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Consultation

Interconnector policy review: Working Paper 3 – Wider impacts

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We are consulting on the analysis, proposed conclusions, and early proposals from workstream 3 of the interconnector policy review, which looks at the wider impacts of interconnection. We would welcome views from a range of stakeholders.

This document outlines the scope, purpose and questions of the consultation and how you can get involved. Once the consultation is closed, we will consider all responses. We want to be transparent in our consultations. We will publish the non-confidential responses we receive alongside a decision on next steps on our website at **Ofgem.gov.uk/consultations**. If you want your response – in whole or in part – to be considered confidential, please tell us in your response and explain why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, put the confidential material in separate appendices to your response.

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Executive summary

In August 2020, Ofgem launched a review of its regulatory policy and approach to new electricity interconnectors. The objectives of the review are two-fold: firstly, to establish whether there is a need for further GB interconnection capacity beyond those projects currently with regulatory approval; and secondly, to consider Ofgem's approach to the regulation of future GB interconnection. The review has been broken down into four workstreams considering specific aspects of regulatory policy and decision making.

This working paper summarises our analysis, findings, and provisional recommendations from workstream 3 - review of the wider impacts of interconnection. In this workstream we have considered the range of impacts that interconnectors currently have, or could have in the future, on the energy system beyond the market economic effects that are assessed through traditional socio-economic market modelling. Specifically, we have considered the:

1. Contribution towards decarbonisation;
2. Potential to provide flexibility in the energy system;
3. Impact on system operability;
4. Contribution to security of supply.

In this regard, we[1] have engaged with a broad range of stakeholders, performed a literature review, and considered how we could build upon our assessment of wider impacts during interconnector needs case assessments.

Based on the conclusions of stakeholder feedback, and consideration of external analysis we are proposing the following conclusions and recommendations:

- Interconnectors have a number of wider impacts, both benefits and costs, on the energy system. Interconnectors also have a potentially important role to play in directly delivering, and shaping the energy system to meet UK energy policy objectives.

- It is important that the wider impacts of interconnectors are fully and appropriately considered when assessing the needs case for future interconnectors. We will explore how best to assess these impacts and integrate them into potential future needs case assessments.

[1] The terms "Ofgem" and "the Authority," "we" and "us" are used interchangeably in this document.

- Enhanced and more proactive network planning could play an important role in identifying system needs based on wider impacts of interconnectors and informing potential future needs case assessments.

- The Electricity System Operator (ESO) are well placed to work with Ofgem to further understand the impact of interconnectors on system operability. As set out in our workstream 1 working paper Ofgem will work with the ESO to establish how they can support future assessments of the impact of interconnectors.

We are now seeking stakeholder feedback on our analysis, conclusions and initial proposals through this public consultation. We will then consolidate the findings across each work streams in a single decision paper, which will provide our final recommendations for the future regulation of interconnectors in GB.

1. Introduction

Context

1.1. Electricity interconnectors are the physical links that allow the transfer of electricity across borders. The cap and floor regime is the regulated route for electricity interconnector developers in Great Britain. We decided to roll out the cap and floor regulatory regime to new near-term electricity interconnectors in August 2014 to incentivise the delivery of further cross-border infrastructure.

1.2. Before the cap and floor regime was introduced, a limited number of electricity interconnectors had been either built or proposed: IFA (2GW) to France, Moyle (0.5GW) to Northern Ireland, BritNed (1GW) to the Netherlands, and the East West interconnector (0.5GW) to the Republic of Ireland. These interconnectors were mostly developed as standalone projects on a merchant basis.

1.3. We recognised that there was benefit in further interconnection and therefore a need to develop a regulated regime for electricity interconnectors to incentivise further development. We proposed a cap and floor regime initially for the Nemo Link interconnector (1GW) to Belgium in 2013[2], and more broadly as an enduring regime in 2014.[3]

1.4. We have subsequently held two cap and floor application windows in 2014 and 2016, and have awarded a cap and floor regime in principle to nine interconnectors totalling 10.9GW in cross-border capacity. If all of these projects go ahead, alongside existing interconnectors and approved projects under development on a merchant basis, GB interconnection capacity could increase to 15.9GW.

1.5. We have committed to reviewing our regulatory policy and approach ahead of any further cap and floor application windows. This is to ensure that both further interconnection, and the regulatory framework for delivery, remain in consumers' best interests. We consider

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[2] Cap and Floor Regime for Regulated Electricity Interconnector Investment for application to project NEMO (2013): https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-regulated-electricityinterconnector-investment-application-project-nemo
[3] Decision to roll out a cap and floor regime to near-term electricity interconnectors (2014): https://www.ofgem.gov.uk/publications-and-updates/decision-roll-out-cap-and-floor-regime-near-term-electricityinterconnectors

that now is the right time for this review for a number of reasons as set out in our August 2020 open letter to interested stakeholders. [4]

1.6. We are also undertaking our review in the context of Government's net-zero target for carbon emissions by 2050. In December 2020 the Department for Business, Energy, & Industrial Strategy (BEIS) published its Energy White Paper[5] setting out how the UK will clean up its energy system to reach net-zero. In the Energy White Paper BEIS committed to working with Ofgem, developers and European partners to realise at least 18GW of interconnector capacity by 2030.

Scope of the review

1.7. The first objective of the interconnector policy review is to establish whether there is a need for further GB interconnection capacity beyond those projects currently with regulatory approval. If so, the second objective of this review is to consider Ofgem's approach to the regulation of future GB interconnection.

1.8. We decided to deliver this review through four workstreams (WS):

- WS1 – Review of the cap and floor regime to date
- WS2 – Socio-economic modelling
- WS3 – Review of the wider impacts of interconnection
- WS4 – Multiple Purpose Interconnectors (MPIs)

1.9. We decided to use a targeted engagement approach in order to maximise value from stakeholder input and invited interested stakeholders to notify us of their interest in the interconnector policy review in our August 2020 open letter. We have subsequently engaged with stakeholders through workstream groups and stakeholder forums.

[4] Open letter: Notification to interested stakeholders of our interconnector policy review (2020): https://www.ofgem.gov.uk/system/files/docs/2020/08/open_letter_-_interconnector_policy_review.pdf
[5] Energy white paper: Powering our net-zero future: https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future

Scope of workstream 3

1.10. The objective of workstream 3 is to understand the impacts that interconnectors have on the energy system and to consider how we can take these impacts into consideration in potential regulatory assessments of interconnectors in the future.

1.11. As more interconnectors have come online it has become increasingly apparent that interconnectors have a far-reaching effect on the energy system beyond the market economic effects that are the focus of traditional socio-economic electricity market modelling. It is important that we understand these impacts so that we can take the full picture into account and reach an informed view on the need for further interconnection. Similarly, as energy policy in GB has evolved it is right that we consider the role that interconnectors play in supporting those policy objectives.

1.12. When considering the needs cases for interconnectors in our cap and floor Window 1 and Window 2 initial project assessments (IPAs), Ofgem considered the market economic impacts through socio-economic market modelling, alongside a qualitative review of the wider strategic and sustainability impacts of those interconnectors. By reviewing the wider impacts of interconnectors in this workstream we hope to form a view of whether and how future needs case assessments should take these impacts into consideration (including by building on or improving our existing approaches).

1.13. This workstream considers point-to-point interconnectors only – it does not explicitly consider the wider impacts of multiple-purpose interconnectors (MPIs). However, many aspects of our analysis may also be applicable to MPIs. MPIs are considered in workstream 4 of the interconnector policy review.

