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UK Offshore Wind: Building an Industry

Analysis and scenarios for industrial development

June 2010

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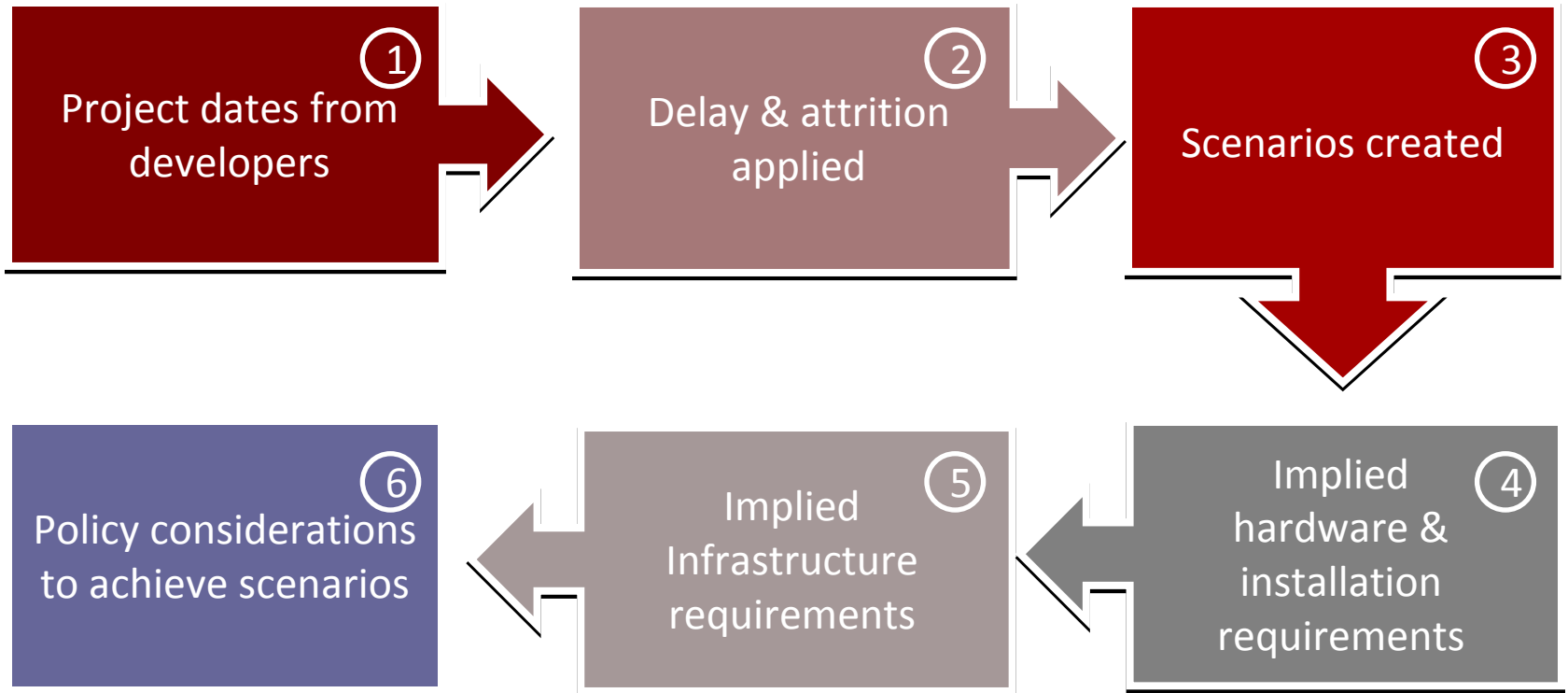
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Building an Industry Report

- Commissioned by RenewableUK
- Douglas-Westwood engaged to interact with industry and model scenarios of future development timing, product & service requirements and investment

