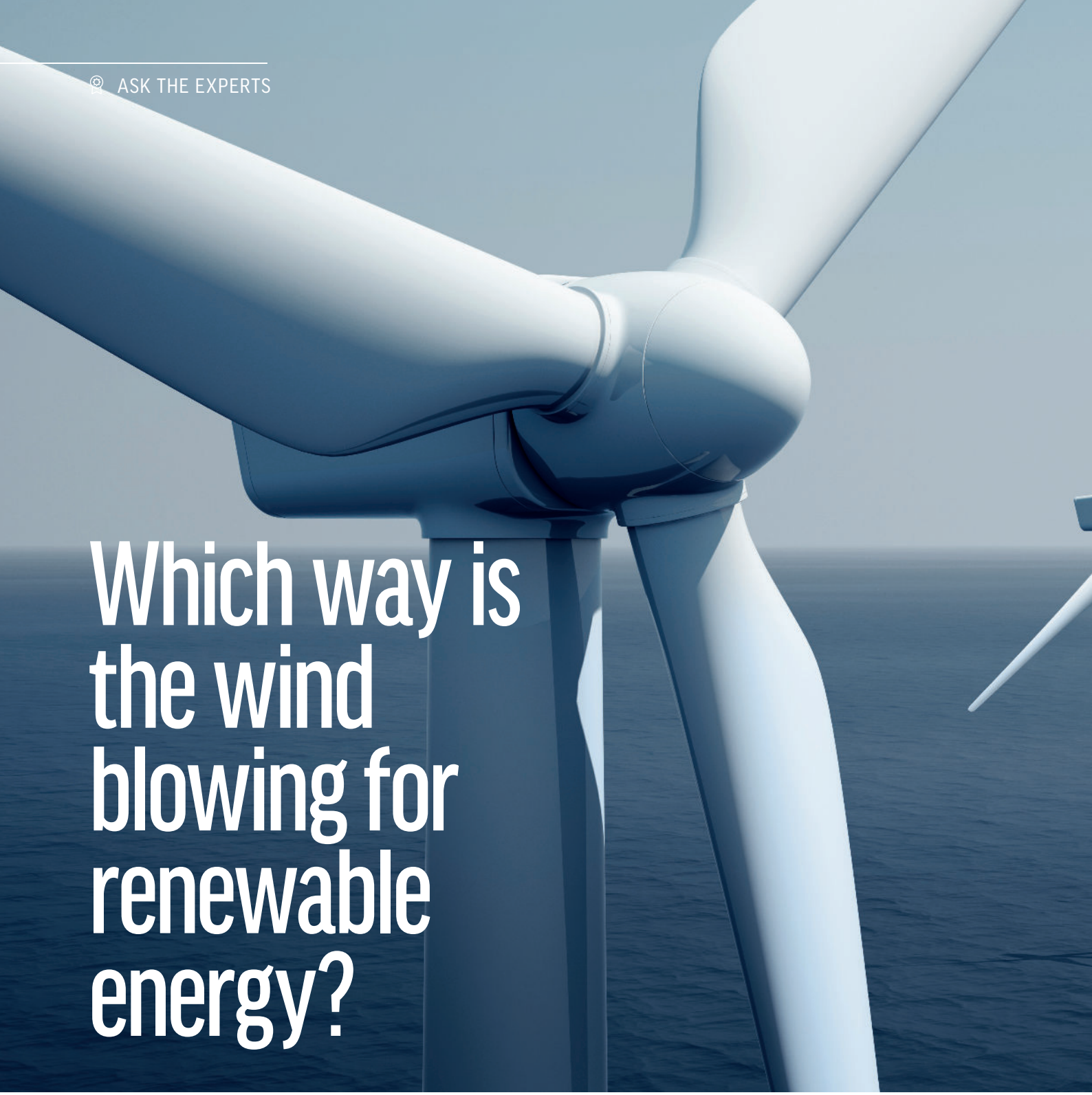

Which way is the wind blowing for renewable energy?

PES sat down with Evgenia Golysheva, Vice President of Strategy and Operations at ONYX Insight, to discuss the latest trends shaping the wind sector, from consolidation to digitalisation, and learnt how wind stakeholders can build future-proofed digital strategies in a rapidly changing sector.

PES: Hi Evgenia – could you start by outlining the position of the wind sector right now?

Evgenia Golysheva: The wind sector is undergoing transformation at a previously unthinkable pace. Governments in Europe and the Americas are backing renewables as part of their net zero ambitions, and wind is a key pillar of their strategies.

Wind has never been in a better place, as it assumes a central role in the global action against climate change, prioritised in the wider goals of blocs such as the EU.

In the UK, a mature offshore wind market, the government has unveiled a 10-point Green Plan, aiming for 40GW of offshore wind capacity by 2030. The total global capacity is currently 32GW, illustrating the scale of the opportunity for the sector.

Across the Atlantic in the US, the Biden administration is making movements on

climate policy as part of their goal to achieve net zero by 2050. Significantly, the offshore industry is finally starting to gather pace, unlocking a huge potential market for wind investors.

