



Learning from the Experts Webinar Series

How to Tap Into the Offshore Wind Supply Chain



Kristian Ravn

Co-founder and Executive Advisor
Green Ducklings



Andreas Schønbeck

Partner
Horten

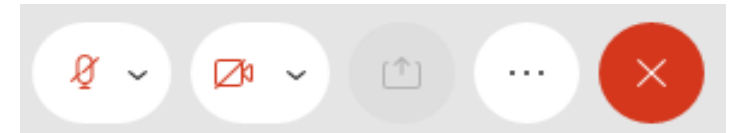
September 20, 2023


Meeting Procedures

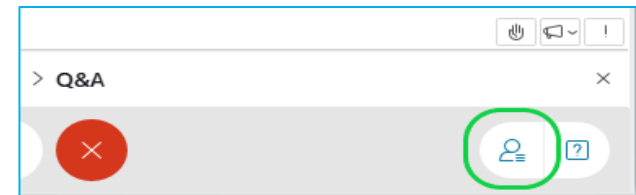
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- > Members of the public will be muted upon entry.
- > Questions and comments may be submitted in writing through the Q&A feature at any time during the event.
- > If technical problems arise, please contact Sal.Graven@nyserda.ny.gov



You'll see  when your microphone is muted



Learning from the Experts

This webinar series is hosted by NYSERDA's offshore wind team and features experts in offshore wind technologies, development practices, and related research.

DISCLAIMER:

The views and opinions expressed in this presentation are those of the presenter and do not represent the views or opinions of NYSERDA or New York State.



Improving the Odds for Success in Offshore Wind

The offshore wind market
- trends and tendencies affecting the US supply chain



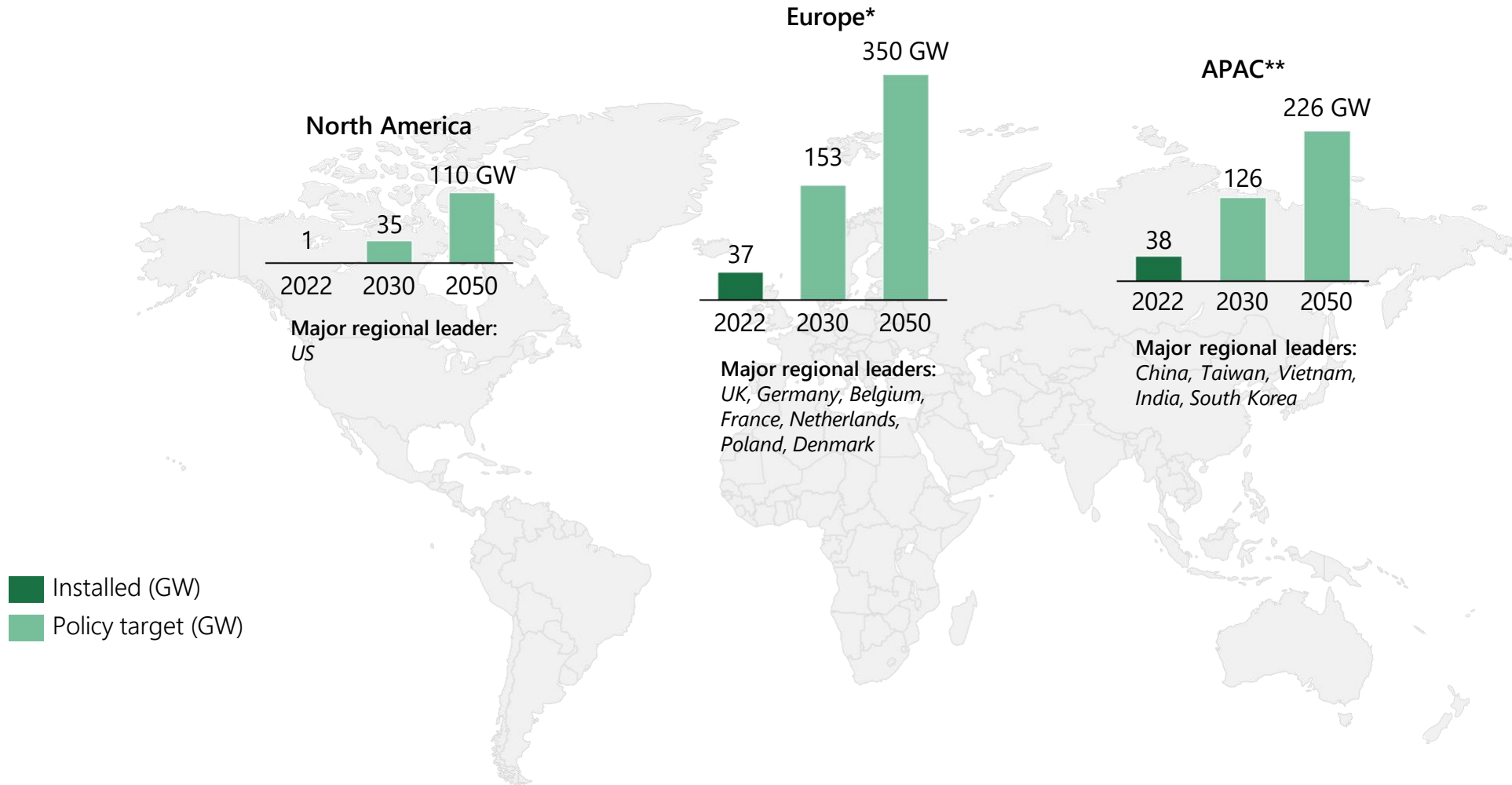


We advise executive managements and
operate in the cross-field between

technical expertise,
commercial considerations
market insights &
stakeholder management

Regional offshore wind capacity targets remain sky high.....

