies that highlight the impact on the resilience of businesses and homes that have pursued sustainable energy goals.<sup>1</sup>

On gas dependency, we wish to comment on the following line from page 3; *"Ireland's dependency on gas imports is increasing as our supply of indigenous gas from the Corrib Gas Field declines."* SEAI would note this effect is exacerbated as the gas grid is expanded and more customers, including industrial and commercial (I/C) customers, are added in line with national strategy<sup>2</sup>.

We note that despite the fact that Ireland has not been in a position to meet the infrastructure standard detailed in EU Regulation 994/2010, that *"detailed arrangements are in place between Ireland and the UK in the event of a gas supply emergency"*.

## LNG and Fracking

We note that *"it is foreseen that the outcome of the review of the security of energy supply of Ireland's electricity and natural gas systems would supersede the policy statement on the importation of fracked gas."* SEAI is of the view that importation of fracked gas in the form of liquified natural gas (LNG) is undesirable on the grounds of sustainability<sup>3</sup>, global carbon targets, and Ireland's role as a leader on climate action - having declared a climate emergency.<sup>4</sup>

## Carbon Budgets

SEAI notes Government has updated its analysis on sectoral emission ceilings as published here: <https://www.gov.ie/en/press-release/dab6d-government-announces-sectoral-emissions-ceilings-setting-ireland-on-a-pathway-to-turn-the-tide-on-climate-change/>. Any action taken in order to improve security of energy supply must be proven to fit within Government's plans for living within the legally binding carbon budgets and sectoral ceilings. Associated analysis should be undertaken to ensure that options are assessed in the context of the existing Government targets and package of policies and measures.

---

<sup>1</sup> E.g. <https://www.seai.ie/case-studies/?page=1&topic=all>, <https://www.seai.ie/case-studies/dairy-plant-cuts-costs/> and [Climate Change Measures | Astellas Pharma Inc.](#)

<sup>2</sup> <https://www.gasnetworks.ie/corporate/news/active-news-articles/aurora-network-to-provide-capacity/Next-Generation-Power-and-Fibre-Solutions-for-Data-Centres.pdf>

<sup>3</sup> <https://www.nature.com/articles/s41893-019-0420-1>

<sup>4</sup> [Ireland is second country to declare climate emergency \(rte.ie\)](#)

Regarding electricity security, SEAI highlights the likelihood of exceeding the first sectoral carbon ceiling if Moneypoint coal fired power station remains in the merit order (refer to Annex 1 for analysis). It is our understanding that it is intended that Moneypoint will switch to oil in October 2024.

### Data Centres

SEAI supports the Government's statement on the Role of Data centres in Ireland's Enterprise Strategy insofar as it refers to the undesirability of islanded data centres powered mainly by fossil fuels. We highlight a risk for carbon budgets and sectoral ceilings (commercial sector) in this regard. This is detailed in Annex 2.

## Responses to Consultation Questions:

### Risks

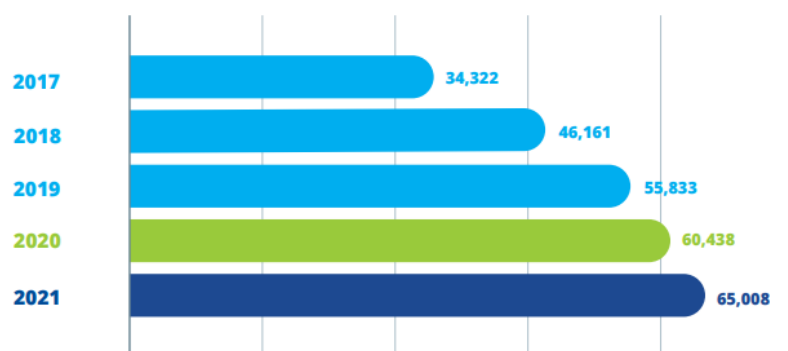
1. Are there any other security of supply risks that you can identify in addition to those set out in section 6?

In addition to the risks set out in the document, we have identified the following:

- Significant increased gas demand from **Large Energy Users** (LEUs):
  - This could result from the addition of new data centres to the gas grid, and new gas customers being pursued.
  - Data on recent new connections is available in Ervia's annual reports and latest projections<sup>5</sup>. GNI current strategy includes a projection of future new gas demand<sup>6</sup>.
  - SEAI considers that this baseline addition of new gas demand locks consumers into fossil fuels and alternative solutions should be promoted with any customers considering fuel switching to gas.

