

# Policy statement

## Liquefied Natural Gas (LNG)

### What is Good Energies Alliance Ireland?

Good Energies Alliance Ireland (GEAI) is an environmental NGO, founded in 2011, situated in County Leitrim in the Northwest of Ireland, who aims to ensure the wellbeing of people and communities on the island of Ireland and elsewhere through the protection and sustainable development of our environment, natural resources and our communities.

Our main objectives are:

- To carry out the activity of promotion of environmental and climate protection and monitoring of energy production and use on the island of Ireland and its territorial waters and elsewhere and any other related activities.
- To establish, promote and operate programmes and services with a view to fostering the economic, personal, cultural, recreational, and social well-being of the local communities and wider areas.

Liquefied Natural Gas or, simplified, LNG is methane processed for transportation in liquid form, at low pressure and at -162°C. This gas can be extracted using the fracking technique, which has been banned in Ireland since 2017. The energy security debate spurred by the geopolitical context has led many countries to increase LNG imports. This raises a number of environmental and social concerns that GEAI as an environmental NGO believes need to be discussed.

### Background

LNG is produced through a process of gas extraction, liquefaction, and transport. Gas extraction can be performed using a variety of methods, but all involve the drilling of wells and the use of hydraulic fracturing, or "fracking." After the gas is extracted, it is transported to a liquefaction plant, where it is cooled to -162 degrees Celsius, at which point it becomes a liquid. LNG is then transported to terminals, where it is regasified and sent to end users. The final stage of the LNG life cycle is combustion, during which the gas is burned to produce energy.

Although Ireland does not use LNG at present, according to data provided by the Irish Government, 30% of Ireland's energy demand and 50% of the country's electricity use is met by natural gas. In 2019, 53% of demand was covered by imports from the UK, mainly Scotland and the country's dependence on its energy imports is projected to be 90% by 2030, in regard to natural gas.

The actual geopolitical situation aggravates the problem. The European Commission has just unveiled the programme RepowerEU, backed by the EU's energy union strategy<sup>1</sup>, in order to reduce its gas imports by two-thirds and end the trade from Russia by 2027, with the final objective of securing the energy supply and diversification to the political region. All this, together with the end of the contracts by 2025, will force the EU to look for alternatives in countries such as Israel, the United States, Canada or Angola, among others, to increase its natural gas imports<sup>2</sup>.

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<sup>1</sup> European Commission (2022) REPowerEU: Joint European action for more affordable, secure and sustainable energy. [Link](#).

<sup>2</sup> IEA (2019) A long-term view of natural gas security in the European Union [Link](#).

All this led the EU to develop LNG infrastructure projects, some of which are included in the EU's Projects of Common Interest (PCI) list and funded by different organisation such as Connecting Europe Facility, the European Fund for Strategic Investments (EFSI) and the European Investment Bank (EIB).

Ireland, although not dependent on Russian imports, has also joined this project in an attempt to combat the volatility of gas prices and meet energy needs. Even though the Department of the Environment, Climate and Communications produced a Policy Statement on the Importation of Fracked Gas, remarking that the Government does not support the importation of fracked gas, it has not proved possible to provide a legal basis for Ireland to legislate domestically for a ban on the import of such gas<sup>3</sup>. In fact, the Republic of Ireland has proposals for four LNG import terminals in Kerry, Cork, Mayo and Louth<sup>4</sup>.

### **Energy justice: Natural Gas and its impact on communities and the environment**

When it comes to controversial issues such as natural gas or the positive and negative impacts of energy system transitions, many questions and concerns arise. Concerns about the impact of natural gas extraction on communities in production areas were raised in 2007 when calling for a blanket natural gas ban, but the current approach to install LNG terminals for natural gas import suggests that such demands may not be acted upon.

The general issues detailed in the next section remain the same. New questions about energy justice emerge. GEAI as an environmental organisation is dedicated not only to protecting nature, but also the communities involved, so it is inevitable to discuss justice in this new energy system paradigm.