US has highest relative growth rate ambitions from a political perspective

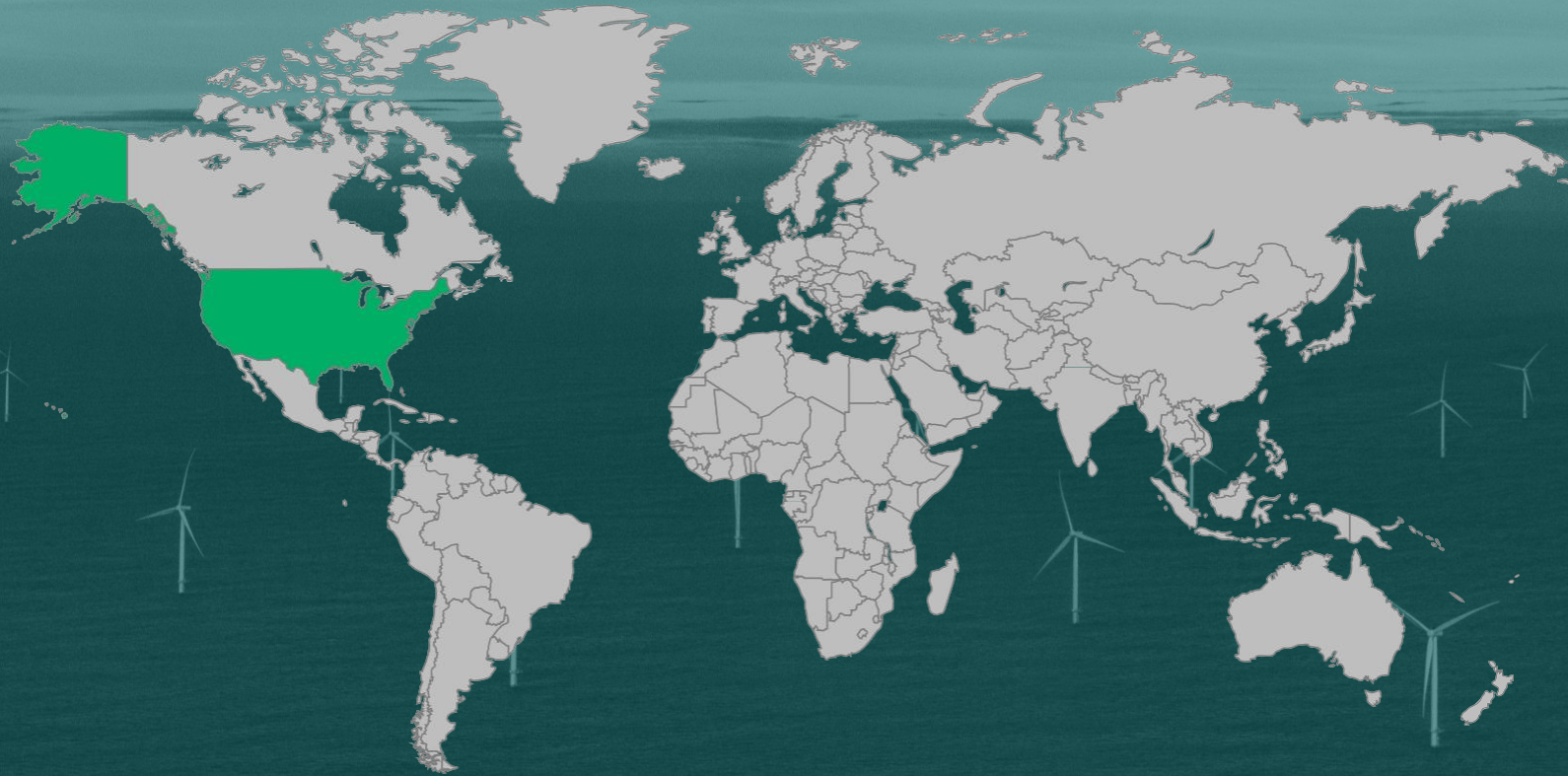


Source: Individual country policy targets - research by Green Ducklings

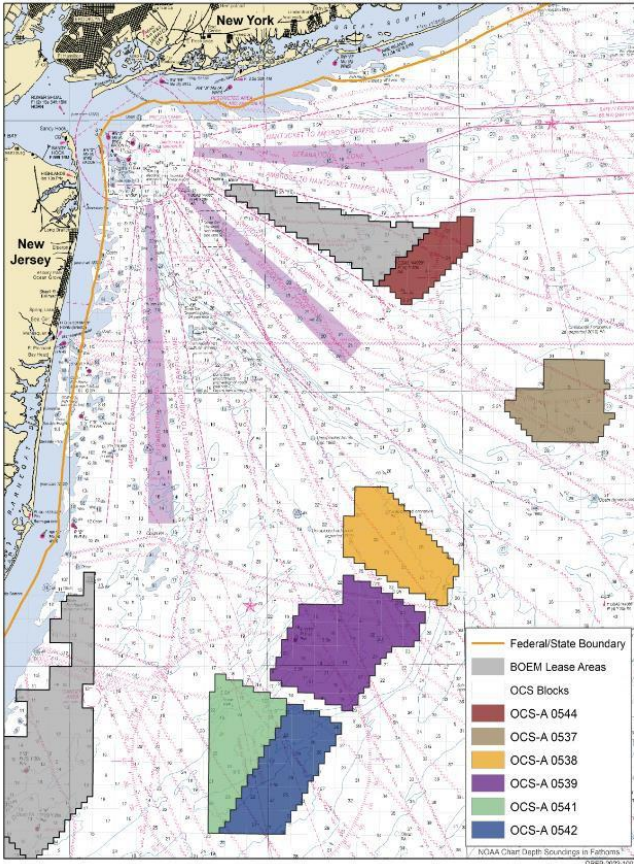
*2050 goals for Europe come from the EU ambition + UK targets

**China's current five-year plan targets 54.85GW by 2025. Due to the nature of Chinese five-year plans, there is limited visibility for long-term ambitions.

