Offshore Coordination Project

Commercial webinar
4 August 2020

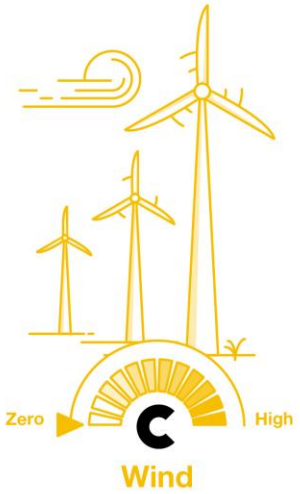
nationalgridESO

Agenda

1. Introduction (5 minutes)
2. Cost benefit analysis (20 minutes)
    - Q&A (10 minutes)
3. Connections workstream findings (15 minutes)
    - Q&A (15 minutes)
4. Potential phase 2 update (10 minutes)
    - Q&A (10 minutes)
5. Next steps (5 minutes)

Many thanks for joining. Please stay on mute and keep cameras off as we are recording this session. If you have any questions as we present please add them to the chat function – we will cover these in the Q&A sections

Why are we looking at this?



Government net-zero commitments:

- 40 GW of offshore wind by 2030
- 75-100 GW of offshore wind by 2050

Department for Business, Energy & Industrial Strategy

- Offshore Transmission Network Review (July 2020)

Ofgem decarbonisation action plan

- “Exploring options a more coordinated offshore transmission system to connect offshore wind generation, to achieve a rapid and economic expansion of the offshore network”
- “As a first step we will work with the ESO to ensure it can take forward an options assessment for offshore transmission”

Potential benefits of a new approach

- Issues now with the impact on coastal communities of the current radial approach
- Questions around cost-effectiveness above current levels

Scope of Phase 1 workstreams and what we are speaking to you about today

These are our four phase 1 workstreams that need to take place at the beginning of the larger programme to inform later workstreams and the scale of potential benefits. We will consider our role in areas such as commercial and regulatory barriers as we scope phase 2.

1) Technology readiness and cost for offshore integration

2) Offshore conceptual design, impact on Onshore Network and cost benefit analysis

3) A review of the offshore connections process to encourage more coordination

4) Gap analysis and review of existing work, leading to scope of potential second phase

