

COVER STORY

Wind Wars

China is running full steam ahead in pursuit of leadership in the 21st century's most important global industries. Can Europe keep pace?

BY LUKE PATEY — AUGUST 29, 2021



Illustration by Sam Ward

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Jens Pedersen has long maintained a simple rule of thumb for gauging his company's position against Chinese competitors: "We can't compete on anything that can be packed in a 40-foot container."

[Pedersen](#) is in the wind business. His company, Welcon, is based in rural Denmark and produces the steel towers that support the nacelle and rotor blades of the modern wind turbine. Often standing over 300-feet tall and weighing 500 metric tons, wind towers do not fit in 40-foot containers. Even when broken down into multiple sections, transporting the enormous steel tubes locally holds its challenges. The roundabouts near Welcon's offices are sometimes cut in half so that transport trucks carrying towers and turbine blades can drive straight through. Moving the massive constructs across continents is another story altogether.

"It just does not make sense to have tower sections shipped around the world," says Pedersen.

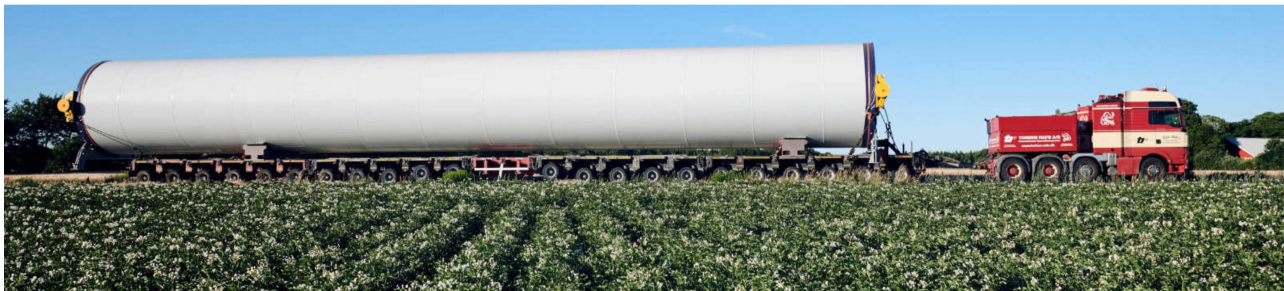
Yet China has a way of defying basic logic in global industries. While Welcon has been supplying wind towers across northern Europe for decades, it has faced new competition recently from tower makers located over 10,000 nautical miles away in East Asia. The influx of low-cost Chinese tower imports — transported by sea in multiple sections and then stacked on top of each other at installation sites — has pushed European wind tower makers to [slash prices](#) to prevent their production from running idle.

Welcon's counterpart in Denmark, Valmont, [has warned](#) local politicians that jobs are on the line if there is no response to the pressure from Asia. The Danish companies have watched as struggling Portuguese and German tower makers have recently been [bought up](#) by their [Chinese](#) and Korean competition. In a story that resonates from shipping to telecoms, Beijing's state-supported companies are challenging the global competitiveness of yet another European industry.

For Pedersen and his European counterparts, however, the influx of Chinese wind towers is particularly discouraging. Not only are the incoming Chinese wind towers bad for business, they also undermine the very purpose of the wind energy industry.

"We did a study and found that if you ship just 20 towers from China to Europe, it corresponds to one full year of pollution from our factory," says Pedersen. "We're in the green business. If anyone should care about the environment, it is us."

Adding to Pedersen's frustration is the fact that this dilemma was brought on by an earlier attempt by the EU to combat Chinese subsidies. In 2016, the [EU placed anti-dumping and anti-subsidy measures](#) on Chinese steel, which had been undercutting European steel prices. No longer able to buy cheap Chinese steel-plates, Welcon and other European tower makers found themselves at a distinct price disadvantage. Chinese wind tower makers — along with those from South Korea, Vietnam, and Turkey who have access to low-cost Chinese steel plates — were able to undercut the Europeans by 10 to 15 percent.



A truck carrying a portion of a turbine tower in Europe. The tower of a wind turbine can be as tall as 330ft (100m).


"We are better at producing towers than our Chinese competition. But when they can buy steel plates at significantly less cost, then it doesn't matter how good we are," says Pedersen. "The EU system is simply not geared for dealing with countries that don't think like we do. They can easily play around with us."

