



Infrastructure Deployment Challenges Ahead

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Presentation Context

Infrastructure deployment challenges ahead

1

Policy context

2

Infrastructure deployment timelines

3

Infrastructure deployment challenges

4

So what?



GB Energy and policy contexts

Great British Energy

“With a publicly-owned company working in lockstep with industry, we can help drive the innovation and investment required to transform our power system and decarbonise the grid by 2030...”

- Great British Energy Chair,
Juergen Maier CBE

Great British Nuclear

- Currently considering how Great British Nuclear functions can be aligned with Great British Energy
- An expert nuclear delivery body to help deliver the government’s nuclear programme

“The first priority of GBN is to launch a competitive process to select the best Small Modular Reactor technologies.”

- Powering up Britain

Mission Control

- Deliver clean power by 2030
- Clean Power 2030 Advisory Commission
 - Eight experts (commissioners)
- Mission Board
- Onshore Wind Taskforce

Source:

[Great British Energy founding statement - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/great-british-energy-founding-statement)

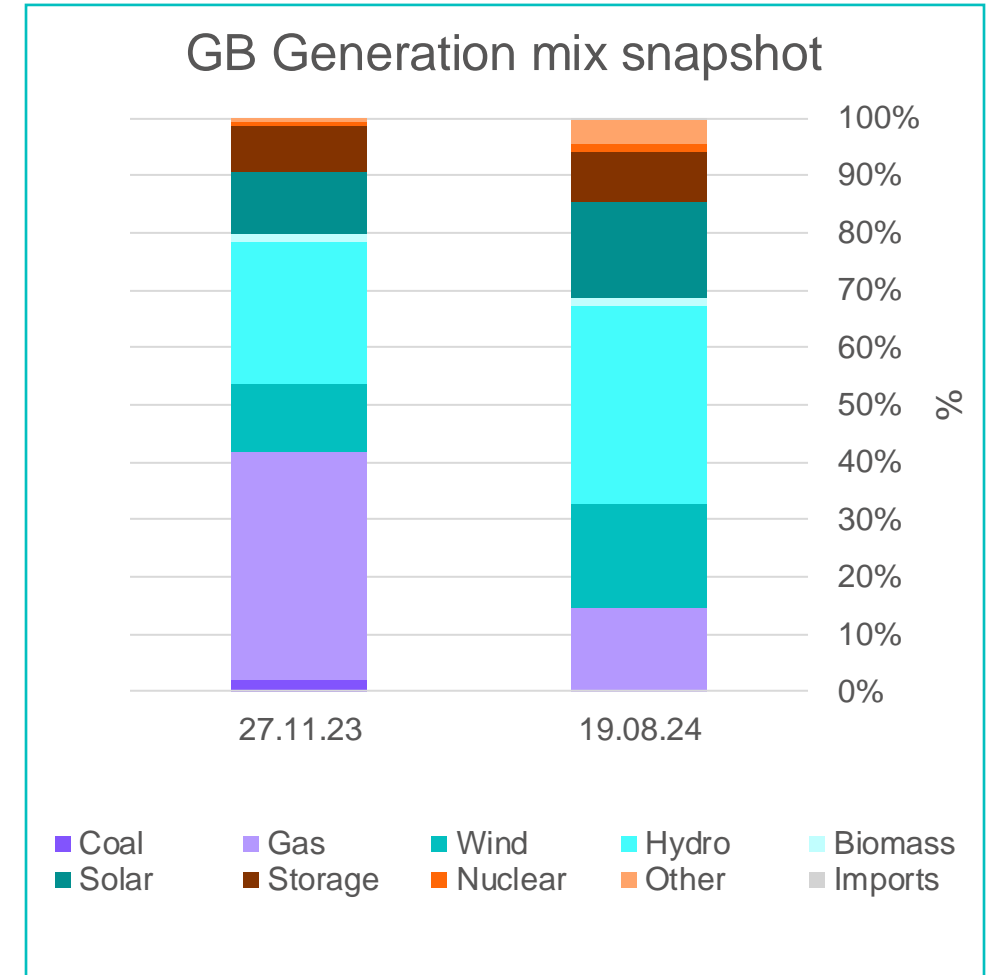
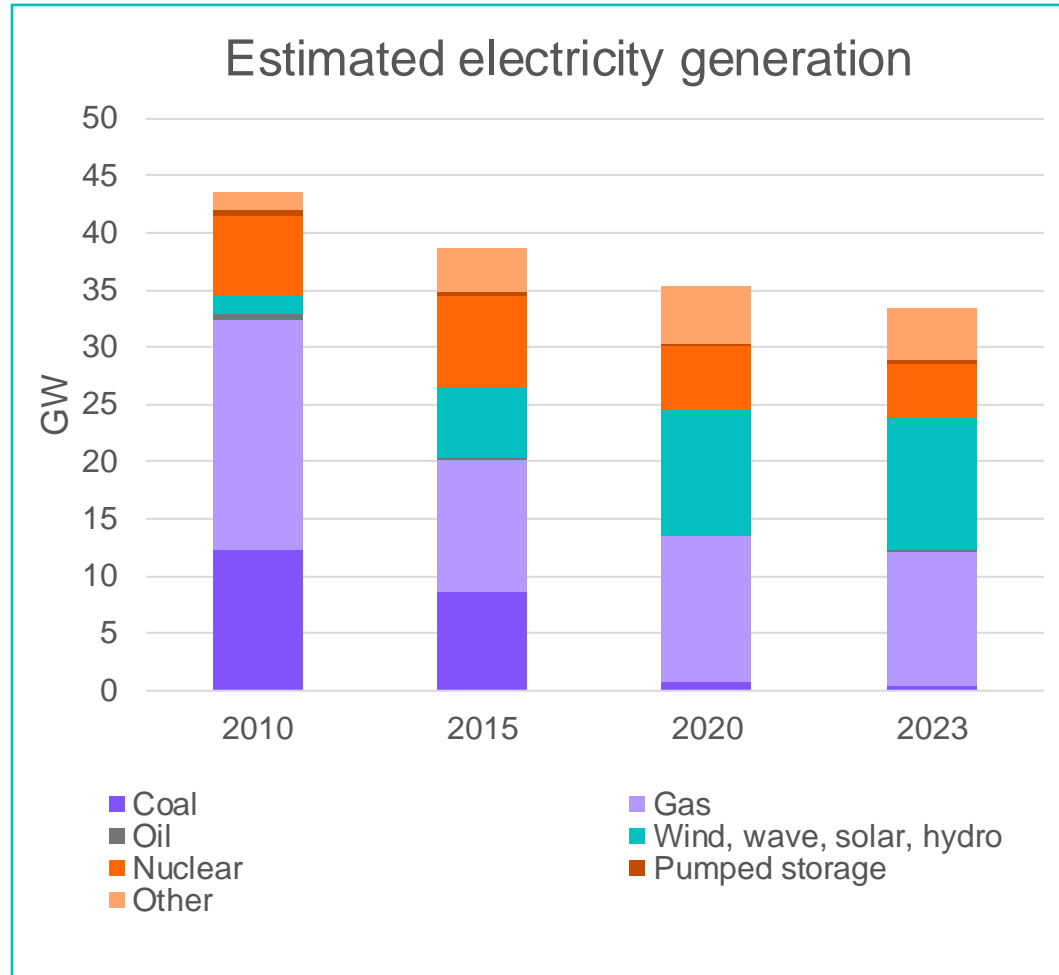
[About us - Great British Nuclear - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/about-us)