For the US market, recently announced “challenged” projects represent ~1/3 of the 2030 installation target, and ~50% of the 2025-2028 expected installations. Several of these are linked with follow-up projects that likely will be delayed as well. The good news for supply chain companies is that the pain points of developers are clear and big investments are at stake!



Proven investment appetite for US East Coast projects.....



Winners of the New York Bight Lease Areas, \$4.37 Billion in High Bids

OCS-A 0544	Vineyard Mid-Atlantic LLC, \$285,000,000
OCS-A 0537	OW Ocean Winds East, LLC, \$765,000,000
OCS-A 0538	Attentive Energy LLC, \$795,000,000
OCS-A 0539	Bight Wind Holdings, LLC, \$1,100,000,000
OCS-A 0541	Atlantic Shores Offshore Wind Bight, LLC, \$780,000,000
OCS-A 0542	Invenergy Wind Offshore LLC, \$645,000,000

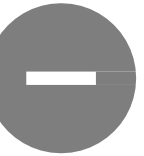
Seabed Lease Rights



Power Purchase Agreements



Cost Levels & Risks?
(CAPEX/OPEX/Financing)



A seabed lease investment turns into a Beauty Contest....

\$ + Beauty =
Promises vs Risk

Seabed
Lease
Right \$\$\$

- Local Job Creation
- Certainty on TCs
- Investment Plans
- Executability

PPA FID

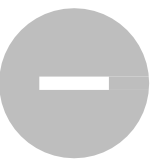
Seabed Lease Rights



Power Purchase
Agreements

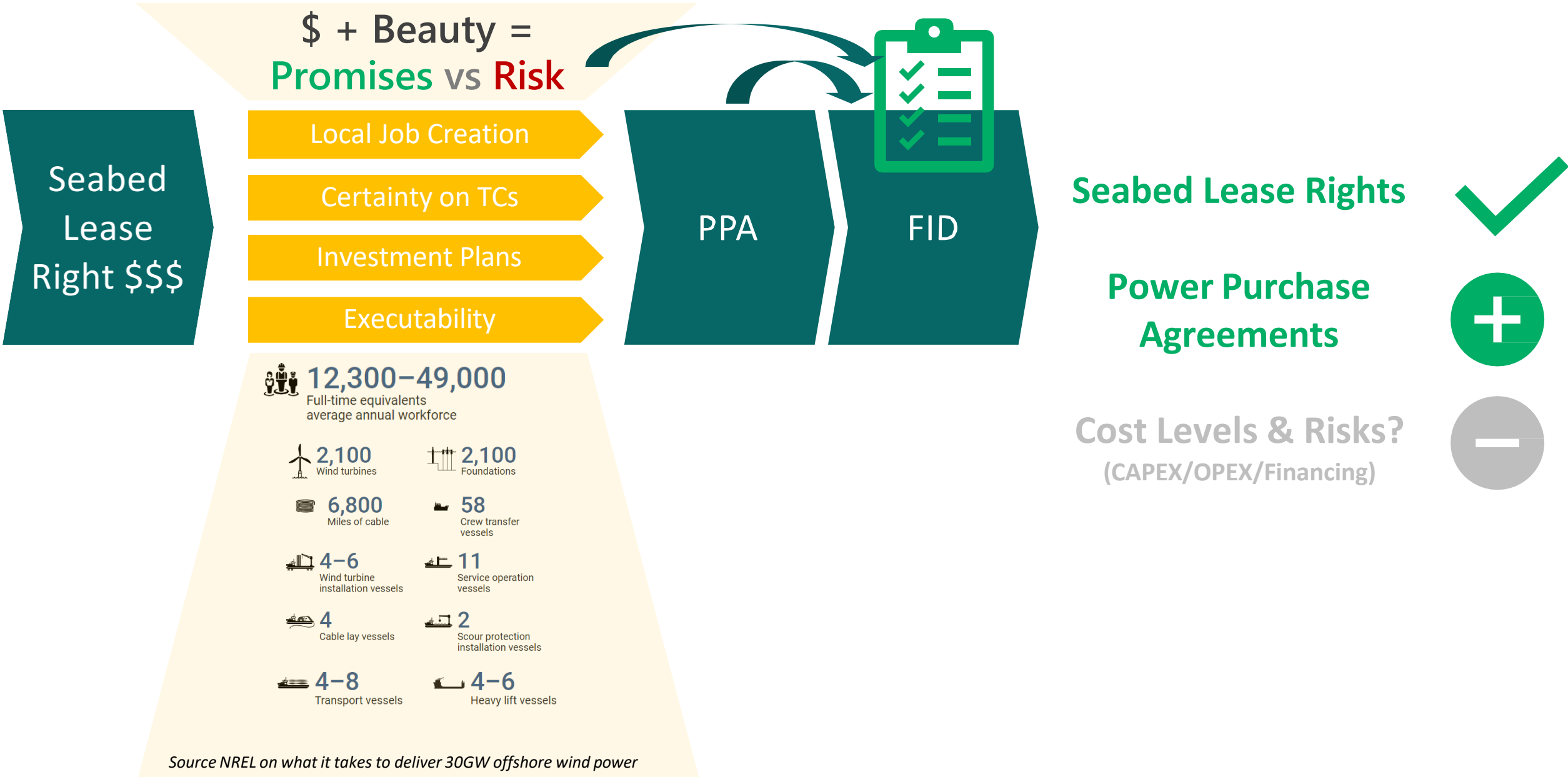


Cost Levels & Risks?
(CAPEX/OPEX/Financing)



Source NREL on what it takes to deliver 30GW offshore wind power

Promises must be kept and assumptions must be confirmed.....



Promises must be kept and assumptions must be confirmed.....

\$ + Beauty =
Promises vs Risk

Seabed
Lease
Right \$\$\$

- Local Job Creation
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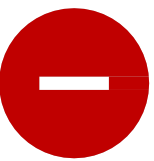
Seabed Lease Rights



Power Purchase
Agreements



Cost Levels & Risks?
(CAPEX/OPEX/Financing)



- 12,300-49,000**
Full-time equivalents
average annual workforce
- 2,100**
Wind turbines
- 2,100**
Foundations
- 6,800**
Miles of cable
- 58**
Crew transfer
vessels
- 4-6**
Wind turbine
installation vessels
- 11**
Service operation
vessels
- 4**
Cable lay vessels
- 2**
Scour protection
installation vessels
- 4-8**
Transport vessels
- 4-6**
Heavy lift vessels

**COST
UNCERTAINTY**

**TRIGGERED
RISK**

**INTEREST
RATES UP**

Source NREL on what it takes to deliver 30GW offshore wind power

Negative news about offshore wind projects pre-FID

>10 GW of challenged projects announced in the past 3 month (billions in impairments, PPAs terminated or under renegotiation, projects stopped by developers, etc.), across many leading developers, higher concentration in US market

#	Country	Main developer	Project	GW	Status	Est. COD	Root cause (as announced)	Impact
1	US, NJ	Orsted	Ocean Wind 1	1.1	Pre-FID	2026 (2025 as per June CMD)	Supplier delays, ITC qualification, interest rates increase	Anticipated impairments of 2.15 bnEUR: 0.67 bnEUR for supplier delays (all 3 projects), 0.81 bnEUR for ITC issues (NY, NJ), and 0.67 bnEUR due to interest rates increase across the 3 projects and additional ones in OF and ON. The announcement triggered negative investor's reaction, Orsted losing 24% market value in one day