By establishing the European Wind Tower Association in 2018, Welcon and its competitors in Denmark, Spain, and Portugal joined together to make [their case](#) to the European Union. By October 2020, the European Commission had [launched a formal investigation](#) into the allegations. A ruling is expected in the coming months and could either reject the tower makers claims or apply duties against competing imports from China.

"There has to be a political solution," says Pedersen. "We can't fix this ourselves in the business." He likens the wind tower situation to the solar panel wars of a decade ago. Back then, when European solar panel producers saw a huge influx of subsidized Chinese solar panels, the European industry brought an anti-dumping case against China. The European Commission eventually sided with them, but it was too late — the once-formidable European competitors had been all but [wiped out](#).

"We're trying to avoid that same fate," says Pedersen. "There is no reason why China should be allowed to kill the European wind industry and then effectively control the European green energy supply."

Especially since the wind industry is expected to grow significantly in the coming years as countries double down on efforts to address climate change. While the global wind tower

market was worth nearly \$25 billion in 2019, it is [expected to top](#) \$45 billion by 2027. To help meet the Paris Climate targets, wind energy alone needs to [increase](#)  from representing 6 percent of global electricity generation in 2018 to 35 percent by 2050. Annual combined wind power investments in onshore and offshore turbines will need to grow three-fold to over \$200 billion per year until 2030 and over \$300 billion per year over the remaining period to 2050.

In other words, the companies — and countries — that drive renewable technology and industrial development forward will reap tremendous economic gains and considerable geostrategic and geopolitical clout. China, of course, intends to be at the forefront of the green revolution. It may be the largest emitter of carbon emissions on the planet, but it is also the biggest renewables investor, [passing Europe in 2013](#), and [the world's largest producer](#) of wind and solar energy.

Moreover, its renewable output is expected to grow since President Xi Jinping has called for the establishment of [an “ecological civilization”](#) and pledged that China will be carbon neutral by 2060. Looking outward, Chinese officials also want [to green](#) Xi's signature foreign policy initiative, the Belt and Road Initiative, by leveraging China's advantages in wind and solar into expansive infrastructure and connectivity projects.

According to observers, the European wind tower producers' complaint is about much more than just the 4,000 jobs it hopes to save. If European wind tower makers go under, it would represent yet another link of the green supply chain taken over by China. Some argue that the bigger European players, such as turbine manufacturing giants like Vestas and Siemens Gamesa, could be next. Indeed, the question left twisting in the wind is if the EU can find a cohesive way to deal with Beijing's support of its state-owned and private corporations — which are emerging stronger by the day — and stay competitive in the coming global economy.

“This is a pattern that has been repeated across many industries,” says [Seung-Youn Oh](#), an associate professor at Bryn Mawr College whose research focuses on Chinese industrial policy. “The Chinese government doesn't just pick a handful of companies and give them everything. These new wind tower and turbine manufacturers survived fierce competition involving hundreds of wind companies in the domestic market. Every national champion was created at the expense of thousands of bankruptcies. But China can afford to accommodate those failures, and eventually, it targets the global market.”

CHINA'S TAILWIND

It was in the Qin dynasty (221–206 BC) that China is believed to have invented the [first rudimentary windmill](#) for agricultural purposes. The technology later appeared in Medieval Europe, via Persia, in the 12th century. The origin story of the modern, multi-megawatt wind turbine, however, has roots in the Danish countryside. In the early 1970s, a group of Danish teachers [seeking to demonstrate](#) an alternative to nuclear power went about designing and building a 2 megawatt wind turbine called Tvindkraft.

Denmark went on to become a lead player in the wind energy field for much of the last half century. But China's rapid growth in the sector has turned heads.

“It's extraordinary,” says [Rasmus Lema](#), associate professor of development economics at Aalborg University in northern Denmark. “Within the span of 10 years China went from not being able to produce a turbine to being able to produce one to world standards.”

So quickly has the Chinese wind industry grown that according to Bloomberg New Energy Finance, China's leading wind turbine maker, Goldwind, [surpassed](#) Denmark's Vestas for the first time in commissioned giga-watt capacity in 2020. Other rankings still place Vestas at [number one](#) — and America's GE closely behind — but after hardly registering among world leaders a decade ago, Chinese wind turbine manufacturers now occupy [10 of the 15](#)

[positions of global leaders](#) in installed wind power capacity.

Beijing's decision to give the wind industry strategic priority explains the displacement, says [Feng Zhao](#), strategy director at the Global Wind Energy Council, an industry representative forum based in Brussels.