1.14. Throughout this document we present a number of initial proposals; these are summarised in Section 5. Following consultation, we will build on these in response to stakeholder feedback and confirm our proposals in our final decision on the interconnector policy review. Any proposals or recommendations for change that are discussed in our working paper consultations will not be retrospectively applied, and will not affect or change aspects of the existing cap and floor regime that applies to projects that we have already approved.

1.15. This consultation paper should be read alongside those published for the other workstreams of this review and not in isolation, as the information and proposed recommendations presented in each paper are interlinked.

What are we consulting on?

1.16. The purpose of this consultation is to get views from stakeholders on our analysis, proposed conclusions, and initial proposals from workstream 3 of the interconnector policy review.

1.17. Consultation questions are summarised in Section 5.

Consultation stages

1.18. This consultation is one of four working papers covering each of the workstreams. Based on the responses received and drawing upon each working papers, we will publish our decision paper presenting our final proposals in relation to the future of the cap and floor regime in Autumn 2021. We will endeavour to implement those final recommendations following that decision.

Figure 1: Consultation stages

Consultation open	Consultation closes (awaiting decision). Deadline for responses	Responses reviewed and published	Consultation decision/policy statement*
30/06/2020	**28/07/2020**	**Autumn 2021**	**Autumn 2021**

How to respond

1.19. We want to hear from anyone interested in this consultation. Please send your response to the person or team named on this document's front page.

1.20. We've asked for your feedback in each of the questions throughout. Please respond to each one as fully as you can.

1.21. We will publish non-confidential responses on our website at www.ofgem.gov.uk/consultations.

Your response, data and confidentiality

1.22. You can ask us to keep your response, or parts of your response, confidential. We'll respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations or where you give us explicit permission to disclose. If you do want us to keep your response confidential, please clearly mark this on your response and explain why.

1.23. If you wish us to keep part of your response confidential, please clearly mark those parts of your response that you *do* wish to be kept confidential and those that you *do not* wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary, we'll get in touch with you to discuss which parts of the information in your response should be kept confidential, and which can be published. We might ask for reasons why.

1.24. If the information you give in your response contains personal data under the General Data Protection Regulation (GDPR) and domestic legislation on data protection, the Gas and Electricity Markets Authority will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, see Appendix 1.

1.25. If you wish to respond confidentially, we'll keep your response itself confidential, but we will publish the number (but not the names) of confidential responses we receive. We won't link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.

General feedback

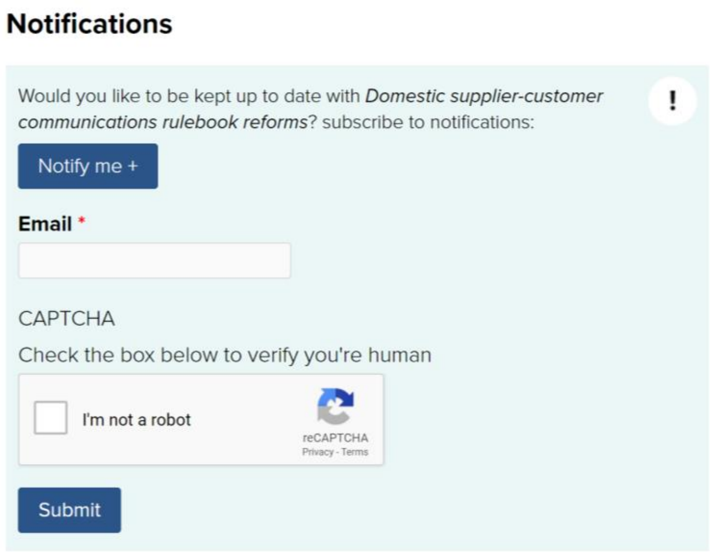
1.26. We believe that consultation is at the heart of good policy development. We welcome any comments about how we've run this consultation. We'd also like to get your answers to these questions:

1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?

1.27. Please send any general feedback comments to stakeholders@ofgem.gov.uk

How to track the progress of the consultation

1.28. You can track the progress of a consultation from upcoming to decision status using the 'notify me' function on a consultation page when published on our website. Ofgem.gov.uk/consultations.



1.29. Once subscribed to the notifications for a particular consultation, you will receive an email to notify you when it has changed status. Our consultation stages are:

Upcoming ► Open ► Closed (awaiting decision) ► Closed (with decision)

2. Our approach to workstream 3

Section summary

This section summarises the processes we undertook throughout workstream 3 and the key outcomes of that work that informed our recommendations.

Questions

Question 1: Do you agree with the approach we have taken to workstream 3?

Approach to workstream 3

2.1. To inform the content and outcomes of workstream 3, we reviewed relevant regulatory decisions under the cap and floor regime and external reports and academic studies where appropriate. Additionally, we adopted a targeted engagement approach with our stakeholders to understand their views on the wider impacts of interconnection and to seek any wider evidence that we should review.

2.2. Specifically, in this workstream we have:

- Reviewed how we have assessed the wider impacts of interconnectors during our Window 1 and Window 2 IPAs;
- Reviewed the feedback from targeted external engagement; and
- Reviewed internal analysis and relevant external literature as shared with us by stakeholders.

Summary of stakeholder engagement

2.3. Our August 2020 open letter invited interested external stakeholders to notify us of their interest in the review and each workstream. A total of 65 stakeholders indicated their interest in the policy review as whole, of which 56 expressed interest in workstream 3 specifically. Interested stakeholders include interconnector project developers, academia, generators, TSOs, consumer associations, investors, independent consultancies and law firms, supply chain providers, and the electricity system operator.

2.4. In December 2020, we sought interested stakeholders' views on the proposed scope of workstream 3. Specifically, we identified the following three categories of wider impacts of interconnection:

- Interconnectors' potential to provide flexibility in the energy system;
- System operability benefits through the provision of services, as well as system costs;
- Interconnectors' contribution towards decarbonisation.

2.5. We received a total of 19 responses, the majority of which agreed with the suggested areas listed above. Stakeholders also suggested several other wider impacts that we should explore. Based on this feedback, we decided to include interconnectors' contribution to security of supply within the scope of workstream 3. We considered that other suggestions were already captured within the existing categories of wider impacts, or otherwise out of scope of the policy review.

2.6. In addition to stakeholder views on the proposed scope, we also invited stakeholders to submit evidence of the impact of interconnectors across each category in the form of modelling, analysis, papers, or academic studies. We received suggestions of 40 documents which we have subsequently reviewed and which inform our discussion throughout the remainder of this consultation.

2.7. In additional to our targeted stakeholder group we also sought external stakeholder input by attending relevant industry forums, such as the GB Interconnector Forum and Energy UK stakeholder groups. Information gathered through this process was taken into consideration and is reflected in discussion throughout the remainder of this document.

3. Workstream 3 analysis

Section summary

In this section we review available literature on each of the identified wider impact categories and form a provisional Ofgem view on each.

Questions

Question 2: Do you agree with the potential wider impact categories we have focussed on? Are there any other areas we should consider?

Question 3: Do you think the discussion presented in this document adequately represents the potential impact of interconnection within each category? If not, please explain and provide supporting evidence if possible.

Question 4: Do agree with our initial views with respect to each potential wider impact category? If not, please explain why.

Decarbonisation

3.1. In June 2019 the UK legislated for net-zero carbon emissions by 2050. Since then the UK has made significant progress in decarbonising the economy, however, significant challenges remain if we are to continue on the path to meet our 2050 goals. With respect to the energy system we expect that significant changes are going to be required in order to achieve net-zero; for example, a significant growth in renewables as set out in HMG[6]'s target of 40GW of offshore wind by 2030.