2	US, NY	Orsted	Sunrise Wind	0.9	Pre-FID	2025	Supplier delays, ITC qualification, interest rates increase	
3	US, RI	Orsted	Revolution Wind	0.7	Pre-FID	2025	Supplier delays, interest rates increase	
4	US, RI	Orsted	Revolution Wind 2	0.9	Early Pre-FID	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 Orsted proposal, as sole bidder (due to high PPA price)
5	US, NY	Equinor and BP	Empire Wind 1	0.8	Pre-FID	2026	Revenues not adjusted for inflation to reflect the significant inflationary pressure	Renegotiating the (PPAs). Potentially not developing anymore if the return thresholds cannot be met.
6	US, NY	Equinor and BP	Empire Wind 2	1.3	Pre-FID	2026/2027		
7	US, MA	Equinor and BP	Beacon Wind 1	1.2	Pre-FID	2027/2028		
8	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 mUSD in penalties in the process. Avangrid intends to rebid in next solicitation (COD post 2029)
9	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	In discussions to cancel and rebid its PPAs, and payment of penalties for termination.
10	UK	Vattenfall	Norfolk Boreas	1.4	Pre-FID	2027/2028	Cost increases up to 40%, hence project development stopped by Vattenfall	Negative impact on earnings of 477.4 mEUR (impairment)

Developers lining up for a **game of hardball**

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Orsted Loses a Quarter of its Market Value After Warning on US Offshore Wind

By [Dominic Chopping](#) [Follow](#)

Updated Aug. 30, 2023 10:15 am ET

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Bloomberg

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Orsted's \$2.3 Billion Charge Exposes US Offshore Wind Woes

- Three US projects challenged by rising costs, tax uncertainty
- Offshore wind facing 'hard realities of energy infrastructure'



A wind farm near Block Island, Rhode Island. Photographer: John Moore/Getty Images

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Offshore wind contract disputes proliferate as high costs jeopardize US buildout

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Essential IR Insights Newsletter - Summer July-August 2023

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Insight Weekly: Climate law faces hurdles; US borrowing

Offshore wind contract disputes proliferate as high costs jeopardize US buildout

Higher financing and equipment costs are compelling more developers of US offshore wind power to renegotiate or terminate power purchase agreements in an attempt to keep their renewable projects viable.

As of June 12, about "one-third of the total offshore wind capacity contracted on state-sanctioned procurements to date is now in dispute," according to ClearView Energy Partners.

In 2022, the Massachusetts Department of Public Utilities declined requests from Avangrid Inc., developer of the 1,232-MW Commonwealth Offshore Wind Project, and Shell PLC and Energias de Portugal SA (EDP), developers of the 1,600-MW SouthCoast Wind Energy Project, to dismiss and renegotiate supply contracts with the distribution utilities of Eversource Energy, Unital Corp.