"Back in 2004, more than three-quarters of the turbines installed in China were made by Western turbine manufacturers," he says. "But that changed dramatically from 2008 when the Chinese government started promoting locally produced turbines and components with subsidies."

“It’s extraordinary... Within the span of 10 years China went from not being able to produce a turbine to being able to produce one to world standards.”

— *Rasmus Lema, associate professor of development economics at Aalborg University*

To boost the position of the [domestic market](#), the Chinese government handed the regulatory reins to provincial authorities, doled out massive subsidies and research and development funds, and most significantly, imposed local-content and joint venture requirements that helped nurture the domestic industry through foreign partnerships.

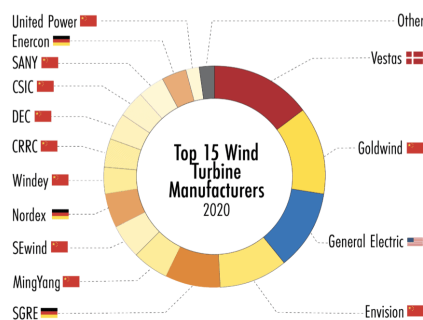
"China is not unique in using local content requirements," says Lema, "but they used them exactly at the right time with extra convening power and extra capacity to develop the market." It was a skillful [combination and co-design](#) of environmental and industrial policy.

By the 2010s, European and American manufacturers' market share in China dropped to [the single digits](#). At the same time, in 2010, China became the world's largest wind sector. Last year, it [accounted](#) for over half of new global capacity. Combined with reverse engineering and internalizing technology through [foreign licensing and acquisition](#), Goldwind, Envision, and other Chinese wind turbine manufacturers not only overtook their foreign competition at home, but China also succeeded in developing a strong position for developing components across the wind industry's supply chain — from turbine blades to wind towers.

Still, there is an important caveat to the rise of China's wind power.

The Turbine Builders

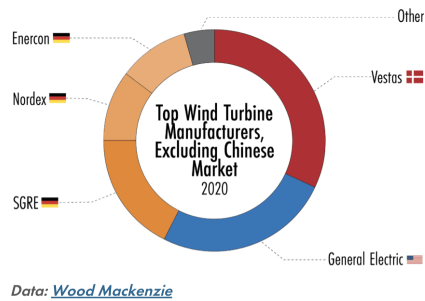
10 of the top 15 wind turbine makers in 2020 were Chinese, but most of their turbines built were for the domestic market. Outside of the China, western firms still dominated, with five companies completing 92% of new installs.



"It may look like the Chinese companies are taking over," says [Ilaria Mazzocco](#), a senior research associate at the think tank MacroPolo. "But that is largely because they are growing with the Chinese market."

[Jan Hylleberg](#), CEO of Wind Denmark, a Danish industry association, agrees: "If you make a global ranking today without China, the Chinese turbine manufacturers would be very low on it."

In fact, without China, the leading American and European wind turbine manufacturers [control over 90 percent](#) of global market share. Both Mazzocco



and Hylleberg see Chinese wind turbine manufacturers continuing to grow overseas, but not necessarily coming to [dominate](#) globally as they did in the solar industry.

“Solar is basically just a commodity,” says Mazzocco. “They are produced on a large scale in factories and shipped all over the world where developers, not manufacturers, install them. Wind is a different paradigm altogether. It is a mature industry with a more sophisticated technology that

already has a lot of manufacturing outside of China.” She notes that once other markets become larger — for instance, India and South America or offshore markets in Europe and the U.S. — then the Chinese share in the global market may not remain the same.

But with the overall market expected to grow so significantly, Feng, at the Global Wind Energy Council, thinks Chinese wind manufacturers will be propelled to success by Chinese energy developers and Chinese policy banks, such as China Development Bank, a leading player in rolling out China’s Belt and Road Initiative.

“If they go hand-in-hand and compete as one unit, Chinese companies and banks are much more powerful than the European wind turbine manufacturers fighting alone, especially in emerging markets” he says.

Goldwind CEO Wu Gang has said he is dedicated to seeing his company become an “[international leader](#),” and steadily, the presence of Chinese wind manufacturers is [growing overseas](#): Goldwind and Envision, for instance, have already leveraged their access to finance to make inroads into [Argentina and Brazil](#).

Moreover, outside of the competition in emerging markets, some observers say China stands to gain ground in the global wind industry because of technological advancements.

