

When energy security accelerates dependency:

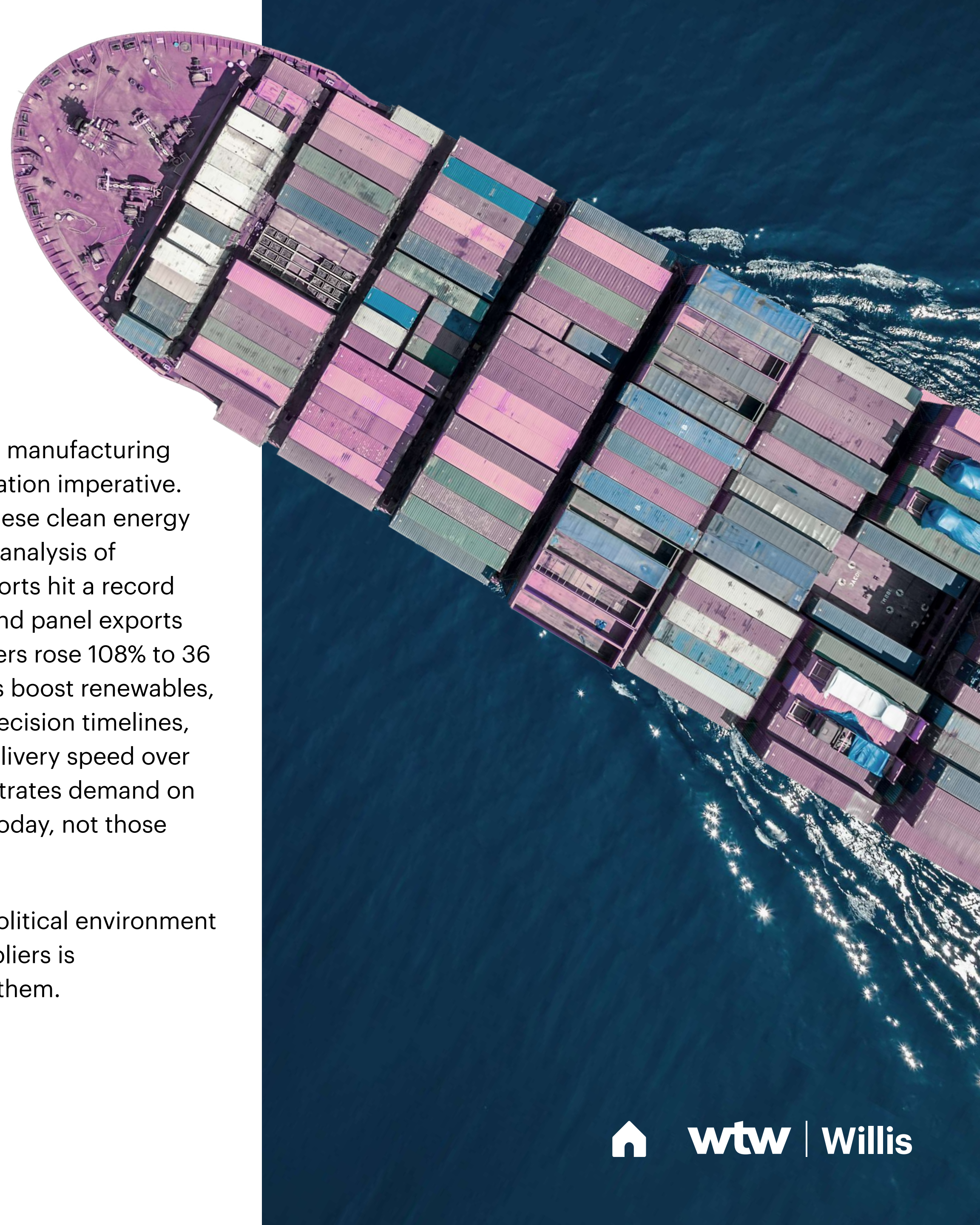
The Chinese OEM paradox

Record-breaking investment, accelerating policy support, and rapid technological innovation are propelling the renewable energy sector into a new era of growth. Underpinning this transformation: Chinese original equipment manufacturers (OEMs).

The conflict in Ukraine, tensions in the Middle East and disruption to shipping routes have reinforced a simple conclusion: for many economies, energy security increasingly depends on the speed of electrification. Solar, batteries, grid equipment and electrified infrastructure are no longer optional decarbonization tools; they are central to protecting revenue, securing supply and maintaining competitiveness.

