

Will Europe's wind be made in China?

Europe has built nearly all its wind farms with turbines made in Europe. Europe's 5 wind turbine manufacturers still dominate the European market. But Chinese manufacturers are starting to win orders here. We are closely approaching a tipping point. Europe risks losing its wind supply chain like it lost its solar manufacturing 15 years ago.

Europe's wind farm developers have now ordered 2.7 GW of Chinese wind turbines, most of them in the last two years. Most are for projects in South East Europe, though France Sweden and Italy have already installed some Chinese turbines. The full list of Chinese orders is in the Annex. The total volume of 2.7 GW compares to 16 GW of new turbines that Europe installed last year. However, Europe's wind farm developers are increasingly tempted by the option of ordering Chinese turbines:

- Chinese turbines are up to 50% cheaper than European turbines;
- Chinese manufacturers offer highly generous state-backed financial terms. They allow developers to defer payment for turbines until the wind farm is in operation, or for 3 years after the order. It would be inconceivable for European manufacturers to offer this in our market-based system; and
- Chinese turbines can be delivered at least as quickly as European turbines.

9 of the world's 15 largest wind turbine manufacturers are now Chinese. They have surplus industrial capacity, and the Chinese state actively encourages them to export. They are rapidly displacing European turbine manufacturers from many third country markets, notably in Latin America, Africa, and the Middle East. They are now targeting European markets for both onshore and offshore wind.

Europe's Green Deal should be made in Europe, so Europe benefits from the investment and jobs that come from it. 300,000 Europeans work in wind today contributing €42bn to EU GDP, and each new turbine generates €10m of economic activity. Then there is energy security: Europe doesn't want to increase its dependency on Chinese energy equipment. And there are wider security issues: wind turbines have multiple electronic sensors producing data. Do we want Chinese companies to control such data flows ?

The Net-Zero Industry Act (NZIA) aims to strengthen Europe's renewables supply chains and, with the Critical Raw Materials Act, reduce our dependencies on China. It is good that the NZIA proposal would require non-price criteria to be used in renewable energy auctions. Choosing technology on price alone drives a race to the bottom and favours Chinese manufacturers, penalising European companies for their high corporate standards and adherence to market rules.

But the NZIA proposal alone doesn't deliver the policy or financial support needed to strengthen Europe's wind supply chain:

1. The "supply chain resilience" part of the non-price criteria for renewables auctions in NZIA should ensure developers score extra points in auctions if they offer equipment made in Europe.
2. Pre-qualification criteria in wind auctions should ensure technology poses no risk on cybersecurity and data standards, and complies with grid codes and ESG standards.
3. National Governments should take full advantage of the state aid flexibility in the TCTF to support investments in the new factories and infrastructure needed in Europe's renewables supply chains.
4. EU finance needs to move away from supporting only innovation. The challenge is volume not technology. There are bottlenecks in e.g. offshore foundation manufacturing and the availability of installation vessels. The Innovation Fund (and the EIB mandate) must support industrial scale-up.

ANNEX: CHINESE WIND TURBINES IN EUROPE


Europe's 5 wind turbine manufacturers still dominate the European market, but Chinese manufacturers are starting to win orders here. We are closely approaching a tipping point. Unless Europe immediately changes its rules on renewable auction design, and starts focusing funding and financing on industrial development, we risk losing our wind supply chain like we lost solar manufacturing 15 years ago. Here are the orders the Chinese manufacturers have one so far, some have already been built (in yellow in the table below).

Table 1 Chinese turbines ordered for European wind farms.

Country	Wind farm(s) name	Onshore / Offshore	Order year	Order size	Number of turbines	OEM	Wind turbine model(s)
North Macedonia	/	Onshore	2023	43 MW	9	Goldwind	GW155-4.8 MW
Serbia	Maestralski Ring*	Onshore	2023	854 MW	112	Zhejiang Windey	WD200 7.7 MW
Serbia	Košava 2, Kula 2, Kula 3, Kula 4, Ram*	Onshore	2023	110 MW	28	Zhejiang Windey	WD164 3.6 MW; WD164 3.3 MW; WD172 5.0 MW
UK	TwinHub	Offshore floating	2022	32 MW	4	MingYang	MySE 8.0-180
Greece	Kastri Eivoias	Onshore	2022	5 MW	2	Goldwind	GW109-2.5MW
France	Les Hauts de la Rigotte	Onshore	2022**	15 MW	6	Envision	EN 131 – 2.5
Turkey	Uşak RES Ext.	Onshore	2022	102 MW	17	Goldwind	GW165-6.0 MW
Turkey	Söke RES Ext.	Onshore	2022**	12 MW	2	Goldwind	GW165-6.0 MW
Bosnia and Herzegovina	Ivovik	Onshore	2021	84 MW	20	Goldwind	GW136-4.2 MW
Ukraine	Ochakov & Zophia**	Onshore	2021	626 MW	75	Goldwind	GW 155-4.5MW; GW 155-4.8MW
Italy	Beleolico Tarranto	Offshore bottom-fixed	2021	30 MW	10	MingYang	MySE3.0-135
Turkey	GRC RES	Onshore	2021**	2 MW	3	Goldwind	GW50-750
Turkey	Bandırma	Onshore	2020	7 MW	2	Goldwind	GW140-3.4 MW
Italy	Alcamo II	Onshore	2020**	14 MW	4	Goldwind	GW136-3.4 MW
France	Vannier Amance	Onshore	2019**	43 MW	17	Envision	EN 131 – 2.5
France	Sud Vannier	Onshore	2019**	24 MW	9	Envision	EN 131-2.6
France	Entre Tille et Venelle	Onshore	2018**	40 MW	16	Envision	EN 131 – 2.5
Turkey	Aksu	Onshore	2018**	10 MW	3	Goldwind	GW140-3.4 MW
Croatia	Senj	Onshore	2017	156 MW	39	Shanghai Electric	4.XMW
Montenegro	Možura	Onshore	2016	46 MW	23	Envision	2.X MW
Sweden	Kafjarden	Onshore	2015	24 MW	9	Envision	3.0-120; 2.3-115
Sweden	Blaiken III and IV	Onshore	2014-5	98 MW	39	Dongfang	FD110-2500
Turkey	Yalova RES	Onshore	2014**	54 MW	36	Sinovel	SL1500/90; SL1500/82
Romania	Miresa I	Onshore	2013	50 MW	25	Goldwind	GW100/2500
Turkey	Uşak RES	Onshore	2011	54 MW	36	Sinovel	SL1500/90
Bulgaria	Milkovitsa/Somovit	Onshore	2011	125 MW	83	MingYang	MY 1.5S

*Preferred supplier contract

**Estimated

 Not yet installed

 Under construction

 Fully installed