Ørsted situation analysis

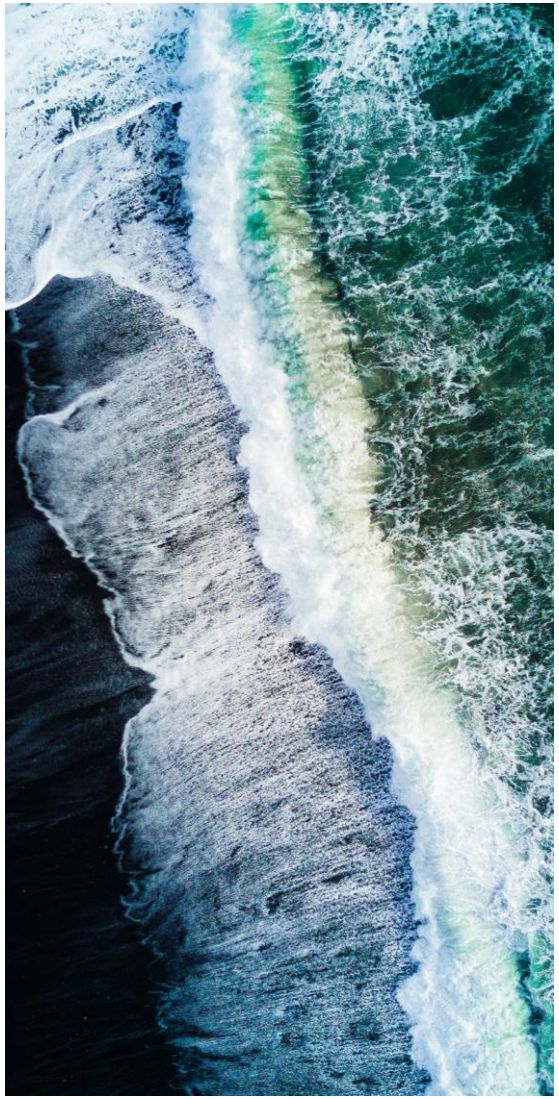
THE MULTI-BILLION USD CHALLENGE IN US (OUTSIDE IN ANALYSIS)

7th November 2023

green ducklings

EXECUTIVE SUMMARY

1 US Offshore Wind projects in trouble across developers	>11 GW of challenged projects announced in US: ~$6 bn in impairments and provisions across developers; 2.4 GW PPAs terminated with $124 m in penalties fees, further PPAs might be canceled (e.g. BP/Equinor). The impact on the supply chain could be very significant and US localization plans very uncertain.
2 US projects have a higher risk profile and higher costs	Higher risk profile: long duration between offtake and FID, high economic development commitments, Jones act restrictions, offtake price is relatively fixed (irrespective of financing cost and supply chain dynamics), short construction time post FID.
3 Ørsted strongest hit, due to much higher risk profile	Ørsted negative hit is >10x bigger than for other developers: $4.9-5.4 bn impairments and provisions for Ørsted (due to high commitments and spent pre-FID), vs. $540 mil for BP and $300 mil for Equinor.
4 Ocean Wind 1 had by far the biggest negative impact for Ørsted	Late ceasing of development, with a final blow that seems to be due to vessel availability, led to impairments and provisions of $4-4.5 Billion for the 1.1 GW Ocean Wind 1 project (~80% of Ørsted's impairments in US). Project was ceased despite: a) legislation passed in July to retain tax credits, b) having an OREC price (PPA) 21% higher than the Revolution wind 1 which was FID.
5 Ørsted US portfolio: scale down expected ?	Will Ørsted focus only on Northeast cluster (and divest Mid Atlantic)? Will the 2030 ambitions in US be reduced from 3-5 GW (as per June 2023 Capital Markets Day) to 1-2 GW ?
6 Ørsted : what's next ?	How will Ørsted strategy change ? (e.g. regarding taking higher supply chain risks pre-FID, farm down in a decreasing interest rate environment, and keep financing costs relatively low) What will Ørsted do with its ceased projects ? Is Ørsted an acquisition target ?