Plus collaborative stakeholder engagement

Offshore Coordination – Cost-benefit Analysis

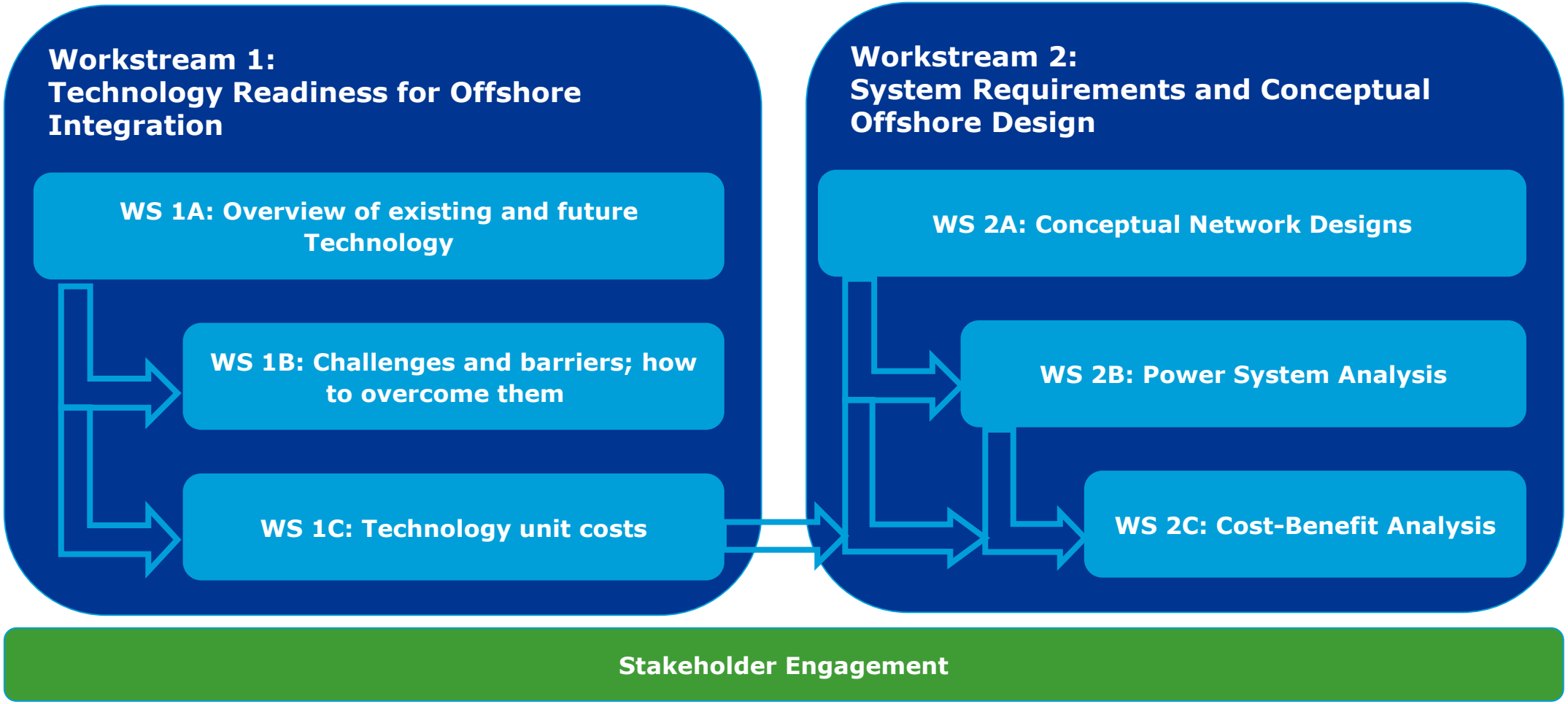
Maksym Semenyuk, Wim van der Veen

August 4th 2020

Content

Introduction

Introduction



Objectives of the Cost-benefit Analysis

Objectives of Cost-benefit Analysis

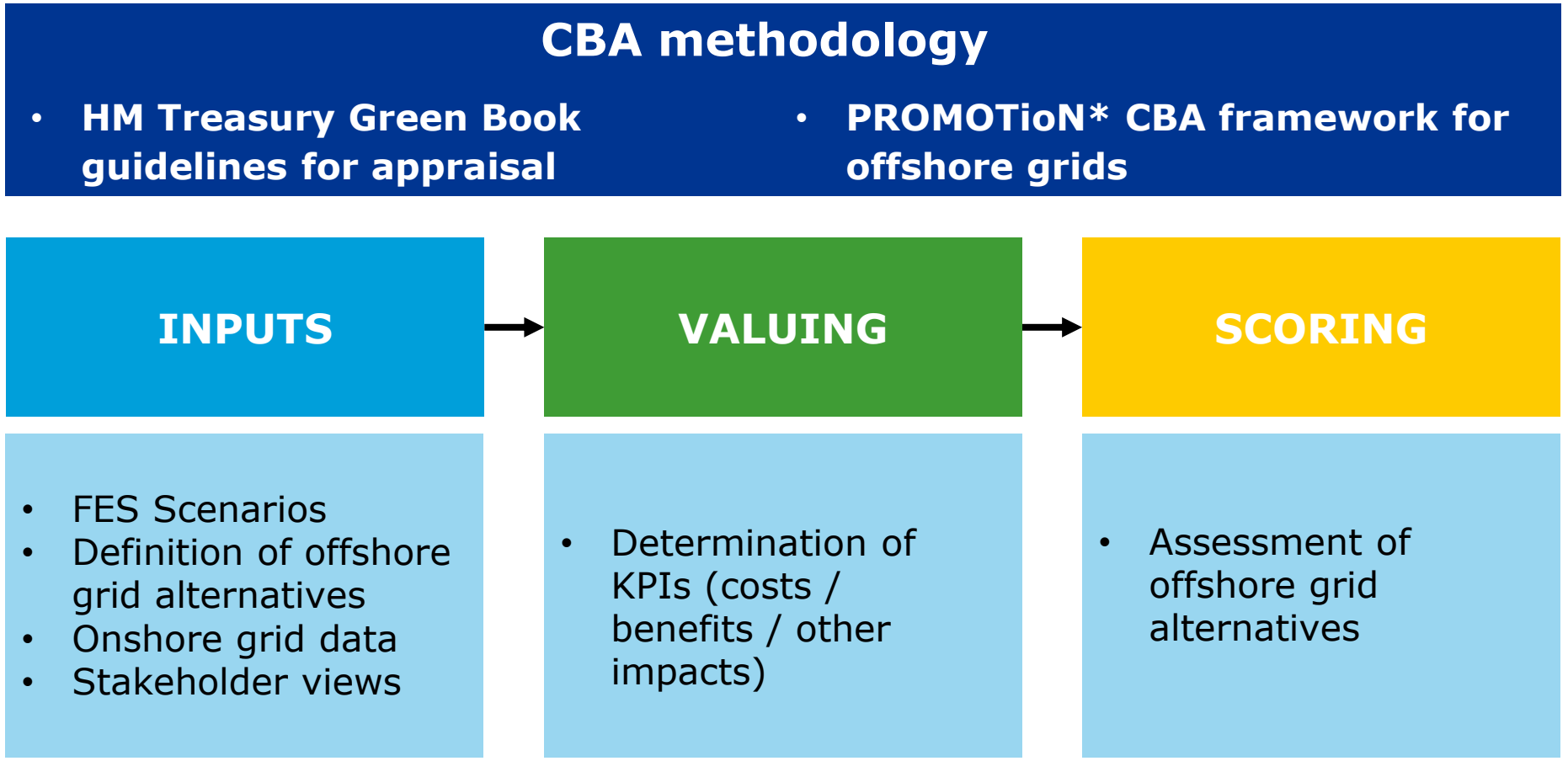
Inform recommendations of the most optimal way of implementing integrated offshore network

Assess economic and social costs, benefits and risks of various grid topologies

Understand potential effects, impacts and trade-offs of options by providing objective evidence for decision making

