



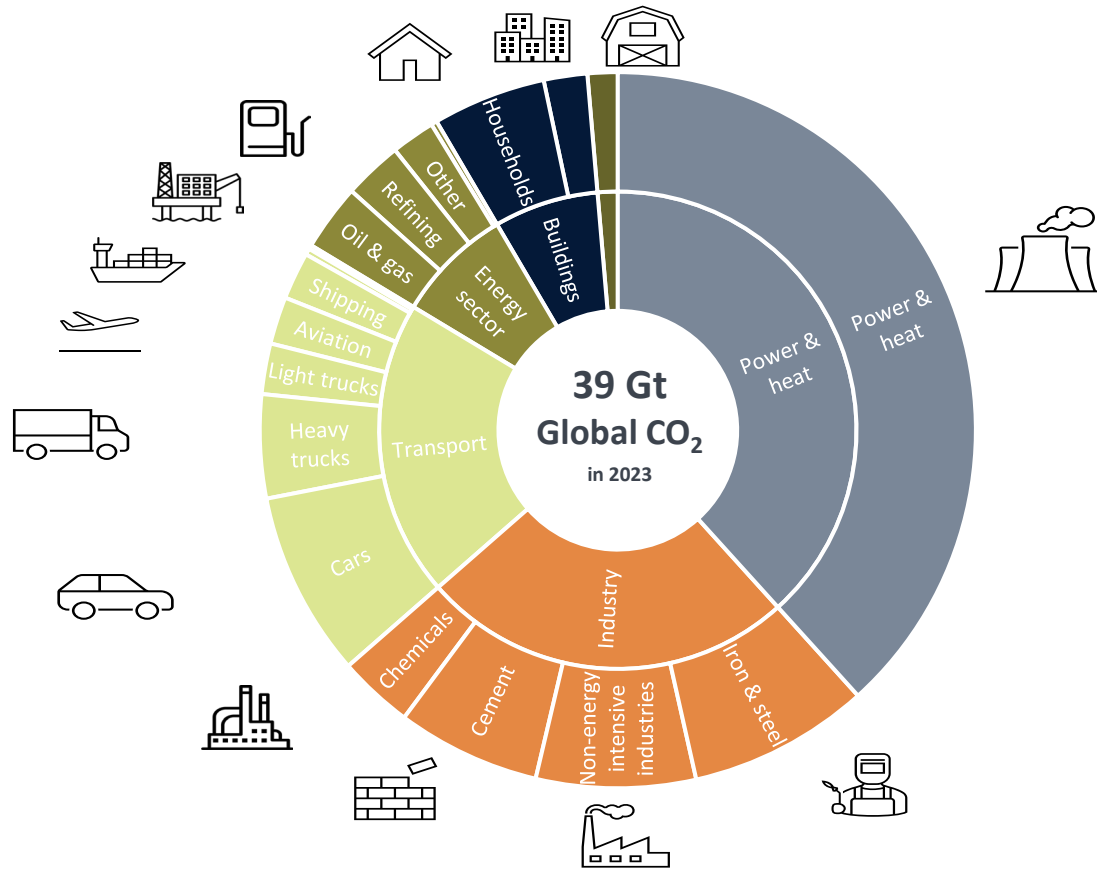
**RystadEnergy**

# China-EU energy cooperation leads the world's energy transition

March 2025

# Decarbonization needs to address a wide range of industries, with a wide range of solutions. Power sector represents the biggest share of global carbon emission and is the easiest sector to be decarbonized.