1 US OFFSHORE WIND PROJECTS (ACROSS DEVELOPERS)

US Offshore Wind projects in serious trouble, across developers

>11 GW of challenged projects announced in US: $4.9-5.4 bn in impairments and provisions for Ørsted, $0.5 bn for BP, $0.3 bn for Equinor; 2.4 GW PPAs terminated with $0.1 bn in penalties fees, further PPAs might follow (e.g. BP/Equinor)

#	Country	Main developer	Project	GW	Status	Est. COD	Root cause (as announced)	Impact	
1	US, NJ	Ørsted	Ocean Wind 1	1.1	Ceased development	2026 (2025 as per June CMD)	Supplier delays (mainly vessels), ITC qualification, interest rates increase	**$4-4.5 bn impairments and provisions (Q3 2023)**	**Total: $4.9-5.4 bn**
2	US, NJ	Ørsted	Ocean Wind 2	1.1	Ceased development	2029/2030		Insignificant impairments	
3	US, NY	Ørsted	Sunrise Wind	0.9	Pending FID Potential rebid (NY)	2025	Supplier delays, ITC qualification, interest rates increase	**$400 m impairment (Q3 2023).**	
4	US, RI	Ørsted	Revolution Wind	0.7	FID Nov '23	2025	Supplier delays, interest rates increase	**$480 m impairment (Q3 2023)**	
5	US, RI	Ørsted	Revolution Wind 2	0.9	Early Pre-FID, no Offtake	Uncertain (towards 2030)	Higher interest rates, increased costs of capital and supply chain expenses, as well as the uncertainty of federal tax credits, all likely contributed to higher proposed contract costs	Rhode Island Energy declined Ørsted offtake proposal, as sole bidder (due to high PPA price)	
6	US, MA	Ørsted	Skipjack 1 & 2[1]	1	Ongoing reconfiguration All spend is paused	2025/2026		Skipjack cancelation fees are insignificant (in case the project will be canceled).	
7	US, NY	Equinor and BP	Empire Wind 1	0.8	Pre-FID	2026	Revenues not adjusted for inflation to reflect the significant inflationary pressure	**Negative decision in Oct 2023 on petition** to renegotiate PPAs. **Equinor: $300 m impairment (Q3 2023). BP: $540 m impairment (Q3 2023).**	
8	US, NY	Equinor and BP	Empire Wind 2	1.3	Pre-FID	2026/2027			
9	US, NY	Equinor and BP	Beacon Wind 1	1.2	Pre-FID	2027/2028			
10	US, CT	Avangrid (Iberdrola)	Park city	0.8	Pre-FID	2027	Record inflation, supply chain disruptions, and sharp interest rate hikes	Terminated the PPA**, agreeing to pay $16 m in penalties** . Plan to rebid in upcoming auctions.	
11	US, MA	Avangrid (Iberdrola)	Commonwealth Wind	1.2	Pre-FID	2027/2028	Sharp and sudden increases in interest rates, persistent inflation, supply chain constraints	**Terminated the PPA, agreeing to pay $48 m in penalties** in the process. Avangrid intends to rebid in next solicitation (COD post 2029)	
12	US, MA	Shell and Ocean Winds	SouthCoast Wind (Mayflower)	1.2	Pre-FID	2027/2028	Material and unforeseen supply chain and financing cost increases affecting the whole offshore wind industry	**Terminated the PPA, agreeing to pay $60 m in penalties**	

Source: Green Ducklings analysis based on public releases, earnings reports, industry news

1 - part of the Mid Atlantic Cluster (with Ocean Wind 1&2, putting it at quite big risk of cancellation)

1 For the US market, the recently announced "challenged" projects represent >1/3 of the 2030 installation target, and >50% of the 2024-2028 expected installations. Several of these are linked with follow-up projects that might be delayed as well and hence the target is seriously under risk.

