

**Europe's energy sovereignty  
is in imminent danger**

Why we need the  
European wind  
industry – and how  
to safeguard it

**SIEMENS Gamesa**  
RENEWABLE ENERGY

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# Executive summary

We're in the midst of an unprecedented energy crisis, with soaring energy prices and faltering supply chains around the world. In Europe, we have failed to realize and mitigate our strong energy dependencies – and now, people and industries are suffering the consequences. We urgently need more wind capacity to protect our economies and our climate alike.

The global wind industry was founded in Europe and is a strategic industry that is a crucial part of the green energy transition. Without wind, we won't be able to combat climate change and at the same time increase energy security. In 2050, 50% of Europe's electricity will come from wind.

## **The European wind industry:**

- Offers affordable technology for delivering renewable energy.
- Employs more than 300,000 people directly and indirectly, a number that is set to grow many times over in the next decade.
- Ensures Europe has the system-critical infrastructure it so desperately needs.
- Shows historic growth rates with tremendous opportunities for value creation.

However, the European wind industry is in the midst of a severe crisis that is threatening Europe's future as a leader in renewable energy and Europe's freedom to make independent energy decisions. While the entire wind industry should be investing in itself to meet the ambitious energy targets and provide Europe with clean energy, wind turbine manufacturers are making losses.

To secure Europe's energy independence and leadership in wind technology, the wind energy industry needs clear decisions and swift action from EU governments.

## **Siemens Gamesa is asking European politicians to:**

- Ensure inflation compensation by making sure contracts offset the effects of high inflation and by providing support where price increases cannot be absorbed.
- Simplify and accelerate the permitting processes, including making necessary grid investments and setting up transparent grid access rules, with clear deadlines on and single points of contact for permitting decisions.
- Make market volumes transparent to resolve the discrepancy between political ambitions and current permit and installation limits.
- Adapt auction design to include up to 30% qualitative criteria in competitive wind energy auctions, without imposing additional costs on wind power plant developers, since such costs are ultimately passed on to the supply chain and consumers, as with "[negative bidding](#)."
- Support the construction of a solid electrical infrastructure across Europe to remove the current transmission system's bottleneck.
- Foster trade agreements for green energy transition technology at the EU level.
- Invest in R&D and in greater value creation, enabling a larger volume production.
- Make public funding accessible to wind turbine manufacturers.



It is high time the wind industry be viewed and treated as the strategic industry it is.



# Wind energy production in Europe is vital for energy resource diversity and energy security

The supply and cost of fossil-fuel energy continue to be volatile, negatively affecting households and businesses. The dangers of accelerating climate change are evident all around us and yet, the world remains overwhelmingly reliant upon the very fossil fuels that are contributing to the climate emergency. The solution is clear: We must transition to sustainable, renewable, unlimited green energy.

To date, the transition has been far too slow and poorly managed. Fortunately, European governments are now recognizing that a lack of energy resource diversity leads to dire consequences. Europe's energy strategy, the [REPowerEU plan](#), and the [European Green Deal](#) demonstrate that energy

has, at last, become a top item on the political agenda. Governments across Europe agree they must accelerate the expansion of renewables, with the goal of becoming the first climate-neutral continent by 2050.

Renewable energy, and wind power in particular, is attaining a larger, decisive role in the global energy mix. As renewable energy production targets continue to increase, the European economy will benefit from the increased demand for people to work in the green sectors, from investments in a more competitive energy mix, and from the resulting stability of electricity bills.



European wind turbine manufacturers can contribute mightily to Europe's energy security, but only if the European governments act now to secure the European wind industry.



# The benefits Europe's wind industry delivers to the continent

Since its start in Northern Europe and Spain in the 1980s, the wind industry has burgeoned across the continent in an innovation success story comparable to the IT industry's growth in California's Silicon Valley.

Today, [the EU wind energy sector has a significant impact on the economy](#). It supports more than 300,000 jobs, contributes €37 billion to the EU's GDP and generates €5 billion in local taxes every year. Five of the world's top 10 wind turbine manufacturers are European, earning a collective 42% global market share. And, each new wind turbine installed in Europe adds €10 million of economic activity.