Off the back of these favourable headwinds, the sector is drawing capital as financiers recognise the commercial, and in many cases ethical, imperatives of investing in wind. Large funds are introducing green investment targets, and the blossoming renewable energy sector is seen as a safe bet in otherwise volatile times.

PES: What, in your view, is the wind sector's main opportunity?

EG: That's a complex question. How do you pin down a single area of opportunity for wind during such an exciting time for the industry?

Floating offshore is a major challenge from a technical perspective. But it is also the key to unlocking vast areas around the world to support wind's growth. Crucially, it means that investors can tap into diverse regions that are currently less suited for wind deployment due to a lack of easily accessible shallow seabed.

Regionally there is a huge amount of development across Asia in markets such as China and Taiwan. Floating wind aside, offshore is set to grow rapidly in the coming years in emerging markets such as Vietnam, Brazil and western Africa.

The industry stands to gain significantly from making wind technology more efficient. This

Evgenia Golysheva

will unlock further maturity in terms of operations, enabling a more sophisticated, connected supply chain. Lots of the wider functions undertaken are still paper-based, pointing to a clear opportunity to scale the use of digital technology.

PES: What about the key challenges for the wind sector?

EG: Although the sector is set for decades of growth and continues to demonstrate high levels of innovation, there are still crucial stumbling blocks that wind stakeholders will need to monitor and overcome. This can range from physical obstacles, such as inadequate infrastructure, to approaches within the industry to key issues such as collaboration.

Many markets are still working hard to build out their grid capacity. This includes transmission lines between regions, as fragmented grids prevent the efficient distribution of power from production areas to consumption hubs. We saw the effects of a fragmented grid in Texas earlier this year, when cold weather led to local power shutdowns without the ability to draw from additional generation.

As wind turbines continue to increase in size, there are emerging challenges with port and maritime infrastructures, which in many cases do not have the scale necessary to support installations of giant assets. And on the onshore side, some markets, such as Germany, are still held back by ongoing permitting and tariff issues.

PES: Are there still challenges on the technology side?

EG: The industry is still very siloed between organisations, and within them. This leads to a disjointed supply chain. The sector needs more joined up thinking to make operations more cost effective and scalable. But it's much easier to come together if you have the right digital tools.

This also requires a change of mindset within businesses, since simply purchasing off-the-shelf tools is not sufficient for business transformation. Organisations need to foster digital champions that will be able to match available digital technologies and business needs to truly transform ways of working.

It is important to share information internally and externally. Cloud-based data operations are quickly becoming standard in many industries. By having a smart data management strategy in the cloud, data sharing is easier, and potential diseconomies of scale can be avoided.

PES: What might the future of the wind sector look like?

EG: By 2030 there will be more consolidation, and the need to manage larger portfolios efficiently will become pressing. Operators will have mixed technology portfolios with a wide geographical spread, offering opportunities to switch to more digitally sophisticated operations.

At ONYX Insight, we have conducted research that shows that from a 2020 baseline of 339GW global solar capacity, 449GW wind, and 5GW storage, total installed capacity in 2030 is set to encompass 902GW solar, 1114GW wind, and 87GW storage.

Supermajors, defined here as renewable businesses with over 1.5GW in their portfolios, already operate 366GW out of 575GW installed wind capacity globally. From 2020 to 2030, supermajors will increase the share of capacity they own from 45% to 60%.

This growth will lead to increased technological diversity. 60% of operators are set to manage mixed portfolios of wind and solar assets by 2025, according to our data, so aligned software platforms for wind and

solar will be needed.

The changing profile of supermajor owner-operators impacts Original Equipment Manufacturer (OEM) dominance, especially in the aftermarket services sector. Larger owners & operators have built considerable operational expertise and increasingly choose to bring their O&M in-house.

PES: How will this affect wind operations?

EG: As they increasingly become exposed to merchant markets, wind owners and operators will seek to maximise revenue by optimising energy sales. This will require flexible operating strategies, underpinned by market pricing, where turbines can be uprated or derated to maximise the value of energy sold.

They will look for digital tools that can facilitate the feedback between market and operations. Instead of having a narrow focus, tracking granular operational data without linking to key profit- and efficiency-driving KPIs, owners and operators will draw on independent, technology-agnostic solutions integrating data on asset performance, maintenance, asset management, sales and pricing.

Software needs to act as a bridge, helping asset managers and field teams take actions that ensure asset-wide profitability. Crucially, future platforms need to build in processes to implement changes. Engineering and operational knowledge must be translated into software to simplify and support operational decisions.

PES: What is your advice to wind farm owners and operators looking to future-proof their digital strategies in this evolving wind sector?

EG: The most important factor is flexibility. Your strategy might work for a 1GW portfolio, but will it scale to support a 10GW or 20GW global asset base? It is also critical to integrate additional technology, such as solar, without compromising the effectiveness of your wind asset management.

What is true for the operations stage, is true for every stage. From consenting and planning through to life extension. Collecting and correctly using data will not only help the industry make smarter, more profitable decisions but potentially create new sources of revenue as well.

www.onyxinsight.com