EPRG Conference – December 2020

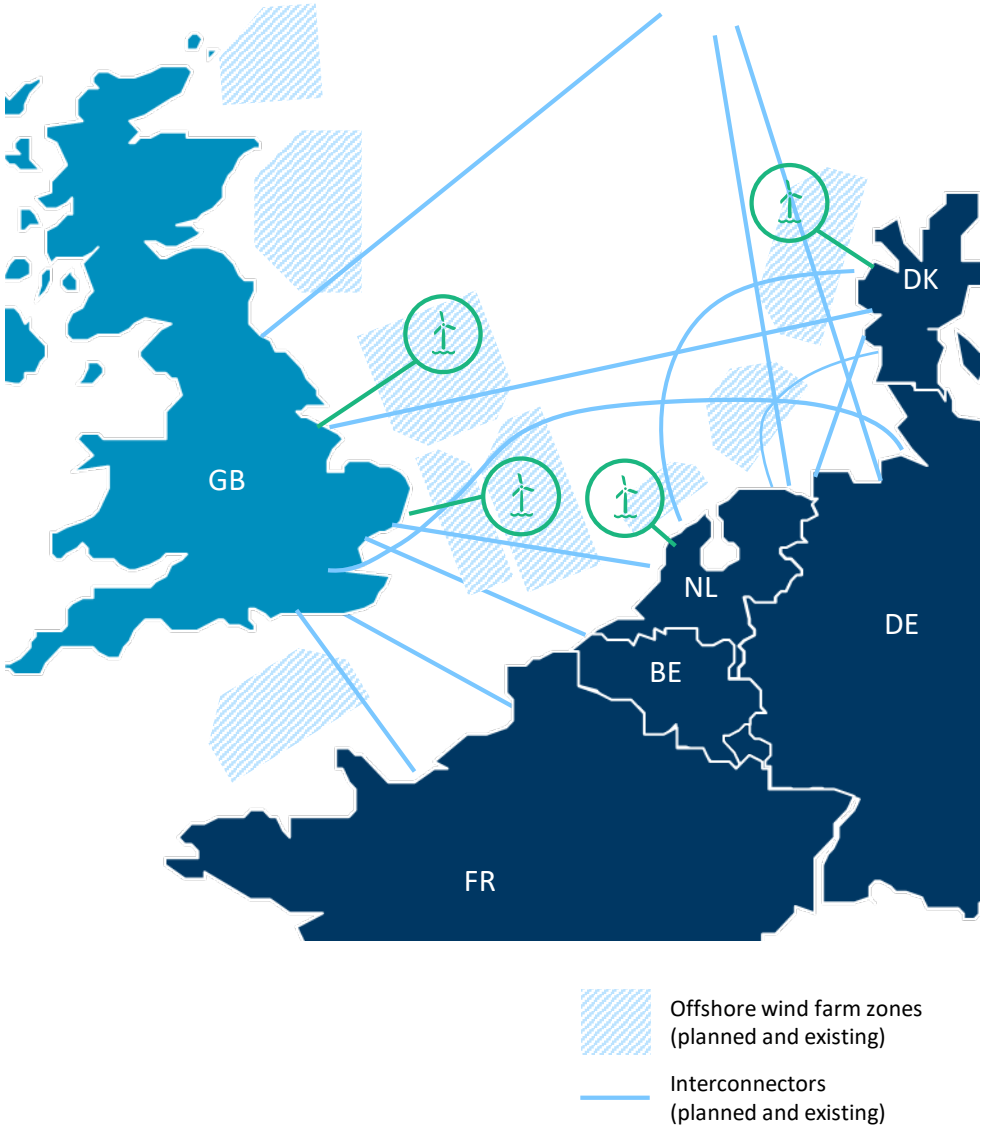
Models for hybrid assets combining offshore wind and interconnectors

FTI CONSULTING

UNIVERSITY OF CAMBRIDGE | Energy Policy Research Group

4 December 2020

Wind farms and interconnectors are currently developed independently of each other, which has led to calls for increased coordination



Ambitious GB offshore infrastructure investment

Interconnectors: 5 GW (2020) → 18-23 GW (by 2032)

Offshore wind: 10 GW → 40 GW (by 2040)