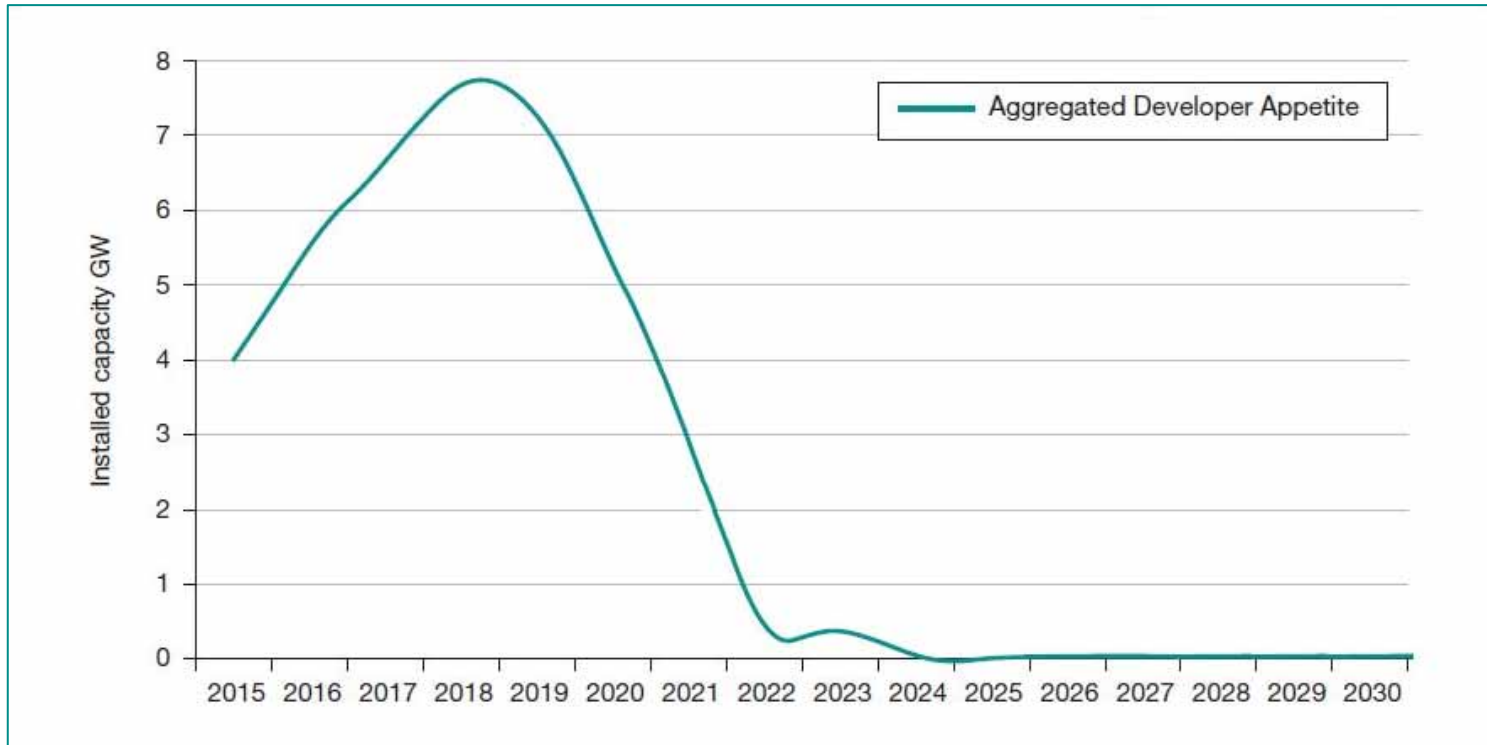
Aims & Outputs

- To develop a number of delivery scenarios, considering:
 - **Stated** development timeframes for every planned UK project
 - Alternative scenarios based upon developer **consultation**
- Outputs include;
 - Three delivery scenarios
 - Development of assumptions to show:
 - Hardware and vessel requirements for each delivery scenario
 - Manufacturing facilities required to deliver the necessary components
 - The effect of the wider European market on the UK's supply chain
 - Policy considerations for capacity delivery and UK supply chain growth