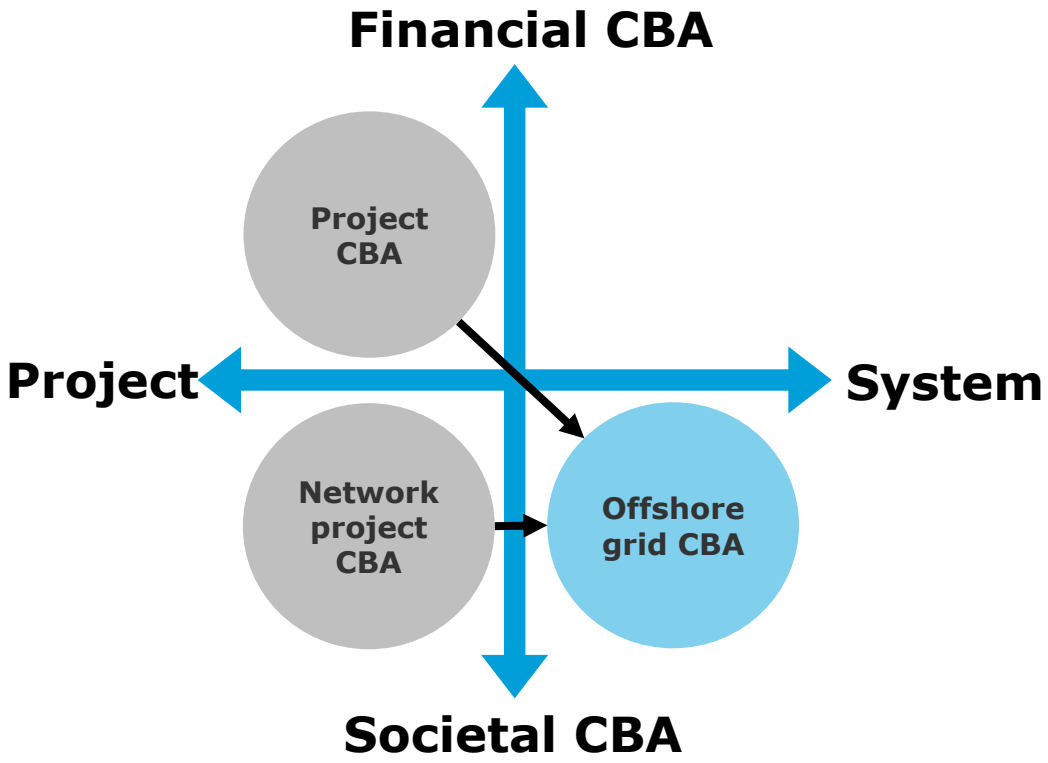
Scope of the analysis

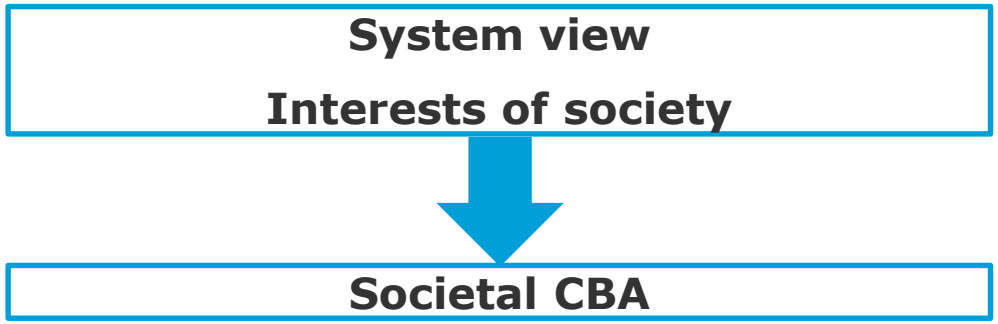
CBA Process



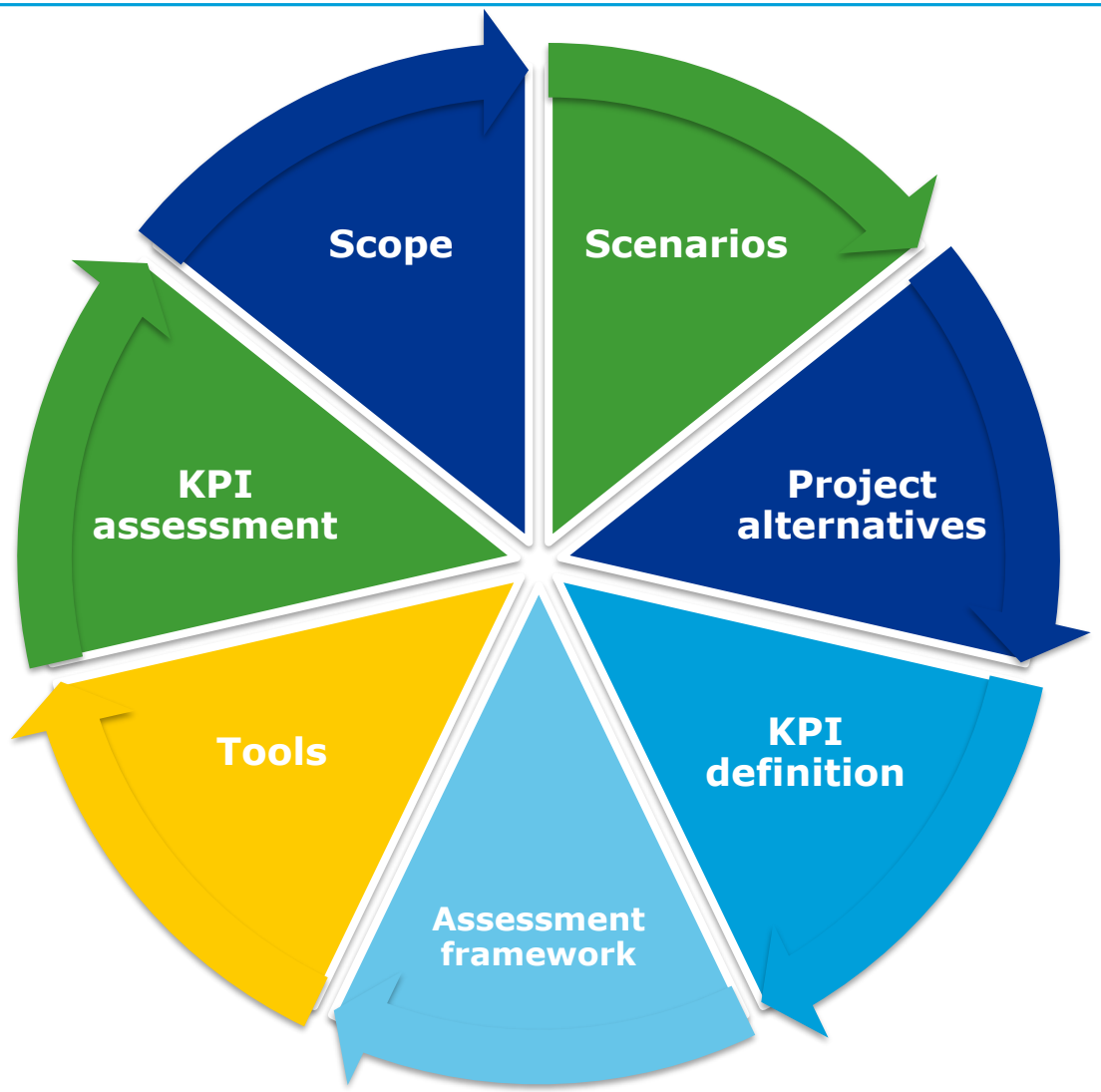
*PROgress on Meshed Offshore Transmission Networks - https://www.promotion-offshore.net/