The impact on the supply chain could be very significant due to the projects being cancelled or at least delayed in such large multi-GW volumes for the next 1-5 years.
The effects will propagate to tier 1 suppliers (GE, SIF, Bladt / Semco Maritime, etc.), but also their sub suppliers. Localization in US of component manufacturing facilities is now uncertain (e.g. EEW monopile facility in Paulsboro – New Jersey, Prysmian's high-voltage cable factory in Somerset – Massachusetts, Hellenic Cables inter array cable facility in Maryland, etc.). Cancelation fees can partially protect suppliers (depending on the contractual T&C, but mainly for late cancelation, much less for early cancelations / delays). Special case could be for vessel owners, where it might have a positive impact, if they cash in the cancelation penalties and then can contract the vessels for other projects (if not re-allocated to other Ørsted activities, which can be difficult especially if the projects are not solely own by Ørsted)

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US projects have a higher risk profile and higher costs

Higher risk profile: long duration between offtake and FID, high economic development commitments, Jones act restrictions, offtake price is relatively fixed (irrespective of financing and supply chain dynamics), short construction time

Root causes for challenged projects

Very long timeline between offtake and FID, and short till COD	• >3-4 years of permitting / consenting after award of the offtake and before FID • 1-2 years only post FID to execute the project
Rising interest rates (since March 2022)	• >5% (in less than 24 months)
CAPEX inflation (commodities, components, services)	• 20-40% (or more) price increases compared with 2021. Prices up for WTGs, vessels, heavy steel plates, manufacturing of BoP, etc.
Supply chain / Local content	• Early stage of development • High commitments (adding costs), unclear / unrealistic[1] tax credits framework
Cabotage rules	• Jones act, restrictive cabotage rules, leading to higher installation costs / risks
Revenue protection / upside / alternatives	• Limited / no options in US, revenues locked in at old levels

Actions required at federal / state level

- **Offtake prices need to reflect the changing macroeconomic and industry dynamics** (higher financing costs, CAPEX inflation)
- **Ensure predictable and large enough pipeline of projects**
- **Structural reconsiderations of the offtake award process in US**, to reduce the risks posed by long consenting time between offtake award and project FID, allowing for reasonable time for construction
- **Consideration of ways to balance offshore wind competitiveness (LCOE) in US**, currently challenged by several cost increasing requirements: uncapped seabed auctions (leading to high prices), in state spent regulations / rules and supply chain investments, just transition and union labor requirements, cabotage rules (Jones Act), etc.
- **Consider direct support for supply chain investments to support the growth of the Offshore Wind Industry**

Source: Green Ducklings

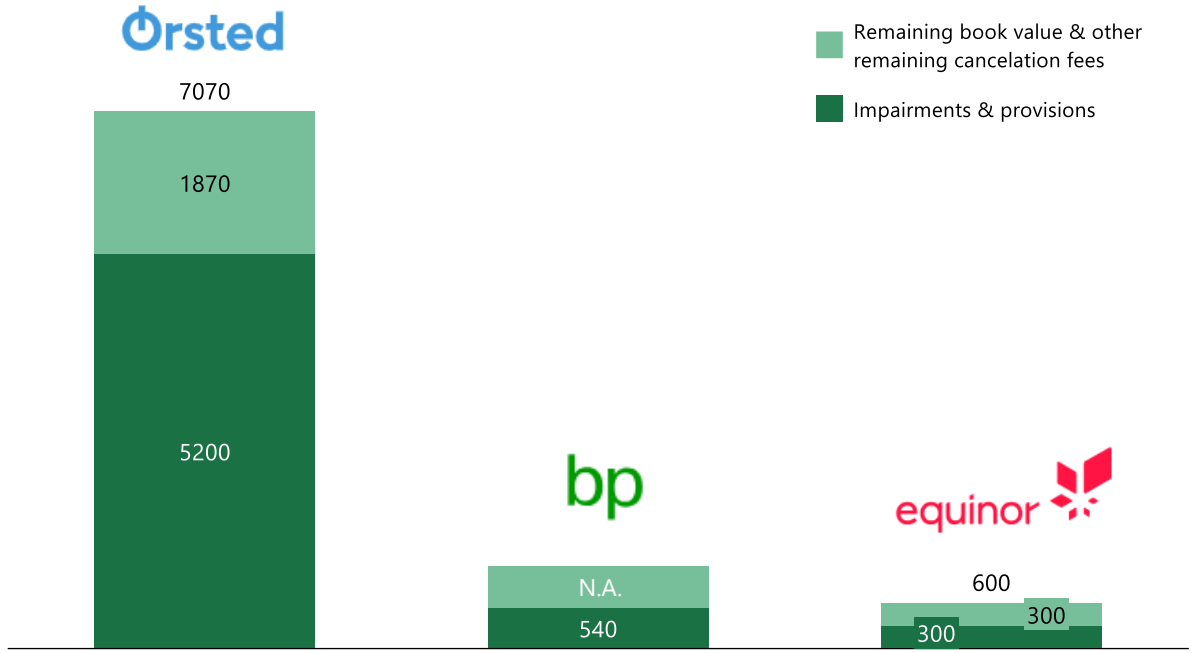
Note 1) In the US the definition of "All American Made Steel & Iron" can't be realized with a local supply chain (due to Heavy Steel Plates) – meaning that this tax credits are de facto not possible.