3.2. Interconnectors are expected to contribute significantly to the decarbonisation of the EU and UK electricity networks. They support the deployment and integration of renewables, such as offshore wind, by providing a flexibility service that makes it easier to manage intermittency. In doing so interconnectors reduce the need for curtailment and can therefore improve the economics of renewables. In the same way interconnectors could increase load factors and

[6] Her Majesty's Government

maximise the output and reliability of renewables, which means making the most of the assets we already have.

3.3. As interconnectors allow renewable generation to be more widely shared across the system, this can displace more carbon intensive sources of generation (ie thermal generation, including CCGTs). Similarly, interconnectors provide access to a wider pool of generation which means low cost renewable energy in one country can be exported to benefit the connecting country. Examples include interconnectors to Norway and France which provide access to low-carbon, and low cost, hydropower and nuclear. This same effect has a positive impact on security of supply.

3.4. Interconnectors also allow for regional specialisation of low carbon development, meaning renewables can be located in areas with highest specific load factors, for example by placing renewable projects such as solar power in Southern Europe or wind and hydro in the North Sea. A National Infrastructure Commission report[7] suggested that locating renewables where they would operate most efficiently could achieve the same renewables output with 15% less installed capacity.

3.5. The decarbonisation potential of interconnectors has increasingly been a focus of HMG and industry analyses, and a number of studies recently have sought to measure and quantify the impact that interconnectors have on decarbonisation.

3.6. Firstly, looking back, National Grid Ventures estimated that the three GB electricity interconnectors that it operates[8] saved 1.13 MtCO2 in the twelve months leading to December 2020, with low-carbon imported electricity displacing carbon-intensive domestic generation.[9] In particular, imports from France and Belgium via IFA and Nemo Link respectively have contributed to an emissions reduction of 1.6 MtCO2 and 0.16 MtCO2 across the time period.

3.7. Secondly, looking forward, the Energy White Paper[10] set out an ambition to realise at least 18GW of interconnector capacity by 2030. Alongside the Energy White Paper, BEIS

[7] Smart Power, National Infrastructure Commissions: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/505218/IC_Energy_Report_web.pdf
[8] IFA, BritNed and Nemo Link
[9] Connecting to a net-zero future: Exploring the role of interconnectors in the transition to net-zero: https://www.nationalgrid.com/document/141856/download
[10] Energy white paper: Powering our net-zero future: https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future

published a research paper by Aurora Energy Research[11] which sought to model the impact of interconnectors on decarbonisation. This modelling suggests that an increase in interconnector capacity could decrease emissions in both GB and the EU, reduce total power market costs in GB, and reduce the curtailment of renewables.

3.8. The 2020/2021 Network Options Assessments (NOA) interconnector analysis[12] also concluded that interconnectors provide benefits to GB and Europe through greater use of renewables and increased environmental benefits. Specifically, NGESO's modelling showed significant reductions in CO_2 emissions in the power sector from 2028 in each of its scenarios that meet net-zero.

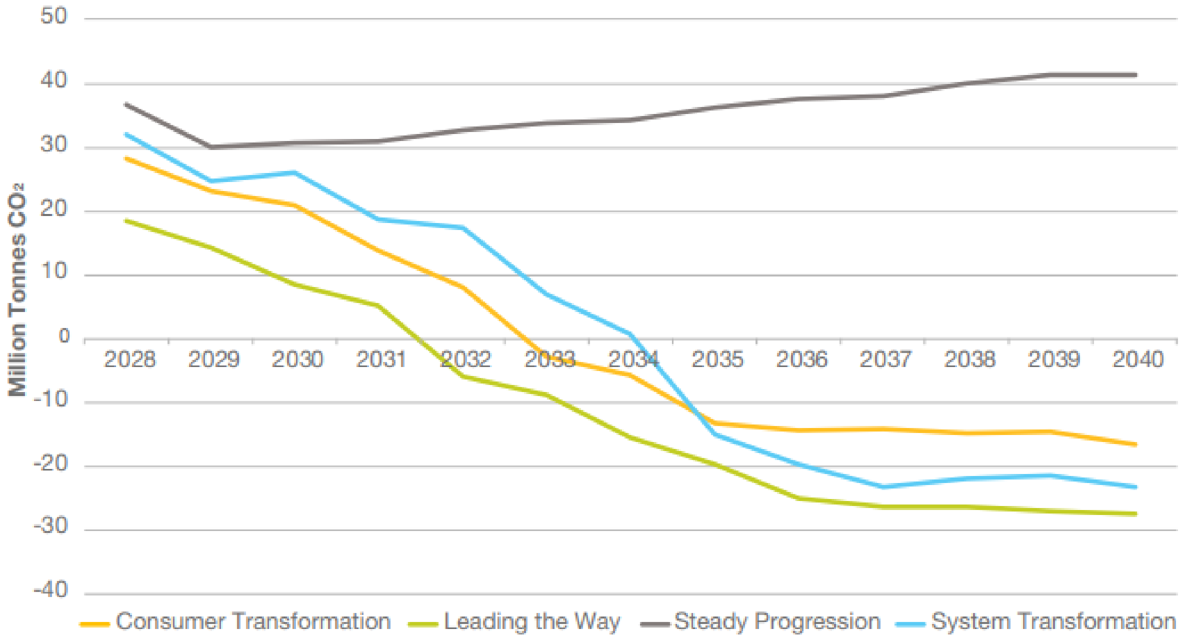


Figure 2: Annual CO2 emissions from generation for the optimal interconnector paths under each Future Energy Scenario. Source - 2020/2021 Network Options Assessment.

[11] The impact of interconnectors on decarbonisation: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943239/impact-of-interconnectors-on-decarbonisation.pdf
[12] 2020/2021 Network Options Assessment: https://www.nationalgrideso.com/document/185881/download

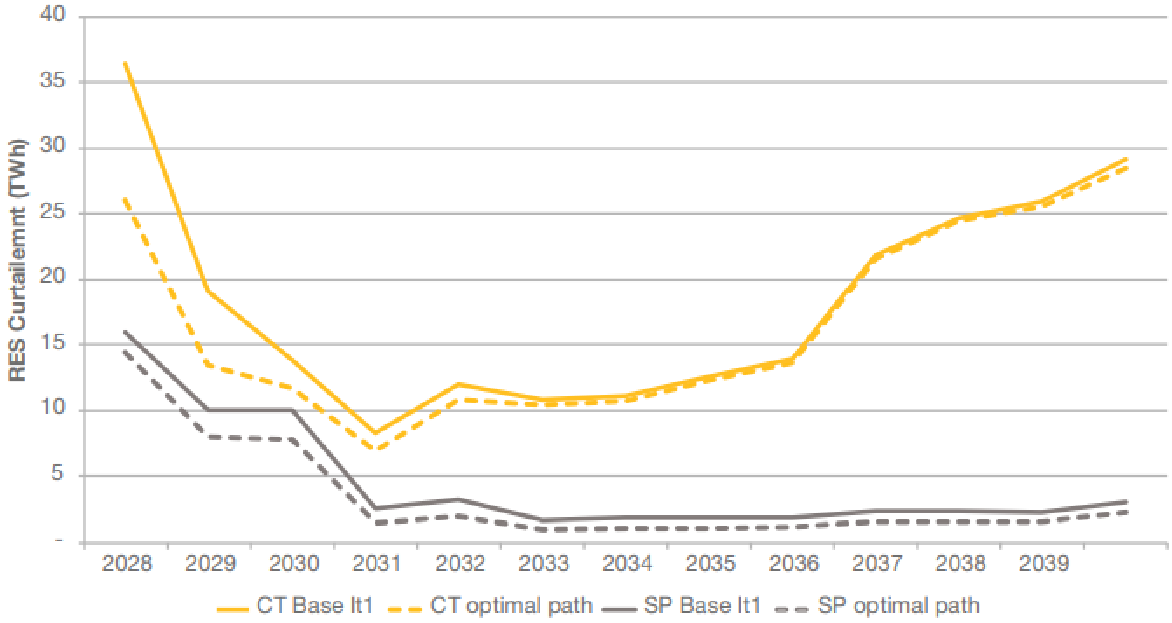


Figure 3: Annual levels of RES curtailment for the optimal interconnector paths under Consumer Transformation and Steady Progression. Source - 2020/2021 Network Options Assessment.

