

Power Systems



Resilient wind industry in Europe

Securing energy supply through a reliable market and
strengthen supply chains through fair competition



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Executive Summary

- Europe has a thriving engineering industry made up of leading manufacturers and suppliers who offer wind turbines and components – a cost-efficient and vital technological solution in the transition to a climate-neutral and secure energy system. The wind power industry creates jobs, generates value, and ensures the availability of expertise. However, weak markets are putting the sector under pressure, meaning it is only slowly emerging from recent economic challenges. **Meanwhile, cost pressures are fuelling a trend to relocate operations outside of Europe, which could cause the wind power industry to diverge from its goal of building a resilient supply chain.**
- The wind power market in China has been growing for many years. Thanks to substantial government support, manufacturers in China of wind turbines have enjoyed a period of strong growth and expanded into markets around the world. Markets are faring extremely well in the USA too, as well as in other Asian and American countries, thanks in no small part to support from industrial policy.
- Political decision-makers in the EU and Germany rightly want to protect key transformation sectors against unilateral dependencies, in order to preserve Europe's independence and security. **This will require targeted action at both national and European level. The aim must be not just to preserve the European wind power industry, but also to empower it to scale up its production operations for the future:**

1. Increase demand

Strong and steady demand is the foundation that enables manufacturers and suppliers to retain their European production operations, operate at full capacity and ultimately expand their activities. It is therefore imperative to facilitate the implementation of wind power projects and **remove the barriers to approval, site selection and project realisation to ensure consistent market demand and increase this demand in line with political targets.**

2. Ensure competitiveness

Policymakers must ensure that all market players meet the same international and European standards and that there is no distortion of the market. In particular, the EU Commission, with the support of the German government, must take clear action against third-country subsidies, including relocation subsidies potentially planned by third countries. Europe must avoid creating a one-sided market, characterised by technological dependencies, that puts the region's energy security at risk. The European wind power industry needs a market environment where unfair competition is excluded and/or counteracted. **The route to achieving this will involve giving consideration to the proposals made by the EU Commission and the European Parliament as part of the Net Zero Industry Act (NZIA). This can be done by applying non-discriminatory and properly designed pre-qualification criteria as well as through the use of trade and/or fiscal policy instruments that counterbalance the effects of subsidies from other states.**



3. Build resilience

Sustainable European production must be able to meet its costs at market prices and maintain market viability. Instrumental to this are the proposals of the European Commission put forward in the Wind Power Package, those of the European Parliament in its position on the NZIA, and those outlined by the European wind power industry, all of which must be integrated into tenders accordingly. **Consensus from politicians, industry and society on the value of resilience must be reached in a manner that can be expressed in easily verifiable, qualitative criteria also considering opportunity costs.**

A Europe-wide approach is essential; it is important to move away from different local value chain requirements in individual EU Member States in order to preserve economies of scale. Moreover, the European wind power industry must be able to **easily access sufficient financing** to safeguard its operations and scale up its production capacity, infrastructure and logistics. Germany's state-owned investment and development bank, KfW, as well as credit institutes of other Member States must endeavour to amplify the impact of the counter guarantee programme from the European Investment Bank (EIB), by introducing complementary programmes. Efforts must continue to **abolish customs duties** for instance on primary items such as steel and composite material.

Preliminary remarks

The purpose of VDMA Power Systems and its working groups is to represent the interests of manufacturers and suppliers of electricity and heat generation plants. This includes both manufacturers of wind turbines and the full spectrum of manufacturers that supply the wind power industry. Together, these organisations are responsible for the vast majority of the value chain and employment in the wind sector, generating over 10 billion euros in turnover and providing over 100,000 jobs in Germany alone. As an association with a strong focus on technology, VDMA Power Systems and the VDMA Wind Industry Working Group, together with their membership of over 150 organisations, are committed to strengthening and preserving Germany and Europe's status as a producer of cutting-edge technologies.

The wind power sector in Europe has a vital role to play in reducing the region's future reliance on crucial external energy sources and technologies and building a resilient European energy system.

Wind power already supplies 17% of Europe's electricity and in Germany this figure stood at over 32% in 2023. With politicians setting ambitious targets to expand the sector, this percentage looks set to rise significantly over the coming years and decades. In short, wind power is already an essential component of a climate-neutral and secure European energy system and its importance is only going to increase in future.

Wind turbines are a vital and irreplaceable solution on the road to climate neutrality, energy security and an independent European energy system. Every wind turbine has a role to play, both now and in the future, in supporting industrial and commercial activity across Germany and Europe, as sectors increasingly transition towards renewables.



If the availability of these turbines is threatened by unilateral dependencies and the resulting risks of interference in global supply chains, this will directly impact on progress in other areas of the power supply sector, as well as industrial production, the use of heat pumps and electric vehicles, and the production of green hydrogen. It will only be possible to make the necessary progress towards climate targets in these areas if the wind energy sector in particular is able to generate sufficient electricity.

The position from Brussels on whether the EU and European governments want an energy system built on European technology and a European industrial value chain or one based on the cheapest imported technologies available is clear. Likewise, the German government has laid the foundations for de-risking its relations with China in its recently published Strategy on China. The EU's Green Deal Industrial Plan aims to limit these dependencies to a certain extent by promoting Europe's own manufacturing capacity,

and this same vision is central to the immediate actions recently introduced to support the European wind power industry.