Energy | Industry Insight

Cost crunch prompts mass rethink of US offshore wind contracts

By [Eduardo Garcia](#)

September 13, 2023 6:37 PM GMT+2 · Updated 5 days ago



Industry Insight from Reuters Events, a part of Thomson Reuters.

Projects will continue but with delay

Developers in the US have to find their way in the new context, where project fundamentals must be revisited to enable a Final Investment Decision

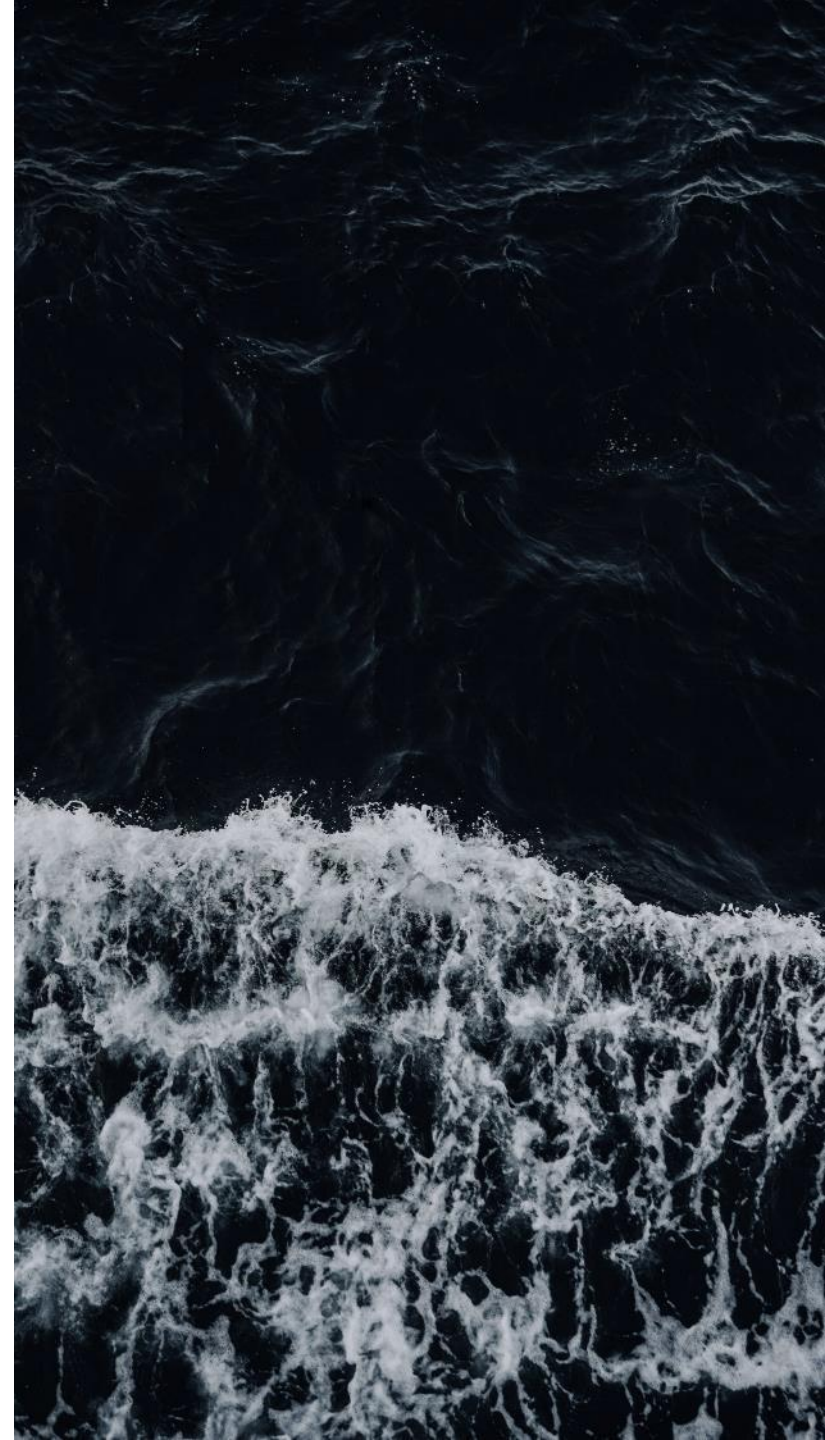
Renegotiate Tariffs from PPA's to increase revenues?

Squeeze suppliers to reduce costs?

PAINKILLERS FOR DEVELOPERS

Secure more tax credits than calculated into the PPA?

Wait for interest rates and/or prices to come down again?



In every challenge there is an opportunity...

The success of Supply Chain Companies in the short term will depend on ability to help resolve the pain points. In the medium term the market dynamics will be back to basics... but with a delayed timeline

Renegotiate Tariffs from PPA's to increase revenues?

Will cause additional requirements within social or environmental benefits in a political trade-off

Squeeze suppliers to reduce costs?