“The competition to date has largely focused on who can build the biggest turbine,” says [Stine Haakonsson](#), an associate professor at the Copenhagen Business School. “But now we’re moving downstream in the value chain to technologies that go beyond the turbine.”

This is most evident in the ongoing [shift](#) from onshore to offshore turbines, which rely more on big data and “smart” wind farm management to lower the expense of turbine maintenance. Haakonsson points to China’s advanced position in artificial intelligence and machine learning as potential advantages.

“If you have the right software, you can almost hear an irregularity in a turbine and immediately know what is wrong,” she says. “You can be proactive rather than reactive.”

[Agatha Kratz](#), associate director of the Rhodium Group, and [Janka Oertel](#), at the European Council on Foreign Relations, note that this kind of technological advantage is baked into the Chinese business model. By leveraging their “[home advantage](#),” China’s national champions, such as Huawei and railway giant CRRC, produce economies of scale that generate massive revenues and allow them to invest heavily in research and development. Eventually, this leads to the development of high-quality products and credibility even as Chinese companies undercut their competitors overseas with lower prices.

“European policymakers are focusing very much on subsidies in China as a key distortion,” says Kratz. “But even if you take away all the subsidies, you’ll still be in trouble.”



A 2019 video by CGTN shows how wind turbine parts are painstakingly transported across difficult terrain to remote installation locations in China. *Credit: CGTN*

'DEATH BY A THOUSAND CUTS'

The gathering wind wars are not the first time European industry has faced intense competition in the global economy. In the spring of 1983, 17 of Europe's most powerful business executives huddled together in Paris to discuss the competition from American and Japanese rivals. Organized by Peter G. Gyllenhammar, then CEO and chairman of the Swedish automaker Volvo, the meeting included leaders from the likes of Siemens, Philips, and Royal Dutch Shell, and it marked the founding of the European Round Table of Industrialists.

Although not a household name in Europe, the ERT went on to become one of the most influential business advocacy groups in European politics. Often in close communication with European political and bureaucratic leaders, its positions on industrial policy changed the shape of Europe's economic landscape — particularly by pushing for the creation of the European single market and the free movement of goods, services, and people.

Today, the ERT includes over 50 of Europe's largest corporations, representing 5 million jobs and over \$2 trillion in revenues. But China presents an altogether new challenge for Europe's industrialists. For starters, while the ERT is once again led by a Volvo chairman, Volvo Cars has since been bought by Geely, the Chinese auto manufacturer.¹ For many in Europe, the Chinese market is inextricably linked to growth.

"We really think that we have to make the ongoing business relationship with China work," says [Jacob Wallenberg](#), chairman of ERT's Committee on Trade & Market Access and chair of Investor AB, a Swedish conglomerate with holdings in Ericsson, ABB, AstraZeneca, and other European multinationals. "Any ERT member leading a global company is in China. They will have China as their first, second or third largest market. They are fully immersed."

This is especially true lately, given the economic shock of Covid-19. With Beijing's quick containment of the virus, China's economic resurgence was a boon for European companies. The European Chamber of Commerce in China found that over 40 percent of its corporate members saw an increase in revenues in 2020, and more than half reported that earning margins in China were higher than their global average.

“European business is extremely bullish about China,” says [Jens Eskelund](#), member of the executive committee at the EU chamber in Beijing. “When you talk to many companies here, China is the bright spot in their business and has been for a while.”

Still, Eskelund notes, European multinationals are not naive about the challenges they face in China. Market access barriers, compelled technology transfers, and intellectual property right infringements persist. Research and analysis show that China maintains, and in [some sectors has expanded](#), foreign investment restrictions and controls that are [three and a half times higher](#) than OECD averages and the third highest among G20 countries.

“It is very much death by a thousand cuts,” says Eskelund, of European companies’ disadvantages against China. “There is no one policy initiative, like subsidies, but across an entire value chain, it can be different small initiatives that conspire in aggregate to create a very significant competitive advantage.”

The EU, for its part, has tried to chip away at these problems. The now politically frozen EU-China investment deal was a move to overcome at least some of the challenges facing European companies in China, [providing](#) new market access and relaxing joint-venture requirements in key industries such as automobiles. Back home, the EU put into place new [barriers to foreign acquisitions](#) of high-tech and advanced manufacturing in 2019. Brussels is also working on expanding its [defensive toolkit](#) with new anti-subsidy and anti-coercion instruments as well as procurement rules in EU markets.