Against this backdrop, it is essential to strengthen technological resilience by manufacturing wind turbines and key components of these systems within the European supply chain. Technological resilience is vital in order to break free from dependencies, including a reliance on fossil fuels. Without European energy technologies or secure supply chains in partner countries, the European energy transition will be solely reliant on technologies produced at a handful of concentrated production locations outside of Europe. It is essential not to relinquish sovereignty in this way.

As a foundation for the necessary action, a European framework is required that will stabilise demand, help scale up production and ensure a level playing field for competition within Europe with fair conditions for all market players.



1 – Current situation in the wind power industry

Economic pressures on European manufacturers and suppliers are easing, but only very slowly; meanwhile manufacturers in China are expanding their operations.

Political situation – Politicians in Europe are setting targets to expand wind power and build a resilient energy system.

Market situation – Significant gap remains between the targets set and the reality on the ground.

Industry situation – Manufacturers in Europe are only just slowly emerging from recent economic challenges.

Result – Insufficient resilience and tendency to relocate supply chains outside Europe to reduce costs.

There are numerous obstacles slowing the implementation of projects.

Competition from manufacturers in China is growing.

1.1 Political situation – Politicians in Europe are setting targets to expand wind power and build a resilient energy system.

- The EU has set itself some ambitious targets for renewables. By 2030, at least 42.5% of EU energy consumption should come from renewable sources. Germany, meanwhile, is aiming to generate 80% of its electricity from renewables by 2030.
- To meet its targets, the EU will need to expand its onshore and offshore wind capacity from the 255 GW currently installed to 420 GW. Germany also plans to double its onshore wind capacity to 115 GW and almost quadruple its offshore wind capacity to 30 GW.

- These renewables targets are central to achieving the EU's climate goals and securing an independent energy supply. Such an independent energy supply also requires sovereign access to technology so that a resilient energy system can be established.

1.2 Market situation – Significant gap remains between the targets set and the reality on the ground.

- To achieve the current targets, the rate of construction of new wind turbines in Europe will need to more than double, from the 17 GW figure cited by WindEurope last year to 38 GW per year. Germany will need to triple its onshore efforts from more than 3 GW new installed capacity in 2023 to 10 GW per year from 2025. Moreover, the country needs to quadruple its installation of offshore wind capacity from just a few hundred megawatts to 6 GW per year.
- Forecasts suggest that the market in Germany and Europe is growing strongly, but is not yet on the expansion trajectory needed in the coming years. Market volumes in both Europe and Germany still fall a long way short of the required levels. Wind turbine manufacturers and suppliers in Europe continue to operate well under capacity, especially in the onshore wind sector.

1.3 Industry situation – Manufacturers in Europe are only just slowly emerging from recent economic challenges.

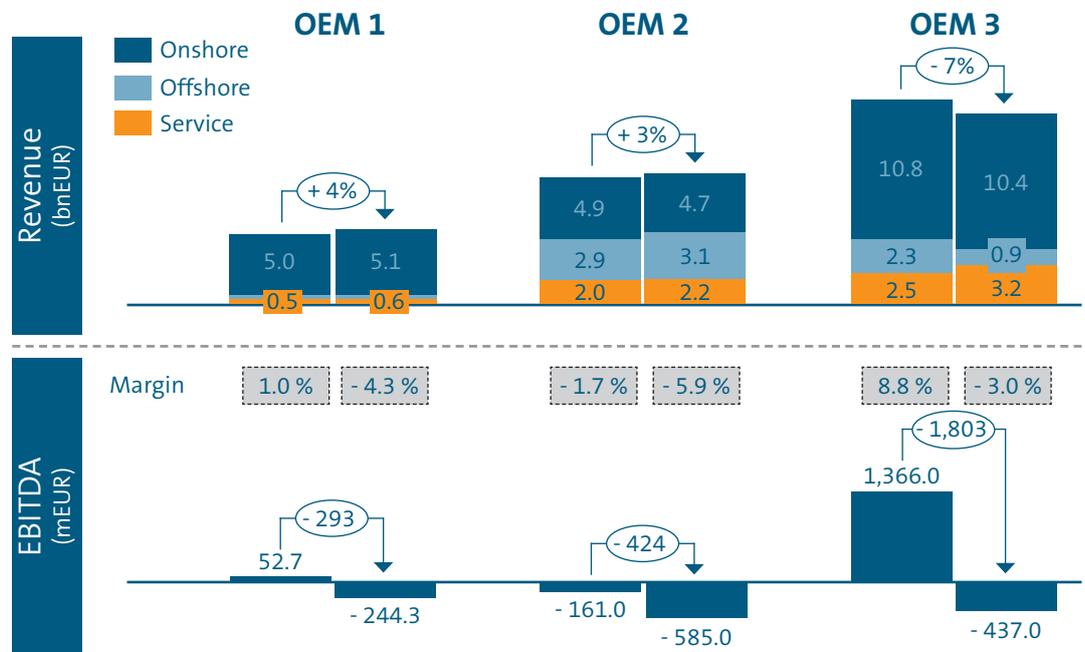
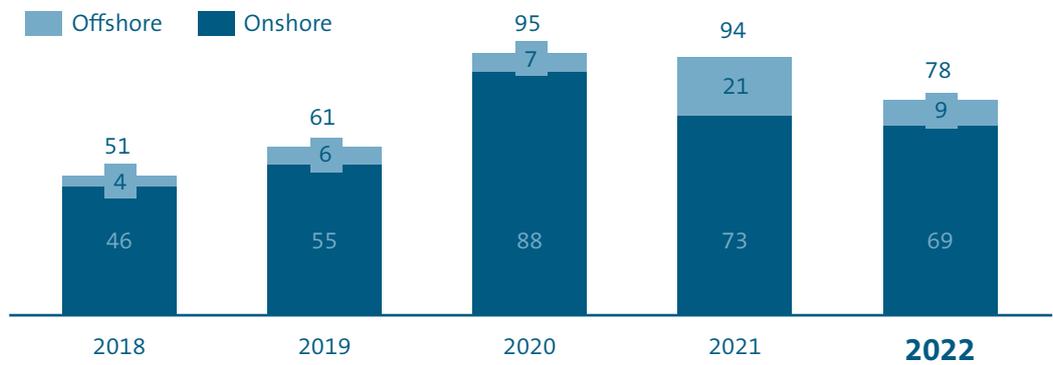
- The wind power industry in Germany and Europe continues to face enormous economic challenges. Rising costs and interest rates, as well as unfavourable market dynamics in Europe, are putting pressure on European manufacturers of wind turbines, right at a time when they need investment in order to scale up their operations.