Will cause need for innovations that can lower costs in a US context with limited risk impact

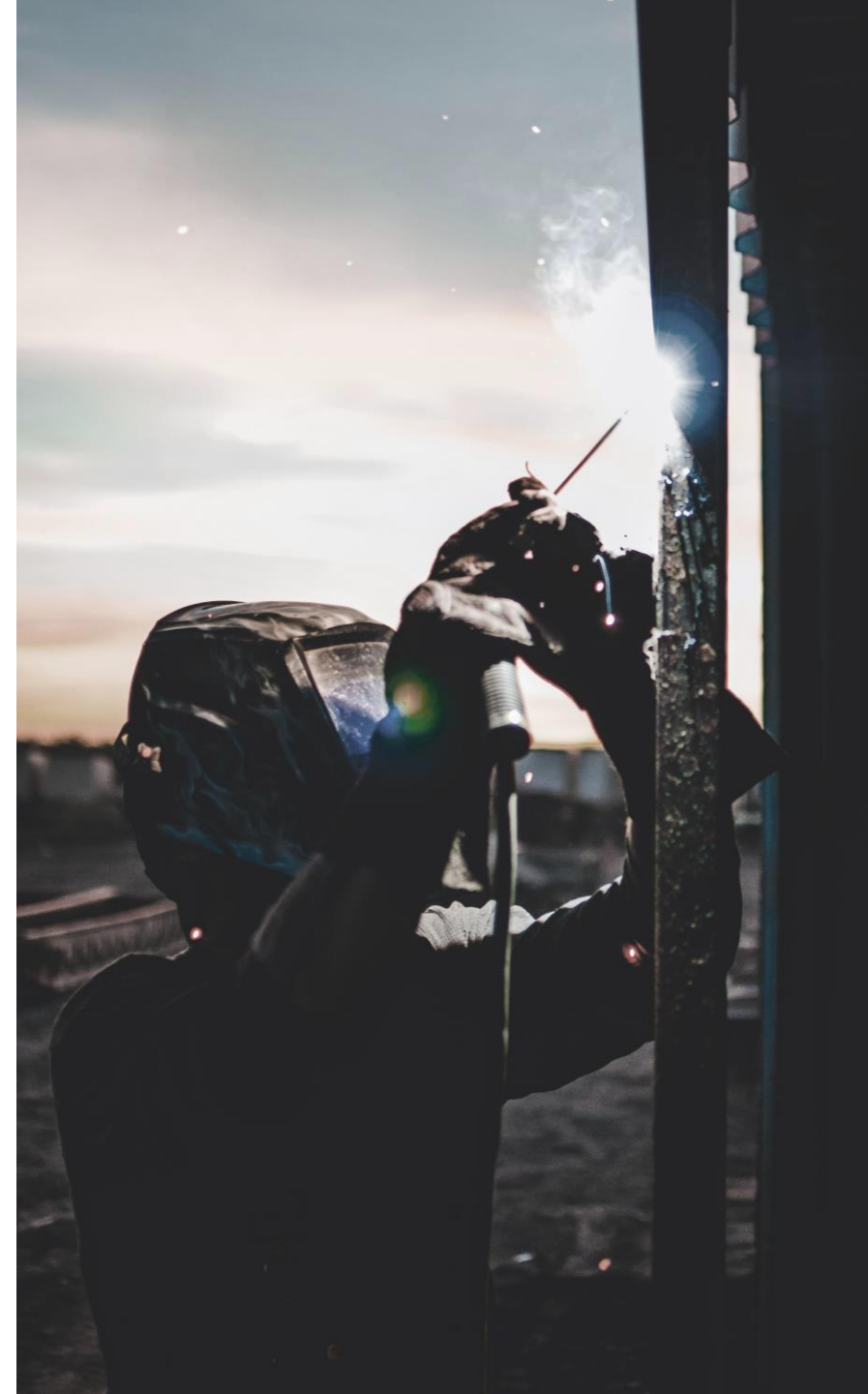
PAINKILLERS FOR DEVELOPERS

Secure more tax credits than calculated into the PPA?

Will require increased local value/job creation for the US as a nation

Wait for interest rates and/or prices to come down again?

Will cause renewed business opportunities since there is better time to work with supply chain improvements



COMPANIES MUST FOLLOW 5 STRATEGIC ACTIONS TOWARDS SUCCESS IN OFFSHORE WIND

COMPANIES NEED TO UNDERTAKE STRATEGIC ACTIONS ACROSS A RANGE OF DIMENSIONS



1 CLEAR RESPONSE

US suppliers need to have a clear response to the developer's key success parameters, such as **quantification of local job creation locally, selected environmental impacts (mainly CO2 emissions) or risk reduction ability**



2 STRATEGIC POSITIONING

Through clear strategic positioning in the sector, companies can **leverage on strategic partnerships with EU-companies** to fulfil capacity and competence gaps at US suppliers, thus increasing bargaining power.



3 SOLUTION-PROVIDER MINDSET

In effect, companies must **implement a solution-provider mindset** vis-à-vis a product mindset, which entails taking on larger scopes (one-stop shopping) with increased risk.



4 OPERATIONAL EXCELLENCE

Focus must also be placed on **Operational Excellence in efforts to improve profitability and scalability** in the sector (a mean to balance the increased risk).



5 SOLUTION DEVELOPMENT

Also, players must be ready to **partake in early solution development**, which entails entering at specification level to increase the strategic importance of an offering. Innovative strategic assets and IP protection becomes key to protect company values.