3 NEGATIVE HIT BY DEVELOPERS

Ørsted strongest hit in US, due to much higher risk profile

Ørsted impairments are much bigger than that of the other developers: $4.9-5.4 bn (~$5.2 bn) impairments and provisions for Ørsted (due to high commitments and spent pre-FID), vs. $540 mil for BP and $300 mil for Equinor

Impairments & provisions and remaining book value & cancelation fees: OFW in US – 2023 ($ m)



3.8 GW: Ocean wind 1, Ocean wind 2, Sunrise, Revolution wind 1. Note: 80% of impairments are for Ocean wind 1

3.3 GW: Empire wind 1, Empire wind 2, Beacon Wind 1

3.3 GW: Empire wind 1, Empire wind 2, Beacon Wind 1

Commentary

- Ørsted had a higher risk strategy, of committing and spending more capex pre-FID in close collaboration with the supply chain. While this would help deliver projects on time in good times, the challenging macro & project environment led to magnifying negative impacts:
  - Ocean wind 1 project led to impairments and provisions of $4-4.5 bn for a 1.1 GW project, equivalent to $3.6-4 bn per GW (Ørsted CFO indicated a capex investment of ~ $6 bn / GW is needed for remaining US projects)
  - This is 10x versus BP and Equinor impairment for their portfolio in US (we assume Empire wind 1, 0.8 GW, was the most advanced vs. Empire wind 2 and Beacon wind)

Note on remaining book values and other cancelation fees as per investor calls for Q3 earning:: Ørsted disclosed that the remaining book value of US projects is DKK 10 bn (spent to date) and additional cancelation fees (in case of cancelation) for Sunrise would be ~3 BDKK and for Skipjack the cancelation fees are insignificant. Cancelation fees for Sunrise not disclosed; Equinor disclosed remaining book value for US projects totaling around $300 million, $100 millions in the projects and around $200 million related to real estate in New York and cables. Equinor did not disclose cancelation fees; BP did not disclose remaining book value

Early commitments and late ceasing, in hindsight proves very costly

Late ceasing of development, with a final blow that seems to be due to vessel availability, led to impairments and provisions of $4-4.5 Billion for the 1.1 GW Ocean Wind 1 project (~80% of Ørsted's impairments in US)

Steady commitment despite announced issues (capex, financing costs, etc.)

- Jan 2023: Ørsted bought out PSEG 25% share (PSEG had the contractual right to sell at cost)
- 5 Jul 2023: ROD (Record of Decision) from BOEM: approval of the construction and operation
- 6 July 2023: New Jersey Governor signed legislation for Ocean Wind 1 to access and retain the federal tax credits (instead of returning them to ratepayers)
- 15 Sept 2023: contract awarded to Riggs Distler for secondary steel (boat landings, platforms, etc.)
- 21 Sept 2023: final BOEM approval of its Construction and Operations Plan (COP)
- As required under the terms of a law Gov. Phil Murphy signed in July on the tax benefits:
  - 4 Oct 2023: Ørsted deposits $100M guarantee that it will build Ocean Wind 1 by 2025
  - Sept – Oct 2023: deposits $200M in an escrow account for supply chain investments that requires the approval of three parties to be withdrawn (Ørsted, the Board of Public Utilities and the EEW)