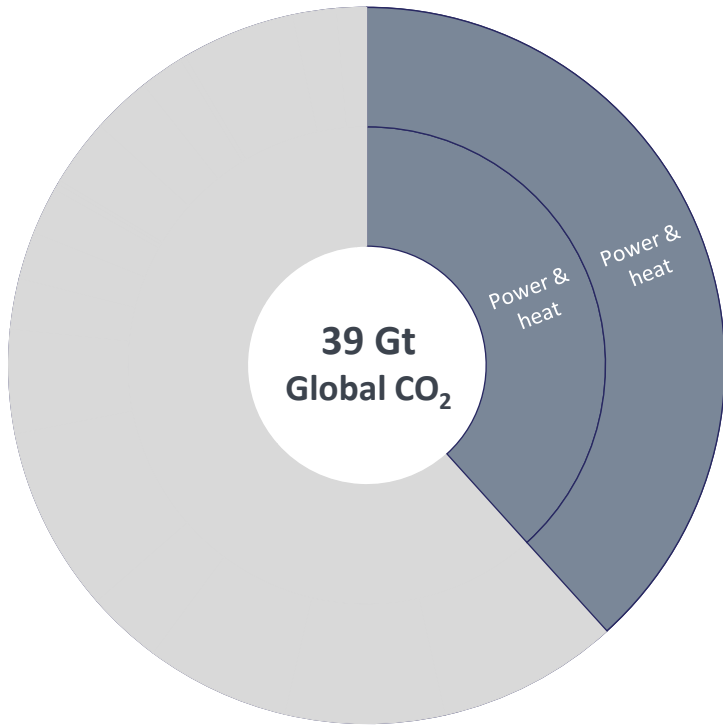
Global fossil CO<sub>2</sub> emissions in 2023  
Gigatonnes fossil CO<sub>2</sub>