[First Mission Board focuses on immediate action to make Britain a clean energy superpower - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/first-mission-board-focuses-on-immediate-action-to-make-britain-a-clean-energy-superpower)

[Onshore Wind Industry Taskforce - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/onshore-wind-industry-taskforce)

GB energy generation mix

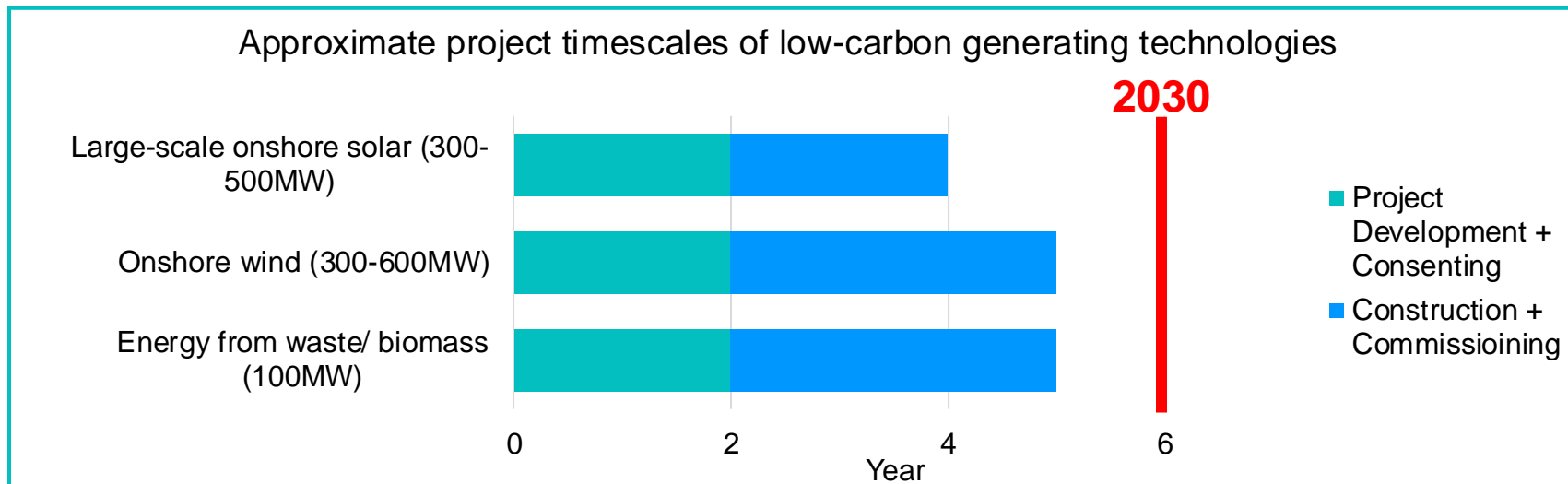
How much low carbon energy is in our electricity generation mix?



Onshore solar and wind, energy from waste/ biomass

Challenges and opportunities

Technology	General supply chain	Equipment supply lead time	Project challenges
Onshore solar	No major challenges, except lack of country-origin diversity	No major challenges except transformer lead time	Land use competition and sites for large scale projects
Onshore wind	No major challenges	No major challenges except transformer lead time	Sites for large scale projects
Energy from waste/ biomass	No major challenges	No major challenges	Challenges on EPC Lack of subsidies for biomass

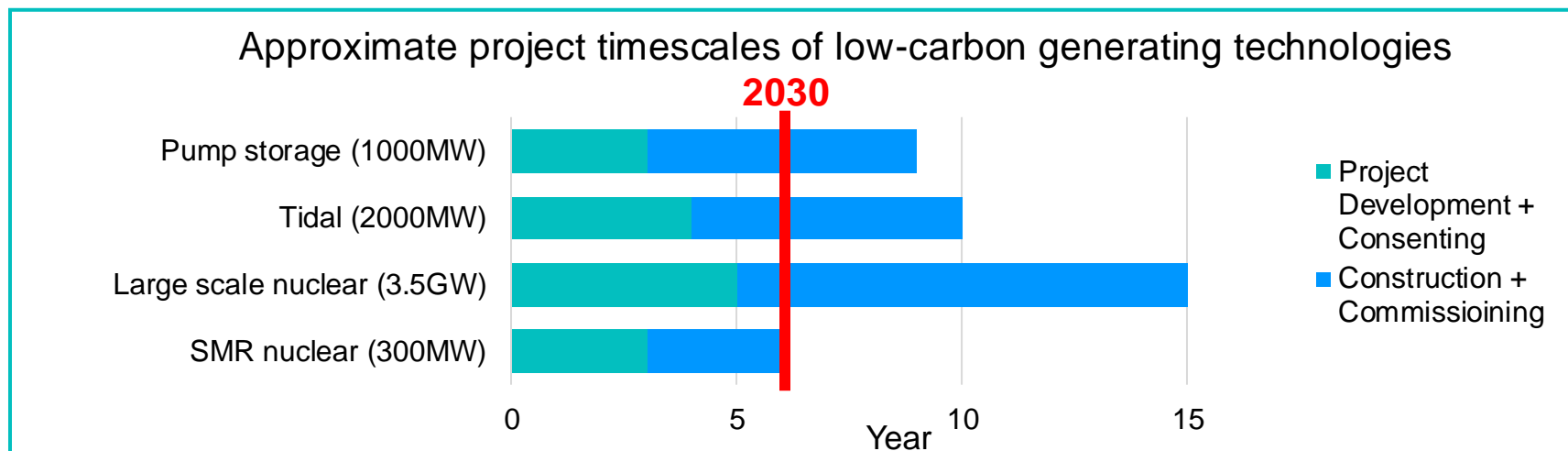


Assumption:

1. Grid connections are assumed
2. Planning within assumed time

Nuclear, pump storage and tidal

Technology	General supply chain	Equipment supply lead time	Project challenges
Pump storage	Lack of recent project construction experience	No major challenges	High cost Need for support (e.g. proposed UK cap and floor mechanism to give investor confidence)
Tidal	Lack of standard procurement approach	Lack of standard procurement approach	High cost
Large scale nuclear	Specialised supply chain	Long lead items (5 yr+)	Financing Regulation Development Consent Order (DCO)
SMR nuclear	Specialised supply chain	Long lead and specialised items (3 yr+)	Regulation (GDA) DCO

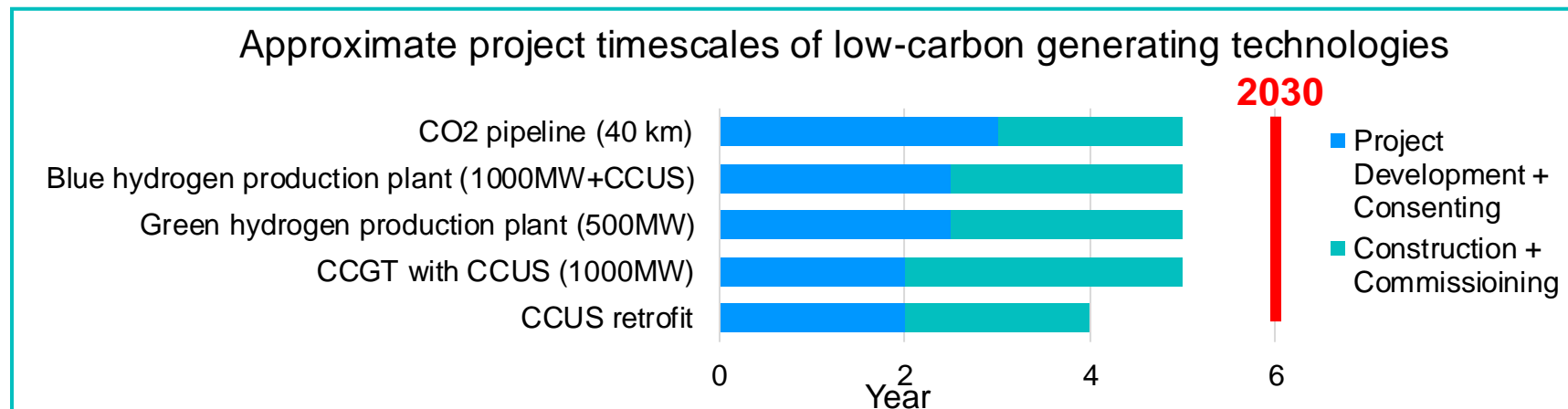


Note:

1. Grid connections are assumed
2. Planning permission is assumed
3. Sites are available

CCGT with CCUS, CCGT with hydrogen (green and blue)

Technology	General supply chain	Equipment supply lead time	Project challenges
CO2 pipeline	No major challenges	No major challenges	Storage facilities availability
Blue hydrogen	No major challenges	Potential challenges	Market for hydrogen Cost of hydrogen Regulation
Green hydrogen	No major challenges	Potential challenges	Market for hydrogen Cost of hydrogen Regulation
CCGT with CCUS	No major challenges	No major challenges	CO2 pipeline availability
CCUS retrofit	No major challenges	No major challenges	CO2 pipeline availability



Note:

1. Grid connections are assumed
2. Sites are available
3. Hydrogen market is available

So what?

Key assumptions:
 1. Planning permission timely
 2. Grid connection timely

Generation options	Long-hanging technical challenges	Quick fixes for 2030
Onshore solar	No major challenges, sharp learning curve/ fast technology revolution	Removing planning barriers and grid connection available
Onshore wind	No major challenges	Removing planning barriers and grid connection available
Energy from waste/ biomass	No major challenges	Biomass supply need attention
CO2 pipeline	No major challenges	Regulation and financing. FID needed now
CCGT with CCUS	No major challenges	FID needed now or for Teesside
CCUS retrofit	No major challenges	FID needed now for Track 1 extension and Track 2
Blue hydrogen	No major challenges	Hydrogen market and cost are potential barriers
Green hydrogen	No major challenges	Hydrogen market and cost are potential barriers
SMR nuclear	No major challenges	Equipment to be ordered now to meet 2030
Pump storage	Long lead times	Need for support (e.g. proposed UK cap and floor mechanism to give investor confidence)
Tidal	Long lead times	Projects still under development. Payment mechanisms
Large scale nuclear	Long lead times	Hinkley Point C operating by 2030 and FID needed soon for Sizewell C
Batteries	Potential lead times issues: <ul style="list-style-type: none"> Prohibitions on Chinese-sourced BESS systems and components in EU 	Potential challenges on supply side



Thank you

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