Multiple cost and timing challenges with a final blow due to vessel availability

- **The project was under time pressure**: as per initial timeline, with the New Jersey's Board of Public Utilities, the project was scheduled to be installed by 2024. As per COP, Ørsted was planning to start onshore construction in Fall 2023, then in early 2024 to start offshore construction (incl. installation of monopile and start of installation of GE turbines), and to be operational in 2025 and commissioning in 2026
- **The rising capex and financing costs deteriorated the business case** (communicated previously), **but the tax credit legislation approved by NJ in Jul would be positive for the business case**
- **What seem to have tipped the balance was the "further significant delays of vessel availability implying a multi year delay of the whole project, and re-contracting that would be at a much higher price and would have a massive impact"**
- **Ocean Wind 1 was ceased on 31st Oct 2023, despite having an OREC price (PPA) 21% higher than the Revolution wind 1[1] which was FID**

$4-4.5 bn impairments and provisions

- Due to high early commitments, meant to speed up the project and catch-up on delays, and due to late ceasing, the total project impairments and provisions accumulated to **$4-4.5 bn**:
  - Impairment of $2.87 bn (DKK 19.9 bn) as part of Q3 2023
  - Currently estimated provision of approximately $1.15-1.6 bn (DKK 8-11 bn) as part of Q4 2023 EBITDA to account for potential contract cancellation fees not already covered by the impairment
- The **$4-4.5 bn** is further split as:
  - **Spent to date, before FID** (book value): $1.87 bn (DKK 13 bn)
  - **Gross break fees of around $2.15-2.6 bn** (DKK 15-18 bn, further split as: DKK 8-11 bn EBITDA provision and DKK 7 bn impairment)
  - Upsides: potential reuse of some equipment, value of the fully permitted lease, LDs on vessel supplier (but capped to contract value)

Based on public information, including from Q3 Earnings Call with the analyst

1 – As per 4C, Ocean Wind 1 levelized OREC price of $116.82/MWh over the 20-year term vs. Revolution wind Weighted average of $95.95/MWh also over a 20-year term

5 ØRSTED US PORTFOLIO: KEY QUESTIONS

Will Ørsted focus only on Northeast cluster (and divest Mid Atlantic)?

Will the 2030 ambitions in US be reduced from 3-5 GW (as per June 2023 Capital Markets Day) to 1-2 GW ?
Will Siemens Gamesa remain the sole WTG OEM for Ørsted US portfolio (already selected for Northeast cluster) ?

Northeast cluster

Project	Status	Supply Chain
South Fork 0.13 GW	• Under construction (since Feb 2022 starting with ON export cable) • On track • FID Feb 2022	• SGRE: 12 x 11MW (supply, deliver, install). WTIV Aeolus from Van Oord • Boskalis: Foundation and OSS transportation and installation • DEME Offshore will transport and install the export and inter-array cables • Cables: Nexans, Hellenic Cables • Kiewit (US, Texas) designed and built the 1,500-ton OSS
Revolution wind 1[2] 0.7 GW	• FID Nov '23 • COD 2025	• SGRE: 65 x 11MW (supply, deliver, install) • Boskalis: Foundation and OSS transportation and installation • Bladt / Semco: OSS fabrication • WTIV: initially Dominion Energy's Charybdis, but delayed. Assumed a new installation approach with a longer timing • LS Cables, Hellenic Cables, Correll Group
Sunrise Wind 1 0.9 GW	• Pending FID • Potential rebid (NY), fully merchant is not attractive • Est. COD: 2025	• SGRE: 84 x 11MW (firm order, conditional to FID) • WTIV: initially Dominion Energy's Charybdis, but delayed. Assumed a new installation approach with a longer timing • Note: No re-contracting expected in case of rebid, will not be a material delay, very close to the original FID timing

Mid Atlantic cluster

Project	Status	Supply Chain
Ocean Wind 1 1.1 GW	• Ceased the development • $4-4.5 bn impairments and provisions	• GE: 98 x 12MW, supply & 5-year service • EEW, monopile Paulsboro facility Phase 1[1] • JINGOLI Power and Burns & McDonnell: EPC Onshore transmission system: • Riggs Distler: Secondary steel • 3 HVAC OSS: Bladr / Semco Maritime • Cables: LS Cables; Hellenic Cables • WTIV, FIV: not named; Boskalis: installation of export cables
Ocean Wind 2 1.1 GW	• Ceased the development	• GE: announced in June 2021 • Ocean Wind 2 included a commitment for a GE nacelle facility and move to phase 2 with EEW monopile facility
Skipjack 1&2 1 GW (0.12+0.85)	• Ongoing reconfiguration (Significant OREC adjust. needed) • All spend is paused	• GE:, but unclear due to ongoing reconfiguration