European wind turbine manufacturers lead the world, create the most advanced wind turbines and enable operators to harvest wind both on land and at sea. The manufacturers are also developing next-generation technology, floating offshore wind turbines, recyclable blades, advanced installation and service logistics, and equipment.

Furthermore, the European wind industry plays a leading role within the green hydrogen production value chain, which will be crucial for creating both sustainable industries and sustainable energy supplies for households.

Wind can provide Europe with energy security and independence through domestic, clean and competitive sources. The importance of this has certainly been highlighted with Russia's war of aggression against Ukraine.

The key, now, is to keep the momentum going by continuing to prioritize wind energy and by dedicating resources to a full energy and grid transformation.







# Why Europe's wind industry needs support and why it's crucial to safeguard it

The realities of today's wind industry stand in stark contrast to the bright future laid out for renewables because the manufacturing needed to bring the EU Green Deal to life is currently fiscally unsustainable.

Damage to the wind industry began years ago, mainly from installation volume fluctuations which were a result of volatility surrounding the permit-granting process. For example, in Germany, the onshore market size has massively declined since 2017, and little or no offshore capacity has been added in recent years. As a result of the lack of market support for wind development, suppliers have gone out of business, skilled people have moved to other industries and many jobs have been lost; in fact, over the past six years, around 37,000 jobs in the wind energy sector in Germany have disappeared.

Currently, the wind industry's ability to produce profitability – which enables it to invest in innovation and operate sustainably – are threatened by soaring energy, commodity and transport prices. The pandemic has overloaded ports and

limited the availability of key wind turbine components, and Russia's war of aggression against Ukraine is only worsening supply chain issues. Plus, members of the wind energy industry could not have foreseen or planned for the recent price jumps of raw materials and material costs and project delays due to delivery problems, and so these events were not priced into the long-term contracts with customers. As a result, wind turbine manufacturers are currently operating at massive losses, which means they do not have the money to build, innovate and invest so they can satisfy growing demands for wind energy.

As global warming accelerates, it becomes even more critical for Europe to accelerate the transition to green energy. But, without significant action along the entire value chain – including governments, developers, manufacturers and suppliers – the European green energy transition targets and the entire European wind industry are at risk. And this has implications beyond Europe.

At a crossroads

# Why Europe should seek to have a major role in the global transition to green energy

China is building more wind power plants than Europe, and its market model offers very competitive prices. Chinese manufacturers are not only gaining ground in Africa, Asia and South America, but they are also starting to win orders to build wind power plants in Europe. This means that Europe is now facing the very real possibility that the EU energy transition will be created by China instead of by the European wind value chain.

The European wind energy industry is now facing a Chinese wind industry that has grown strong in a protected environment; an environment that happens to be the world's

largest wind market and in which European wind turbine manufacturers have struggled to compete. Unless fairness is created, China will likely gain overwhelming momentum in the energy industry, which will significantly weaken the European wind industry, leading to additional price pressures, which can, in turn, be expected to result in further reductions in know-how and jobs in the EU.

It's incredibly important that we establish the European wind industry as a strategic industry so we can ensure European energy security and critical infrastructure are delivered with European technology, quality and reliability.



Competition is good, but a level playing field doesn't exist in the wind energy industry.







# Five steps to safeguard the European wind industry and accelerate the global transition to green energy

A true partnership between governments and the wind industry would enable an effective mitigation of the climate crisis. With this partnership, the wind industry could resolve the fiscal pressures that limit its ability to invest in development, and governments could establish a regulatory environment that supports the green energy transition.

This partnership would enable the following five steps, which will ensure the European wind energy industry's viability and enable it to realize its enormous potential to help mitigate the climate crisis, ignite innovation, establish energy security and create jobs.