“In the years to come, historians will look at these defensive measures as the first step in realizing that we have a challenge coming from China,” says [Patricia Schetelig](#), deputy head of international markets at the Federation of German Industries. “The next step is to think about what we can do in a proactive way to help promote the competitiveness of the EU and our companies.” She points to the pursuit of new trade and investment agreements across the Asia-Pacific region and the EU’s industrial policy agenda as two examples.

But only the historians will know if these measures were implemented in time to give European industries a fighting chance. When it comes to complying with international trade rules, for example, the work of Oh at Bryn Mawr College shows that China often abides by World Trade Organization rulings against it — but it is a [“convenient compliance.”](#) During the multi-year interim period before a trade ruling is made, China’s subsidies and state-support help raise the competitiveness of Chinese companies and undermine its international counterparts.

As Pedersen, at Welcon, is arguing, by the time the European Union’s ruling about Chinese wind towers is made, it might already be too late.



A 2016 meeting between the President of the European Roundtable of Industrialists, Mr. Benoît Potier (foreground center), German Chancellor Angela Merkel, then-French president Francois Hollande, and then-European Commission president Jean-Claude Juncker. Credit: Sipa USA via [AP Photo](#)

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“We are too slow in Europe,” he says. “China is one step ahead of us in selling its steel plates to third countries.” In other words, even if the anti-dumping case of Welcon and the European Wind Tower Association is successful, the European companies will then need to deal with towers built with cheap Chinese steel plates entering the EU from Southeast Asia and Turkey. This kind of pressure, Pedersen maintains, is a clear sign that the EU needs to take on a more holistic understanding of economic success when it comes to its relationship with China.

Indeed, the business perceptions of Europe’s biggest industrialists at times stand in contrast to its smaller industries, which together make up [over half of GDP in the European economy](#). As Eskelund, at the EU Chamber explains, depending on what industry a European company is in, and whether it is a large, publicly listed company, or a smaller, private family firm, the balance between prospects and challenges from China is skewed differently.

“That is the genius of the Chinese model,” he says. “Some European companies are allowed to prosper, but a lot of the other ancillary companies and benefits — like employment, taxes, and contributions to development — stay in China.”

This divide within European industry is evident in the wind wars. European turbine manufacturers like Vestas and Siemens Gamesa — who still reign supreme across much of the globe — have benefited from the influx of cheaper towers. Their industry associations, such as Wind Europe, are actively working against Pedersen and the wind tower makers’ case.

“We oppose anti-dumping measures against imports of Chinese steel wind towers,” says [Joshua Gartland](#), a senior advisor at Wind Europe. Gartland points to general declines in industry profitability, delivery time challenges, and capacity issues as the reasons for the tower makers’ struggles. “I don’t think the story is as simple as what the wind tower association is saying.”

The story of how Europe both protects its industry at home and competes with China abroad is anything but simple. European policymakers must find the balance between defending and promoting the interests of both industrialists and small business owners. But when it comes to Europe’s green energy revolution, Pedersen maintains that the fate of wind tower manufacturers may mark the beginning of the end. If they fall, Vestas and Siemens Gamesa will be some of the only companies left standing to face Chinese competition.

“The next thing to happen is that the Chinese will start to subsidize complete projects,” says Pedersen. “Then you’ll see the European turbine manufacturers come crying.”



Luke Patey is a senior researcher at the Danish Institute for International Studies and Lead Senior Research Fellow at Oxford University’s Institute for Energy Studies. He is author of [How China Loses: The Pushback Against China’s Global Ambitions](#). His work has been published in *The New York Times*, *Financial Times*, *The Guardian*, *The Hindu*, *Foreign Affairs* and *Foreign Policy*. [@LukePatey](#)

COVER STORY



Pole Position

BY EYCK FREYMAN

In public, Chinese diplomats and climate negotiators deny that they see any link between climate change and geopolitics. But there is a deeply cynical consensus within China's academic and policy communities that climate change creates geopolitical opportunities that China can exploit — and must exploit before its rivals do. Greenland was the proof of concept for this strategy. And it caught the U.S. flat-footed.

THE BIG PICTURE



Transsion's Triumph

BY GARRETT O'BRIEN

A look at Transsion's monumental growth, unique marketing strategies and future growth potential.

Q & A



Jörg Wuttke on China's Self-Destruction

BY ANDREW PEAPLE

The EU Chamber of Commerce in China president talks about China's self-inflicted problems; how he gets away with being so outspoken; and why he believes in China's comeback gene.



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