- Additional measures are required to support growth in the sector and combat the relatively flat market conditions currently facing European manufacturers of wind turbines. The market needs a clear and reliable project pipeline to drive much faster growth across the sector. In the onshore wind power sector in particular, the first step is to close the gap in production capacity. The task will then be to build on this and ramp up production rapidly.

1.4 Result – Insufficient resilience and tendency to relocate supply chains outside Europe to reduce costs.

- In some individual cases, such as new offshore wind turbine manufacturing, capacity is being expanded within Europe; however, the general trend continues to be to outsource parts of the supply chain – notably the upstream supply chain – outside of Europe as a result of cost pressures and the flat market environment. Even though manufacturers and suppliers in the wind power sector remain a firm fixture of the German and European engineering industry, production in Europe is facing a growing threat from unfair international competition.
- This situation needs to be addressed. Sovereign access to technology, in conjunction with dedicated and diversified supply chains, is essential for a resilient European energy system. Wind turbines are one of the key technologies needed to secure an independent energy supply across Germany and Europe. The wind power sector is therefore an important component not only of energy policy, but also of industrial and security policy. By outsourcing supply chains in response to current cost pressures, there is a risk that expertise and conse-

Wind capacity construction worldwide; financial results for western OEMs 2022 (sample)



Source: GWEC, WoodMcKenzie

quently sovereignty will be lost.

There will also be a loss of jobs, research and opportunities within the value chain. Unless appropriate industrial policies are put in place, energy independence is under threat.

1.5 There are numerous obstacles slowing the implementation of projects globally and competitive production in Europe.

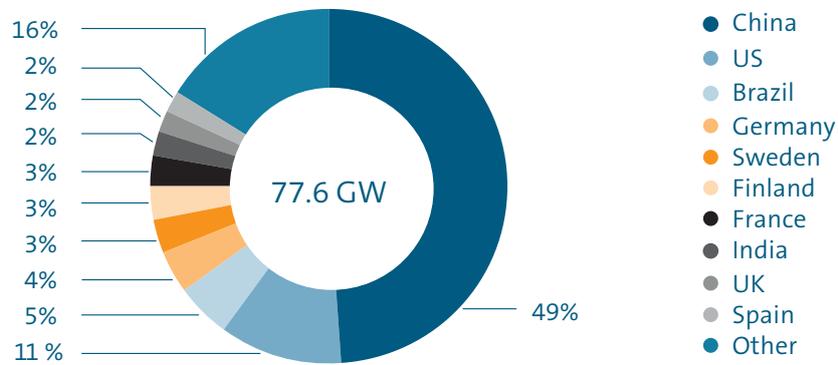
- While the production facilities of European manufacturers and suppliers of onshore wind turbines continue to operate under capacity against the backdrop of a stagnating global market (despite the growth forecasts), if the dramatic growth in the offshore wind sector forecast for the second half of this decade is to be achieved, investment is needed to expand existing production facilities and develop new ones right now.
- The environment for future investments is very challenging. In Europe, risk-averse banks dominate the picture, meaning only limited growth financing is available, even in a market with real potential for future expansion.
- Inadequate and poor-quality infrastructure – both in terms of the transport network (roads, ports and waterways) and digital technologies – is hampering supply chains and make costs unpredictable.
- Rising bureaucracy, accountability requirements and other hurdles all add to manufacturers' workloads and lead to delays. Plus, administrative processes are often not digitised and therefore extremely laborious.

1.6 Competition from manufacturers in China is growing.

- Production in Europe faces competition from companies around the world. While the domestic European market is currently weak, manufacturers in China are strengthening their global position, with a 58% share of global production capacity in 2020 (according to the Global Wind Energy Council [GWEC]) and a recently estimated production overcapacity of 20 GW per year.
- China remains by far the world's largest market for wind turbines and components. The country also only installs its own domestically produced wind turbines, which has created enormous economies of scale and led to rapid technological development in recent years and a massive upsurge in its production capacities to meet the enormous demand within its own closed internal market. In 2022, 7 of the 10 biggest manufacturers worldwide by installed capacity (including the Chinese market) came from China. Even without the Chinese market, this figure stands at 4 out of 10.
- In line with the Chinese government's 'Made in China 2025' policy, manufacturers in China are looking to expand into foreign markets. Wind power technologies are one of the top priorities under MIC 2025, since they fall under the category of power generation equipment, energy storage systems and transmission and transformation equipment.
- Manufacturers in China are currently running their production operations for wind turbines and components at overcapacity, so they are well placed to expand into other markets – including in Africa, South America, central Asia and southern and eastern Europe – and their presence in these markets is increasing.