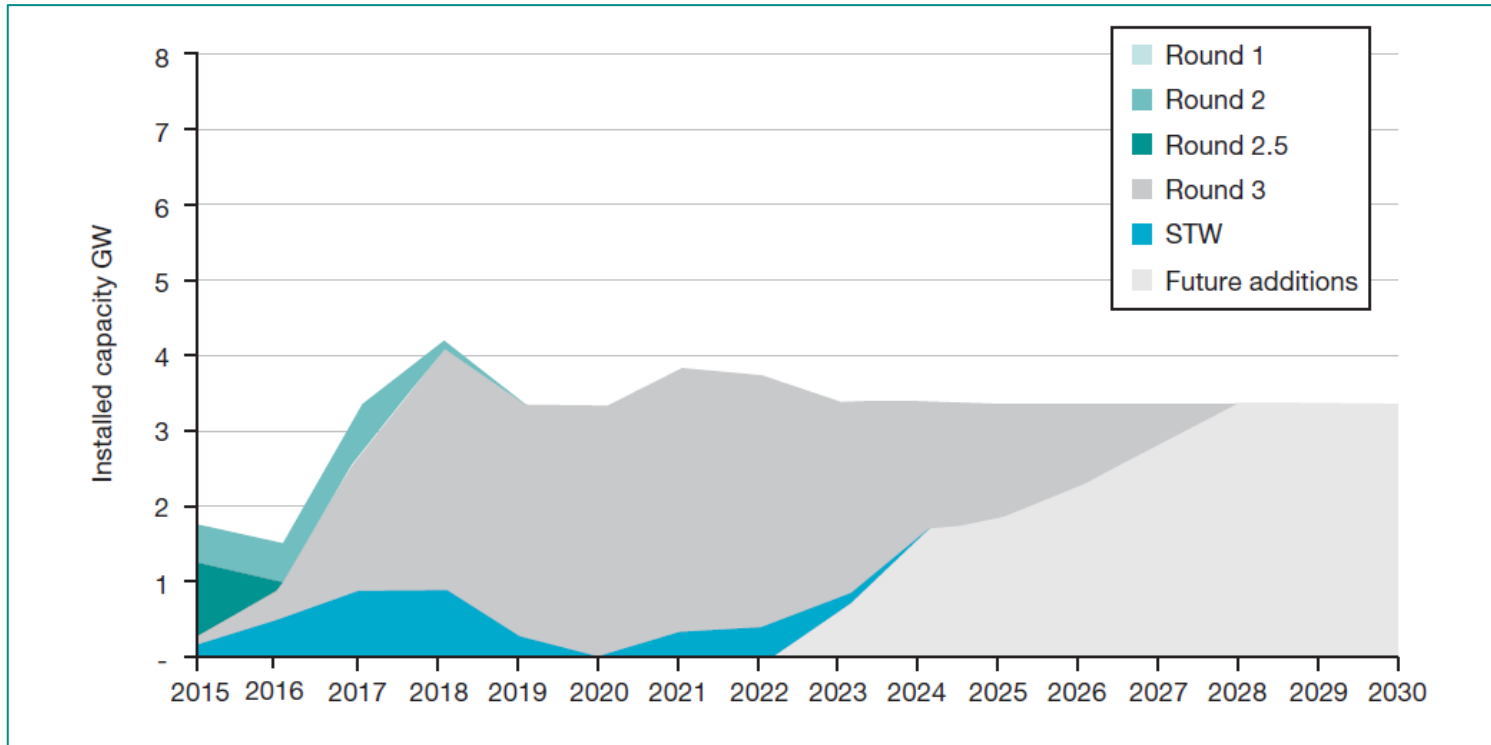


- The project timings, assumptions and policy recommendations were developed through **consultation** with developers, manufacturers, contractors and stakeholders
- The scenarios and assumptions were tested and developed at RenewableUK strategy sessions and on a one-to-one basis with industry stakeholders

