

AQUIND overview and benefits

Contents

1.1	Project overview.....	1
1.2	Benefits of the project.....	1
1.3	The exemption route for AQUIND.....	2
1.4	The investment route	3
1.5	Summary of AQUIND welfare analysis	3
1.6	Additional analysis to consider wider European impacts.....	4
1.7	Implications of Brexit.....	5
1.8	Wider support for interconnection and European targets.....	5

1.1 Project overview

AQUIND is a new electricity interconnector between Great Britain (GB) and France. The use of the interconnector, i.e. import and export flows, will be determined by market participants in response to economic price signals. Where the French electricity price exceeds the price in GB, market participants will be incentivised to import electricity to France via AQUIND (and vice versa).

The existing and persistent structural differences in the wholesale electricity price between GB and French clearly demonstrates the need for more capacity. AQUIND is being developed by independent investors. In contrast to most other similar projects, none of the investment costs of the project will be passed on either GB or French consumers. Where the success of the project exceeds expectations, the investors commit to pay additional profits back to consumers in France and GB in equal measure as detailed in AQUIND’s exemption request.

1.2 Benefits of the project

- ▶ **Economic benefits of trade:** Economic analysis, submitted as part of AQUIND’s exemption application, shows that AQUIND will provide a social welfare benefit to Europe of over €1bn in the central modelled scenario.¹ AQUIND will typically be used to import electricity to GB, as the gas and coal derived GB price remains higher than the lower, nuclear and renewables derived, French price in general over the modelled horizon. This provides significant benefits to electricity producers (i.e. generators) in continental Europe, who benefit from supplying the higher priced GB market. GB consumers are similarly advantaged by the import of cheaper electricity to GB via AQUIND.
- ▶ **Competition:** AQUIND will increase the opportunity for market participants to access GB, French and mainland-European markets. This will increase competitive pressure on incumbent market participants. AQUIND will offer a range of short-term, as well as multi-year capacity products, which other interconnectors cannot offer. This will provide trading opportunities for market participants of different sizes, and with different hedging strategies. The analysis undertaken by the project developers indicates these competitive benefits will be provided without reducing market concentration or pivotality in the GB or French markets.²
- ▶ **Security of supply:** With a capacity of 2000MW, the AQUIND Interconnector will become a valuable supplier for GB and France at times of system need (i.e. high demand or low supply). These imports will help to reduce electricity price spikes and shocks in either country, as cheap

¹ In NPV terms, based on analysis of the 25 year exemption period.

² Measured through the Herfindahl-Hirschman Index (HHI) and using Pivotality analysis.

imports from the connecting country replaces more expensive domestic generation. Formally, the AQUIND Interconnector will also be able to participate in the GB and French capacity markets. AQUIND will compete with more expensive domestic supply sources to drive down consumer costs.

- ▶ **European integration:** Cross-border trade is a key pillar of the European energy market design as set out under the Third Package. European markets will benefit from AQUIND as the interconnector provides access, via France, to the GB and Irish markets (and vice-versa). This will allow for efficient electricity generation across Europe, utilising lower cost generation, such as renewables, ahead of more expensive options across the whole interconnected European market.
- ▶ **CO2 reduction and climate change:** The AQUIND Interconnector will facilitate more efficient dispatch of renewables across Europe. Carbon dioxide emissions are projected to reduce overall with the introduction of AQUIND. The total reduction of up to 50Mt over the length of the modelled period is mainly driven by a reduction in more carbon-intensive GB generation.
- ▶ **Ancillary services:** AQUIND will be a large flexible asset with the capability to provide a range of services and flexibility to the national TSOs, National Grid and RTE. The use of Voltage Source Converter (VSC) technology means that the AQUIND Interconnector can provide mandatory and commercial ancillary services (for example voltage control, frequency control and black start capability services) and for emergency assistance and cross-border balancing. AQUIND is expected to increase competition for these ancillary services, reducing the system costs faced by network users in GB and France.