Challenges with the status quo

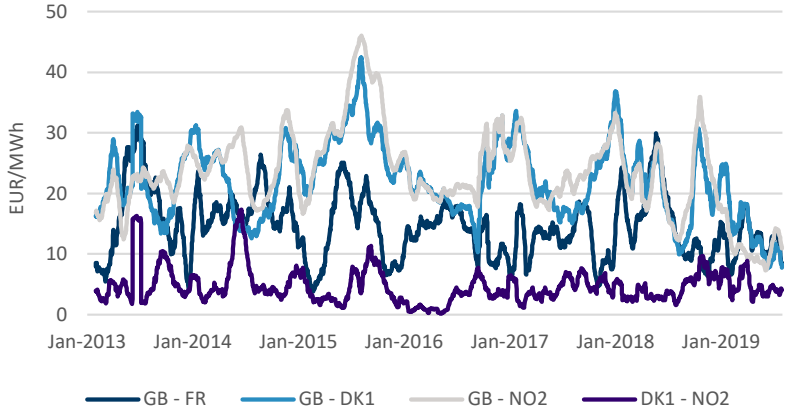
- **Under-utilised transmission**
- **Under-exploited economies of scale**
- **Excessive environmental footprint**

→ **Inefficient way of meeting carbon reduction targets**

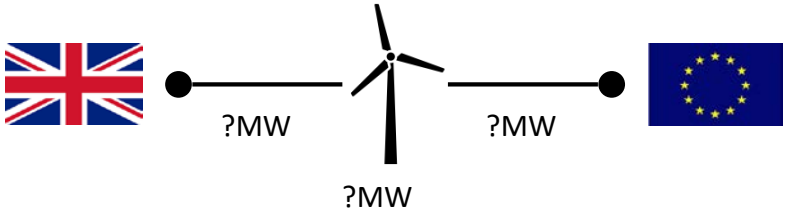
Hybrids face several commercial and regulatory challenges, which require carefully designed solutions to overcome them

Commercial challenges

Price differentials may not support interconnectors between countries



The optimal capacities of cables and the wind farm is a function of: (i) expected price differentials; (ii) expected wind speeds; and (iii) costs of the asset.



Regulatory challenges

Jurisdiction of the wind farm will need to be determined

Two markets

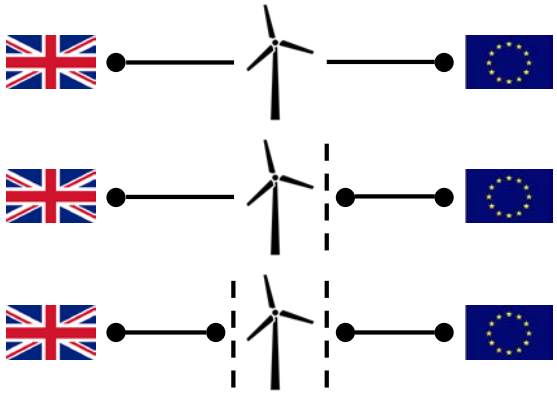
Wind farm dispatches to both price zones

National market

Wind farm 'in' one price zone

Offshore market

Wind farm 'in' own price zone



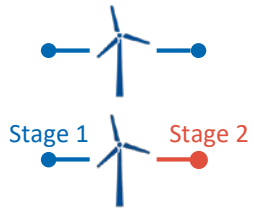
EC unbundling restrictions will need to be addressed