Our initial view on decarbonisation impacts

3.9. Interconnectors likely have a positive impact on decarbonisation. We think that interconnectors have a key role to play in decarbonising the energy system in support of net-zero and reaching government ambitions with respect to renewable energy deployment by 2040. In this respect we think interconnectors are in the interest of consumers and closely aligned with HMG energy policy goals.

3.10. We will consider how the impact of interconnectors on decarbonisation can be integrated into potential future interconnector needs case assessments. Existing approaches to quantifying the impact tend to focus on offset emissions. We will explore options for similar or other approaches to inform any potential future needs case analysis.

Flexibility

3.11. System flexibility is the modification of energy generation and/or consumption patterns in response to a signal (such as a change in price) to provide a service within the energy system.

3.12. To achieve net-zero commitments, the UK's electricity system will be integrating increasing amounts of variable renewable generation. The deployment of significant volumes of non-dispatchable intermittent renewables can present challenges, due to the need to continuously balance supply and demand on the system. This leads to an increasing need for system flexibility.

3.13. To address these challenges, additional sources of flexibility will be increasingly required to balance the system, and interconnectors will likely play a critical role. Through connecting to neighbouring markets, interconnectors provide access to a diverse pool of generation, allowing the import or export of cheaper electricity by responding to changes in market signals. Interconnectors can also provide additional benefit through the speed at which they can respond to changes in market signals compared to some sources of generation. In addition, greater interconnection helps to reduce the curtailment of renewable energy sources, through facilitating the trade of energy from areas of production to areas of consumption where it is most valued. Doing so could also help to improve the economics of low carbon generation and increase load factors to maximise the output and reliability of renewables.

3.14. Various bodies have called for increased flexibility in the system as we transition to net-zero, and some of these bodies have quantified the savings to GB of increased overall system flexibility.

3.15. In 2016, The Carbon Trust quantified that a more flexible energy system could save the UK £17-40 billion across the electricity system cumulatively to 2050.[13] This year The Carbon Trust again quantified that a fully flexible energy system (that is delivered by a range of flexibility technologies including interconnectors) has the potential to deliver considerable net savings.[14]

3.16. In analysis published alongside the Energy White Paper in 2020[15], BEIS conclude that system flexibility reduces the system costs required to meet net-zero by reducing the curtailment of wind and solar, and flattening demand for electricity, therefore reducing the overall capacity required.[16] To achieve very low emissions in a high demand scenario, without

[13] An analysis of electricity flexibility for Great Britain: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/568982/An_analysis_of_electricity_flexibility_for_Great_Britain.pdf
[14] Flexibility in Great Britain - https://publications.carbontrust.com/flex-gb/report/
[15] Energy White Paper: Powering our Net Zero Future: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf
[16] Modelling 2050: electricity system analysis: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943714/Modelling-2050-Electricity-System-Analysis.pdf

hydrogen, the modelling shows that system flexibility (provided by a combination of demand side response, battery storage and interconnection) could provide an annual system cost saving of up to £12bn per year.

3.17. Furthermore, in 2019 the Committee of Climate Change, have also highlighted that improvements in system flexibility could bring system costs down by £3-8 billion/year by 2030 and £16 billion/year by 2050.[17]

3.18. It is important to note that all the analyses referenced above consider the impact of a range of flexibility solutions, including interconnectors. These systems cost savings cannot therefore be attributable solely to interconnectors, although they can be considered as a key contributing factor. We are not aware of any external studies that quantify the specific impact of interconnectors on system flexibility, nor the impact of individual interconnectors.

Our initial view on flexibility impacts

3.19. We consider that increased interconnection is likely to have a positive impact on the system by providing some of the additional system flexibility needed to enable the energy system changes required to meet net-zero. The modelling referred to in this working paper suggest that interconnectors have an important role to play as part of the development of an increasingly smart, flexible and decarbonised grid. Interconnectors can benefit the GB energy system through rapidly responding to changes in market signals, especially with the support of the appropriate frameworks in place to enable flexibility services.

3.20. Therefore, we believe an assessment of flexibility as a wider impact should be considered in potential future needs case assessments. The impacts that interconnectors have on flexibility, however, are intricately linked to the other wider impact categories being considered in this working paper; therefore, when considering how to fully capture these impacts it will be important to avoid any potential double-counting across impact categories.

System operability

3.21. To manage supply and demand, and maintain a balanced grid, the ESO procures the provision of ancillary services to ensure the system operates in a stable, efficient and safe way.

[17] Net Zero Technical report: https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-Technical-report-CCC.pdf

The provision of ancillary service supports the grid in being more resilient, in case of unexpected shocks which may results in changes to system frequency or inertia. Providers of ancillary services need to be able to meet a number of technical specifications around how quickly they can supply power and over what time period. Interconnectors have the inherent capability to provide a number of these services to the ESO.

3.22. Maintaining the reliable operation of the energy system is expected to become increasingly challenging as we transform our energy supply. As we move towards net-zero, the increasing deployment of renewable generation is expected to have impacts on the power networks in terms of grid performance characteristics such as frequency and voltage. This means that the ESO may need to procure a growing number of ancillary services to keep the system stable and secure, for the benefits of consumers. Interconnectors could play an important role in providing these services. However, it is also important to note that in some instances interconnectors may have a negative impact on system operability as discussed in the following paragraphs.

Frequency response and reserve

3.23. Differences between system demand and active power generation result in changes to the system frequency. System frequency increases when generation is greater than demand and it decreases when demand is greater than generation. The rate of change of frequency (RoCoF) is subject to the level of system inertia and the initial power mismatch. Fluctuations in frequency are buffered by synchronous generation sources (i.e. rotating steam/gas turbines that rotate at the same frequency as the grid) that provide system inertia.

3.24. As the energy mix transitions towards integrating an increasing amount of renewable energy sources, it will lead to a higher degree of vulnerability in the system due to the decreasing relative levels of system inertia from synchronous sources to buffer changes in frequency. This means that it will likely become more challenging to maintain system stability. However, interconnectors with Voltage Source Converters (VSC) based high voltage direct current (HVDC) interfaces could contribute virtual inertia and be able to provide grid frequency support.

3.25. Interconnectors[18] can therefore provide both frequency response and reserve. In our Window 1[19] and Window 2[20] submissions from ESO, it was concluded that the majority of proposed interconnectors studied could provide some benefit with regards to services such as frequency response. The potential consumer benefit was quantified by the ESO by assessing the potential cost savings of procuring the service from interconnectors instead of alternative frequency response products that cost more money.

3.26. We note however, that interconnectors may also lead to additional costs with respect to frequency management. As interconnectors are often the largest loss on the system they could cause large deviations in frequency that exceed the dynamic RoCoF limit. To mitigate risk, the ESO may carry out pre-emptive trades to reduce overall IC flows, or otherwise take actions to secure the system.

Black Start

3.27. Black start is the process of restoring power stations to operation following a total or partial shutdown of the transmission system. It requires isolated power stations to be started individually and used to gradually re-energise the system. Interconnectors that use VSC technology can provide black start services.