# Step 1: Turn targets into real opportunities and provide market visibility

## **The challenge: Capacity lags behind targets**

Today, there is a significant mismatch between ambitious political targets and actual annual wind capacity installation figures, which are low. The REPowerEU targets call for 39 gigawatts (GW) of annual installations by 2030 for a total of 510 GW of wind energy by 2030, up from today's 190 GW. Meanwhile, Europe installed only 11 GW in 2021 and is set to build only 19 GW, annually, over the next five years. These low volumes undermine the European Green Deal, stall energy independence, challenge geopolitical stability, hurt Europe's wind energy supply chain and cut jobs. The European Commission has provided frameworks for faster permitting, such as with the recently published guidance for member states, but implementation is lagging at the national, regional and local levels.

## **The solution: Accelerate the approval of wind power plant permits**

Because renewables are now considered to be in the "overriding public interest," permitting for projects under auctions and for projects driven by Power Purchase Agreements (PPAs) need to be accelerated. This will require EU member states to adopt proposals from the European Commission into national and regional legislation, improve on rules and employ more people. In addition, nature conservation and wind energy should not be played off against each other. Instead, we must foster earlier engagement, especially when developing offshore wind projects, and, together, work to ensure species protection over the long term.

Our industry also requires a visible project pipeline, one with at least five years of upfront visibility on auction volumes, timelines and budgets, so manufacturers and suppliers can load existing factories and plan for new capacities.





# Step 2: Manage price risks and stabilize supply chains

## **The challenge: Unpredictable world events are buffeting the industry**

First, the pandemic choked supply chains, limiting the availability of key wind turbine components and overloading ports. Russia's war of aggression against Ukraine is making matters worse, delaying projects due to delivery problems and raising the price of raw materials. For example, the cost of steel has increased by more than 100%; in some cases, it has tripled.

As these unforeseen factors were not priced into long-term contracts with customers, wind turbine manufacturers now find themselves dealing with unexpected costs at a time when they should be making the investments needed to satisfy growing demand.

## **The solution: Stabilize supply chains while compensating for inflation**

To prevail among global competition, Europe must enable materials to be procured at competitive costs. This can be done by stabilizing raw material and pre-production supply chains through diversification. Governments can support this effort via energy and commodity partnerships and trade agreements. Wind turbine manufacturers can contribute to this effort by standardizing required products, diversifying international supply chains and strengthening the European industry to allow a shift to a "Made in Europe" strategy.