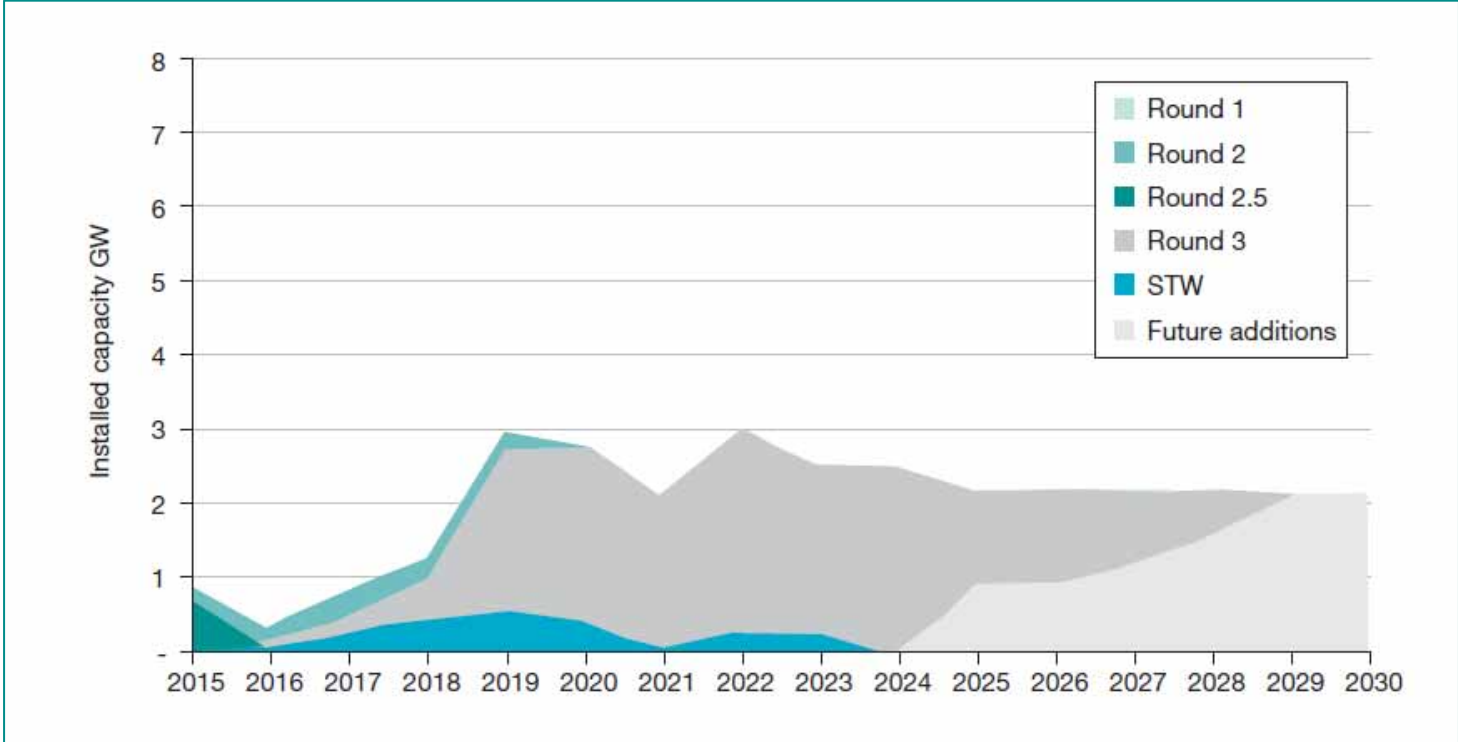
Aggregated Developer Appetite



- Uses dates originally given to the Crown Estate by developers
 - 31 GW of R3 completed between 2015 and 2021, all by 2023
 - Almost 43 GW installed by 2020
- Requires intense supply chain ramp-up – is this achievable?
- What happens after the peak?
- Round 4 needs to be online from 2020 at 6 GW/year to keep momentum