### Growth

New Connections Cumulative 2014–2021



- We measure the increase in network utilisation as a result of new connections.
- While we continue to see growth in new connections. The volume is primarily driven by industrial customers and businesses.

Figure 1: GNI's New Connections Cumulative 2014–2021, [http://www.ervia.ie/who-we-are/financial-information/Ervia\\_2021\\_AR.pdf](http://www.ervia.ie/who-we-are/financial-information/Ervia_2021_AR.pdf)

- Increasing the contribution of renewable energy mitigates some categories of risks to energy security; however, SEAI notes the following:

<sup>5</sup> <http://www.ervia.ie/ervia-annual-report/>

<sup>6</sup> <https://www.gasnetworks.ie/docs/corporate/gas-regulation/GNI-2021-Network-Development-Plan.pdf>

- By increasing indigenous supply and distributed energy production, the exploitation of renewable energy relies upon the **development of new infrastructure**.
  - This infrastructure incorporates many technologies whose output is sensitive to prevailing **weather conditions** and may furthermore be affected by future **climate change**.
  - In respect of this new renewable energy infrastructure, new security of supply risks must be considered, anticipated, and mitigated.
  - It will be particularly important to understand the likelihood of the occurrence of correlated meteorological events affecting multiple renewable energy resources simultaneously, for example, low wind speeds affecting wind energy, occurring simultaneously with mist or fog affecting solar energy and with low temperatures affecting heat pump efficiency.
  - Further research is required to understand and predict weather patterns which may affect renewable energy production and the future impact of climate change upon these more precisely. This research may require a long-term interdisciplinary collaboration between meteorologists, renewable energy technologists and energy systems specialists.
  - One such collaboration has been initiated within IEA Wind Task 51 "Forecasting for the Weather-Driven Energy System", and Irish researchers are participating in this.
- SEAI also notes that a failure to achieve **RES and demand reduction targets** would also represent a significant security of supply risk.

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

- To address significant increased gas demand from **LEUs**:
  - As above, SEAI considers that any baseline addition of new gas demand locks consumers into fossil fuels and alternative solutions should be promoted with any customers considering fuel switching to gas.
  - A once-off switch to direct renewable use or heat pumps, as an alternative, is desirable in the context of carbon budgets and sectoral ceilings.
  - Curtailing all non-essential future increases in gas use (and resulting new connections) will reduce future supply risk.
  - We understand this scenario is modelled in the Natural Gas Demand Management Scenario.
  - SEAI consider curtailing all non-essential future new gas connections to be an measure that is implementable immediately, with available technologies available.
- We welcome the call for **joint electricity and gas grid** planning. This should include detailed assessments of different infrastructure pathways on a by sector and by fuel basis. These should also include the need for new infrastructure to decarbonise rapidly in line with carbon budgets and sectoral ceilings, such as the rolling out of heat pumps and district heating.
  - SEAI's National Heat Study<sup>7</sup> provides a detailed analytical basis for decarbonisation of heat in the context of net-zero 2050 ambitions.

---

<sup>7</sup> <https://www.seai.ie/data-and-insights/national-heat-study/>

- SEAI welcomes the call for regular energy security reviews and can provide up to date data and other inputs as per SEAI's 2020 publication *Energy Security in Ireland*<sup>8</sup> to any such process.
- We would encourage that a holistic view of security is taken in this approach, and that reviews are undertaken in the context of the underlying need for compatibility with climate and energy targets as their basis.
- To address potential shortfall on **RES and demand reduction** targets:
  - Significant Government funding increases are required for critical infrastructure, including district heating networks.
  - We would call for a review of planning and consenting legislation in order to fast track deployment of infrastructure of national climate significance.<sup>9</sup>

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

Technical Analysis Part 2 states, “One of the assumptions that underpins the assessment that was carried out on 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.” The five shock scenarios considered would impact Ireland differently in a security of supply context depending on future achievement of demand reduction and RES shares per sector and per fuel. This aspect should be highlighted further via the scenarios and write up. In other words, the benefits of achievement on RES diversity and demand reduction actions should be highlighted via scenario and sensitivity analysis. **If we underachieve on these necessary actions, Ireland will remain at higher security of supply risk.**