3.28. However, the ability of an interconnector to provide black start services is location dependent. This is due to NGESO's contracting strategy for black start services, which divides GB into six zones and allows for only one interconnector providing black start services per zone. The analysis performed by the ESO for our cap and floor Window 1 and Window 2 IPAs showed that several interconnectors could provide black start services.

3.29. We note that in 2021 the ESO delivered a new black start services strategy with the aim of further strengthening the regional and overall restoration time, and that this strategy references a number of technologies including interconnectors.[21] Further to this, we note that

[18] With Voltage Source Converter (VSC) technology.
[19] Cap and floor regime: Initial Project Assessment for the FAB Link, IFA2, Viking Link and Greenlink interconnectors (see subsidiary documents): https://www.ofgem.gov.uk/publications/cap-and-floor-regime-initial-project-assessment-fab-link-ifa2-viking-link-and-greenlink-interconnectors
[20] Cap and floor regime: Initial Project Assessment of the GridLink, NeuConnect and NorthConnect Interconnectors (see subsidiary documents): https://www.ofgem.gov.uk/publications/cap-and-floor-regime-initial-project-assessment-gridlink-neuconnect-and-northconnect-interconnectors
[21] Black Start Strategy and Procurement Methodology 2021/22: https://www.nationalgrideso.com/document/191636/download

by the mid-2020s, the ESO hopes to be running a fully competitive black start procurement process.

Reactive response

3.30. The flow of reactive power on the transmission system affects voltage levels. Unlike system frequency, which is consistent across the network, voltage is a local issue which is uniquely related to the prevailing real and reactive power supply and demand in a local area. The ESO must manage voltage levels on a local level, and without the appropriate injections or absorption of reactive power at the correct locations, the voltage profile of the transmission system will exceed statutory limits.

3.31. Interconnectors utilising the right technology could contribute to providing reactive power services to the GB transmission system. By locating these links appropriately, there is the opportunity to utilise their reactive power capability to meet the changing needs of the transmission system and to reduce capital investment in purpose-built static as well as dynamic reactive power compensation equipment.

Boundary capability and constraint management

3.32. Boundary capability is the ability of a transmission network to transfer energy from generation to supply. Each boundary in the transmission network is required to securely enable the maximum expected power transfer. A constraint arises where the system is unable to transmit power supplies to the location of demand due to congestion at one or more parts of the transmission network. When a constraint occurs, the ESO takes actions in the market to increase or decrease the amount of electricity at different locations on the network.

3.33. Future changes in generation and demand will change the nature of power flows on the transmission system, potentially leading to transmission constraints (both thermal and voltage) across some boundaries. The location of interconnector connection points to the GB transmission system and the direction of power flow on the interconnector will have an impact on the boundary capability and constraint costs. The determination of location points for interconnectors is considered as part of the ESO's Connection Infrastructure Options Note (CION) process.

3.34. Interconnectors could help reduce the need for network investment, by providing boundary capability and reducing constraint management costs. This requires appropriate location of interconnector connection points and depends on the prevailing market conditions between GB and the interconnected market. We recognise however that in some instances, interconnectors can have a negative impact on constraint management, where a large influx of power could lead to local constraints and costly curtailment.

Our initial view on system operability impacts

3.35. The impact of interconnectors on system operability is mixed. Their capability to provide ancillary services may well be beneficial to system operability. However, the impact of interconnector flows often represents the largest loss on the system, leading to significant curtailment costs. We note that the ESO are undertaking a number of actions to minimise these costs in the future as set out in their System Operability Framework[22].

3.36. An important consideration across most system operability impacts is interconnector location. At present the optimum location points for interconnectors is considered as part of the Connection Infrastructure Options Note (CION) process, which takes place a number of years before interconnectors are operational. As GB interconnectors operate under a developer-led regime, the CION process is undertaken at the request of developers whose basis for preferred connection points is price signals, rather than system impacts. This means that under current frameworks interconnectors may not be optimally located with respect to system operability impacts.

3.37. As highlighted in Ofgem's review of GB energy system operation[23] we think there is a need to have a more formal and structured assessment of the impacts of interconnectors on system operability on a regular basis, for example through enhanced and more proactive network development planning. We will work with the ESO to establish how their analysis on system operability can better support any potential future regulatory regime for interconnectors.

Security of supply

3.38. Interconnectors contribute to GB security of supply by connecting GB to neighbouring electricity networks. They also provide access a to wider pool of generation, increasing the

[22] System Operability Framework (SOF): https://www.nationalgrideso.com/research-publications/system-operability-framework-sof
[23] Review of GB energy system operation: https://www.ofgem.gov.uk/publications/review-gb-energy-system-operation

diversity and resilience of GB's energy supply. They are a useful tool to system operators as they can ramp quickly in response to rapid short-term changes in supply and demand. Interconnectors also help to address intermittency of renewables which also results in increased system security. As offshore wind generation capacity is set to increase in line with government ambitions, it is increasingly important that the system is able to manage changes to the supply and demand balance.

3.39. To date GB interconnectors have typically been net importers of electricity. However, as discussed in our workstream 2 policy review working paper, we expect that GB interconnectors will become net exporters in the medium to long term. Over these timeframes we also expect trading over intra-day timeframes to become increasingly important as intermittent generation penetrates deeper into the energy mix. Therefore, we expect that interconnectors will continue to be able to respond quickly to price signals at times of system stress and we expect them to be an increasingly important tool in managing volatility in different timeframes.

3.40. Some stakeholders have raised concerns that additional interconnectors may have a negative impact on security of supply. This is because interconnectors may displace GB-based generation, which they considered to be more reliable, and may not always be flowing into GB at times of system stress if there is greater scarcity in the connecting country. Whilst it is noted that interconnectors are de-rated on the capacity market, those stakeholders note that existing derating factors do not appropriately reflect the risk that interconnectors export at times of system stress.

3.41. For similar reasons some stakeholders suggest that interconnectors should not participate in the GB capacity market. Those stakeholders argue that interconnectors have a distortive effect on auction prices, making security of supply more expensive. This is because they are competing against domestic generation that does not have the same regulatory support (through the cap and floor regime) and are disadvantaged by transmission charges which interconnectors are not subject to.

Our initial view on security of supply impacts

3.42. We consider that interconnectors likely have a positive impact on security of supply in GB. However, we recognise some stakeholder concerns to the contrary. It is important therefore that we appropriately assess the impact of interconnectors on security of supply in any potential future needs case assessments.

3.43. We note that future policy on the participation of interconnectors in the capacity market is a matter for government and is therefore out of scope of this policy review. The Electricity Capacity Report (ECR) gives a range of possible de-rating factors for interconnectors participating in the capacity market from each country. The final, single de-rating values for each interconnector are decided by the Secretary of State based on consultation with the Panel of Technical Experts (PTE). As the policy review is focussed on regulatory policy, the setting of de-rating factors for ICs is also outside of the scope of this review.

4. Assessing the wider impacts

Section summary

This section reviews how the wider impacts of interconnectors have been captured in the past and considers how they could be captured in the future.

Questions

Question 5: Do you agree with our view on how wider impacts have been captured in past needs case assessments?

Question 6: How do you think we should approach future needs case assessments within the framework presented in this working paper? Are there any other options we should consider?