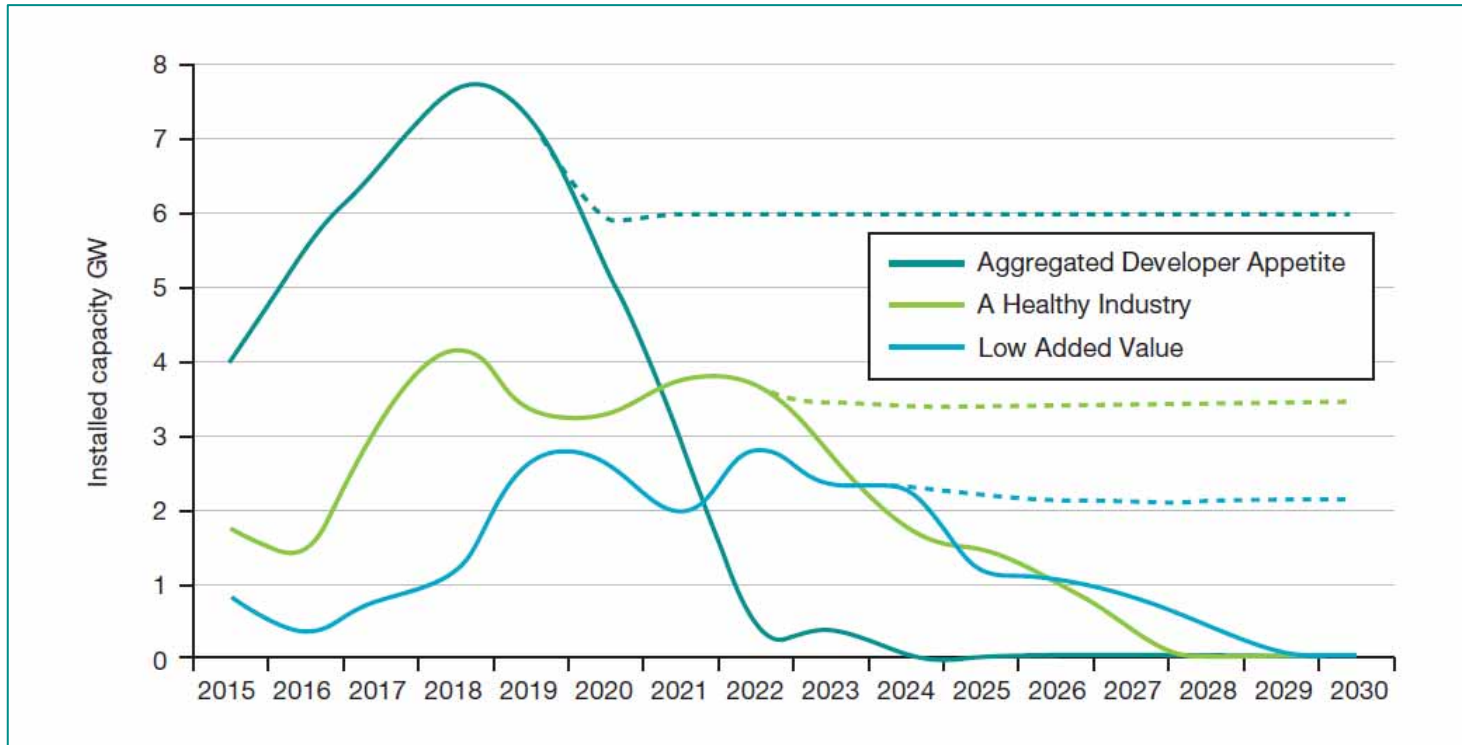


- Uses developer dates from consultation with attrition and delay applied
- 23 GW installed by 2020 in UK waters
- Round 3 complete by 2027
- Fast growth required within the supply chain
- Round 4 to come online from 2023 at 3.3 GW/year