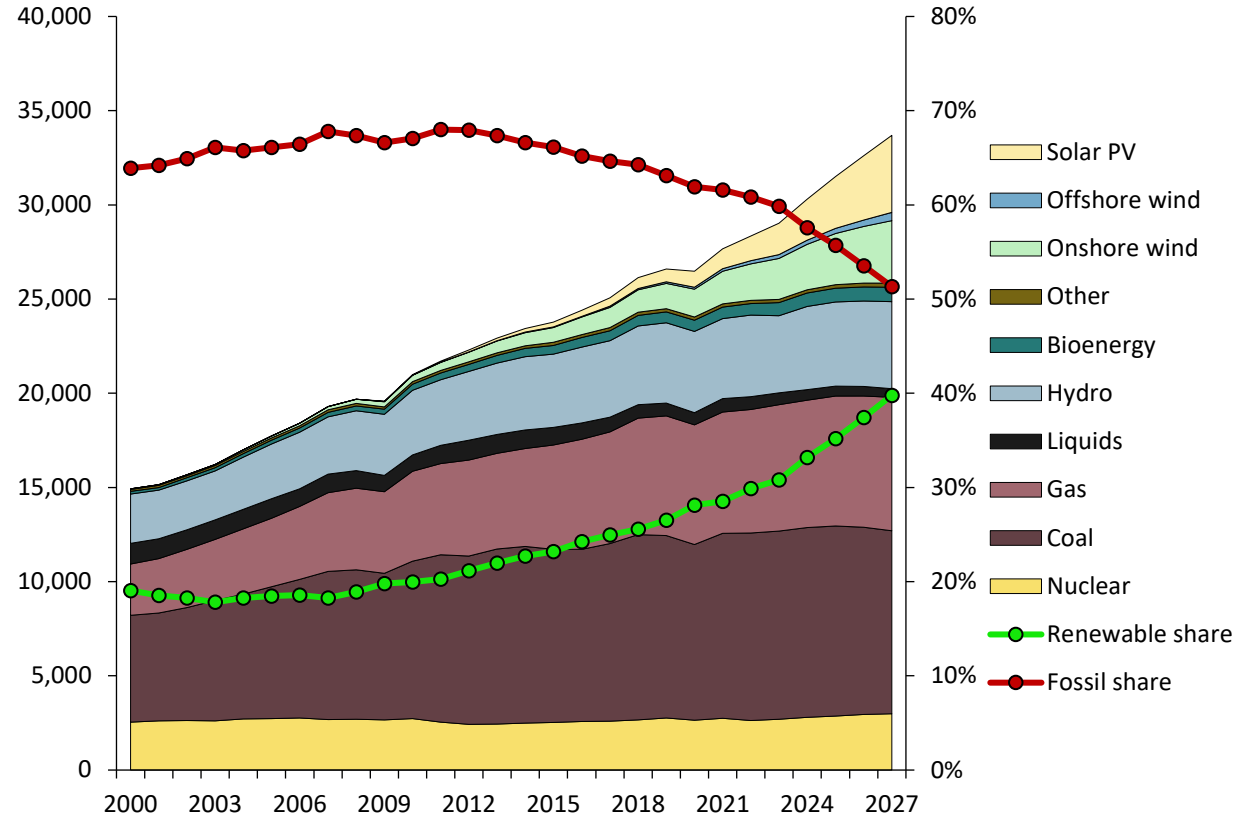
Source: Rystad Energy EnergyDemandCube

# 2024: renewables power generation crossed the 33% milestone globally

Global fossil CO<sub>2</sub> emissions in 2023  
Gigatonnes fossil CO<sub>2</sub>

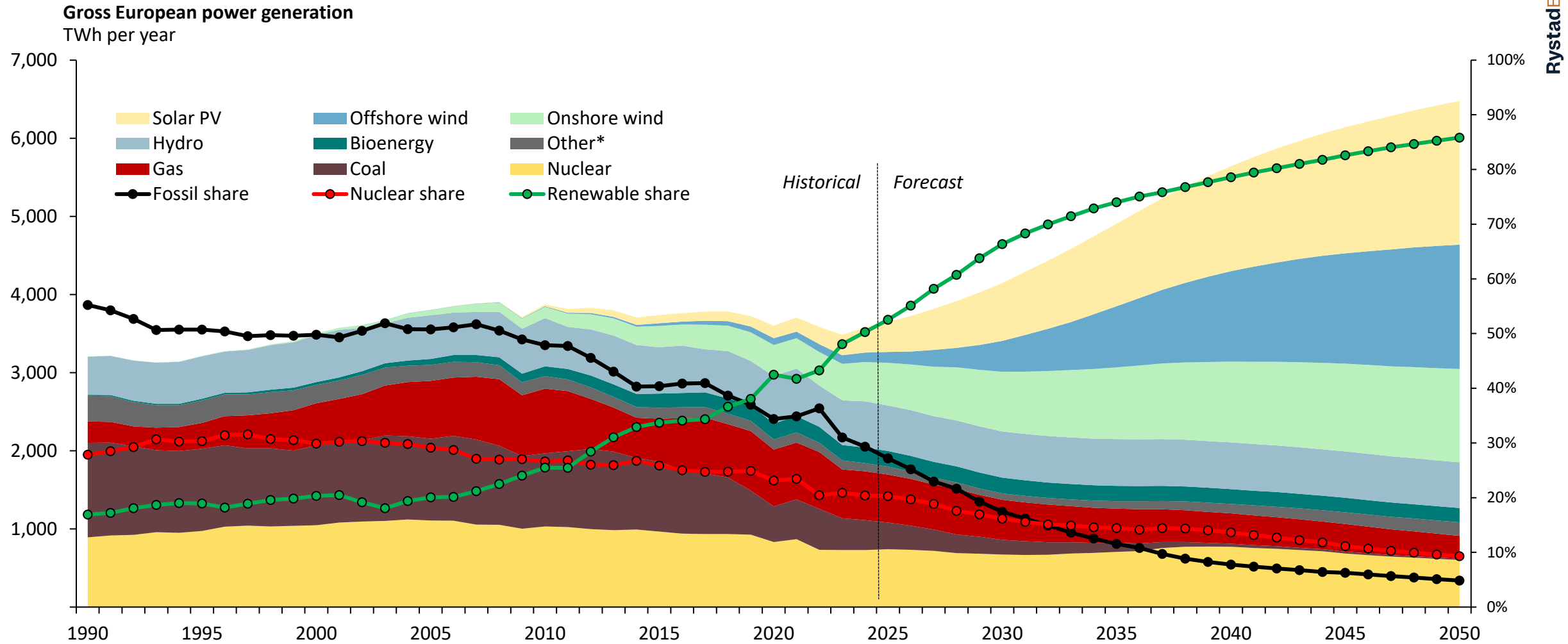


Global power generation mix by source (left) and share of fossil and renewable energy (right)  
Terawatt-hours (TWh) Percentage (%)