- M.Sc. Structural Engineering, Graduate Diploma Business Administration
- Global Head of Field Integration Solutions, Technology Major
 - engineering
 - project execution
 - global O&G market
- Country Manager Norway, Offshore EPCI Contractor
 - EPCI project execution models and supply chain
 - engineering and projects
 - offshore labor force
- CEO, Offshore Wind Technology Company
 - Fixed-bottom foundations
 - Execution model and IP
 - Working with strategic level developers worldwide



"Bridging technology, strategy and clients through concepts"

THANK YOU

Improving the Odds for
Success in Offshore Wind



Offshore Wind Supply Chain

Contractual Tendencies and Focal Points

Andreas Schønbeck, Partner

20 September 2023

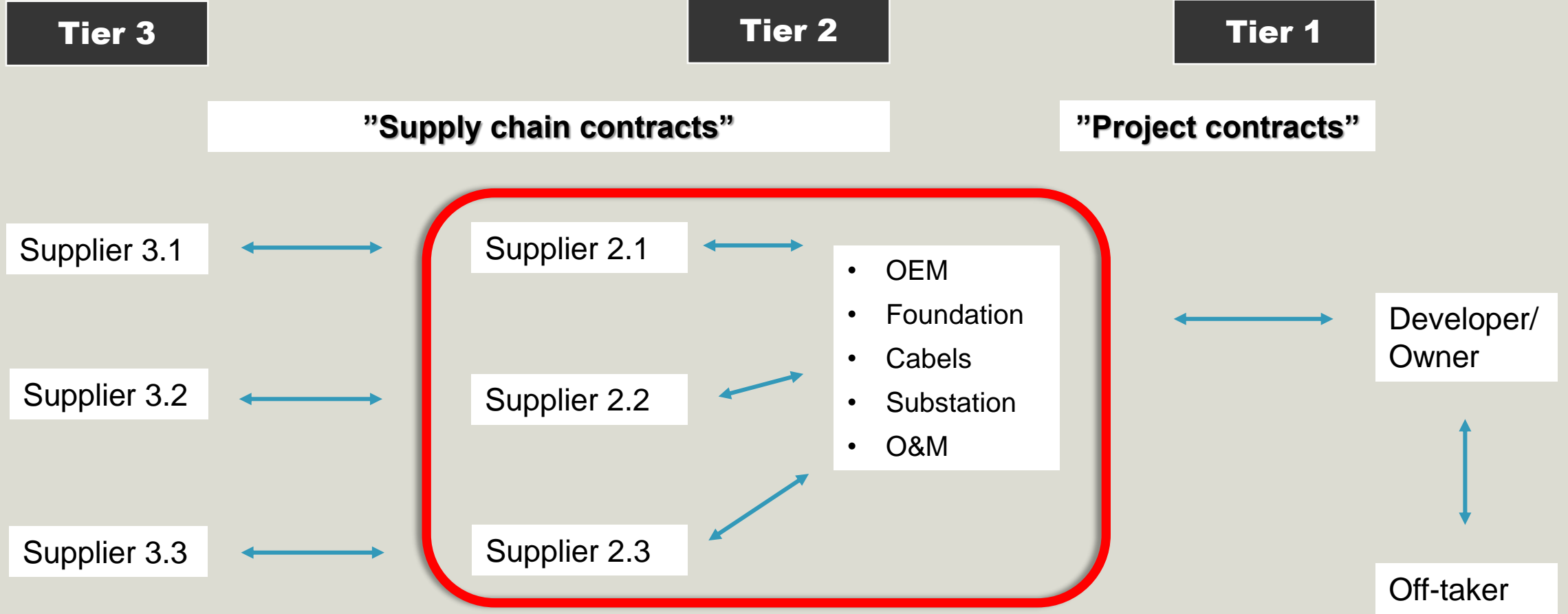
Offshore Wind Supply Chain

Contractual Tendencies and Focal Points

Main topics

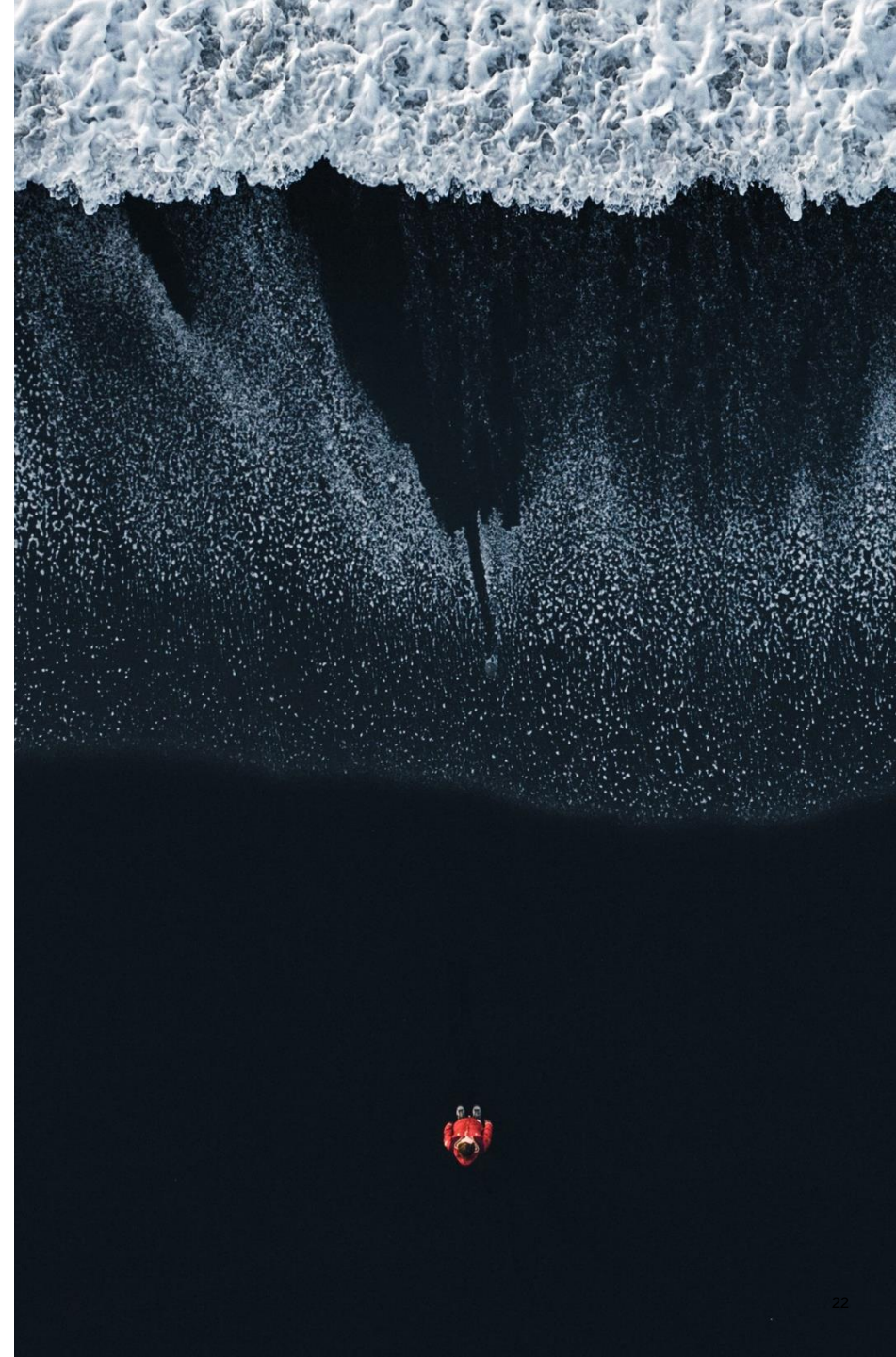
- Contract characteristics
- Recent development and tendencies – what do we see in practice?
- Recommendation – focal points and key objectives

Offshore Wind Contracting Chart



Contract Characteristics

- Project contracts will typically be based on the FIDIC Yellow Book (more often the 1999 version rather than the 2017 version)
 - Main features:
Construction contract, project specific, maritime aspect, Engineer, programme and milestones
 - Main topics:
Delay, defects, tests on completion, knock-for-knock regime
- Supply chain contracts do most often not resemble FIDIC standards
 - Framework agreements
 - Contracts for delivery of structures/performance of services
 - Main topics:
Delay, defects, product liability, IPR indemnities, forecast, quality, scope of services, limitation of liability



What to expect?

- Unbalanced risk allocation
 - Pick your fights through thorough risk analysis
- Focus on qualification and documentation proces
 - Document your capabilities
 - Document your business
- Can you deliver the needed scope?
 - Consider acquiring capabilities (M&A)
- Cost-out and price reductions
 - Cheaper, lighter, more efficient
- HSE + ESG
 - Compliance is licence to operate



Tendencies and Focal Points

TENDENCIES

- Intensified focus on quality
 - Quality issues offshore is a major problem, and may jeopardize the business case and even the business itself
- Enhanced project contract awareness