Chinese OEMs are at the core of global manufacturing capacity to fulfil the global decarbonization imperative. In March 2026, combined sales of Chinese clean energy parts and products totaled [\\$26 billion](#), analysis of [Chinese customs data](#) shows solar exports hit a record 68 gigawatts (GW) in a single month, and panel exports rose 91% to 32 GW, while cells and wafers rose 108% to 36 GW. The lesson is not simply that crises boost renewables, it is that energy security compresses decision timelines, and prioritizes availability, scale and delivery speed over diversification. In practice, this concentrates demand on the suppliers that can deliver at scale today, not those that might diversify supply tomorrow.

This creates a paradox: the same geopolitical environment that increases scrutiny of Chinese suppliers is simultaneously deepening reliance on them.





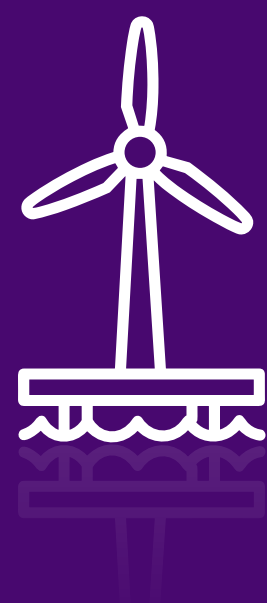
Chinese OEMs are structurally central

This paradox exists because China's role in clean-energy manufacturing is not substitutable at the speed the market now demands given the scale, cost advantages and vertically-integrated supply chains that have been established for more than a decade. [International Energy Agency \(IEA\) analysis](#) shows China accounts for around 85% of solar PV supply chain production capacity and around 80% of lithium-ion battery supply-chain production capacity. Its share is even higher in specific bottleneck stages, including around 95% of PV wafers and 97% of battery anode materials.

China is not the only source of OEM excellence. Denmark and Germany retain deep credibility in wind engineering, service and bankability; South Korea and Japan remain strong in batteries, power electronics and reliability-led manufacturing; and the U.S., Spain, Austria and Israel have credible positions in differentiated solar, inverters, microinverters, grid software and storage integration. India is also emerging as an important wind and solar manufacturing base. But these strengths are typically concentrated by technology or niche. China's distinction is the combination of scale, cost, vertical integration and deployment speed in a way few alternatives can replicate across much of the electrification stack.

Once embedded, these dependencies are difficult to unwind without introducing further delay, cost or performance risk. What appears diversified on paper can include shared dependencies in practice across factories, firmware, logistics routes and service arrangements. The more credible strategy is not to assume dependency can be avoided altogether, but to locate it precisely, diversify where exposure is systemic and manage the residual risk explicitly.

This is not confined to one jurisdiction, OEM category or procurement decision. Recent examples — spanning U.S. offshore wind, EU scrutiny of suppliers, solar import enforcement across multiple origin countries and fabrication route exposure through key maritime chokepoints — all point to the same underlying issue. This is a bankability and insurability challenge across jurisdictions.



Willis perspective: European wind — scaling under hidden dependency

Europe's wind sector appears diversified, with multiple OEMs, strong engineering capability and an expanding offshore pipeline. In practice, diversification is more fragile than it looks. Chinese OEMs dominated global turbine rankings in 2025, filling the top six positions in the global rankings and reinforcing system-level exposure across wind supply chains.

As deployment accelerates, timelines are tightening. Europe installed 19.1 GW of new wind capacity in 2025 and anticipates installations over 2026-2030 to take the EU to 343 GW and Europe to 439 GW of total installed capacity. Disruption rarely presents as physical damage. Instead, it emerges as delay — through component bottlenecks, installation constraints and certification timelines — driving revenue loss, cashflow pressure and refinancing risk.

The risk is no longer which asset fails, but how delay propagates across a system built on shared dependencies. The implication is clear: dependency cannot be avoided at the required pace. It must be identified, segmented, and actively managed before stress reveals where concentration truly sits.

This dynamic is explored in more detail in our accompanying analysis of European wind and the evolving role of Chinese OEMs in global turbine supply chains.



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From supplier choice to accelerated dependency risk

When disruption occurs, the impact often materializes as delay without physical damage and critically, through delivery and commissioning timelines that are tightly engineered but operationally fragile. Even where equipment is available, disruption to transport routes, customs holds, certification processes or installation capacity introduces lag into a finely balanced system. In many cases, the financial impact of delays now exceeds the cost of replacing damaged equipment but may sit only partially within traditional insurance structures.