New global wind capacity by region

2023



Manufacturing of onshore nacelles by region

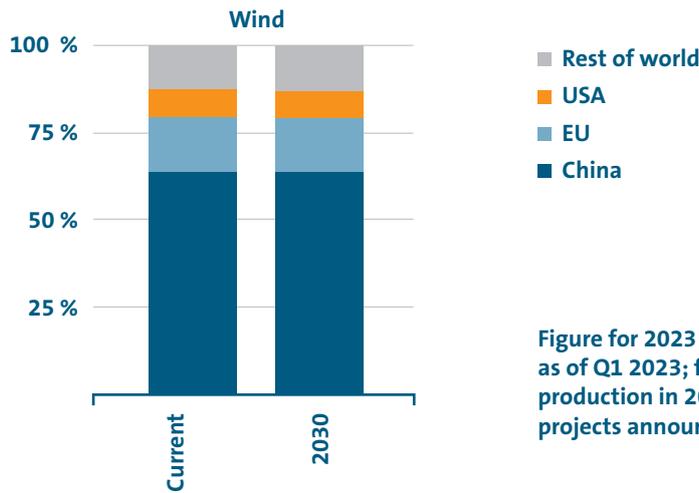


Figure for 2023 refers to installed capacity as of Q1 2023; figure for 2030 refers to production in 2030 from all existing and announced projects.

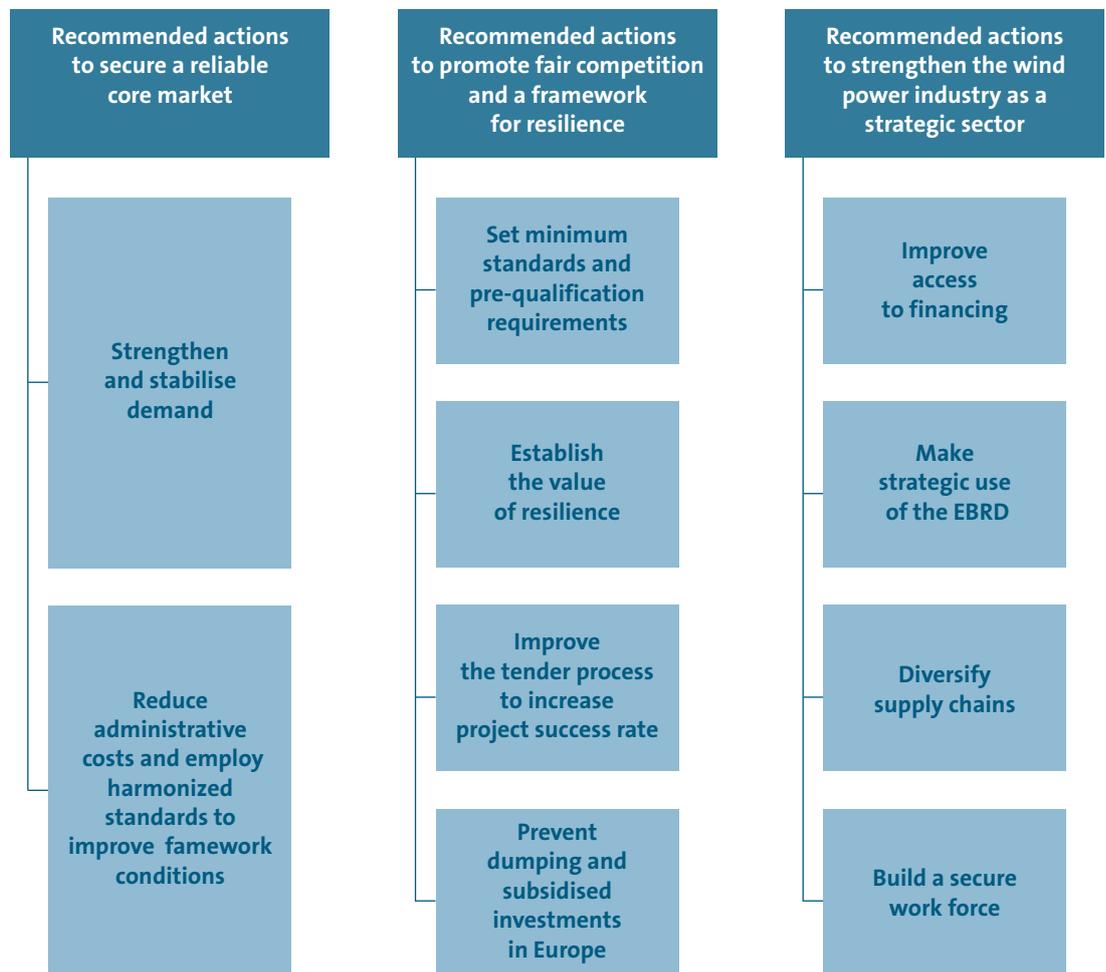
Quelle: GWEC Global Wind Report 2023; IEA World Energy Outlook 2023