The production of "natural" gas (actually methane) requires the drilling of wells and the use of hydraulic fracturing, or "fracking." The process of hydraulic fracturing involves injecting a fluid (usually water, sand, and chemicals) into a gas well at a high pressure in order to fracture the rock and release the gas. The fluid used in fracking can contain harmful chemicals that can contaminate water resources. In addition, the process of fracking can induce earthquakes. The use of hydraulic fracturing, or "fracking," is a controversial method of natural gas extraction that has been linked to water contamination and other environmental problems.

The environmental impacts of LNG production vary depending on the stage of the life cycle. Gas extraction can have a negative impact on local water resources, as a result of fracking. The liquefaction process also requires a large amount of energy, which can lead to emissions of greenhouse gases from different sources:

- Fuel consumption for driving turbines and engines to operate equipment.
- Combustion of waste gases in flares.
- Gas losses from venting associated with pre-treatments, maintenance processes and losses from equipment and pipes.

Additionally, regasification of LNG with fuel gas using submersible burners increases GHG emissions by an equivalent of combusting about 1.5% of the imported LNG<sup>5</sup>.

LNG transport uses large ships, which emit pollutants such as nitrogen oxide and sulphur oxide. Leakages of methane occur at every stage of production, transportation and use, causing the use of LNG to produce more emissions than even coal<sup>6</sup>.

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<sup>3</sup> Government of Ireland. Policy Statement on the importation of fracked gas. [Link](#).

<sup>4</sup> Not here, not anywhere (2022). LNG in Ireland a bridge to climate chaos. Policy briefing, June 2022. [Link](#).

<sup>5</sup> Mokhatab, S., Mak, J.Y., Valappil, J.V., Wood, D.A. (2014). Handbook of Liquefied Natural Gas || LNG Fundamentals., (), 1-106. doi:10.1016/B978-0-12-404585-9.00001-5

<sup>6</sup> Testimony of Robert W. Howarth, Ph.D. Cornell University, Ithaca, NY 14853 USA before the Joint Committee on Climate Action House of Oireachtas, Ireland 9 October 2019. [Link](#).

Finally, the combustion of LNG releases carbon dioxide, a greenhouse gas that also contributes to climate change.

Various studies have been conducted on fracked communities showing the devastating impact of such infrastructure. Another report highlighted concerns about the impact of this harvest on women with preterm births and high-risk pregnancies<sup>7</sup>. In addition to the other disadvantages of fracking mentioned above, there is fine particle pollution known as PM 2.5, which consists of chemical particles that can cause the diseases mentioned above, as well as an increased risk of cancer, breathing and circulation problems<sup>8</sup>. About 200,000 people in the U.S. annually die from these particles<sup>9</sup>.

More of this impact on communities and the environment can be read in the literature review GEAI carried out in previous campaigns against fracking: [Impacts of Fracking and Literature Review](#) and [Myths and risks of fracking](#).

*What is energy justice and why do we talk about it?*

The concept of energy justice has been defined as a *global energy system that fairly disseminates both the benefits and costs of energy services, and one that has representative and impartial energy decision-making*<sup>10,12</sup>. In other words, it encompasses the costs, barriers and externalities that the energy system has on the society as a whole. It provides a multidimensional approach to analysis as it transcends the dichotomous barrier between 'supplier' and 'consumer'. It explores the interconnectedness of the energy system, by not just tackling environmental degradation, but also those aspects that detract from posterity (hurting future generations), human rights (violating a "right" to a clean environment), and utility (externalities which produce human suffering and misery)<sup>10</sup>. So, when we talk about energy justice, we're not just looking at Ireland, but the overall impact of the energy system on which the country depends.

Most importantly, justice refers to acknowledging the vulnerabilities caused by a model of production that not only impacts one community or country but all of them involved in the production – distribution – consumption chain. Energy justice goes beyond the necessities of the country importing and demands global responsibility and distributional justice, that nations overall, along with companies and civil society, have to protect people from negative externalities, resulting from their economic and political decisions<sup>11, 12, 13</sup>.