Why this matters for bankability and insurability

Highly electrified systems introduce lead times between disruption and financial impact. Revenue shortfalls, liquidated damages and refinancing pressure often emerge only after inventory buffers are exhausted, project schedules slip and commissioning dates move. For insurers, this shifts the focus from asset damage to timing: when does loss attach relative to waiting periods, policy triggers and indemnity periods? For lenders, it raises a parallel question: how long can the project absorb delay before cashflow, and debt servicing are affected?

Insurers and lenders are increasingly looking beyond nationality alone, focusing instead on dependency, recoverability and evidence while still treating origin, ownership, cyber access and regulatory exposure as material where they affect project resilience. What improves confidence is not branding, but evidence: realistic delay assumptions, tested contingency plans and clear alignment between procurement, contracts and insurance.



The hidden risk isn't just component failure. It's common mode dependency — the same firmware, the same spares model, the same logistics pathway repeated across a portfolio. When that dependency is stressed, the loss shows up as delay and degraded performance long before anything looks like damage.



Babak Eftekharnajad, Associate Director, Risk Engineering, Willis Natural Resources



For risk leaders, this isn't a 'Country X or not Country X' decision. It's a governance decision. If you can't explain how delay propagates from procurement to commissioning to revenue, you can't price it, finance it, or insure it properly.

Ray Zhang, Power and New Energy, Power and Infrastructure, Willis Natural Resources, China

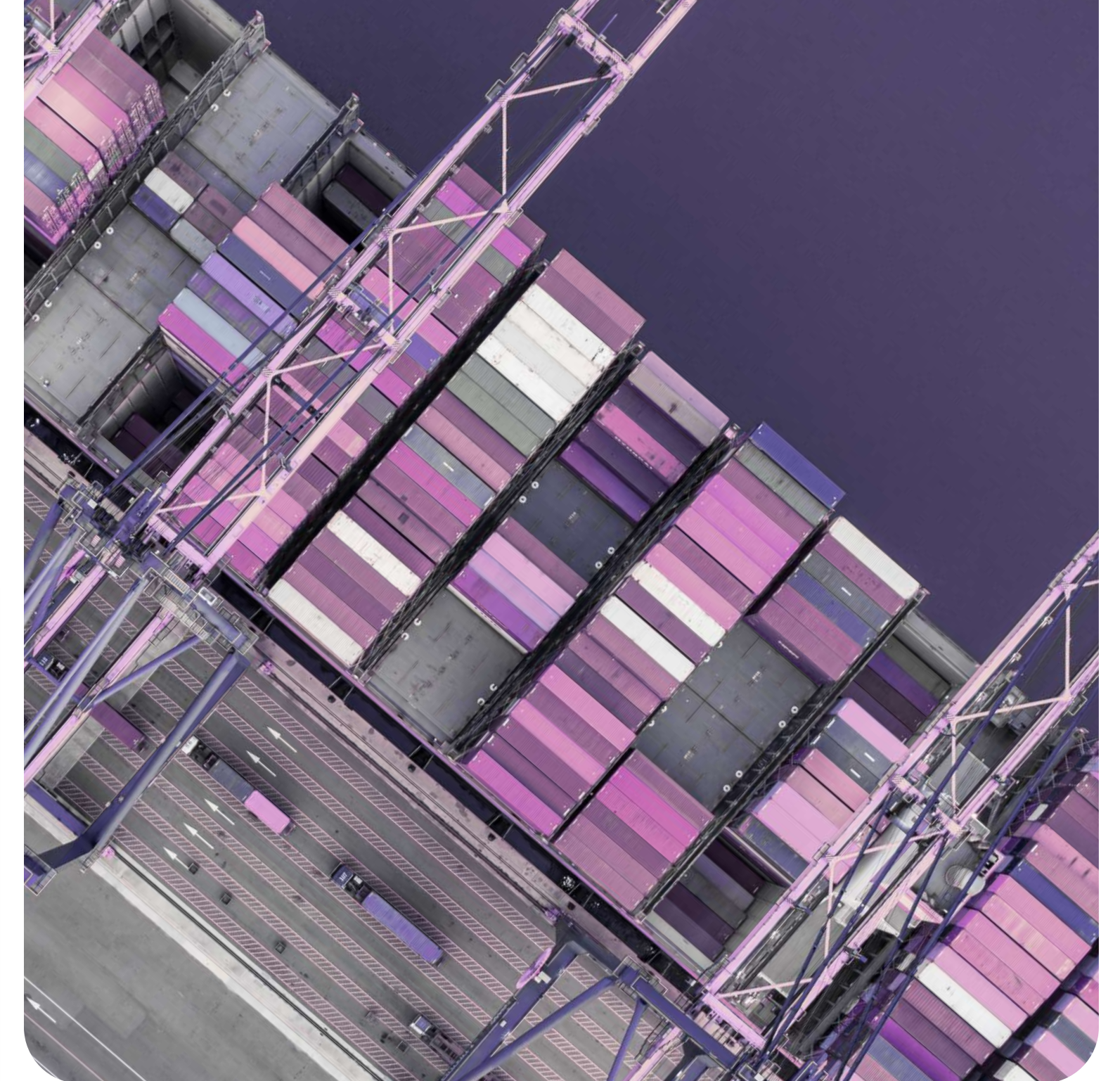
For insurers, this has sharpened attention on aggregation, delay scenarios and recovery realism. For lenders, it has elevated dependency management into a financing issue. Insurance availability, terms and pricing increasingly rest on credible recovery evidence, not simply technical compliance at commissioning.