Scope of the CBA for Great Britain offshore grid





Dimensions of the CBA



- **Scope:** GB onshore and offshore networks, neighbouring EU countries
- **Scenarios:** FES Leading the Way scenario (2030, 2040, 2050)
- **Project alternatives:** coordinated design(s), counterfactual
- **KPIs:**
  - Monetised
  - Quantified
  - Qualified
- **Assessment framework:** Spider Diagrams
- **Tools:** Plexos Market Model, NPV Model

Key Performance Indicators (KPIs)

KPIs

Benefits	Costs	Environmental and Local impacts
£ Socio-economic welfare	£ CAPEX	Environmental impacts
Renewable Energy integration	£ OPEX	Social and Local impacts
CO_2 variation		
Grid losses		
Security of supply - Adequacy		
Security of supply - Security		

£ **Monetised**

Quantified

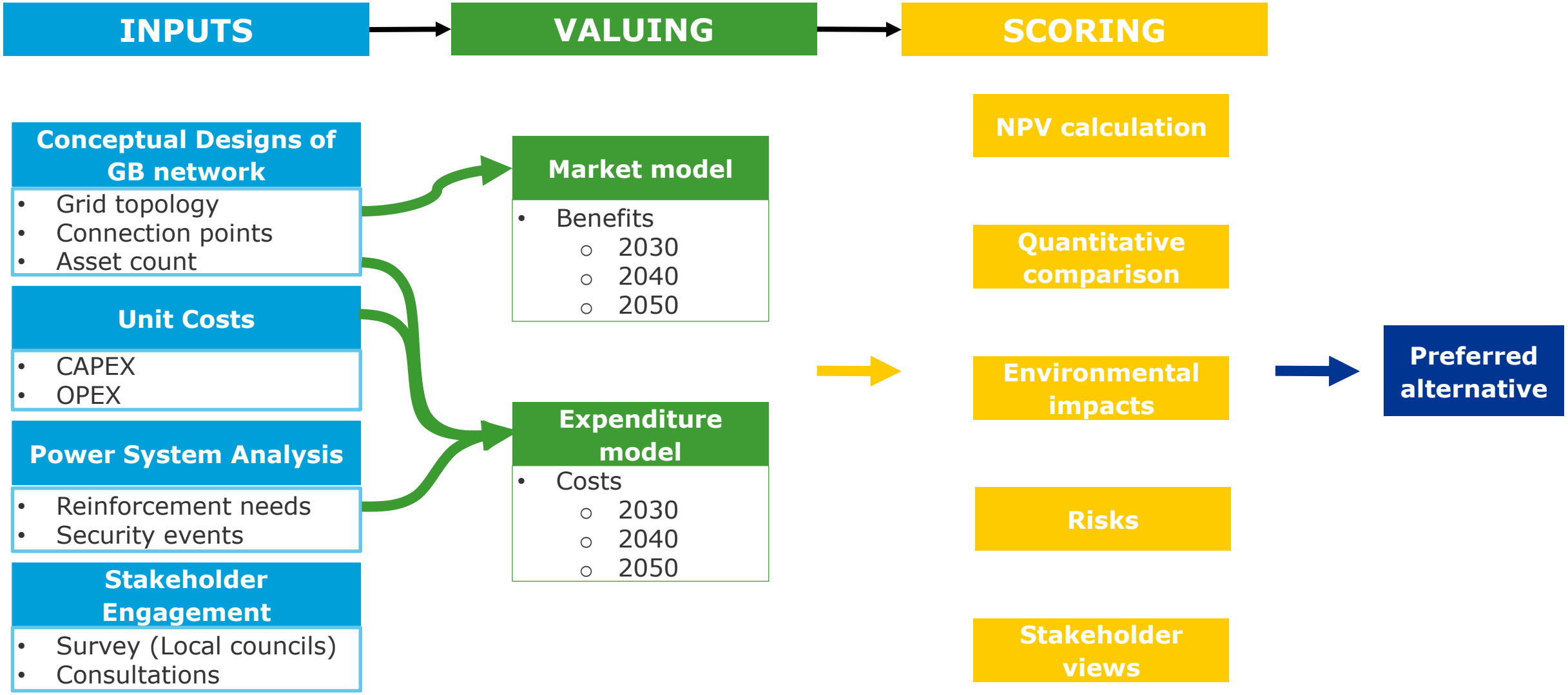
Qualified

KPIs cover a variety of impacts:

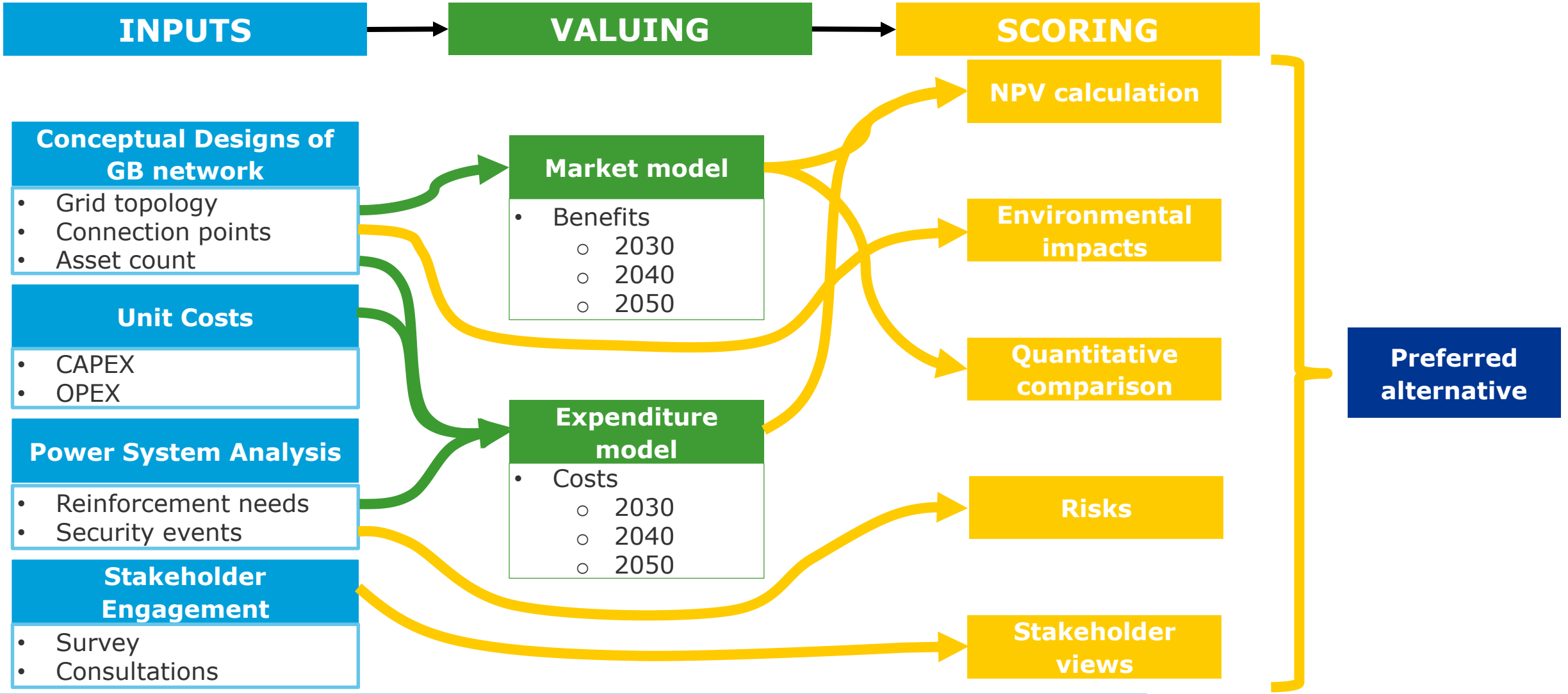
- Economic
- Environmental
- Societal

Execution

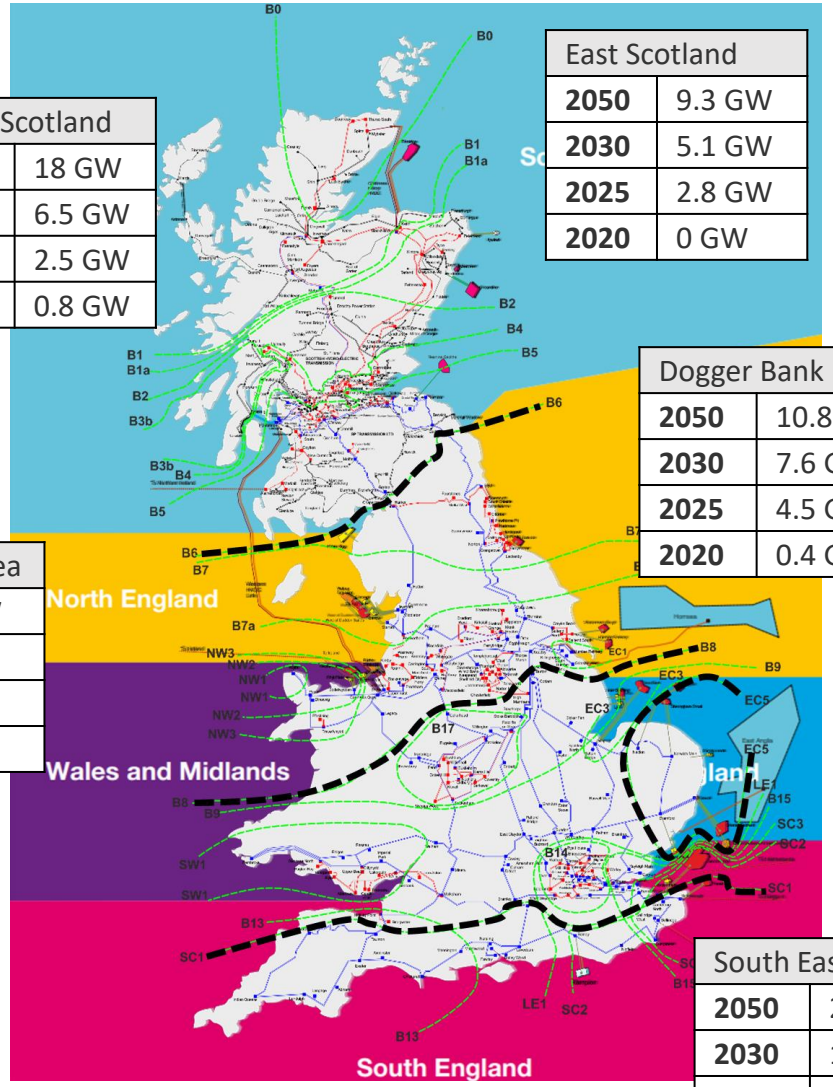
CBA Execution



CBA Execution



Market Modelling - consideration of GB transmission network



North Scotland	
2050	18 GW
2030	6.5 GW
2025	2.5 GW
2020	0.8 GW

East Scotland	
2050	9.3 GW
2030	5.1 GW
2025	2.8 GW
2020	0 GW

Dogger Bank	
2050	10.8 GW
2030	7.6 GW
2025	4.5 GW
2020	0.4 GW

N Wales & Irish Sea	
2050	15.4 GW
2030	3.7 GW
2025	2.7 GW
2020	2.7 GW

Eastern Regions	
2050	27.5 GW
2030	17.4 GW
2025	10.1 GW
2020	4.4 GW

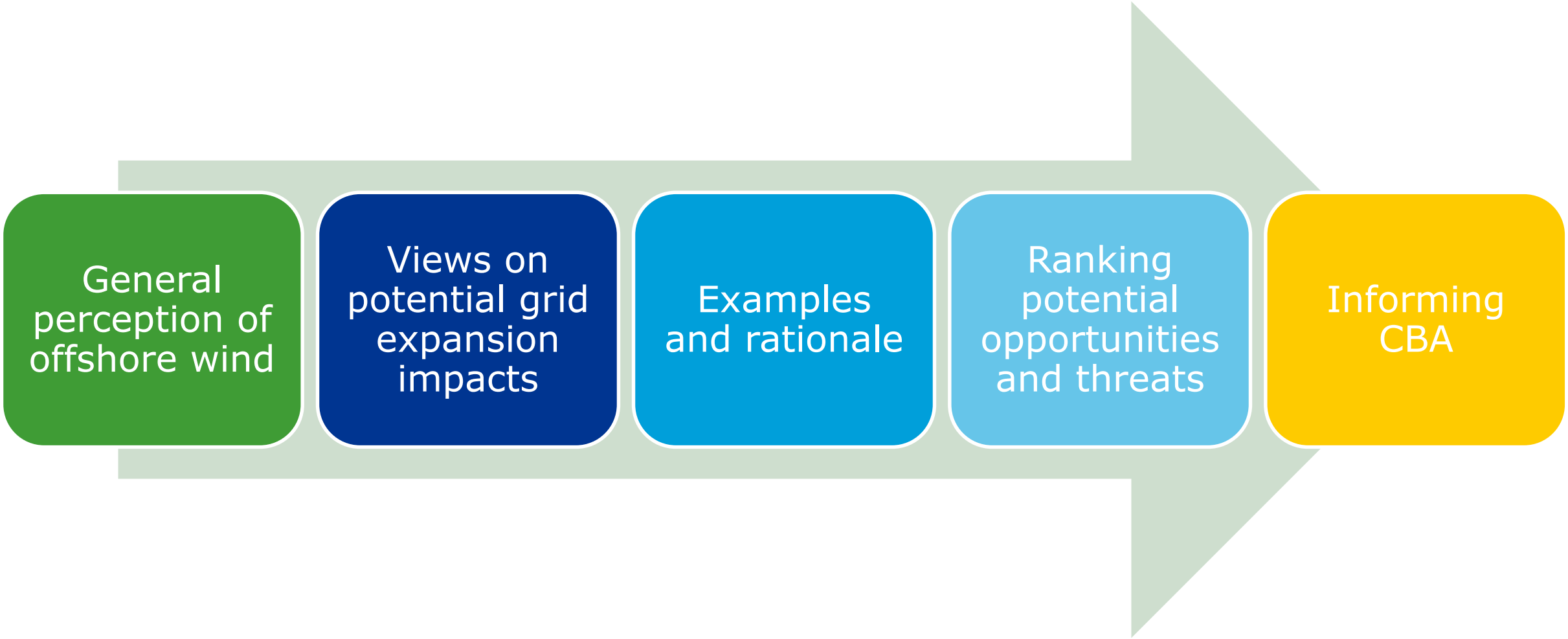