1.3 The exemption route for AQUIND

AQUIND is developing the interconnector independently, without partnering with the national TSO, RTE, in France. This means that a regulated regime with financial underpinning is not available to AQUIND in France by operation of law, as the French energy code provides that the French transmission system, including interconnectors, must be run by the publically owned TSO only. Specifically, article L. 321-6 of the French energy law entrusts the operator of the public electricity transmission grid the development of the public transmission grid and any interconnectors. The French regulatory authority CRE has, in a decision of 29 March 2012³, re-iterated its view that the only way for non-RTE investors to develop an interconnector into France would be on the basis of an exemption decision pursuant to Art 17 of Regulation (EC) 714/2009 of 13 July 2009. The exempt investment route is therefore the only way to deliver the project, and deliver the benefits identified in our analysis as set out in AQUIND's exemption application.

To ensure the interconnector delivers the maximum benefits to European network users, the AQUIND project developers propose to introduce a number of conditions through the exemption. These conditions will place limits on AQUIND, and its users, to ensure that the exemption meets the requirements of the National Regulatory Authorities, market participants, AQUIND, and its investors. These limits will include:

- ▶ A maximum volume of capacity that can be allocated through multi-year contracts; and a corresponding minimum volume of capacity that must be allocated through short-term contracts.
- ▶ A limit on the length of multi-year contracts and a range of multi-year capacity products with a range of contract size and durations.

³ Communication of the French Energy Regulatory Commission of 29 March 2012 on the application of article 17 of Regulation (EC) No 714/2009 of 13 July 2009

- ▶ A limit on the allocation of multi-year capacity to market participants where this may unfairly increase competitive advantage.
- ▶ Use-it-or-sell-it provisions for all capacity (both short-term and multi-year).
- ▶ A secondary trading facility for all capacity.
- ▶ A profit sharing mechanism, so consumers will benefit should revenues exceed current expectations.

1.4 The investment route

AQUIND is an independently funded project, being brought forward by private investors without reliance on support by the consumer. The project will further attract equity and debt finance from the market to progress with the project through development, construction and operations. Potential investors will be able to evaluate and to commit to the project only if AQUIND's exemption request is granted.

AQUIND has also recently gained Project of Common Interest (PCI) status. This recognises AQUIND's central role in meeting the demand for cross-border capacity on the congested border between GB and France.