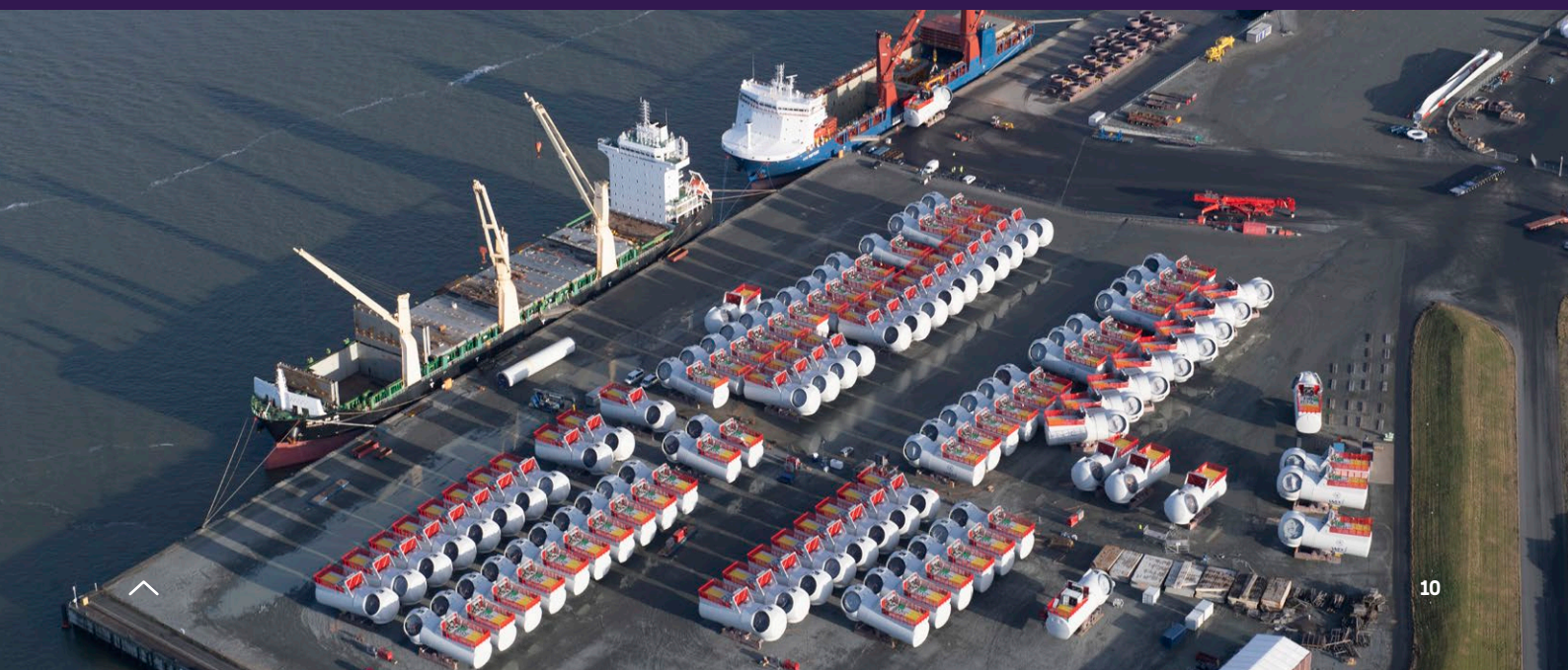
In this effort, Siemens Gamesa is working with the [European Raw Materials Alliance](#) to gain access to raw materials for the European Green Deal. This initiative includes the critical support of and contributions from stakeholders from the industry, governments and public institutions. We welcome that The European Commission is now working on a [Critical Raw Materials Act](#) for 2023, a development that we welcome. Siemens Gamesa is also a member of the [SteelZero initiative](#), which has a clear commitment to sourcing increasing amounts of green steel responsibly going forward.

Without indexation compensation, there is a high risk that developers will ultimately not build projects, as costs would outpace the initial financial planning. That's why a contract design along the entire value chain is needed to offset the effects of inflation and provide support where price increases cannot be absorbed – both retroactively, to cover price increases in 2021 and 2022, and to protect future contracts.

Offshore wind contracts, in particular, have long lead times between the contract award and the final investment. Maximum bid prices and bid awards in tenders should be linked to a dynamic inflation compensation that covers cost developments for raw materials and other areas of industry, including labor costs. Inflation indexation for wind tenders (e.g., contracts for difference models), is in place only in France, Poland and the UK. We call for this to be extended across Europe.



All industry players should have a voice in critical discussions – for example, around the increased use of green steel in Europe.





# Step 3: Support domestic innovation and foster technology competence

The challenge: Solely price-driven auctions triggered a fierce race to the bottom beyond cost efficiency, putting clean, competitive and wind-driven energy security in danger

Between 2011 and 2021, the wind industry reduced the global average cost of electricity from wind turbines by more than 70%, making wind energy one of the world's cheapest energy sources. This was achieved partly through the industry's technological innovations and partly thanks to expanded global supply chains. Competition in solely price-driven auctions, however, is jeopardizing the financial sustainability of the industry and triggering a race to the bottom beyond cost efficiency. However, achieving energy security is about more than just price and should be a value that has highest priority.

## **The solution: Ensure governments get qualitative criteria in auctions right**

Auctions should reward the added value that the European wind industry brings, including:

- More sustainable and circular wind turbines.
- Technology that helps balance the grid and the energy system.
- Contributions to European jobs and R&D development, such as with the development of storage and Power-to-X solutions, necessary to unlock wind installations' full potential.
- Engagement with local communities and protection of the environment.

Tenders in the EU are mostly price-oriented, but EU state aid guidelines allow for qualitative elements in tenders of up to 30%. Additional guidance can and should standardize criteria for comparison and assessment. This is important as it will ensure that qualitative criteria do not go against needed speed in the auction process. And special products should not need to be produced for only one market. Governments can prepare for assessments and ensure evaluations are competently and quickly completed.