1 - $250M investment, out of which $100M USD investment from Ørsted. First monopile completed in Jul 2023; 2 - Revolution wind 2 is not awarded: Rhode Island Energy declined Ørsted proposal, as sole bidder (due to high PPA price); hence COD is uncertain but probably not before 2030

6 Key to Ørsted's strategy was to:

a) take higher supply chain risks pre-FID (to progress faster the projects);

b) farm down in a decreasing interest rate environment (making the investment attractive versus bonds)

c) keep financing costs relatively low leveraging its balance sheet financing with investment credit rating.

All these might change / are challenged going forward

(Ørsted insisted that will protect its credit rating)

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Key strategic questions on what comes next

Question 1

WHAT ØRSTED WILL CHOOSE TO DO NOW WITH SOME OF CEASED / UNLIKELY PROJECTS IN US (OCEAN WIND 1, OCEAN WIND 2, POTENTIALLY SKIPJACK) ?

SELL THE PROJECTS (SEABED AND PERMITTING HAS A VALUE) ? SELL THE PROJECTS WITH EQUIPMENT / CONTRACTS ?
WAIT FEW YEARS AND REBID AT A LATER DATE ? MERCHANT ROUTE IS NOT FAVORED.

Question 2

WHAT HAPPENS TO THE EQUIPMENT ALREADY ACQUIRED ?

COULD SOME OF THE OCEAN WIND 1 EQUIPMENT BE RE-USED IN OTHER ØRSTED'S PROJECTS?
OR PARTIALLY RESELL AT A DISCOUNT ?

Question 3

WAS THE CEASING OF OCEAN WIND 1 THE BEST / THE ONLY DECISION ?

IS THE $4-4.5 BN IMPAIRMENTS AND PROVISIONS THE BETTER OPTION VS. IMPLEMENTING THE PROJECT WITH BIG DELAYS AND AT INCREASING AND UNCERTAIN LOSSES (VESSEL SUPPLY STILL NOT CERTAIN, TIMING OF THE PROJECT NOT MATCHING WITH THE OREC MANDATE, ETC.)?