- Market players sometimes report more favourable financial terms when developing projects with wind turbines from China. Payments only become due once the turbines are feeding power into the grid and generating revenue.
- According to the Agora Energiewende think tank, wind turbines from China are around 14% cheaper than turbines from Europe on average, largely as a result of lower labour costs, lower interest rates, lower inflation, more favourable access to raw materials and lower ESG requirements. Market players also report that quotes from companies from China are significantly lower – up to 40–50% below current European prices. However, it is generally difficult to draw comparisons since the business model employed by manufacturers from China often includes the project planning stage and in some cases project financing (see below).
- China's renewables strategy targets not only the end product, but rather every step in the supply chain. European companies use large volumes of parts from China and their (unilateral) dependence on the country for raw materials is even greater. According to industry figures, a wind turbine installed in Europe today will contain around 50–60% European components and 40–50% Chinese components on average. If this figure is broken down further into pre-components and raw materials, the reliance on China is sometimes even greater. Moreover, certain key components – such as cast iron parts or rare earths for permanent magnets – can sometimes only be sourced from China. According to the IEA, 64% of the global wind power supply chain is now located in China – an observation that it is important to keep front of mind when developing policies to create a level playing field for competition in the sector.

2 – Recommended actions

De-risking to prevent unilateral dependencies and create a level playing field for fair global competition



Recommended actions to secure a reliable core market

1. **Strengthen and stabilise demand**
 - The supply chain needs projects. Any bottlenecks and hurdles around approval processes, court proceedings, transport, infrastructure and grid technology must therefore be removed as a matter of urgency.
 - Above all, it is important to ensure prompt and reliable access to land for development, since a shortage of potential sites leads to extremely high costs. For public land in particular, the possibility of a cost cap should be evaluated. Germany's Onshore Wind Act requires that 2% of the country's surface area be designated for wind power by 2032, with an interim target of 1.4% by 2027. Bringing these targets forward – as is already the intent in several states, such as Lower Saxony – would result in a more rapid expansion of the available space, thus easing the cost pressures generated by the need to lease suitable sites.
 - Without strong and growing demand from within Europe, there is no foundation for maintaining, let alone expanding, European supply chains. Political targets must therefore be translated into concrete projects that can be implemented easily without obstacle. Manufacturers and suppliers across the board must be consistently operating at capacity wherever possible, so that they have the opportunity to expand their production operations.
2. **Reduce administrative costs and employ harmonized standards to improve framework conditions**
 - The European wind power sector faces numerous hurdles at both the manufacturing and project implementation stages, resulting in longer lead times and higher costs. Costs arising from inadequate infrastructure, complicated logistics, inconsistent regulations and unnecessary additional bureaucracy run contrary to political ambitions and must be eliminated. This applies in equal measure to the transportation, installation and servicing of wind turbines, where special solutions may exist at the state or even regional level for requirements relating to towers, power grids, and occupational safety, for example.
 - In particular, accountability requirements must be critically reviewed, regulatory hurdles removed and national regulations brought in line with European and international standards. Essentially, European production must be made more competitive with the rest of the world.
 - The digital transformation of administrative processes must be brought forward, and not just when approving projects and transporting large components. Clear and sustainable action is required to speed up planning and approval processes, simplify administrative procedures and reduce bureaucracy at all stages of project implementation.



Recommended actions to promote fair competition and a framework for resilience

3. Set minimum standards and pre-qualification requirements

3.1. Core requirements

- Criteria must be introduced for the approval, production, transport, installation, operation, removal and recycling of wind turbines. These criteria must be straightforward to apply and standardised across the EU, in order to eliminate any unnecessary additional costs or delays in the approval, production, transport, installation, operation, removal or recycling processes. It is vital that the same criteria apply across all EU countries or, at the very least, that criteria are based on the same standards.
- When defining these criteria, it is important to ensure that they are appropriate for the subject matter of the tender in accordance with EU public procurement law. The exact extent of the regulatory and accountability burden must be known and reasonable, and any assessments made and decisions taken must ultimately have a sound legal basis.
- Any criteria that give rise to incalculable costs at any point in the value chain or reduce the potential for economies of scale must be avoided, since such criteria will limit the ability to achieve targets for expanding the wind power sector. It is important to ensure that any cost burden does not sit with a single point in the value chain of the manufacturers that operate in the wind sector and create an additional obstacle for the supply chain.

- Criteria used for comparisons at individual project level (e.g. assessment of which tenderer offers the most environmentally friendly solutions for a project) are not suitable for the supply chain as a whole. In cases where it is necessary to differentiate between bids, e.g. offshore wind power tenders, it can be helpful to design a set of project-specific criteria. Such criteria should be avoided for onshore wind power tenders due to the often very small project sizes, since there is no corresponding benefit to be derived from the additional work and costs involved.
- In order to create a level playing field, a set of non-discriminatory, standardised and correctly designed pre-qualification criteria should be defined. This is because, unlike differentiated qualitative criteria or technology bonuses, they can simply be defined and demonstrated on the basis of existing standards, meaning that they can be introduced as mandatory measures without delay.

3.2. Requirements for defining pre-qualification criteria

- Market requirements that manufacturers and their supply chain must meet in order to participate in the European market – i.e. mandatory pre-qualification criteria that act as minimum standards – offer a potential mechanism for establishing a level playing field. These criteria must, however, be defined very carefully (see above).
- The European wind sector benefits from a robust supply chain, which sets it apart from many other renewable technologies. The EU must give due consideration to these fundamentally disparate starting conditions; this may require a differentiated evaluation of net zero technologies without any technological discrimination.