For future tenders, price competition must not be further fueled by negative bids or payment components. Wind is already the most competitive energy source, so payment components mean added costs for developers, which in turn puts unsustainable added pressure on the supply chain. As negative bids are mostly related to offshore wind projects with longer lead times, there is a risk that projects will not materialize because of excessive financial risks. Additional payments and negative bids will eventually be passed on to the consumer resulting in higher electricity prices or making offshore uncompetitive against other resources. All reasons why governments should avoid legislation that includes additional payments in auctions.



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# Step 4: Establish a level playing field

## **The challenge: China has an unfair advantage in the wind turbine industry**

China has a large wind turbine industry, and it is building more wind power plants than all of Europe combined. Higher quantities – 51% of total wind market installations in 2021, according to the Global Wind Energy Council – and a different market model enable Chinese companies to offer their wind energy technology at very competitive prices. Meanwhile, western wind turbine manufacturers are excluded from the domestic growth in China by regulations or differing operating models.

## **The solution: Create a fair market environment**

To protect the European wind industry over the long term, it is critical that a level playing field be established across Europe. This can be done through trade and/or fiscal policy instruments that would offset subsidies from other countries, including China, or through strict requirements in pre-qualification and participation conditions for tenders. Furthermore, such actions should be taken at the European level, not at the local EU member level, to preserve economies of scale for those manufacturers with a global presence.

European leaders must address [Chinese investments in critical energy infrastructure](#) and discuss European energy security from a technological point of view and with regard to wind turbines.

If properly designed, instruments such as the Carbon Border Adjustment Mechanism (CBAM), proposed by the EU, or a Climate Club can protect higher expenditures for CO<sub>2</sub> reduction in Europe against competition that is not subject to a CO<sub>2</sub> trading system. This is necessary to avoid competitive disadvantages for European production. Charging only for raw materials and intermediate products increases production costs in Europe.

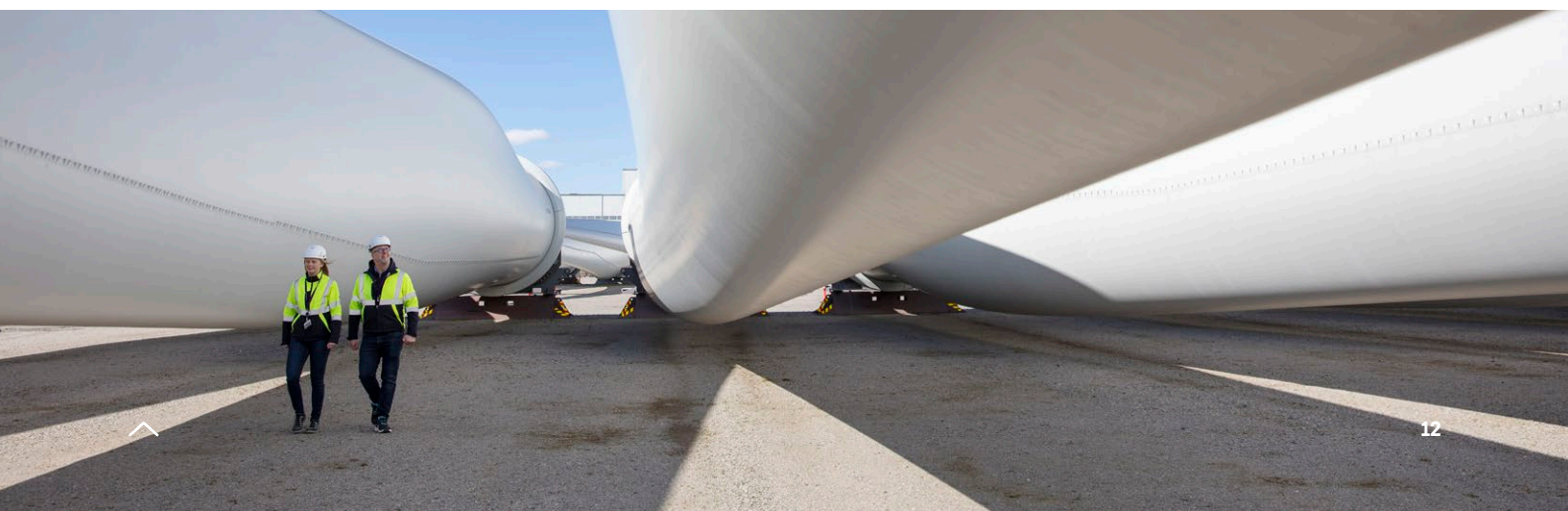
To support European production, the entire downstream value chain must be considered, and a mechanism must