How we have considered wider impacts in the past

4.1. It has always been the case that interconnectors have had a whole system impact. This was recognised in our Initial Project Assessments (IPAs) for our cap and floor regime Window 1[24] and Window 2[25] interconnectors. During these assessments we considered the needs case of applicant projects using both quantitative and non-quantitative analysis to inform a view on the social welfare impact of each project. Specifically, we considered:

- impacts of projected flows between the connecting markets;
- impacts on the operation of GB's transmission system;

[24] Cap and floor regime: Initial Project Assessment for the FAB Link, IFA2, Viking Link and Greenlink interconnectors: https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-initial-project-assessment-fab-link-ifa2-viking-link-and-greenlink-interconnectors

[25] Cap and floor regime: Initial Project Assessment of the GridLink, NeuConnect and NorthConnect Interconnectors: https://www.ofgem.gov.uk/publications-and-updates/cap-and-floor-regime-initial-project-assessment-gridlink-neuconnect-and-northconnect-interconnectors

- the costs of onshore transmission reinforcements needed to accommodate each project; and

- qualitative assessment of hard-to-monetise impacts, including strategic and sustainability benefits that the projects may provide.

4.2. Our assessment across each of these areas was informed by a range of data sources:

- Submissions received from the project developers. These submissions included background on the projects, economic modelling, details on the technical design of projects and project plans.

- Independent electricity market modelling by formed by Pöyry Management consultants ("Pöyry"; now AFRY Management Consulting) on the potential impacts of projected flows between connecting markets.

- Reports from National Grid Electricity Transmission (NGET) in its role at the time as the GB system operator (SO). These reports covered the potential impact of proposed interconnectors on the operation of GB's transmission system and inform our analysis in Section 5.

- Input from NGET on the connection process for each project and estimated costs of connection to GB's transmission system.

4.3. The remainder of this section discusses each of the Window 1 and Window 2 assessment areas further and consider whether these assessments capture the range of wider impacts that are the focus of workstream 3.

<u>Impacts of projected flows between the connecting markets</u>

4.4. The impacts of projected flows resulting from each interconnector was assessed using independent electricity market modelling performed by Pöyry, and was compared to modelling submitted by each developer. This analysis provided a view on the social welfare impact of each interconnector resulting from the flow of electricity. It also provided a view on the expected revenues of each project and the resulting impact on consumer bills through the cap and floor mechanism. It also considered the potential impacts of capacity mechanisms on each of the assessed interconnectors.

4.5. The focus of socio-economic electricity market modelling is market flows of electricity and the resulting impact on consumers, generators, and other market participants. This is the focus of workstream 2 of the interconnector policy review and we invite the reader to review our workstream 2 working paper for further discussion on this assessment type and its suitability for possible future needs case assessments.

4.6. We do however consider that electricity market modelling inherently touches upon a number of the wider impacts considered in this working paper, although not explicitly. The flow of electricity along interconnectors responds to price signals, in doing so interconnectors are providing a flexibility service. We note however, that our modelling considers flows on a day-ahead timescale, whereas we expect the value of interconnectors in flexibility to be increasingly on an intraday timescale as intermittent generation capacity grows.

4.7. The price signals to which interconnectors respond are dictated by prevailing market conditions (supply and demand) in each connecting country. Where demand outstrips supply wholesale prices rise, increasing the likelihood that interconnector flows in that direction in response to security of supply events. By considering the directionality of interconnector flows electricity market modelling does therefore capture part of the role that interconnectors play in security of supply. Additionally, the modelling considers the impacts of potential interconnectors on the GB capacity market which is the primary market level tool used to ensure security of supply in GB.

<u>Impacts on the operation of GB's transmission system</u>

4.8. Our assessment of impacts of interconnectors on operation of the transmission system focussed on two areas:

- the potential impact from the provision of ancillary services by each project to the System Operator; and
- the constraint cost implications of each interconnector connecting to the transmission system.

4.9. Our assessment was based upon analysis provided to us by NGET and information contained within each project's Connections Infrastructure Options Note (CION), which identifies the most economic and efficient connection location.

4.10. The analysis from NGET provided a quantified monetary impact of each project, from the two areas listed above, to the consumer. These values were taken into consideration when performing a cost benefit analysis on each project alongside the outputs of socio-economic modelling. Disaggregated cost and benefit values were not presented publicly due to the commercially sensitive nature of the information.

4.11. In addition to the quantitative assessment, NGET's analysis also provided a qualitative assessment of the impact of each interconnector on a range of ancillary services and likely impact on constraint costs. This was primarily based on the potential role that each interconnector could have based upon its size and location with respect to existing system needs.

4.12. System operation is one of the categories of wider impacts being considered in workstream 3. The assessment of this category performed at IPA stage in the past covers the key aspects of system operation impacts already discussed in this working paper. We do however consider there to be scope to expand our assessment of system operation impacts in potential future assessments as we set out at the end of this section.

Costs of onshore transmission reinforcements

4.13. Onshore reinforcement costs reflect the investment that is required by NGET to connect each interconnector to the transmission system. The costs are recovered through Transmission Use of System (TNUoS) charges, which are paid by users of the transmission network. At IPA stage these costs were considered as part of our quantitative assessment of GB welfare impacts alongside the outputs of socio-economic electricity market modelling.

Qualitative assessment of hard-to-monetise impacts

4.14. This assessment focussed on long-term strategic and sustainability indicators in line with Ofgem's impact assessment guidance[26] at the time and was based on information from the project developers alongside internal analysis. Specifically, this assessment looked at:

[26] Impact Assessment Guidance: https://www.ofgem.gov.uk/publications-and-updates/impact-assessment-guidance

- **Optionality:** The evaluation of specific, realistic options that may be enabled or prevented by a decision. Optionality is about recognising the value of maintaining flexibility and keeping options open to help accommodate future uncertainty.

- **Diversity and resilience:** Resilience is defined as the energy system's capacity to tolerate disturbance and continue to deliver energy services to consumers. A resilient energy system can recover from shocks quickly and still meet energy needs even if external circumstances have changed. In general, diversity is considered to increase resilience.

- **Stress and security implications**: This concerns the effect on security of supply; potential for extreme price and/or volatility in the market; and the UK's legally binding energy targets.

- **Learning by doing and supply chain development:** This is the consideration that there can be potential savings in cost by one company/individual going through a process and passing that learning onto others. This can result in a more efficient process via sharing of learned efficiencies.

- **Pathways and lock-in:** Pathways is the idea that past decisions or events can affect the likelihood of future decisions, i.e. one decision precludes another. Lock-in is where pathways make certain desirable options unachievable.

- **Natural assets and sustainability implications**: This concerns the effect on consistency with UK 2050 targets; natural asset implications; and longer-term greenhouse gas (GHG) considerations.

4.15. There were some differences in how we assessed these areas between our Window 1 and Window 2 IPAs. In our Window 1 IPA we provided narrative across each of the impact areas listed above, whilst in our Window 2 IPA we focussed in more on stress and security implications, and sustainability implications. In addition to these, in our Window 2 IPA we provided a qualitative assessment of the provision of balancing service to the SO, providing alternative solutions to security and supply, and supporting the decarbonisation of energy supplies.

4.16. A number of these assessed areas remain very relevant today, and there is natural read across to some of the wider impact categories being considered in this working paper, most notably decarbonisation and the role that interconnectors could play in supporting government policy targets.

Is the existing assessment framework still fit for purpose?

4.17. The needs case assessment framework used in our Window 1 and Window 2 IPAs was comprehensive and covered to some degree most of the wider impacts of interconnectors that we are considering this working paper. However, we consider that the role that interconnectors play in the energy system is changing, and policy objectives and targets with respect to decarbonisation are strengthening and legally binding. We therefore consider it appropriate to review the needs case framework ahead of any potential future assessments.

4.18. Specifically, we propose to further explore how we can better assess the impact of interconnectors under each of the wider impact categories discussed in this working paper. This includes whether there is additional quantification we can perform under each potential impact category.