## Mitigation Options

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

- **Fast tracking process developed for delivery of critical infrastructure deemed to be of national climate action significance:**
  - It is clear that the early deployment of offshore wind, further development onshore (including repowering), district heating networks and other technologies are critical to the success of the Climate Action Plan – and for improving security of energy supply.
  - Any delay to deployment of these technologies leads to significant ongoing exposure to fluctuation in global energy markets and other factors.
  - There is a need to prioritise projects that align with decarbonisation goals where resources to commit to project are limited.
  - Existing planning and consenting processes should be reviewed to cut red-tape and streamline in the context of the national declared climate emergency.
  - This should result in fast-tracked approval of any infrastructure deemed of national climate emergency significance, and should include at a minimum, offshore wind, onshore wind (including repowering), district heating, and electricity interconnection and storage technologies.
- **Electricity demand reduction programmes:**
  - Increased focus on electricity energy efficiency actions, including in homes, businesses, industry and the public sector.

---

<sup>8</sup> <https://www.seai.ie/publications/Energy-Security-in-Ireland-2020-.pdf>

<sup>9</sup> E.g. offshore and onshore wind, solar, and district heating

- Energy efficiency actions can also reduce the impacts of demand shocks from cold weather or long-term volatility and increasing seasonal variations due to climate change (such as measures to compensate for reduced coefficient of performance of heat pumps in extreme cold).
- **Agreements with LEUs**
  - Ensuring LEUs must adhere to stricter energy efficiency standards and partner with or sponsor the development of infrastructure schemes to offset a portion of increased demand.
  - This could be considered in the context of waste heat, district heating, smart charging algorithms in EV infrastructure, requiring minimum performance standards for data centre hardware, among other potential schemes.
- **Review the security of supply implications of the major technology deployment programmes required to deliver our energy efficiency and renewable energy targets.**

This would be with a view to develop measures to mitigate particular exposures, such as:

  - Hybrid heat pump/gas boiler installations, where the existing gas or oil boiler is left in place when retrofitting a heat pump, with appropriate control systems, have been demonstrated, in UK modelling and trials, to simultaneously reduce peak demand on the electricity system, reduce operating costs for consumers and reduce total CO<sub>2</sub> emissions and gas demand.
  - Low specific power wind turbines may provide more power output during protracted low wind events. A wind turbine's specific power is the ratio of its nameplate generation capacity rating in watts to its rotor swept area in meters squared. There has been a trend of decreasing specific power in wind turbines primarily to serve low wind speed markets. These turbines are more normally chosen for low wind speed sites, but would have the impact of reducing the duration of zero output if employed on sites with higher wind speeds.
  - Incorporating thermal storage within large-scale industrial or district heating heat pump systems should reduce stress on the electricity system, increase overall system efficiency, reduce carbon emissions, and reduce operating costs for the owners.

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

##### **Natural Gas Demand Management Measures**

- Significant focus on demand reduction for large industrial users of natural gas should be considered as a gas supply mitigation option.
  - This would include a review of pricing structures for large gas users.
- SEAI would recommend a moratorium on new gas connections in all sectors outside of power generation.
  - Given the useful life of power generation assets is generally greater than 25 years, zero-carbon readiness or retrofit/overhaul clauses could be included in capacity remuneration mechanism terms and conditions, so as to avoid carbon lock-in or make upcoming investments carbon-budget compliant.
  - The connection of data centres to the gas network to feed onsite electricity generation rather than connect to the electricity grid is of significant concern, as highlighted in the consultation document.
- SEAI would strongly recommend an accelerated shift to district heating in towns and cities on the gas network, on the basis of outputs from the National Heat Study.
- SEAI would also advise that increased communications (at national and local level) should be considered in order to harness potential to save and or replace gas use in homes and businesses.

### Shortlisted options

SEAI supports the decision not to shortlist options that are not aligned with the goals of the sustainable energy transition (such as commercial LNG). We believe it would be useful to further investigate increased onshore storage, such as is done for oil currently.

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

SEAI supports the actions listed except for the following comments:

- **SEAI does not support the use of biomass for electricity production, with the exception of limited applications for co-generation.**
  - It is an inefficient use of biomass resources, as it uses resources that should be reserved or used to decarbonise heat.
  - This measure would push prices of remaining biomass higher, making heat decarbonisation with biomass more expensive.<sup>10</sup>
- **Conversion of a gas fired power plant to hydrogen**
  - Whilst conversion of existing gas plants to hydrogen is a technically possible future measure, given the timelines proposed, it may be more cost-effective to build new hydrogen powered plant, rather than focus on conversion.
  - This aspect requires financial assessment based on currently available technologies.