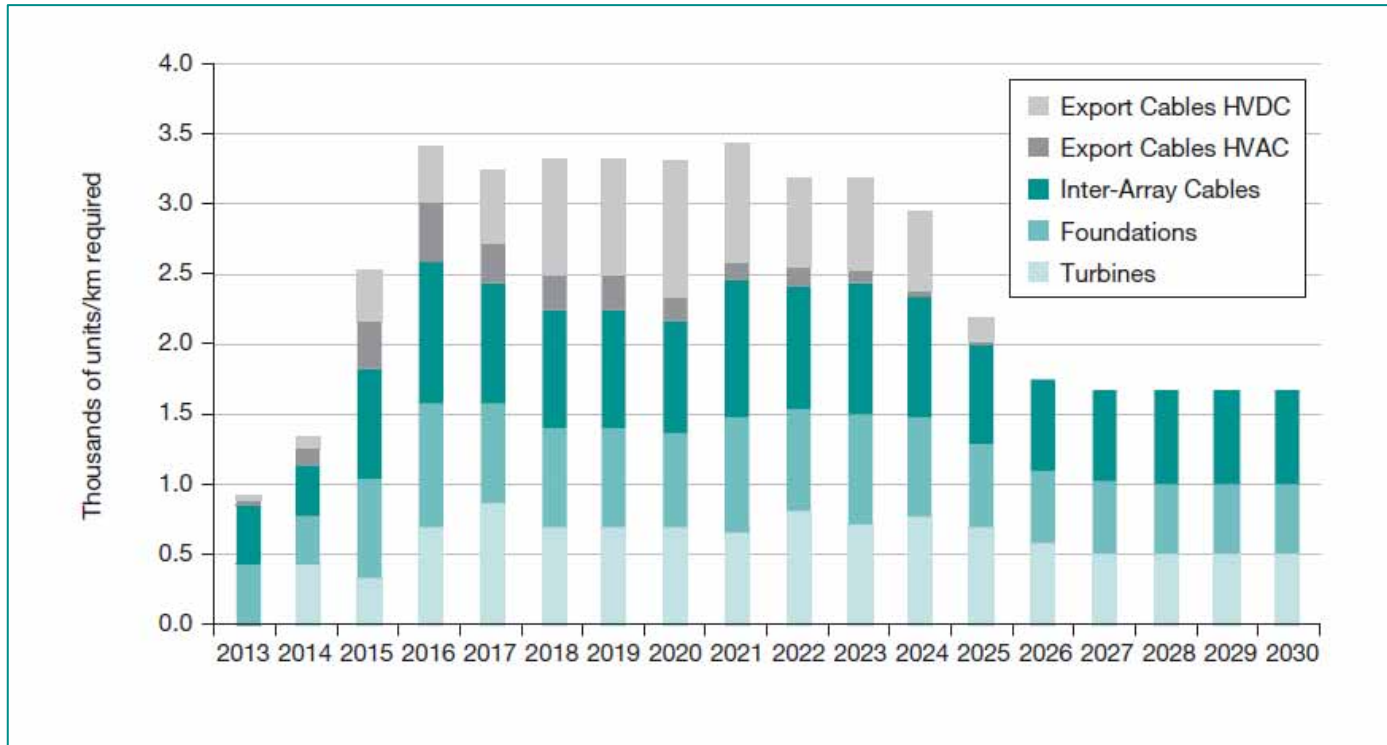
- Delays in project sanction limits delivery
- 7 GW of R3 completed between 2015 and 2021
- 14 GW installed by 2020
- Still requires a steady ramp-up within the supply chain
- Questionable activity levels for UK supply chain development
- Implies Round 4 needs to be online from 2023 at 2 GW/year