Only then will it be possible to agree on targeted measures for the wind power industry too. If the existing value chain in Europe is to be preserved and allowed to grow as the European markets evolve in line with the political targets, then the following aspects of articles 19 and 20 of the NZIA will be crucial for the wind sector:

- In the sense that specific and relevant European regulatory standards in the wind power market must also be guaranteed in the case of suppliers not based in Europe, we welcome the provisions of the NZIA relating to pre-qualification criteria. However, they must be applied uniformly across Europe and with binding effect. Segmentation of the domestic market must be avoided. Voluntary adoption of these criteria by the Member States runs the risk of fragmenting the common market; discrepancies between the requirements of the different Member States would also impose an additional burden on manufacturers within the European industry.
- For this reason, a gradual phasing-in of binding pre-qualification criteria should be avoided if it leads to market segmentation. Binding, clearly defined pre-qualification criteria strengthen the domestic market as a whole and support the supply chain of the European wind power industry in achieving the targets defined in the NZIA. It is essential to avoid a scenario where 27 different versions of the pre-qualification criteria exist, as this would place a significant bureaucratic burden on market players and lead to unnecessary costs.

- Pre-qualification criteria and non-price criteria in tenders must be differentiated in terms of their goals and modes of action. In order to ensure equal competitive footing in the wind power industry, it is essential to adopt and apply binding pre-qualification criteria consistently across Europe, for example in relation to the risk-based approach to cybersecurity (which has already been established with the NIS2 Directive, the EU-wide legislation on cybersecurity). This is crucial for onshore and offshore wind power alike.
- The EU-NZIA correctly highlights the need to offer clear incentives to retain supply chains and production within the EU or relocate them back to the EU in order to strengthen the region’s resilience. The key questions are those of costs and the need for a sufficiently large domestic market (capable of meeting said costs).
- One option, as set out in the EU-NZIA, is to incorporate qualitative assessment criteria into the tender process in order to boost the value of the European value chain, e.g. by giving consideration to components that the sector wishes to promote. Such resilience criteria must, above all, address the downstream part of the supply chain already present in Europe.

4. Establish the value of resilience

- Introduced in response to the Inflation Reduction Act in the US and the need to increase resilience in Europe’s energy and technology sectors, the EU’s draft Net Zero Industry Act (NZIA) aims to strengthen European industry as part of the energy transition. Under this legislation, tenders for renewables projects will need to include non-discriminatory criteria that promote resilience within the EU economy/industry. Such a move could help strengthen the European value chain, provided the legislation is appropriately implemented with suitable criteria and minimal additional costs and work involved and is properly concretised in consultation with the industry.
- The US IRA system of tax credits that are directly connected to production volumes or expected output is not viable in Europe due to the EU tax structure. Another mechanism is therefore needed to achieve the political aim of retaining at least some supply chains in Europe or relocating them back to the region (see paragraph below on the EU-NZIA).
- This approach goes hand in hand with avoiding financial benefits by taking advantage of subsidies from others. Given the strategic importance of energy independence and technological resilience, however, consensus on the right approach is required from politicians, industry and society.
- Threshold values as resilience criteria – as proposed by both the Council and the European Parliament (EP) for the NZIA – must, if applied, have an effect that actually supports European wind turbine construction and must not create additional market barriers. A precise design must be developed in close dialogue with the industry – both in the context of the design of the resilience criteria and with regard to the other prequalification requirements and qualitative criteria. The industry should therefore be involved in the detailed drafting of the Commission’s delegated act as set forth in the NZIA.

- When developing and introducing policies and examining their designs, it is crucial to pay close attention to the wording and timescales, since international supply chains for raw materials, pre-components and components remain vital in the current market environment and the transition to more resilient supply chains is very challenging. Ultimately, a trend that has established itself over two decades cannot be reversed overnight. Competitive cost structures need to be developed, opportunity costs considered and access to an experienced workforce, raw materials and components secured. Such measures should be evaluated so that their effectiveness can always be proven.
 - Policymakers need to develop appropriate resilience incentives and ensure they are standardised across Europe, maintain dialogue with all parties involved and give industry players and supply chains space and time to adapt. Any decisions taken must take all parts of the supply chain into account. Above all, policymakers must avoid introducing a miscellany of different requirements across different European nations, as this situation will only lead to increased costs and work. A strategic approach is essential to prevent countermeasures being introduced by third countries in response to European legislation and avoid putting essential imports under threat.
- 5. Improve the tender process to increase project success rate**
- The use of effective indexed inflationary-adjustment mechanisms in tenders is essential in order to accommodate unforeseeable cost increases. In addition to selecting the right mix of indices, it is also important to define the indexing start and end date in consultation with investors and manufacturers, in order to ensure planning certainty for investment, production and installation even if indices fall.
 - Bid payments and financial elements in tenders create financial pressure points within supply chains and undermine the ultimate aim of expanding supply chains. All industry organisations in Germany, as well as Wind Europe, have called for their abolition or capping. Such a measure is provided for by the European Commission and the European Parliament in the NZIA, which would see these elements abolished or capped before the tender processes for offshore wind power in 2024.
 - Timely, reliable and transparent tender conditions give greater confidence when planning future investments and avoid a ‘wait-and-see’ mentality around ongoing investments. It is therefore right, for example, that European countries are coordinating their offshore wind power installation plans as part of the North Seas Energy Cooperation (NSEC). A steady annual volume of 15 GW is an appropriate target.