1.5 Summary of AQUIND welfare analysis

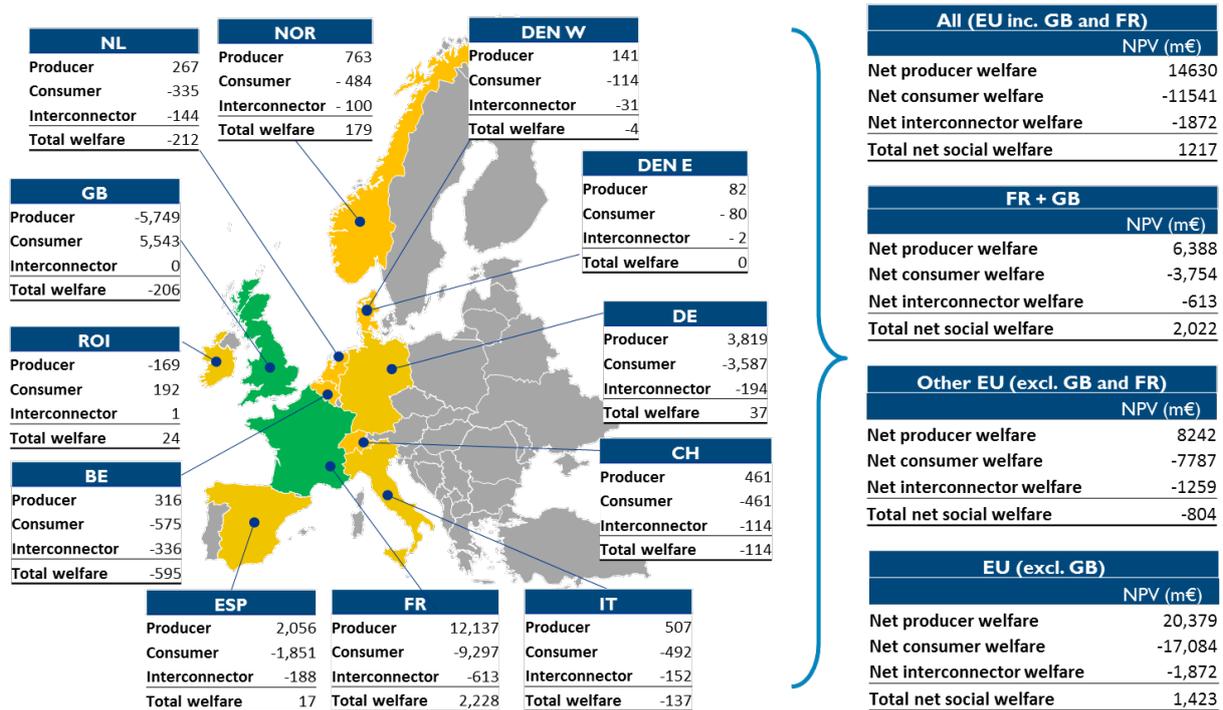
The AQUIND project team has completed detailed economic analysis to evaluate the potential benefits of the project. This social welfare analysis is presented in full in the main exemption application, and is summarised here. The analysis is based on detailed modelling, using long-term projections of future capacity investment, demand, commodity prices and policy decisions for European markets. This Cost-Benefit Analysis (CBA) quantifies the potential costs and benefits of the new interconnector.

The total net benefit for GB and France combined, and the total benefit for the countries included in the analysis, is strongly positive in the Reference case – the central scenario in the AQUIND modelling. The sustained premium in GB prices compared to French prices over the modelled period, drives a large volume of interconnector flows from the lower priced French market to GB. In France the impact of these flows pulls up the wholesale price to the benefit of French producers. As a result, producers receive a higher price, but French consumers would pay more for electricity.

In GB, imports of relatively cheaper electricity via AQUIND from France reduce GB prices. This has a strong positive welfare impact for GB consumers, who benefit from a lower average wholesale price. GB producers receive a lower market price and therefore producer welfare in GB is negative.

In this analysis, a large proportion of benefits accrue to GB consumers and French producers. The benefits of AQUIND to other countries in the analysis vary depending on price differentials and interconnection capacity. Typically, the increase in the French wholesale price, as a result of AQUIND, provides a large benefit to European producers in connecting markets.

Figure 1 Social welfare results



1.6 Additional analysis to consider wider European impacts

The impact of AQUIND across Europe as a whole will depend on the relative price of electricity across European countries, and the level of interconnection between these countries. Sufficient interconnection between markets will facilitate price convergence.

The main AQUIND analysis, presented in Figure 1, shows the impact of the AQUIND Interconnector on European energy markets connected to GB and France.⁴ The developers have also completed wider analysis, taking into account a further 11 European countries to explore the impact across a wider geographic zone.⁵ Whilst this analysis does not include the full EU Member States, it is representative of the impact of AQUIND to Europe.

The results of this analysis are consistent with main analysis, showing a total benefit for Europe, including GB, of just under €1bn, and a total European benefit (excluding GB) of €1.15bn. The fall in total net welfare in this wider study, compared to the main analysis, is explained by a reduction in interconnector flows as a result of greater European price convergence with AQUIND. Price convergence is a natural outcome of any interconnection capacity increase and underlines the role of electricity interconnectors in eliminating market inefficiencies.

In accordance with CRE's requirements, AQUIND has also performed an analysis of the potential impact of its interconnector on the functioning of the French grid.⁶ This analysis showed that no severe negative impact on the continental European transmission system is to be expected and no specific investments in grid reinforcements will be required.