Question 4

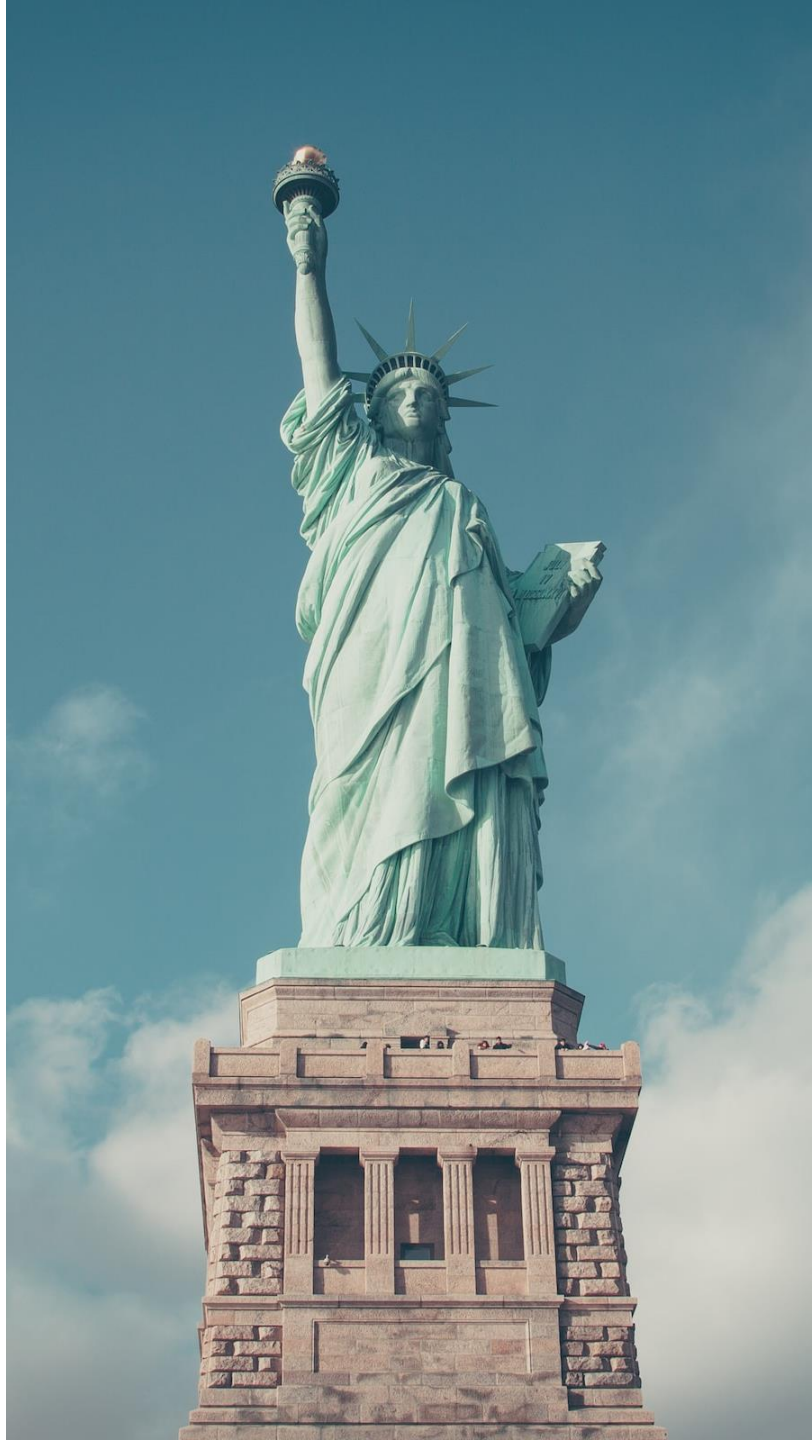
WHAT ARE THE IMPACTS FOR THE SUPPLY CHAIN ?

A LOT OF EU AND US COMPANIES HAVE BOOKED CAPACITY ON THE BASIS OF ØRSTED (AND EQUINOR) US PIPELINE…
… WHAT IS THE CONSEQUENCE OF THIS WITHDRAW ON THE SUPPLY CHAIN?
EEW PAULSBORO STILL IN A HIGHLY CRITICAL RAMP UP PHASE – HOW TO RETAIN US FABRICATOR SKILLS FOR NEXT PROJECTS?
COMPANIES LIKE BLADT INDUSTRIES ARE IN AN OPEN SALES PROCESS (WITH CS WIND) BEING COMPLICATED BY THE ANNOUNCEMENT (ON TOP ON ONGOING OPERATIONAL ISSUES AT THE XXL MP FACILITY AT LINDØ) – RISK OF CS WIND PULLING OUT? SIF IN INVESTING IN THE LARGEST MONOPILE FACTORY GLOBALLY, IN ROTTERDAM, AND RESERVED CAPACITY FOR US PROJECTS.
WILL THE VESSEL ANNOUNCEMENTS FREE UP CAPACITY IN THE EU?

Question 5

IS ØRSTED AN ACQUISITION TARGET ?

WILL THE DANISH STATE RECONSIDER THEIR POSITION IN ØRSTED (AT A HIGH PREMIUM OVER TODAYS LOW STOCK PRICE)?
WILL O&G MAJORS POSITION THEMSELVES IN A PUSH TO ACHIEVE THEIR RENEWABLE ENERGY TARGETS?



About Green Ducklings A/S

Green Ducklings was founded by three Executive Management partners, with the common vision of being masters of "**Black2Green**" transformations. The sole purpose of Green Ducklings is to increase the value of companies by efficiently facilitating strategic guidance and diversification processes in offshore wind.

Our senior industry specialists leverage an extensive network within the offshore wind as well as the Oil and Gas markets. Our experience total 15 years in the offshore Oil and Gas sector and more than 100 years of total experience in the offshore wind. The offered processes has been tested, proven and refined by the Green Ducklings team, including collaboration partners.

Integrated Wind Solutions AS holds 97% ownership of Green Ducklings A/S.

Webpage: www.greenducklings.com