6. Prevent dumping and subsidised investments in Europe

- In addition to introducing strict pre-qualification criteria and conditions for participating in tenders, Europe must use its instruments of trade and/or fiscal policy to counterbalance the effects of subsidies or other distortions of competition introduced by other states.
- Efforts to open up and maintain export markets through EU free trade agreements must go hand in hand with measures to protect the EU's domestic market against unfair trade practices in third countries, notably China. In doing so, a balance must always be maintained between the use of offensive and defensive trade instruments.
- It is particularly important to ensure that existing instruments, notably the International Procurement Instrument (IPI), Anti-Coercion Instrument (ACI) and Foreign Subsidies Instrument (FSI), can be effectively targeted and expeditiously implemented as needed.
- For the FSI in particular, effective instruments are needed to evaluate foreign subsidies, in order to prevent any distortion of the EU domestic market and any negative impacts on the EU's industrial sector. Fundamentally, companies that invest in the EU must conduct their business on the same terms as EU-based companies.
- Companies that invest in the EU must therefore not be permitted to access direct or indirect subsidies from foreign states, governments or government-backed institutions that could distort market competition. Assessing the level of subsidy – whether applied to the investment itself or allocated to the business making the investment (including indirectly via its parent company) – ensures that companies that want to invest in the EU conduct their business on equal terms.



- Provided they are effectively designed, border adjustment mechanisms such as CBAM or Klimaclub can provide protection against the higher costs associated with carbon reduction in Europe compared to competitor countries elsewhere in the world. It is, after all, essential to remove the competitive disadvantages encountered by European production. In order to best support European production, it is important to look at the entire (downstream) value chain. Moreover, the mechanism employed must comply with the rules of the WTO in order to avoid the risk of countermeasures.
- A Europe-wide approach is essential; it is important to move away from different local value chain requirements in individual EU Member States in order to preserve economies of scale for global manufacturers.
- Ahead of a potential EU anti-subsidy investigation into wind turbines from China, the EU Commission must take a proactive look at the distorting effect of these activities on the wind power market. If imports are increasing to the detriment of the EU market, the EU Commission must not hesitate to use the instruments at its disposal to counteract these developments.
- Given that the European wind power sector also sources components and raw materials from China, it is important to ensure that any trade protection measures do not result in higher manufacturing costs in Europe.
- Other EU instruments such as public procurement and cybersecurity regulations, sustainability standards and even a European IRA may prove better mechanisms for levelling the competitive playing field with China.

Recommended actions to strengthen the wind power industry as a strategic sector

7. Improve access to financing

- Temporary instruments are the right approach to overcoming the financial challenge posed by the gap between the low market volumes seen today and the ramping up of production capacity that is needed to meet the political goals to expand, maintain and relocate wind power production facilities back to Europe.
- For instance, credit and guarantee lines and working capital can be secured by providing project sureties and investment guarantees for manufacturers and suppliers as well as the necessary infrastructure and logistics at ports and installation sites. The Temporary Crisis and Transition Framework (TCTF) can provide temporary additional assistance in this regard. Likewise, the support of the European Investment Bank (EIB) should be enlisted as part of a package of immediate actions to support the European wind industry.
- It also needs to be made easier for the European wind power industry to access (low-interest) finance, so that it can scale up its operations, including higher production capacities, installation vessels and cranes, training and re-training for staff, equipment/tools, and upgrades or expansions to production facilities, infrastructure, grid components and ports. Funding of this kind could be a mix of public and private investment capital that is easily accessible and managed in such a way that financing and investment are available exactly when they are needed. The Strategic Technologies for Europe Platform (STEP), for example, must be made more easily accessible and allocated the necessary funds as part of the Green Deal Industrial Plan.
- The European Wind Power Package contains some important financing measures, not least the EU Commission's decision to instruct the EIB to create a new counter-guarantee scheme in the coming months. The EIB's Board of Directors has announced a 5 billion euro package of counter-guarantees for wind energy manufacturing. The scheme will provide counter-guarantees to commercial banks to support the risk they are taking by providing their own guarantees to wind energy projects. The EIB expects the scheme to support up to 80 billion euros in new wind energy investment. The EU Innovation Fund is also expected to provide additional financial support for investments in wind turbines. In addition to the national funding programmes and measures by its state-owned investment and development bank, KfW, the German government should particularly advocate European instruments and coordination within the EU.
- Accelerated depreciation for investments in production capacity can be an effective instrument, but only if the right conditions are in place to encourage investors to invest.
- Funding for R&D and innovation must be increased, for instance through Horizon Europe and the EU Innovation Fund where there are fewer (bureaucratic) barriers to access. At the national level, too, funding for wind energy research must again be stabilised at an appropriate benchmark of 200 million euros per year in line with the advice from relevant institutes and the wind power industry.

8. Make strategic use of the EBRD

- The European Bank for Reconstruction and Development (EBRD) finances projects with wind turbines from China in countries just outside Europe, such as Kazakhstan and Egypt, and reviews corresponding financial support in Europe, for instance in Serbia. The lowest CAPEX cost is currently the only factor under consideration in the awarding of these projects, with no consideration given to OPEX, life cycle costs, sustainability, human rights or even simply the strategic deployment of the EBRD to support European value chains. The criteria currently used to allocate this funding must be examined in order to prevent European industry from being cut out of foreign markets and ensure that the EU's own priorities for its industrial policy are not being undermined.
- In addition, the EBRD must take into account procurement guidelines to ensure environmental, social and governance (ESG) standards and good market practices, including:
 - compliance with OECD regulations on deferred payments;
 - more extensive due diligence assessments for suppliers of wind project sponsors, in order to ensure that they are meeting the same regulatory standards;
 - ensuring that the due diligence of project sponsors continues to be carried out independently by consultants employed by the bank.
- The EBRD must also ensure that its procurement policy only contains CAPEX and OPEX-related criteria based on established ESG standards, including the requirement that manufacturers of wind turbines uphold human rights.