South East	
2050	2.1 GW
2030	1.7 GW
2025	1.3 GW
2020	1.3 GW

- **Market modelling** (economic dispatch) in 2030, 2040, 2050
  - Generation costs
  - Boundary costs / benefits

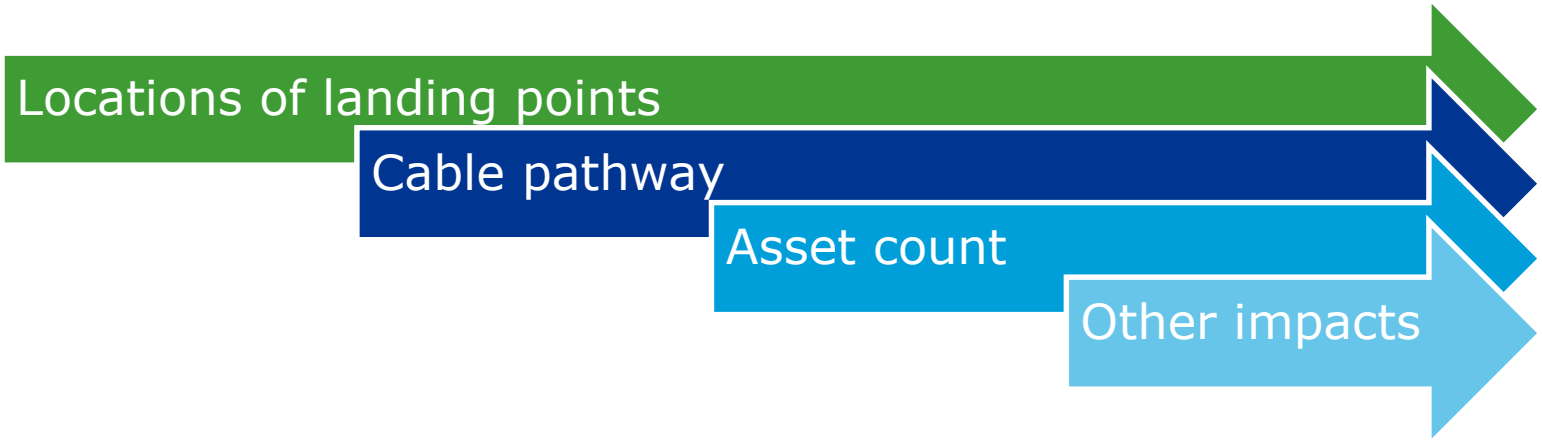
- **6 Offshore wind regions.** Wind development in line with Future Energy Scenarios (FES)
  - Leading the Way scenario
- **5 Onshore regions** - Network Options Assessment (NOA) and Electricity Ten Year Statement (ETYS).
  - The most congested boundaries (B6, B8, SC1, EC5)
- **Neighbouring EU countries.** Zonal representation
  - Interconnectors