⁴ This modelling approach was agreed with the NRAs.

⁵ The number of European countries considered is limited by the geographic scope of the original modelling.

⁶ Consentec, Impact of a new Interconnector between France and Great Britain on the continental European transmission grid, 2017, Exhibit 10 to the AQUIND exemption request.

1.7 Implications of Brexit

CRE and Ofgem have both asked ACER to deliberate on the AQUIND exemption application. In its position paper to ACER, published by ACER, CRE indicate the reasons for the referral is due to uncertainty in the correct approach to quantify the benefits of the AQUIND Interconnector to the European Union. In particular, CRE question whether Brexit means that the impact of AQUIND to the UK, should be omitted from the European social welfare analysis.

AQUIND understands the concerns expressed by CRE regarding the uncertainty of the Brexit negotiations. These have been address in additional studies performed and submitted to CRE by AQUIND prior to the acceptance of its exemption request by CRE and Ofgem.

AQUIND believes that the potential future benefits of the AQUIND Interconnector outweigh the risks and uncertainties presented by the ongoing Brexit negotiations, especially taking into account that, as an exempt project, AQUIND is being developed at no risk to the consumer. Further, assumptions can be made as part of the CBA to demonstrate that AQUIND's benefits to Europe are robust to varying Brexit outcomes. In the extreme, this analysis shows that if the benefits accrued by the GB are disregarded in totality, the benefits to the remaining European countries amount to almost €1.5bn with the introduction of AQUIND in the main analysis.

In addition to this simple sensitivity, the AQUIND main exemption application includes more detailed analysis of the possible impacts of Brexit. This analysis considers Brexit under two lenses:

- 1) The impact of Brexit on cross-border trading arrangements, access rules and tariff setting.
- 2) The impact of Brexit on policy alignment between GB and the European Union.

Any move away from the current, and proposed, trading arrangements would introduce inefficiencies in cross-border trade. These inefficiencies would result in sub-optimal trade between GB and France.

AQUIND's analysis of the impact of Brexit on GB and European energy policy, reveals the possibility of increased value from interconnection under a more extreme Brexit scenario. Different national policy objectives may to results in more divergent wholesale prices – a key signal of the benefit of further interconnection.

The range of sensitivities considered by AQUIND and presented to the NRAs and ACER as part of the exemption application, show that the AQUIND welfare results are robust to a range of Brexit sensitivities.

1.8 Wider support for interconnection and European targets

The benefits of an integrated European grid are well documented and recognised at the European level, most recently through the European Commission's November 2017 Communication on strengthening Europe's energy networks.⁷ The European Commission confirm that "*an interconnected European grid will help to deliver the ultimate goals of the Energy Union to ensure affordable, secure and sustainable energy to all Europeans*".

At the heart of this ambition are the 2020 and 2030 electricity interconnection targets, as agreed by the European Council. The Commission now proposes to start working towards the 2030 interconnection targets, and has identified Member States where urgent action is needed to meet

⁷ https://ec.europa.eu/energy/sites/ener/files/documents/communication_on_infrastructure_17.pdf

these European energy policy goals. The European Commission has assessed each Member State against three thresholds to determine the need for interconnection investment.

These thresholds consider:

- 1) Whether an indicative price differential between Member States exceeds €2/MWh
- 2) Whether interconnection capacity is below 30% of peak load
- 3) Whether interconnection capacity is below 30% of installed renewable capacity.

For those countries, such as the UK, that fall below these thresholds, the European Commission *“calls upon Member States to prioritise the development of interconnections with those neighbours that are below any of those thresholds in a spirit of solidarity and cooperation”*. The UK-France border is therefore of critical importance to the Europe wide ambition for interconnection investment. This position is supported by the PCI process, which identifies the UK-France border as a Priority Corridor for the Northern Seas Offshore grid as part of the Third PCI list.