9. Diversify supply chains

- Supplies of certain raw materials and components are highly dependent on specific regions. In many cases, these products are not available in Europe or supplies are very limited. Perceived cost pressures in recent years have seen key links in the supply chains of the wind power sector increasingly relocated to countries with lower costs, with production being ramped down in Europe and expanded in other countries. In some areas, e.g. cast and steel components, almost no suppliers remain in Europe at all.
- As a result of this trend, the procurement of raw materials and components needs to be diversified. Trade corridors and bilateral agreements between governments can play an important role here. The market for the critical raw materials required for critical energy infrastructure projects needs to be stabilised through greater international cooperation, in order to address the current limitations and open up new sources of these materials.
- It is important to develop EU-wide standardised strategies to tackle the issues around the availability of raw materials (trade deals and raw material agreements) and components (casting capacities).
- Efforts must continue to abolish customs duties on steel and composite materials, for example. The Critical Raw Materials Act announced by the EU Commission provides a good foundation for strengthening Europe's raw materials markets and action must now be taken to implement this legislation. Once again, a Europe-wide approach is key here and it is essential to avoid a situation where different national regulations apply in individual Member States.

- In the current market environment, international supply chains remain essential, but industry players are ready to support a 'Made in Europe' strategy for the future. Nonetheless, expanding European supply chains presents a significant and lengthy challenge, requiring competitive costs, an experienced workforce and sufficient access to raw materials. Investment confidence is essential (see above). Suppliers too are unwilling to invest in new production facilities without certainty around their incoming order volumes.
- Incentives must be introduced to promote the circular economy, and innovations that facilitate alternative and more efficient use of materials must be supported. In doing so, it is important not to place unnecessary additional obligations on suppliers, as this will only further hamper the competitiveness of supply chains. Recycling strategies even for critical components such as rotor blades have already been implemented by European manufacturers.

10. Build a secure workforce

- In order to avoid further workforce shortages, the pool of potential workers must be expanded through training and immigration policies for the manufacturing and service industries. Suppliers in particular have emphasised the problems around workforce shortages and the need to counteract this trend.
- A sensible approach would be to launch a Europe-wide initiative to attract the necessary workers. Employment in the wind power sector needs to grow by at least 50%, including a three-fold increase in jobs in offshore wind by 2030. This expansion can be supported by creating new specialist programmes and training schemes to help students develop the necessary expertise.
- Likewise, in order to tackle the current workforce shortages, notably in the service and installation sectors, training clusters must be created, freedom of movement must be facilitated for workers from EU third countries and funding programmes must be expanded for electrical engineering professions.
- The much-needed transition from coal to renewable energy sources also brings opportunities to retrain and upskill former workers from mines and power plants.



Conclusion

The European wind power industry already has the technologies needed to build a climate-neutral energy system. Through innovation and the implementation of effective industrial structures within supply chains, it will be possible to achieve ambitious energy policy targets and establish industrial value chains in Europe.

However, this will require political will and concrete measures to level the competitive playing field. In the absence of a level playing field on the global markets, Europe must continue to protect itself against unfair competition.

A positive outcome of the EU-NZIA is that it sets targets to promote European production and addresses the need to speed up approval processes for new production facilities. However, these non-binding targets and faster processes on their own will not be enough to make European production more competitive and prompt the necessary scaling up of manufacturer and supplier production facilities, infrastructure and logistics operations.

The goal should not be to turn global supply chains on their head. Instead, there should be a realistic and strategic assessment of where and to what extent unilateral dependencies exist within supply chains, and the relevant components and areas that need to be addressed.

Complete independence is not the aim, but rather a sufficiently high level of economic sovereignty through the establishment of more variable supply chains. Efforts to promote resilience must focus first and foremost on protecting those parts of the supply chain that are based in Europe and then strategically address those parts where dependencies exist. A legal framework that supports economically sustainable business models will be key to the success of these efforts.

With the European Wind Power Package, the EU Commission rightly commits to work together with Member States to make tender timelines transparent and speed up approval processes. The EU Commission also confirms that the tender process must be updated, makes a clear commitment to inflationary adjustment mechanisms and non-price criteria (in both the pre-qualification and award phases) and takes a clear stance against negative bids and high location costs, as is the case with the bidding components in Germany's Offshore Wind Act. The political opportunity exists to create the right conditions for a strong and sustainable European wind industry. What matters now is that political decision-makers at all levels – be it the EU, its Member States, regions or communities – pull together and take the necessary action. As the largest wind power market in Europe, Germany plays a key role here. If the targets for renewable energy expansion and climate protection are to be achieved, governments and industry can no longer afford to make mistakes when it comes to large tender volumes.

Energy policy must go hand in hand with industrial policy, because unilateral dependencies around technologies such as onshore and off-shore wind turbines pose just as much of a threat to the energy transition as dependence on fossil fuels. Only then can wind power play its vital role in developing an independent energy system in Europe.

Industry players and associations are ready and willing to provide support when it comes to defining and implementing the measures on the table; their involvement should be sought, in good time and as appropriate, in any consultation process that shapes the legislation impacting their sector.

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