Build Scenario Comparison



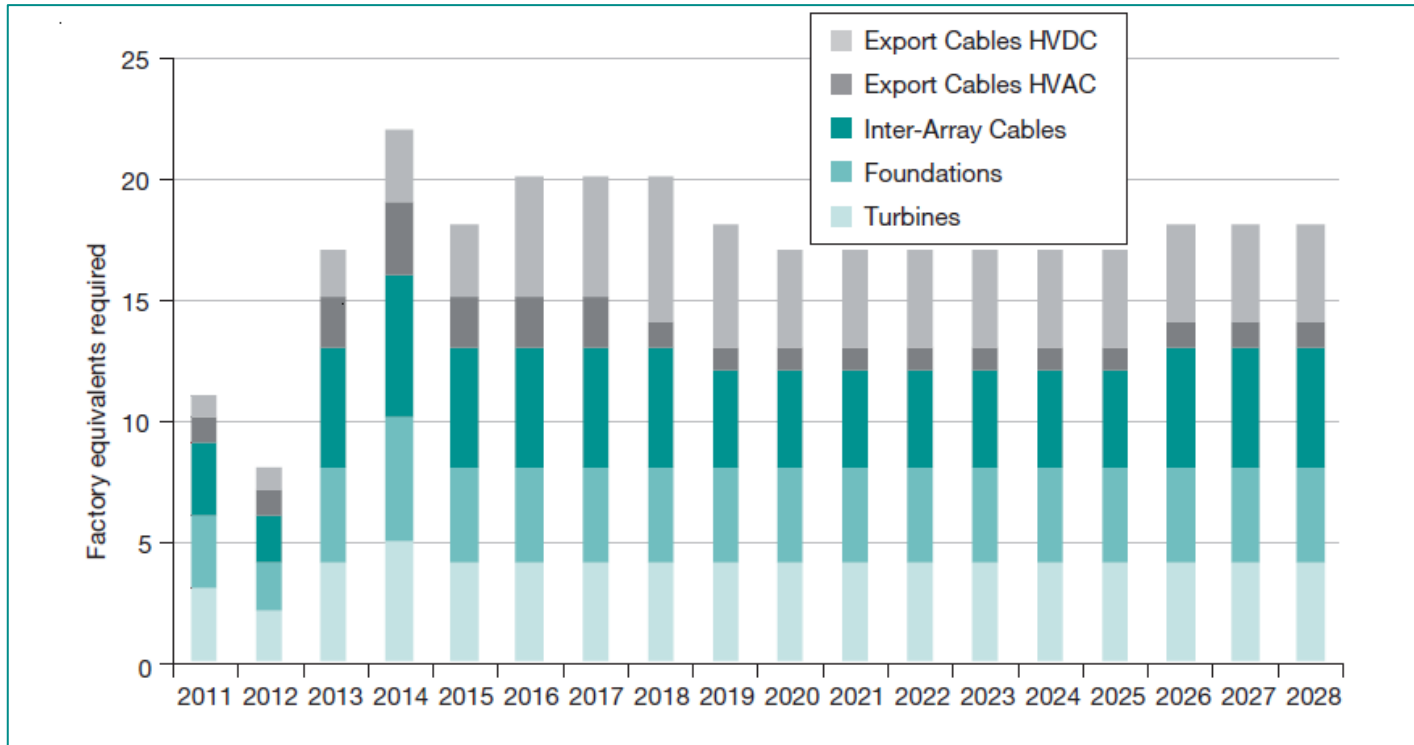
- **Aggregated Developer Appetite:** High intensity, significant short term demand requirement, sustainability issues
- **A Healthy Industry:** Lower short term intensity, demand sustained over longer time period
- **Low Added Value:** Further demand reduction, project delay, little indigenous supply chain development