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

On the demand side, SEAI would recommend the following measures:

- No new gas connections (in all sectors).
- Expanded energy efficiency supports for businesses, and homes.

Furthermore, in SEAI's submission to Working Group 9 of the 2021 Climate Action Plan, SEAI identified a set of discrete measures and individual projects that may contribute to both decarbonising energy use and reducing gas dependency. Examples of such measures and projects is provided below:

- Incentivise the electrification of industrial heat through the use of industrial heat pumps, leveraging heat recovery and heat storage where feasible.
- Implement upstream energy efficiency measures in gas transmission.
- Implement upstream energy efficiency measures in gas supply.
- SEAI would advocate for a rigorous analysis of all significant national short-term opportunities for simultaneous decarbonisation and efficiency improvements that reduce our gas dependence.

Supporting the transition of some industrial and commercial activity to off peak times to flatten the demand curve could also yield benefits (e.g. where a manufacturing plant with high electricity demand only operates a day shift, they could potentially be supported to move to a night shift).

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

---

<sup>10</sup> See for example: <https://www.seai.ie/publications/Bioenergy-Supply-in-Ireland-2015-2035.pdf>



SEAI would recommend a massively expanded, fast paced implementation of known solutions, including;

- Energy efficiency upgrades
- RES-E deployment (wind, solar)
- Electricity system services (storage, interconnection etc.)
- Heat pumps
- District heating deployment.

This now needs to occur in the context of urgent action to address the climate emergency. This is required in order to meet our legally binding climate targets and to live within carbon budgets and sectoral ceilings, as detailed in the Climate Action Plan and anticipated for future Climate Action Plans.

## **Policy Measures**

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

In order to support proposed actions associated with those outlined in 8.2, namely Regular Energy Security Reviews, SEAI requires a clear legal mandate and sufficient human resources to collect and process the associated data. This is due to the role SEAI plays in collecting energy statistics as Ireland's Authority on sustainable energy and energy efficiency. SEAI proposes that such a review be based on the need to ensure the sustainability aspects of the energy system, compatible with carbon budgets, as a clear priority. Any security of supply solution must meet these criteria in order to proceed, or if they add to emissions, equivalent savings be found elsewhere via other measures.

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

SEAI has long promoted a revolution of Ireland's energy system to one based on efficient use of locally generated renewables. Related actions are the best way to reduce energy imports and increase Ireland's security of supply. In other words, the security supply agenda is served by widespread decarbonisation of the energy system.

This will require an evolution to a more complex system that is built on greater linkages and dependencies between the energy vectors and associated emerging security of supply risks. It will be important to understand the interactions between elements of the new and increasingly coupled system, and additional research and modelling efforts on system coupling will be required to bring about a full understanding of the implications for security of supply.

SEAI would also consider that developed roadmaps for indigenously produced sustainable biomethane and green hydrogen would contribute to the conversation on Ireland's security of supply.

Lastly, SEAI would consider that data centre and other large energy users demand management is a critical consideration, as detailed above and in annex 2.

## Annex 1

- The analysis<sup>11</sup> that supported the Electricity sector carbon ceilings assumed that Moneypoint power station produces no electricity after 2022.
- If Moneypoint runs at the same capacity factor in 2023-2025 as it has in 2021-2022, the electricity carbon budget may overshoot the target by 22% (8.6 Mt over the 40 Mt ceiling), see Figure 1.
- Policy/regulatory intervention is required to limit carbon-intensive generation run hours, while still maintaining its availability during stress events for electricity supply adequacy.