- **Generation and Load** based on FES 2020
- **Future Boundary capabilities** based on NOA analysis

Stakeholder Engagement – Local councils survey



Other impacts – Environmental and other impacts

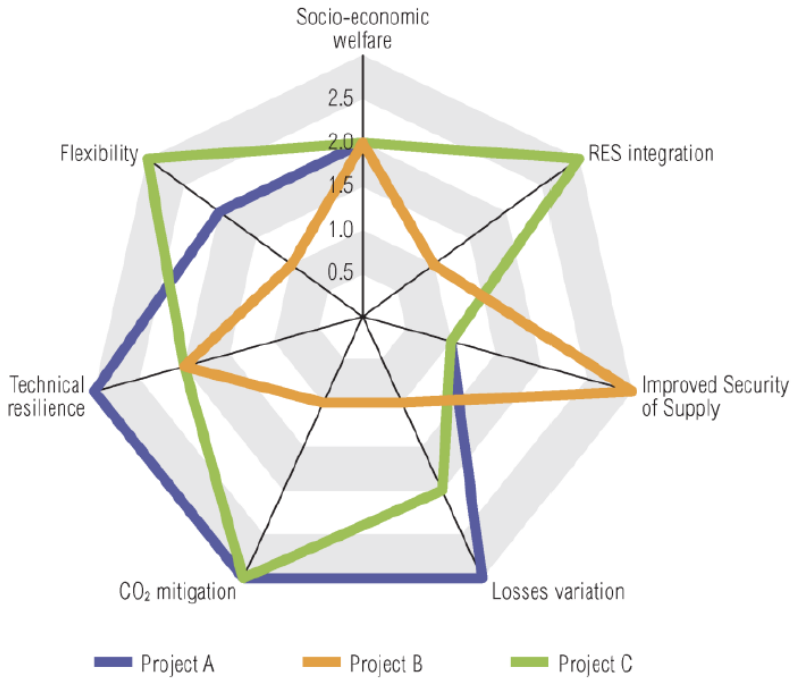


Defra (Department for Environment Food & Rural Affairs) tools:

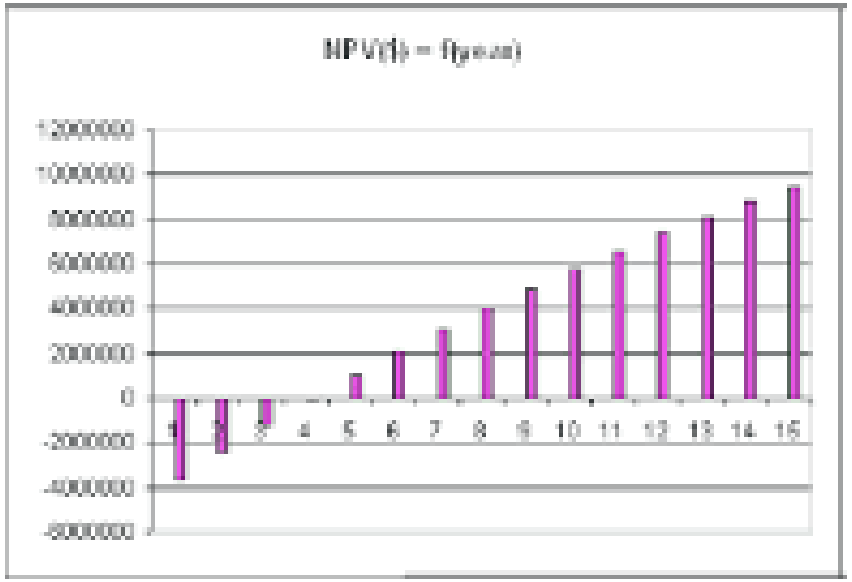
- **Outdoor Recreation Valuation Tool (ORVal)**
- **Environmental Value Look-Up (EVL) Tool**

Project comparison – Assessment Framework

- Conceptual designs comparison
- Ideal vs practical
- Limits on full monetisation of KPIs
- Objective KPIs and display of results



Degree of quantification and monetisation



Question and Answers

Cost benefit analysis next steps

- Feedback on anything presented today is welcome, please send to: box.OffshoreCoord@nationalgridESO.com (this will ensure all feedback is picked up over summer period)
- Consultation on the cost benefit analysis to be launched **in September 2020**

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Connection workstream findings

Anthony Tichivangana

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Agenda

1	Connection workstream overview
2	Stakeholder engagement
3	Summary of opportunities
4	Recommendation – Highlights
5	Questions
6	Next steps

Connections Work stream

Review and recommend options for developing the offshore connections process for

- **Short to medium term (options not including changes to network codes and standards)**
- **Longer term (changes to network codes and standards)**

to encourage and drive more coordination in offshore connections.

