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# LIQUEFIED NATURAL GAS AND GAS STORAGE VALUATION: LESSONS FROM THE INTEGRATED IRISH AND UK MARKETS

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# Liquefied natural gas and gas storage valuation: Lessons from the integrated Irish and UK markets<sup>1</sup>

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## OVERVIEW

This research evaluates the potential effects for consumers in both Ireland and the UK of two new natural gas projects. The first project is an Irish Liquefied Natural Gas (LNG) facility to import gas, such as the Shannon LNG facility in Co. Kerry; the second project is an Irish natural gas facility to store gas for later consumption, such as the Islandmagee Underground Gas Storage facility in Northern Ireland. Both projects have been proposed by the EU as key European Projects of Common Interest to integrate Europe's energy markets and diversify the supply of energy sources.

The research shows that an Irish LNG facility would allow Irish consumers to benefit from highly competitive global LNG markets, thus bringing a reduction in their annual energy bill.

Ireland is currently partially dependent on the UK to meet its gas supplies. However, this research shows that an Irish LNG facility can reduce this dependence. In fact, we find that the pipeline connecting Ireland and mainland UK (known as Moffat) could also be used in reverse flow, that is not only to import gas from the UK but also to export gas to the UK. This reverse flow can bring further savings for Irish consumers, since the transportation costs related to the Moffat reverse flow would be paid by consumers in the UK instead of Ireland.

Further benefits for consumers emerge when considering both an Irish LNG facility and a storage facility together. Gas storage permits Ireland to import and store gas during the summer, when prices are lower, and to consume it during the winter, when prices are higher. Therefore, gas storage assures higher flexibility and more competitive prices for both the Irish and UK gas markets.

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<sup>1</sup> This Bulletin summarizes the findings from: Devine, M.T., and Russo, M., "Liquefied natural gas and gas storage valuation: Lessons from the integrated Irish and UK markets", *Applied Energy* 238 (2019), p. 1389-1406. Available online: <https://doi.org/10.1016/j.apenergy.2019.01.157>.

Overall, this research highlights how LNG and gas storage facilities represent complementary investments that enhance supply security and market competitiveness to the benefit of Irish consumers.

## **CONTRIBUTION AND POLICY IMPLICATIONS**

In this research, we develop a methodology that evaluates gas infrastructures and their implications for gas market interconnectedness and supply diversification. We apply the methodology to consider how both LNG and storage infrastructures in Ireland, and their interaction, can satisfy gas demand.

Due to its versatility and environmental advantages relative to more polluting coal and oil, natural gas contributes towards policy objectives that target environment quality and sustainable development. However, infrastructure availability is potentially a major constraint to the growth of natural gas markets. Consequently, the future role of natural gas will depend on infrastructure development, in particular LNG. Diversification of supply sources is crucial to ensuring energy security and competitiveness.

We consider the expected economic benefits of Irish LNG and gas storage infrastructures for consumers in both Ireland and the UK. Based on seasonal fluctuations of gas demand and prices, we assess the annual expected cost reduction for consumers and its sensitivity to varying market conditions.

This research is of interest when considering consumers' benefits of EU energy policies and legislation goals. Furthermore, it is of interest to decision- and policy-makers when designing and evaluating new developments in energy infrastructure. This research is also relevant when assessing the speculative function offered by LNG and gas storage facilities and has implications when considering power systems highly reliant on variable renewable energy sources.

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