be designed that follows the rules of the World Trade Organization. If soundly implemented with long-term visibility to allow better allocation of investments, this mechanism could also be a lever to foster innovation along the different industries that create a more sustainable supply chain, which was the case with the green steel industry.

Governments should also foster global trade agreements related to wind technologies. The [US-EU high-level B2B forum on offshore wind](#) celebrated in April 2022 in Atlantic City, featuring European and US representatives, showed a willingness to cooperate in the offshore wind market, furthermore in consideration of the opportunities that the Inflation Reduction Act brings to foster collaboration between US and European suppliers. At the recent [Major Economies Forum on Energy and Climate \(MEF\)](#), many of the attending countries emphasized the link between climate security and energy security, noting that Russia's war of aggression against Ukraine only highlights the need to accelerate the clean energy transition and that renewable energy supports energy security.

Should investment decisions in Europe be taken only from a cost-per-wind-turbine perspective, the strengthening of low-cost competition from China will lead to more than just a significant weakening of the European wind industry. The resulting additional price pressure would most likely lead to further reductions in innovation, know-how and jobs in the EU. Governments should take care to avoid a repeat of what happened across the [European solar industry](#).

Technology security, highly relevant for energy independence, must also be considered. The technologies needed to support the green energy transition in Europe must not become dependent on non-European sources. Critical infrastructures, such as grid technology and energy infrastructure, should be built with and steered by European technology. Governments should take the respective requirements in technology auctions into account.





# Step 5: Consider the wind industry to be of strategic importance and invest today to secure its stability well into the future