How others assess wider impacts

4.19. The European network development process is of particular relevance given that GB interconnectors generally connect us to European markets. The network development process in Europe aims to identify, assess, and support those projects that are considered important for meeting European energy goals. Prior to the UK's departure from the European Union this is a process that we participated in alongside other National Regulatory Authorities (NRAs). The process is underpinned by European legislation which places obligations of certain bodies to deliver and oversee different aspects.

ENTSO-E CBA guidelines

4.20. The European Network of Transmission System Operators for Electricity (ENTSO-E) publish cost benefit analysis (CBA) guidelines for the assessment of transmission and storage projects. It describes the common principles and methodologies to be used in the necessary network studies, market analyses, and inter-linked modelling methodologies. The latest ENTSO-E CBA guidelines were published in January 2020.[27]

[27] 3rd ENTSO-E Guideline for Cost Benefit Analysis of Grid Development Projects:

4.21. The ENSTO-E CBA guidelines are used primarily for the ENTSO-E Ten Year Network Development Plan (TYNDP), and subsequently the outputs are used in European Commission's selection of Projects of Common Interest (PCIs). Additionally, the ENTSO-E CBA guidelines are recommended for use in assessing cross-border cost-allocation (CBCA) requests.

4.22. The guidelines set out a framework for consistently assessing the impacts of a range of projects. The framework is based upon a series of benefit, cost, and residual impact indicators which combine to provide an overall welfare assessment for an individual project. Within the guidelines are methodologies for assessing and quantifying each of those indicators.

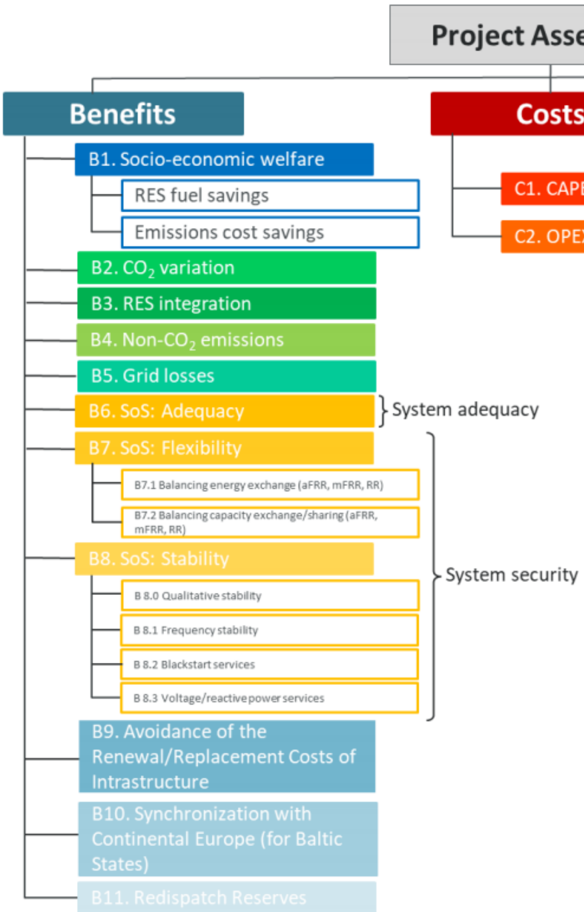


Figure 4: Project assessment categories in the 3rd ENSTO-E CBA guidelines.

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https://eepublicdownloads.entsoe.eu/clean-documents/tyndp-documents/Cost%20Benefit%20Analysis/200128_3rd_CBA_Guideline_Draft.pdf

4.23. These CBA guidelines are a particularly useful reference point as they provide methodologies for the quantification and consistent assessment of a range of indicators that reflect the wider impact categories we are exploring. It is also a set of methodologies that are already publicly consulted on, are likely familiar to most stakeholders, and would likely already have been applied to potential future GB interconnectors through the TYNDP.

TYNDP and PCI selection

4.24. The CBA guidelines are applied to transmission and storage projects that apply to the TYNDP based upon central scenarios and project information submitted by the project promoters. The NRAs are provided with an opportunity to comment on the consistency of the submitted information for projects in their jurisdictions. The output of the TYNDP is a project sheet on each project summarising the outcome of the CBA assessment.

4.25. The PCI selection process is separate from the TYNDP, but draws upon the TYNDP outputs alongside an assessment of whether each project contributes towards meeting European policy goals and identified system needs. This is an example of how network development processes feed into political or regulatory decision making on the needs case for projects.

4.26. The relevance of this process to this working paper is how the outputs of network development planning processes and assessment of wider impacts are factored into political or regulatory decision making. As set out in our workstream 1 working paper we want to be more coordinated in how we invite and assess prospective future interconnectors, including by taking account of analysis by National Grid Electricity System Operator (NGESO) through enhanced and more proactive network planning processes. We may be able to draw parallels to the European network development planning process to inform how this could work in GB.

Future needs case assessments

4.27. Based on the analysis presented in this consultation document we consider that our appraisal of a broad range of wider impacts should play a larger role in any potential future interconnector assessments.

4.28. At IPA stage for the existing cap and floor windows the needs case assessment was Ofgem led and supported by developer submissions, independent socio-economic market modelling, and an assessment of system impacts from the system operator. Whilst this has worked effectively to date, we will also explore alternative options to assessing the needs case for future interconnectors.

4.29. We consider there to be three end-points that could define a potential future needs case assessment framework. The best solution may lie somewhere between these end-points. The indicative options below describe the parties who would be undertaking and providing assessment and analysis – these do not otherwise change the roles of Ofgem, developers or other public bodies. Across all of these end-points, Ofgem would remain the decision maker under the current legislative and regulatory framework.

- **Ofgem led assessment –** In this end-point, Ofgem leads the assessment and are decision makers on input parameters and methodologies. Consultants may be procured to support technical aspects such socio-economic modelling or other quantitative analysis.

- **Developer led assessment –** In this end-point, the onus is placed on the developer to demonstrate to Ofgem why their project should be awarded a regulatory regime. The developer may choose to procure consultants to support technical aspects such socio-economic modelling or other quantitative analysis. Ofgem would assess and challenge submissions from the developers. Ofgem would issue guidance on minimum expectations on developers in order for us to be able to make an informed needs case decision.

- **Public data led assessment –** In this end-point, we would mostly rely on existing processes and analysis already in the public domain to inform our needs case assessments. Examples of existing processes would include the Network Options Assessment (NOA) for interconnectors, the System Operability Framework (SOF), and ENTSO-E's Ten Year Network Development Plan (TYNDP). Ofgem may work with the parties responsible for those processes to ensure that they best support future assessments.

4.30. We consider the approach to needs case assessments here as separate to the questions we explore with respect to needs case assessments in our workstream 1 policy review working paper, which primarily concern the design of the application process, rather than the assessment itself.