EU Directive 2019/944 – Article 43

Anticipatory investment

Full coordination of the asset

Sequenced development



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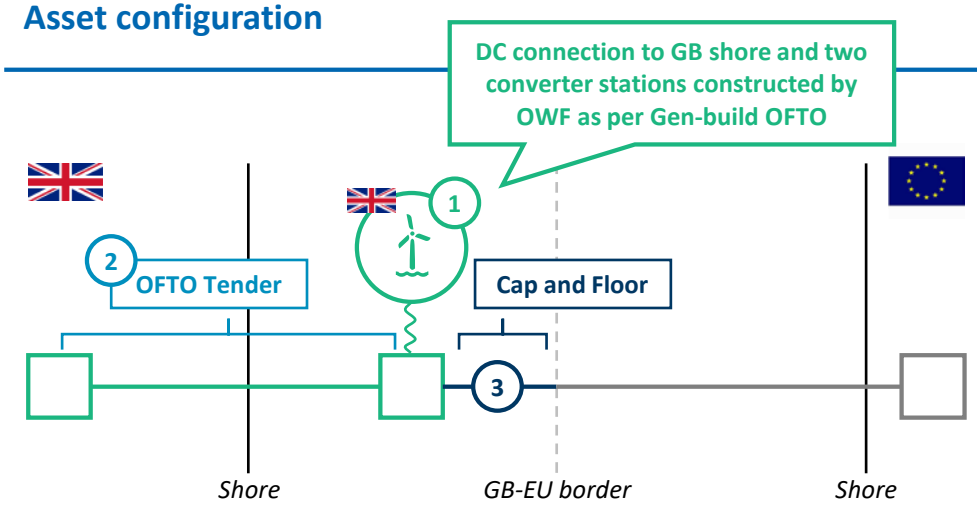
Status quo model: Applying existing OFTO and interconnector Cap and Floor regimes to hybrid configurations could be a simple solution…

Asset configuration



Regulation of revenue

Interconnector	C&F in GB / Regulated in EU
GB Offshore transmission	Regulated (OFTO)
GB Offshore wind farm	Regulated (CfD)

✓ Easiest to implement

✓ Relies on attractive well-established regimes (such as OFTO)

× Suboptimal sizing and configuration

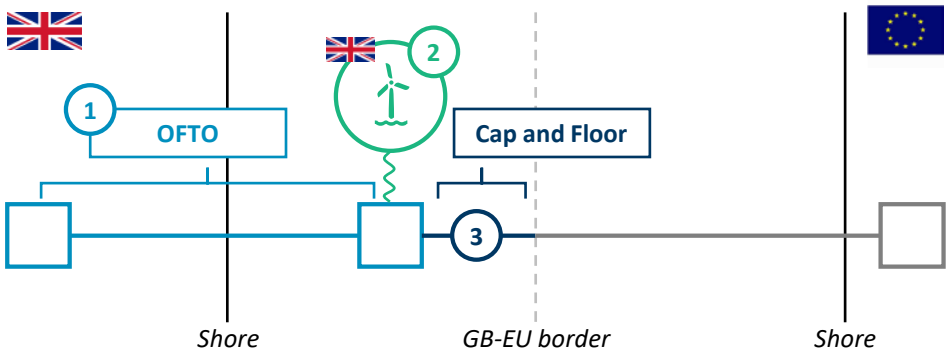
? Skills mismatch between the OFTO and the IC

? Limited interest among developers to extend the asset into an IC

…but may not deliver optimal consumer outcomes

Anticipatory model (OFTO variant): GB offshore transmission could be 'anticipated' to help optimise the configuration…

Asset configuration



Regulation of revenue

Interconnector	C&F in GB / Regulated in EU
GB Offshore transmission	Regulated (OFTO)
GB Offshore wind farm	Regulated (CfD)

✓ **Improved incentive to participate by Tx developers**

✓ **Improved asset configuration**

× **Risk of asset stranding (depends on reg regime)**

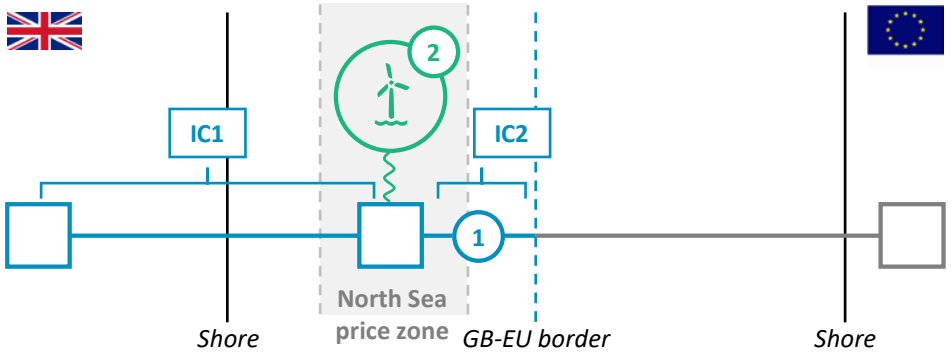
? **New regulatory regime for anticipatory investment**