- National Grid Electricity System Operator (NGESO) to recommend and feed into Department for Business, Energy and Industrial Strategy (BEIS) Offshore Transmission Network Review in the form of a report
  - Short to medium term
    - Identify prioritise and recommend changes to process in short-medium term
    - Assess early opportunities for coordination through pathfinder projects
    - Focus on projects expected to connect before 2025
  - Long term
    - Review of current processes to implement co-ordinated regime minimising social and economic costs
    - Focus on projects expected to connect post 2030
- Review current connections application process including but not limited to Connection and Infrastructure Options Note (CION) process, network codes, securities and liabilities

Stakeholder Engagement

Customer Connections focused Webinar 23/07/2020 with stakeholders

- Developers
  - Ørsted and Vattenfall
- Transmission Owners
  - National Grid Electricity Transmission
  - Scottish Hydro Electricity Transmission
  - SP Transmission
- National Grid Electricity System Operator (NGESO)
  - Customer Connection Managers
  - Codes Team
  - Economics Team
  - Revenue Team
  - Technical Policy Team

Opportunities to unlock more coordination – Short/medium/long term

Connection Application:
- Application Fees & Reconciliation review
- Coordination with leasing rounds

Site Considerations
- Anticipatory investment (for Ofgem)

Reinforcement Works:
- Develop use of Network Options Assessment and Future Energy Scenarios
- Anticipatory investment (for Ofgem)
- Developer risk and financing
- Codes and charging

Liabilities for broad system and generator-driven investment

Connection and Infrastructure Options Note:
- Timescales
- Opportunity to encourage coordination rather than single connection
- Interactivity/"Reopen" CION
- Transparency /Clauses
- TEC Register Improvements

Charging Methodology review:
- Delay /Backfeed charges
- TNUoS charging for offshore generators and the Offshore Transmission Owner regime
- User Commitment

Policy & Codes:
- Review Connection Use of System Code
- Revisit Modification proposal on Offshore Networks

Legal Agreements Review
- Separate processes for Interconnectors

Manage Risk of implementation

Delivery model

Webinar Recommendations – Highlights

- Connection Application
  - Review Connection Use of System Code (CUSC)
  - Coordinate connection applications with the Crown Estate leasing rounds –package offer?
  - Placeholder offer to secure TEC subject to post-CION final offer
  - Separate Connection offer process for interconnectors?
- Connection and Infrastructure Options Note
  - CION to be codified – Timescale consistency
  - Regional CIONs
- Manage Risk of implementation
  - “OPT – IN” option for developers to changes made in medium to long term
- Policy & Codes
  - Offshore Developers formally designated role as a “shadow” offshore TO during the design and construction of transmission assets (via Generation License).
  - Offshore Developers Code (modelled on System Operator Transmission Owner Code) which Developers to work with the relevant onshore TO, other offshore transmission development (OTD) and ESO in offshore coordinated development, prior to appointment of an OFTO.
  - An Offshore NOA (ONOA) to enable a coordinated onshore and offshore NOA process?
  - Develop Offshore Network Owner/Operators (OFTNOs?)

Questions & answers

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Connection process next steps

- **Workshop sessions** planned over next two weeks in established stakeholder groups to hear stakeholders' views on the prioritisation of the opportunities
- **Feedback questions**, slides & video recording to be sent later today
- Collate feedback provided to make recommendations that will be fed into wider BEIS Offshore Transmission Network Review by mid September
- Feedback on anything presented today is welcome, please send to: box.OffshoreCoord@nationalgridESO.com

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Offshore Coordination Potential Phase 2 August 2020

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Potential Phase 2

What are the key elements that have not been covered that will build on the work in Phase 1, to further the progress us towards genuine coordination in the offshore regime?

Following the conclusion of a gap analysis of the work that has gone on in the wider industry, feedback from stakeholders and the work we have done in Phase 1 we have landed on a number of thematic areas which form the basis of our proposal for Phase 2,. Each area will ***develop a clear industry agreed roadmap*** of what needs to happen next and how we get there. We are presently aiming for the works to commence in October and conclude in March 2021. The theme areas are:

- **Commercial aspects**
- **Technical aspects**
- **Phase 1 CBA follow-ons**
- **Roles and responsibilities**

Potential Phase 2

Commercial aspects (examples)

- Reviewing and proposing changes to the timing, manner, and process of grid connections.
- Reviewing best practice from European Markets, how they function and what learning and best practice can be taken from them.
- Proposals for amending codes and frameworks to allow parties to demonstrate compliance when delivering benefits or investment in an aggregated manner where they may be reliant on other parties, and not unduly penalising them for failures from other parties.

Technical aspects (examples)

- Reviewing and recommending how the Grid Code and Security and Quality of Supply Standard (SQSS) could be changed to hardwire in Offshore coordination. E.g. the maximum infeed loss for offshore networks.
- Reviewing the methodology for how offshore integration is treated in relation to onshore boundary capacity, including integration with NOA

Phase 1 CBA follow-ons (examples)

- To review and propose areas for further review that did not get full coverage given the nature of the timescales of Phase 1 e.g.
  - *Integration with Europe?*
  - *Technologies not yet covered e.g. Hydrogen?*
  - *Onshore network analysis?*

Roles and responsibilities (examples)

- The future role of the ESO and potentially other stakeholders in the offshore regime - including what roles look like, the responsibilities they will entail and any new or changed processes or systems required.
- A review of system planning and how this is undertaken to ensure it is aligned with the goals of greater coordination.

Next Steps - Potential Phase 2

Scoping and Resourcing - Detailing out scope with greater granularity
Funding – Discussion ongoing now with Ofgem
Ensuring alignment – Continue working with BEIS to ensure we dovetail into their ongoing work
Planning – Understanding in detail the deliverables and timescales that we need to work with (worth noting that Phase 2 may well not be the “last” Phase and further work will be required)

Questions & answers

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Project next steps

- Thank you for listening today!
- Feedback on anything presented today is welcome, please send to: box.OffshoreCoord@nationalgridESO.com
- Document on Q&A to be published along with all feedback received during and following webinars this week

Any feedback on this session is welcome, please feed in to help shape further sessions on the project

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