## **The challenge: The European wind industry lacks funding**

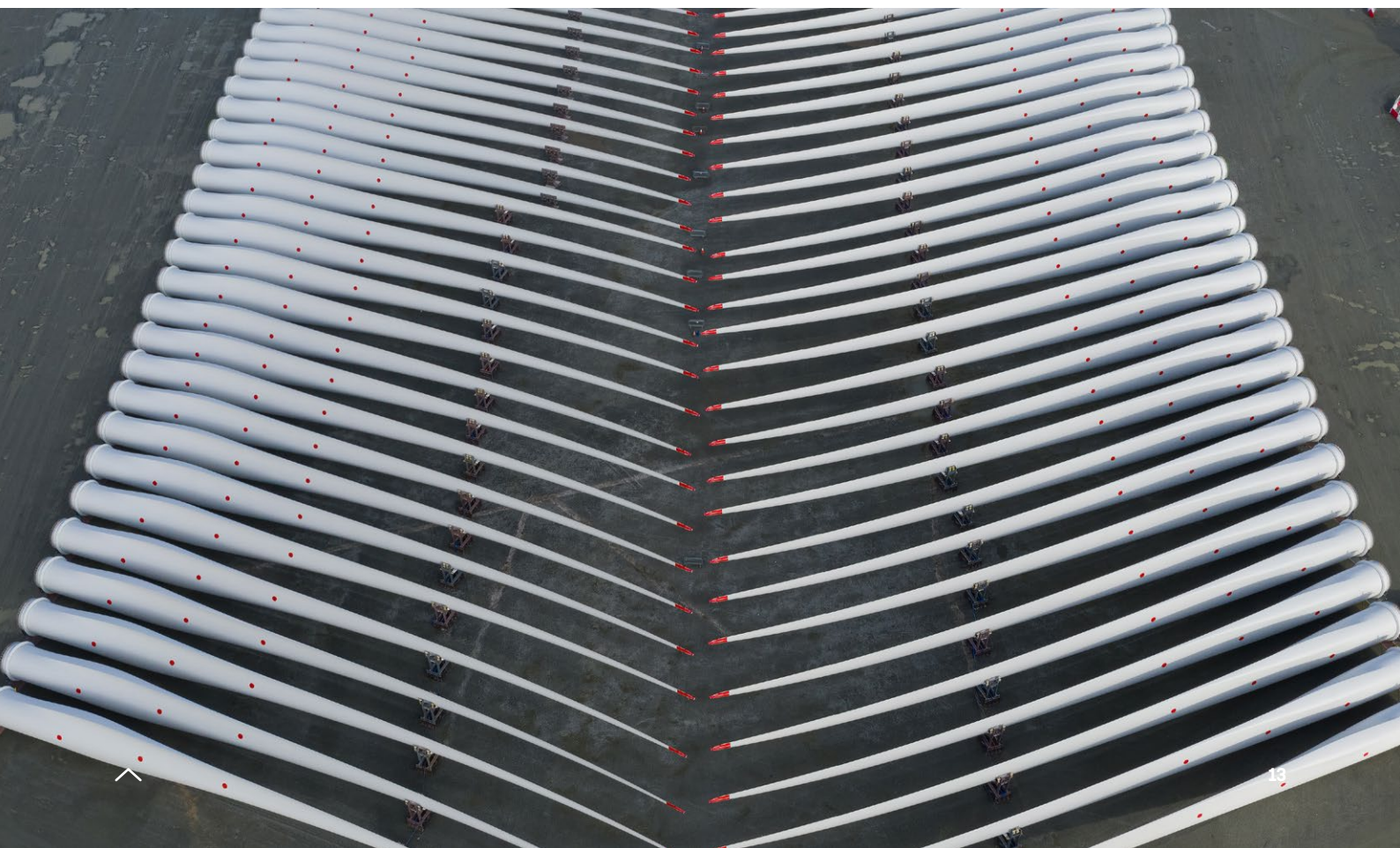
It's critical to keep and meet high targets for wind energy. To do this requires expanding existing capacities which, in turn, requires expanding both supply chains and infrastructures (e.g., ports and transmission grids). And these expansions must be concurrent with consistent technological innovations. These are all actions that require major capital expenditures. Yet, wind turbine manufacturers are not able to sustain new CAPEX investments due to their constrained financial situations. The wind industry needs government support.

## **The solution: Improve manufacturing and increase sustainable investments**

As part of our new operating model at Siemens Gamesa, we are standardizing and automating the manufacturing processes, together with our suppliers, and we are managing costs by increasing production of individual wind turbines. While this is a great start, external support is needed to bolster productivity and sustainability, protect the climate and ensure energy security.

The wind energy industry should be treated as an industry of strategic importance for energy security, long-term cost stability, and for production and employment in Europe. New and existing funding for strategic, sustainable investments in energy independence and climate protection must be made available in both the Next Generation EU (NGEU) funding program and the REPowerEU plan – including investments in R&D, renewable energy generation, green hydrogen, grid infrastructure, ports and storage – together with well-established funding programs such as Horizon Europe work program for 2023 and 2024, and the third annual calls of the Innovation Fund. These programs should ease the necessary CAPEX investments in future production capacities.

In addition, the European wind industry needs more highly skilled workers to realize its vast potential and deliver reliable, safe energy. This is a tremendous opportunity to create European jobs. Partnerships between governments and the industry can pave the way for a just transition for people coming from other energy sectors – securing their rights and livelihoods in the shift to sustainable energy production.



# It is not too late, but the tipping point is near

Europe still has the possibility to stabilize, defend and foster its energy security and independence. There is a clear path to a green energy transition that would provide energy stability for households and companies, jobs for people across Europe and revenue for EU member states, all while mitigating the climate crisis. For this path to be forged, EU governments must take decisive, deliberate action, and they must do so now.





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