? **Incentives for offshore wind farms to connect**

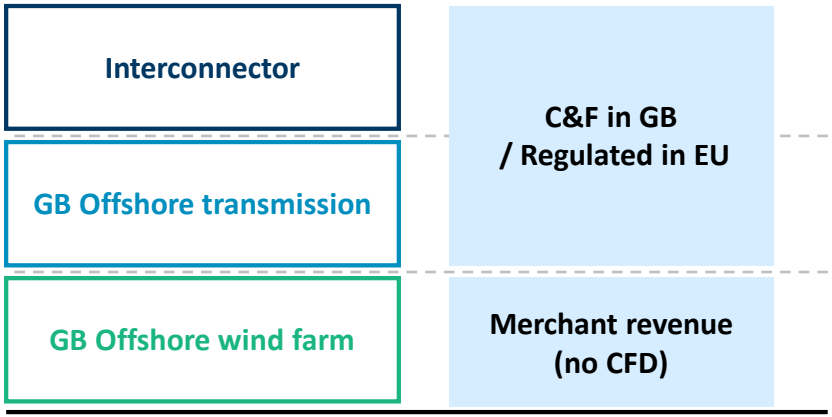
…but requires additional regulatory mechanisms and incentive regimes to mitigate the risk of asset stranding

Anticipatory model (IC variant): The entire IC could be 'anticipated' and constructed before, or while, connecting offshore wind farms…

Asset configuration



Regulation of revenue



✓ **Optimised Tx, for anticipatory offshore wind farm**

× **Some risk of asset stranding remains**

× **Offshore wind "squeezed"**

× **May not be able to access CFD**

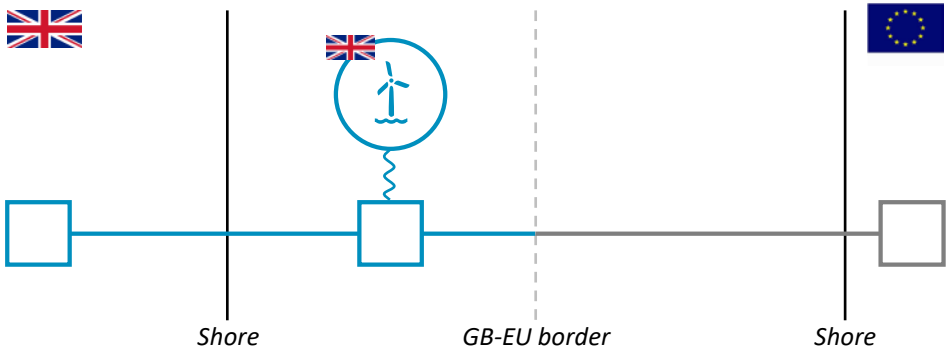
? **Treatment of TNUoS**

? **Creation of a new North Sea price zone**

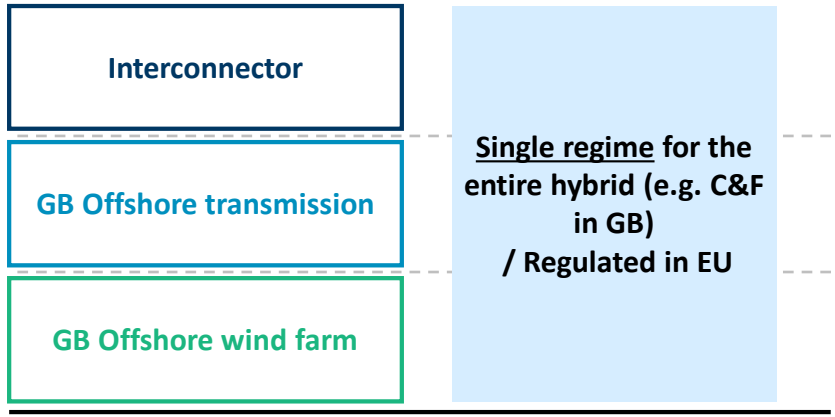
…which partly mitigates the risk of asset stranding, but may entail developing an entirely new "North Sea" price zone

Fully coordinated model: The entire hybrid asset could be jointly configured for optimal outcomes for developers and consumers…

Asset configuration



Regulation of revenue



- ✓ **Full optimisation of asset configuration**
- ? **Sharing of capex savings**
- ? **Additional complexities from multi-party coordination**
- ? **Legislative barriers from unbundling regime**
- ? **Competition concerns?**

…but it requires all parties (developers as well as regulators) to come onboard

Any questions?

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