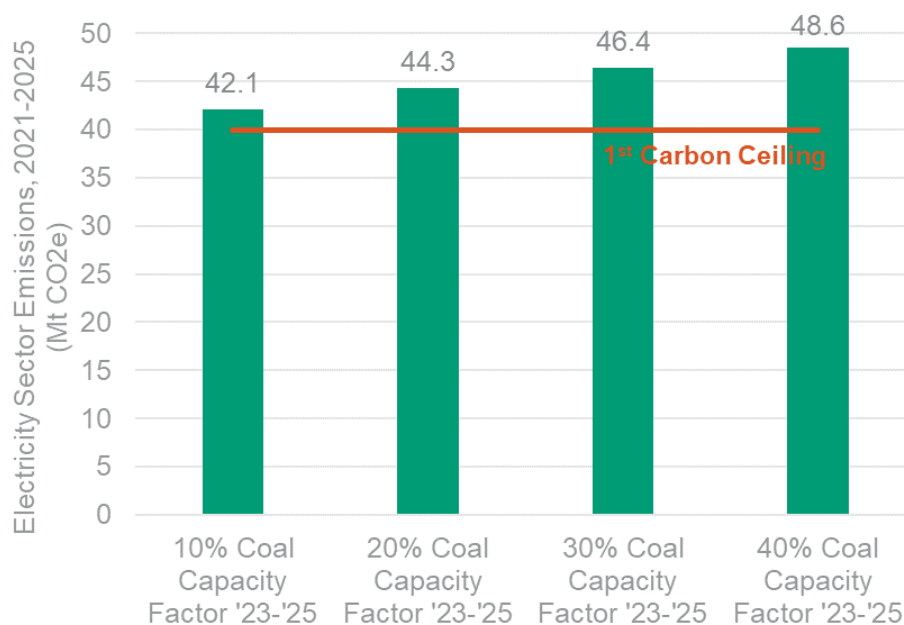


Figure 1: The potential impact of Moneypoint run hours on the 1st Electricity sector carbon budget

## Annex 2

### Gas Demand in the Industrial and Commercial Sector Issue

- Nationally the Ervia Group's [strategy](#)<sup>2</sup> includes connecting data centres to the gas grid to feed onsite electricity generation rather than connect to the electricity grid. Gas Network Ireland's *National Development Plan (NDP) 2021* best estimate gas demand projection for the industrial and commercial (I/C) sectors sees over 3,600 GWh of gas demand growth by 2030.
- This scale of future I/C gas demand growth (~400 GWh p.a.) is similar in scale to sum of efficiency programmes delivered nationally through SEAI in 2021 (428 GWh savings) at a capital cost of €180m (figure 2). It also compounds locked in gas demand.
- Policy/regulatory intervention is required to address new connections to the gas grid, as outlined in SEAI's response in this document. High gas prices may not be a deterrent to further gas connections as these prices also yield a high electricity price due to the wholesale electricity price being formed by generator marginal costs (mainly fuel costs, i.e., gas prices).

<sup>11</sup> <https://assets.gov.ie/236057/3ddf7b83-8ee8-4d62-b35e-d3dea38fa433.pdf> (p. 50)

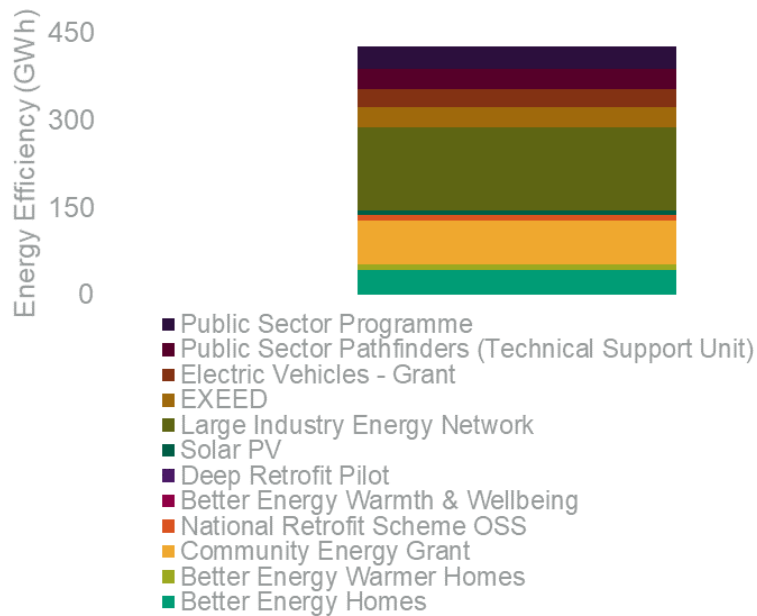


Figure 2: Estimated energy savings from SEAI energy efficiency programmes, 2021



Riailas na hÉireann  
Government of Ireland

**Sustainable Energy Authority of Ireland**

Three Park Place  
Hatch Street  
Upper Dublin 2  
Ireland  
D02 FX65

w: [www.seai.ie](http://www.seai.ie)

e: [info@seai.ie](mailto:info@seai.ie)

t: 01 8082100