A Healthy Industry: Hardware Requirements



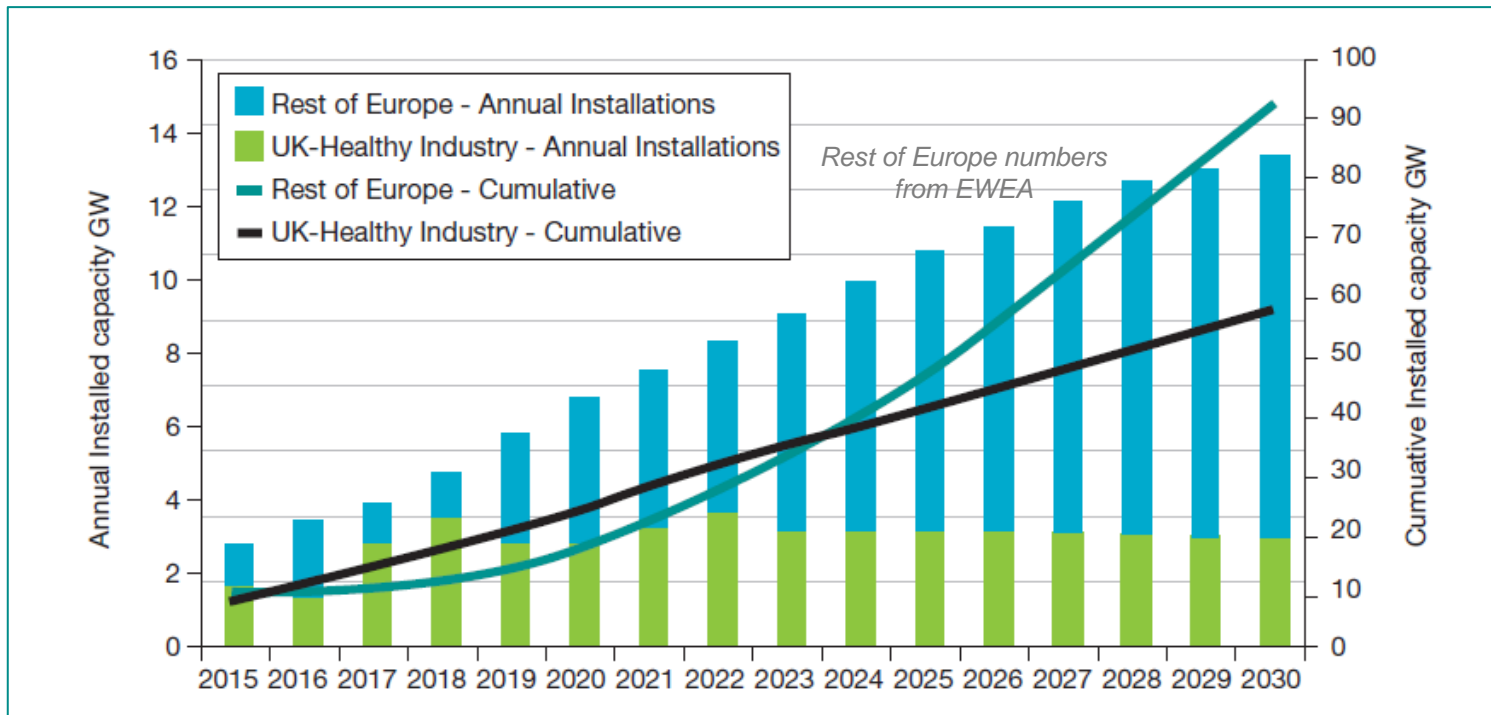
- Fast ramp-up in turbine production will be required - 300 turbines p.a. in 2015 to 900 by 2017
- Monopiles used where possible, but use expected to decline from 2015 due to increased turbine sizes and increasing water depths of STW & R3
- High proportion of jacket foundations – standardisation & modular design of jackets seen as advantageous with regard to cost
- Fast growth in the use of HVDC – exceeds HVAC by 2017

A Healthy Industry: Indicative Factory Requirements



- Fast growth expected between 2016 and 2018 will require significant new production capacity
- Investment in 22 ‘factory equivalents’ for turbines, foundations and cables required from 2011 to ensure production is online
- Estimated £1 billion investment required to build the necessary plants (for these major components only)
- Investment will be dependent upon the ability of the plants to supply further, currently unannounced UK Rounds and the wider European export market

European Market: Export Opportunities?



- Large scale growth in Europe now beginning
- From 2022 annual capacity installation in Europe exceed the UK's
- By 2024 cumulative capacity in the rest of Europe exceeds UK total capacity
- European market very strong when R3 is nearing completion (2020 on)
- Production capacity built up within UK for current Rounds will have strong export market potential
- Without an initial UK domestic market, likely that European demand will be met by non UK firms

Considerations For Policymakers

- The UK now has an opportunity to build a world-leading supply chain to service the huge domestic market and export to the burgeoning European markets and beyond
- However, there are many challenges to overcome to ensure a healthy market and strong domestic supply chain
- Policy decisions by the coalition government across a range of areas will be key to creating a UK-based industry
- The following policy areas for consideration were highlighted by industry;
 - Long-term government commitment
 - Sufficient resourcing and support during planning
 - Continuing access to finance
 - Grid infrastructure
 - Port development
 - Supply chain development
 - The creation of a skilled workforce
 - Establishing a National RD&D programme

- The UK's planned project delivery could result in development of a long-term sustainable domestic industry
- The Healthy Industry scenario will deliver 23 GW of UK capacity by 2020
- This will still require massive increases in production capacity
- The planned delivery rate of forthcoming projects necessitates immediate investment into new manufacturing plants
- Any government assistance must be prompt to ensure new facilities are built in time to deliver to projects
- There must be further Rounds of development to ensure the UK industry created has a follow-on market beyond Round 3
- European activity represents major export potential for UK industry if the supply chain can be developed indigenously