 - The project contract is the source of many obligations that are passed down the supply chain
- ESG becomes increasingly important
 - focal point for investors, governments, project developer – and in turn for the supply chain

FOCAL POINTS

- Risk
 - Limit your risks and liabilities
 - Both operationally and contractually
 - Back-to-back coverage (pass on risk)
- Variations
 - Your contracts relate to projects, production schedules, etc. which may vary
 - Ensure that variations of timing and scope give rise to extension of time and extra payment
- Secure investments
 - Pricing
 - Commitments
 - Termination



Dir: +45 33344274
Mob: +45 52344274
E-mail: ash@horten.dk

Andreas Schönbeck

Partner

Andreas Schönbeck is specialised within complex contracts - both in relation to drafting, negotiation, interpretation and other contractual matters.

Andreas has more than 10 years' experience as in-house counsel of some of the world's leading onshore and offshore wind turbine manufacturers. Through the years, he has worked internationally and negotiated contracts globally.

Andreas is probably the most experienced Danish attorney in relation to contracts within the wind industry's supply chain.

In addition, Andreas has been an external lecturer at the University of Aarhus for seven years and has written several articles on contract law and product liability law and textbooks on confidentiality agreements, product liability and international contracts.

In 2018, Andreas was nominated for Berlingske Business Talent 100 in the category "advisers".

Career

Partner, Horten, 2022
Director, attorney, Horten, 2022
Senior Attorney, Horten, 2020
Lead Counsel – Global Supply Chain (Legal), MHI Vestas Offshore Wind A/S, 2019-2020
Senior Legal Advisor, MHI Vestas Offshore Wind A/S, 2015-2019
Admitted to the Danish bar, 2012
Corporate Legal Advisor, Vestas Wind Systems A/S, 2009-2015

Education

Master of Laws, the University of Copenhagen, 2009

Practice areas

Energy law & supply law
Corporate advice & contracts
Corporate M&A

**Thank you for your attention –
any questions?**

Coming Soon

October 25, 1:00 p.m. ET

Financing Structures for Offshore Wind

Lesley Hunter with American Council on Renewable Energy (ACORE)

November 8, 1:00 p.m. ET

How Offshore Wind Farms are Installed

Drashya Goel and Patrick Sanguily with Spinergie

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