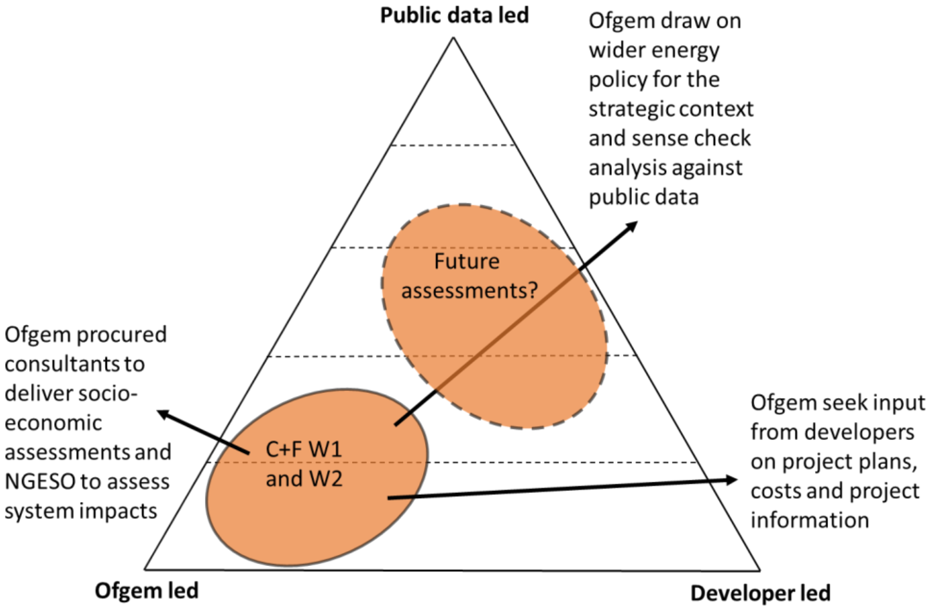

Figure 5: Graphical representation of the indicative framework within which we are considering our approach to future needs case assessments. The dashed "Future assessments?" box is indicative only and should not be considered our preference.

4.31. We would welcome the views of stakeholders on how we should approach future needs case assessments in line with this framework, or whether there are other intermediate options that we should consider further.

5. Conclusions and initial proposals

Section summary

In this section we summarise the conclusions and initial proposals that have been set out and discussed throughout this document.

Questions

Question 7: Do you agree with our initial conclusions? If not, please concisely explain why and provide supporting information if available.

Question 8: Do you agree with our initial proposals? If not, please concisely explain why and provide supporting information if available.

Conclusions

5.1. As a result of the analysis performed under workstream 3 of the interconnector policy review, as described in this consultation document, we have concluded the following:

- Interconnectors have far-reaching impacts on the energy system which can be broadly captured under the following categories – decarbonisation, flexibility, security of supply and system operation.
  - **Decarbonisation** – Interconnectors likely have a positive impact on decarbonisation. Specifically, we think that interconnectors have a key role to play in enabling decarbonisation of the energy system in support of net-zero.
  - **Flexibility** – Increased interconnection is likely to have a positive impact on the system by providing some of the additional system flexibility needed to enable the energy system changes required to meet net-zero. These impacts cross-over to the impacts considered across the other wider impact categories.
  - **Security of supply** – Interconnectors likely have a positive impact on security of supply by increasing the diversity and resilience of GB's energy supply. We recognise some stakeholder concerns regarding the participation of

interconnectors in the capacity market; however, we note that this is matter for Government.

  - **System operability** – The impact of interconnectors on system operation is mixed and in some instances location-dependent. The ESO is well placed to analyse these impacts and support potential future needs case assessments.

- Based on our review of existing decisions, external studies and analysis we think that the wider impacts of interconnectors are likely benefits on the whole, although we recognise that there are some costs. A more detailed assessment of these wider impacts should therefore be integrated into future potential future needs case assessments, to ensure we can consider the full picture of possible costs and benefits.

- The assessment framework used in our cap and floor Window 1 and Window 2 IPAs captured aspects of the wider impacts of interconnectors, although not always explicitly. There is scope to improve how we assess wider benefits for potential future needs case assessments.

- The network development planning process in Europe provides a useful comparative framework for how some wider impacts can be quantified and for how network development processes can feed into regulatory decision making.

Initial proposals

5.2. In response to the conclusions drawn from workstream 3 we are seeking views on the following proposals:

- There is likely a need for further GB interconnection, and a need for a regulatory regime to incentivise further investment in a way which continues to be beneficial for consumers.

- We will review our approach to needs case assessments to ensure that any future assessments take into full consideration the range of factors, including wider impacts, that could contribute to consumer's interests:

  - We will explore methodologies for assessing the wider impacts of interconnectors, including their quantification where possible.

- We will also consider how best to incorporate assessments of wider impacts into our decision making on the needs case for potential future interconnectors.
- We will review how best to deliver potential future needs case assessments taking into consideration the role of Ofgem, the developer, and the ESO.
- We explore the role that enhanced and proactive network planning could play in potential future needs case assessments. This links into the initial proposal highlighted in our workstream 1 working paper.

5.3. Following this consultation, and our review of stakeholder responses, we will confirm our final proposals in our interconnector policy review decision. Our proposed detailed steps to implement our final proposals will also be set out in our decision.

6. Consultation questions

Section summary

In this section we will set out the specific questions on which we would like feedback

Questions

In responding please be as specific and concise as possible – for example, if providing feedback on specific conclusions or recommendations, please clearly explain.

Section 2

Question 1: Do you agree with the approach we have taken to workstream 3?

Section 3

Question 2: Do you agree with the potential wider impact categories we have focussed on? Are there any other areas we should consider?

Question 3: Do you think the discussion presented in this document adequately represents the potential impact of interconnection within each category? If not, please explain and provide supporting evidence if possible.

Question 4: Do agree with our initial views with respect to each potential wider impact category? If not, please explain why.

Section 4

Question 5: Do you agree with our view on how wider impacts have been captured in past needs case assessments?

Question 6: How do you think we should approach future needs case assessments within the framework presented in this working paper? Are there any other options we should consider?

<u>Section 5</u>

Question 7: Do you agree with our initial conclusions? If not, please concisely explain why and provide supporting information if available.

Question 8: Do you agree with our initial proposals? If not, please concisely explain why and provide supporting information if available.

<u>Other</u>

Question 9: Do you have any further feedback on our analysis, conclusions or proposals presented in this consultation document?

Appendix 1 – Privacy notice on consultations

Personal data

The following explains your rights and gives you the information you are entitled to under the General Data Protection Regulation (GDPR).

Note that this section only refers to your personal data (your name address and anything that could be used to identify you personally) not the content of your response to the consultation.

1. The identity of the controller and contact details of our Data Protection Officer

The Gas and Electricity Markets Authority is the controller, (for ease of reference, "Ofgem"). The Data Protection Officer can be contacted at dpo@ofgem.gov.uk

2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

3. Our legal basis for processing your personal data

As a public authority, the GDPR makes provision for Ofgem to process personal data as necessary for the effective performance of a task carried out in the public interest. i.e. a consultation.

4. With whom we will be sharing your personal data

Your personal data will not be shared outside of Ofgem.

5. For how long we will keep your personal data, or criteria used to determine the retention period.

Your personal data will be held in line with our processes.

6. Your rights

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right to:

- know how we use your personal data
- access your personal data
- have personal data corrected if it is inaccurate or incomplete
- ask us to delete personal data when we no longer need it
- ask us to restrict how we process your data

- get your data from us and re-use it across other services
- object to certain ways we use your data
- be safeguarded against risks where decisions based on your data are taken entirely automatically
- tell us if we can share your information with 3rd parties
- tell us your preferred frequency, content and format of our communications with you
- to lodge a complaint with the independent Information Commissioner (ICO) if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at https://ico.org.uk/, or telephone 0303 123 1113.

7. Your personal data will not be sent overseas (Note that this cannot be claimed if using Survey Monkey for the consultation as their servers are in the US. In that case use "the Data you provide directly will be stored by Survey Monkey on their servers in the United States. We have taken all necessary precautions to ensure that your rights in term of data protection will not be compromised by this".

8. Your personal data will not be used for any automated decision making.

9. Your personal data will be stored in a secure government IT system. (If using a third party system such as Survey Monkey to gather the data, you will need to state clearly at which point the data will be moved from there to our internal systems.)

10. More information For more information on how Ofgem processes your data, click on the link to our "Ofgem privacy promise".