



Winds of Change: Navigating Growth, Volatility, and Leadership in the Global Wind Energy Sector



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Organized by the Industrial Practice Group at Pedersen & Partners, a recent virtual executive session brought together leading figures in the wind energy sector. The session was moderated by **Michael Larsen**, Client Partner, Industrial Practice, Energy, Renewable & Cleantech Lead at Pedersen & Partners, and featured two keynote speakers: **Mr. Knud Andersen**, former COO at Vestas A/S and now professional board member and consultant, and **Mr. Lars Rytter**, former CPO at GE Vernova Offshore Wind and founder of Rytter Advisory & Consultancy.

The discussion covered the growth trajectory, structural complexities, and long-term strategic outlook for the global wind industry. The session emphasized data, global dynamics, and operational challenges shaping the sector.

Global Market Outlook and Driving Forces

The wind energy sector is expected to reach approximately USD 150 billion in 2025, with an annual growth rate of 8%. It is deployed across more than 100 countries, with installed capacity surpassing more than 1,000 GW by the end of the year 2024. Although onshore wind remains dominant, offshore wind is forecasted to grow at double-digit rates over the next decade.

"The industry is volatile and driven heavily by political forces," noted Mr. Rytter. *"We've seen projects stalled or cancelled not only due to economics, but because of shifting subsidy policies or leadership changes."*

Electrification is a primary driver. Decarbonization goals and global demand for clean energy are pushing economies toward renewables. *"All of us agree more or less that we need to electrify our energy system going forward,"* said Mr. Andersen. He added, *"I have learned over my professional career that facts tend to limit the creative discussions,"* referencing the practical constraints shaping policy decisions.

Projections show that achieving net-zero by 2050 could require 20 to 25 times the current global capacity in solar and wind.

Regional Development and Market Dynamics

Electrification rates are uneven. Europe is relatively advanced, while many US states face energy shortages due to rising consumption, particularly from AI and data centers. Geopolitical shifts are accelerating demand for energy independence.

Emerging markets may leapfrog fossil fuel development, moving directly into electrified systems. Mr. Andersen observed, *"We believe that growth is led by increasing prosperity in emerging economies. They will probably skip oil and gas like people skipped fixed telephones and moved to smartphones."*

China is the global leader in wind deployment, with approx. 500 GW installed – triple the US total. Germany remains Europe's leader, while new offshore markets like Taiwan, South Korea, and Poland are gaining ground.

Technology and Manufacturing Evolution

Technological development is reshaping turbine design. Newly developed offshore turbines now reach 21–22 MW with rotor diameters of more than 270 meters. Onshore units are approaching 8–10 MW.



“One thing I just want to mention here is that rotor diameter beats everything,” said Mr. Andersen, explaining its dominant role in energy yield and cost efficiency. Larger rotors increase output, reduce the number of turbines needed, and lower service costs.

Mr. Rytter highlighted the growing complexity: *“The size of components makes traditional logistics unfeasible. We’re dealing with 800-ton towers and 2,000-ton monopiles—blades with length of more than 120 meters and weight of 55–60 metric ton that cannot be transported by road.”*

The turbine OEM landscape is consolidated. Global players like Vestas, Siemens Gamesa, and GE Vernova compete with cost-focused Chinese OEMs such as Goldwind and Envision.

Supply Chain, Infrastructure & Standardization

Each turbine contains roughly 8,000 components. Supply chains are global, but heavily dependent on Asia for steel and rare earth elements. China dominates production of both, raising strategic concerns. *“Maybe it was bit over exaggerated that 100% is China but maybe it’s 98.9%,”* Mr. Rytter remarked, referring to rare earth materials which are used not only in the wind turbine sector but also EV. *“That is of course a bit scary.”* But we see countries outside China are massively investing in rare earth capacity.

Manufacturing for large components for especially the offshore sector increasingly requires port-side facilities and specialized vessels. These vessels, used for transportation, installation, and servicing, are limited and often booked years in advance. The entire supply chain will need to invest massive in capacity, equipment and factories to meet the current forecast and the race toward decarbonizing the world.

Grid infrastructure is also a bottleneck. The rapid deployment of variable renewables is outpacing grid adaptability. As Mr. Andersen explained, *“The grid was designed when it was more traditional power plants. More variable input is a more complex control situation.”*

New pricing models may be needed to maintain economic viability. Mr. Andersen suggested, *“Going forward, electricity will be more or less free of charge like telephones today... you pay for having the telephone but not really for the conversation.”*

Digitalization and Predictive Technologies

AI is expected to play a growing role, especially in predictive maintenance and surveillance. *“AI will in particular be a good thing making turbine surveillance where you can then predict failures before they happen,”* said Mr. Andersen. This is especially important offshore, where access is limited and downtime is costly.

While AI is unlikely to boost turbine output significantly beyond current limits, it improves uptime, reliability, and operational cost management.

Talent Strategy and Workforce Demand

The sector faces an urgent need for talent across engineering, electrical systems, and project management. Both speakers agreed that attracting talent from adjacent sectors like automotive can help, but industry-specific training and upskilling are essential.

“As the industry matures, leadership roles across engineering and supply chain will be increasingly critical,” Mr. Rytter said. *“Also experienced project managers who must handle EURO multi billions complex construction contracts will be required. Qualified and trained experienced installation technicians who are used to working offshore – are in big demand,”* said Mr. Rytter.

Mr. Andersen emphasized purpose-driven recruitment: *“A lot of young people would actually like to work in an industry where they are part of making a difference.”*

Strategic Consolidation and Business Opportunities

OEM consolidation is likely to be followed by supplier consolidation. Currently, suppliers are fragmented and lack the scale required by global OEMs.

“Supporting these suppliers through M&A and external capital is not only necessary but offers a viable business opportunity,” said Mr. Rytter.

Repowering—replacing smaller, older turbines with newer, more efficient models—is another growth area. Decommissioned turbines could be redeployed in emerging markets, supporting circular economy goals.

The Evolving Energy Mix and Future Path

The global energy system will not be powered by renewables alone. Carbon capture, nuclear, and biofuels will also play roles.

“Carbon capture is growing rapidly now,” said Mr. Andersen. *“It will be added onto existing plants or big industries today.”*

He added, *“I’m sure nuclear will grow... it’s good to have something which is baseload and something which is more variable.”*

Western governments are expected to favor local suppliers for critical infrastructure. *“Politically this will probably lead to US and Europe... demanding local suppliers and control over the infrastructure,”* Mr. Andersen concluded.

Conclusion

The global wind industry stands at a critical juncture—expanding rapidly while navigating volatility and structural limitations. Strong leadership, strategic investment, and ecosystem-wide collaboration will determine its ability to scale responsibly.

Through platforms such as the Industrial Practice Group at Pedersen & Partners, firms and stakeholders can engage directly with these evolving challenges and help shape the executive talent pipeline driving transformation in one of the world’s most important sectors.