In live placements, the conversation has moved on from 'who is the OEM?' to 'what happens when the timeline breaks.' Underwriters want to see where dependency sits, how fast you can recover, and whether your insurance assumptions match the real lead times



Jonny Martin, Director, Renewable Energy, Willis Natural Resources



Key questions now include:

- Where are the single points of failure across OEM platforms, sub-suppliers, firmware, control systems and logistics routes?
- How quickly can components realistically be replaced under customs, regulatory, trade or shipping disruption?
- Do delay-in-start-up (DSU), business interruption (BI), marine cargo, cyber, political-risk and trade-disruption structures reflect the actual recovery pathway?



5 actions renewable energy leaders are taking to build resilient supply chains

As electrification accelerates, risk leaders sit at the center of the trade-off between speed, resilience and financial performance. The question is no longer just “what happens if something fails?” but “how long before failure becomes financially visible, and does our insurance recognize that timing?” Resilient organizations are managing dependency deliberately rather than implicitly:

1. Identify dependency where it actually sits

Move beyond OEM brand lists. Bring procurement, project delivery, finance, legal, cyber and insurance stakeholders into one room to map exposure across specific models, factories, firmware platforms, shared sub-suppliers, critical components, logistics routes, ports, storage concentrations and service arrangements. This allows decision-makers to distinguish acceptable dependency from systemic fragility and explain that difference to insurers and lenders.

2. Build a forward-looking dependency strategy

Set concentration thresholds by technology, control criticality, supplier, geography, component and route. Separate commodity equipment from critical-control assets. Approve suppliers and technologies at the level of insurable risk: model, factory, bill of materials, firmware and service model, not brand alone.

3. Stress-test delay and recovery, not just physical loss

Harness risk engineering insights to model DSU and BI sensitivity to customs detention, replacement lead times, spares scarcity, marine rerouting, port congestion, regulatory intervention and service discontinuity. Validate substitution rights, spares availability and recovery assumptions in practice, not just in procurement documents.

4. Align procurement, contracts and insurance

Resilience is weakened when procurement, legal, cyber, finance and insurance decisions are made in isolation. Better outcomes come when warranties, parent guarantees, dispute forums, spare-parts obligations, cyber patching, remote-access governance and policy wordings support one another rather than creating hidden gaps. Making dependencies a board-level discussion can help to align commercial goals and actions with shared accountability.

5. Optimize risk financing to preserve investment capacity

Use analytics and risk engineering insights to balance retained volatility and insurance spend. The objective is not to insure every exposure. It is to understand which dependencies can be retained, which should be transferred, which require contract protection and which need operational redesign. Getting this balance right can unlock capital and drive an optimized risk spend.



The strategic takeaway

The strategic challenge is not to slow deployment in pursuit of perfect resilience. It is to recognize that energy security crises accelerate dependency faster than governance frameworks naturally adapt.

Leaders that address this gap deliberately by designing for evidence, optionality and recoverability, and by understanding how delay propagates through supply, delivery and commissioning timelines will be better positioned to deliver the speed that energy security now demands, without embedding avoidable fragility into the systems they depend on.

Bottom line: Diversify where exposure is systemic.
Contract for recourse. Engineer for failure. Insure for delay, defects, cyber and political disruption.
Keep proof ready before a crisis begins.

To find out how to design a robust risk strategy, contact:

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