### **More concerns**

- [Natural gas and methane](#): The Intergovernmental Panel on Climate Change last year estimated methane emissions would need to be reduced by 35% between 2010 and 2050 to meet the Paris goals<sup>14</sup>. LNG is

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<sup>7</sup> Concerns Health Professionals of NY (2022). Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking and Associated Gas and Oil Infrastructure, Eighth Edition, April 28, 2022. [Link](#).

<sup>8</sup> Environmental Health News (2020). Air pollution from fracking killed an estimated 20 people in Pennsylvania from 2010-2017: Study. [Link](#).

<sup>9</sup> Bowe B, Xie Y, Yan Y, Al-Aly Z. (2019). Burden of Cause-Specific Mortality Associated with PM2.5 Air Pollution in the United States. *JAMA Netw Open*. 2019;2(11): e1915834. doi:10.1001/jamanetworkopen.2019.15834

<sup>10</sup> Sovacool, Benjamin K.; Dworkin, Michael H. (2015). Energy justice: Conceptual insights and practical applications. *Applied Energy*, 142(), 435–444. doi: 10.1016/j.apenergy.2015.01.002

<sup>11</sup> Finley-Brook, Mary; Williams, Travis L.; Caron-Sheppard, Judi Anne; Jaromin, Mary Kathleen (2018). Critical energy justice in US natural gas infrastructuring. *Energy Research & Social Science*, (), S2214629618303712-. doi: 10.1016/j.erss.2018.04.019

<sup>12</sup> B.K. Sovacool, M.H. Dworkin, *Global Energy Justice: Principles, Problems, and Practices*, CUP, Cambridge, 2014.

<sup>13</sup> Ann Florini; Benjamin K. Sovacool (2009). Who governs energy? The challenges facing global energy governance., 37(12), 5239–5248. doi:10.1016/j.enpol.2009.07.039

<sup>14</sup> IPCC (2018). Summary for Policymakers. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. [Link](#).

methane, a gas 86 times more damaging than carbon dioxide over a timescale of 20 years if leaked<sup>15</sup>. The main sources of oil- and gas-related methane emissions are from: incomplete combustion of flared gas and venting of methane from upstream operations; escaping emissions from pipelines, storages and **LNG facilities**<sup>16</sup>.

- Natural gas as a transition fuel: One of the arguments widely used to defend use of natural gas is its use as a transition fuel in response to climate crisis since it emits half of the CO<sub>2</sub> produced by black coal during combustion. This is an argument rejected by the International Energy Agency and other science bodies<sup>17</sup>. As previously stated, natural gas produces more emissions than coal, during its life cycle<sup>18</sup>. To continue to use this argument to justify the development and import of a gas that poses a risk to the environment and health, is not ethical and does not demonstrate accountability on the part of public bodies and authorities.
- Development of fossil fuel infrastructure: In addition to the above, continuous development of infrastructure to allow the expansion of energies such as natural gas will lock countries into its use, preventing the progress towards a cleaner future and harming any incentive to look for alternatives, endorsing the previous argument.
- Prices: Current geopolitical tensions are leading to higher energy prices. In recent months there have been planned and unplanned outages at gas facilities around the world (Pampa Melchorita in Peru, Sonatrach in Algeria...) <sup>19</sup>. The possibility of locking ourselves into reliance on gas could trigger economic and societal impacts at a national and community level. Relying on imported LNG to ensure energy security will not solve efficiency problems, lower prices, and certainly not reduce our reliance on fossil fuels, which will expose us to shortages and market shocks.

### **Alternatives to replace LNG imports and natural gas consumption**

- Renewable energy: Renewable energies are the best alternative to fossil fuels, even though these still account for 80 % of global energy production. The most widely used renewable energy is wind, which happens to be one of the predominant renewable energy sources in Ireland.

At the same time, renewable projects are great community cohesion enablers, since they allow implementation of community ownership models, provide socio-economic benefits in addition to low-cost renewable energy for the local community<sup>20</sup>.

The development of renewables contributes to reliable power supplies and greater energy diversification, which reduces the need to import fuels such as LNG. Apart from that, renewables increases energy independence and protects us from geopolitical disruptors.

- Green hydrogen: is produced by splitting water into hydrogen and oxygen using renewable electricity. It has positioned itself as the best option for storing and transporting the energy produced by electrolysis or renewable power, the most prominent being wind and solar PV. Seeing the importance of onshore and

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<sup>15</sup> Howarth, R.W. (2014). A bridge to nowhere: methane emissions and the greenhouse gas footprint of natural gas. Cornell University. [Link](#).

<sup>16</sup> The Oxford Institute for Energy Studies (2020). Methane Emissions from Natural Gas and LNG Imports an increasingly urgent issue for the future of gas in Europe. [Link](#).

<sup>17</sup> Howarth, Robert W. (2014). A bridge to nowhere: methane emissions and the greenhouse gas footprint of natural gas. Energy Science & Engineering, 2(2), 47–60. doi:10.1002/ese3.35.

<sup>18</sup> Idem 6.

<sup>19</sup> Robinson, T. (2022). LNG Production Outages Continue to Test Tight Global Natural Gas Market. Natural Gas Intel.

<sup>20</sup> IRENA (2020). Innovation landscape brief: Community-ownership models, International Renewable Energy Agency, Abu Dhabi.

offshore wind farms in Ireland, promoting the implementation of green hydrogen can go a long way to generate emission reductions and mitigate the issues of variability and storage associated with high penetration levels of wind and solar PV technology<sup>21</sup>.

There are different types of hydrogen, because apart from green hydrogen there is also grey and blue hydrogen (from coal), depending on the way in which it has been produced. However, green hydrogen is proving to be vital in the transition towards more sustainable models due to its possible inclusion in the existing gas networks of buildings, as fuel for transport or to increase the power system flexibility due to its capacity to be reused in gas turbines, among other benefits.

It is worth to note that the United Nations have launched "The Green Hydrogen Catapult" initiative and the European Commission has adopted a series of legislation for the decarbonisation of the European Union, which includes hydrogen.

- Renewable methanol: methanol can be produced by different chemicals such as formaldehyde or plastics, but the vast majority of it comes from fossil fuels. Now, renewable methanol offers a more sustainable alternative to this. Renewable methanol consists of (a) bio-methanol, which is produced from biomass (from forestry, agricultural waste, sewage...); and (b) green e-methanol obtained by capturing CO<sub>2</sub> from renewable sources<sup>22</sup>.

The positive side of renewable methanol is that it does not require the development of new technologies, the same technologies that are used in the production of methanol from fossil fuel can be used in bio- and e-methanol and also has different uses in maritime and air transport<sup>25</sup>.

The green methanol industry is currently small and there are only few producers worldwide, which makes it uncompetitive. On the positive side, the promotion of renewable methanol could anchor and create a new niche market in Ireland, which would generate employment and economic growth.

## Conclusion

GEAI reaffirms its position against fracking and the importation of Liquefied Natural Gas. The most important measures for decarbonization are in the areas of energy efficiency, renewable energy sources and their power generation, and research and development of new alternatives or possibilities such as green hydrogen, renewable methanol or modern bioenergy. The potential of Ireland for offshore wind energy should be exploited and given priority.

The current geopolitical situation shows the fragility of our energy system. We should work towards self-sufficiency and flexible systems. Re-establishing fossil fuel energy generation would reverse all the work accomplished towards sustainable transition, something that is essential and mandatory, not a whim. Time does not stand still; we must meet our climate goals. This is not a local issue, but a national and international issue. Policymakers need to stop delaying this process and act consciously and quickly to continue Ireland's sustainable transition and achieve our climate targets.

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<sup>21</sup> Wind Energy Ireland (2022). Hydrogen and Wind Energy. The role of green hydrogen in Ireland's energy transition. [Link](#).

<sup>22</sup> IRENA and Methanol Institute (2021). Innovation Outlook: Renewable methanol. International Renewable Energy Agency, Abu Dhabi.