Source: Rystad Energy Renewables & Power Solution

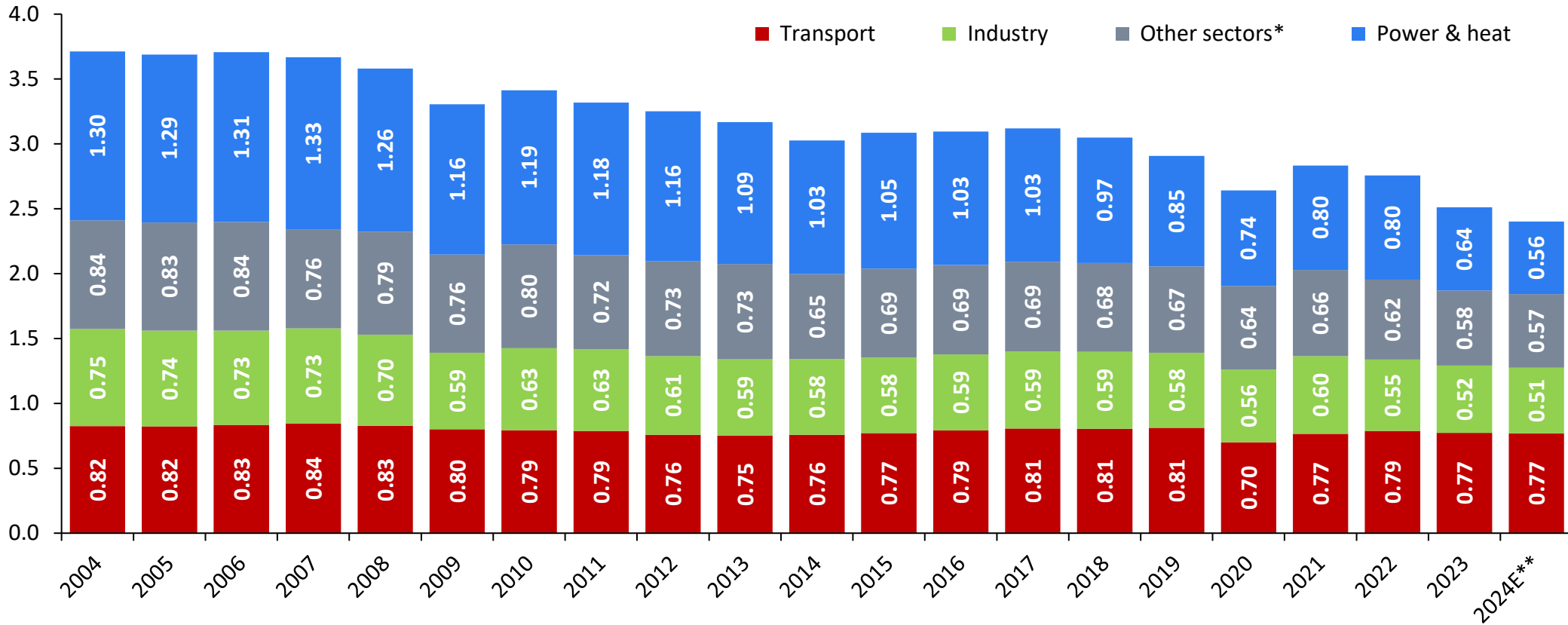
# The European power sector is even more progressive



Source: Rystad Energy Renewables & Power Solution

# Power & heat sector emissions in EU27 has declined more than 55% over the last 20 years, hard-to-abate sectors lag

EU27, fossil CO<sub>2</sub> emissions  
Gigatonnes



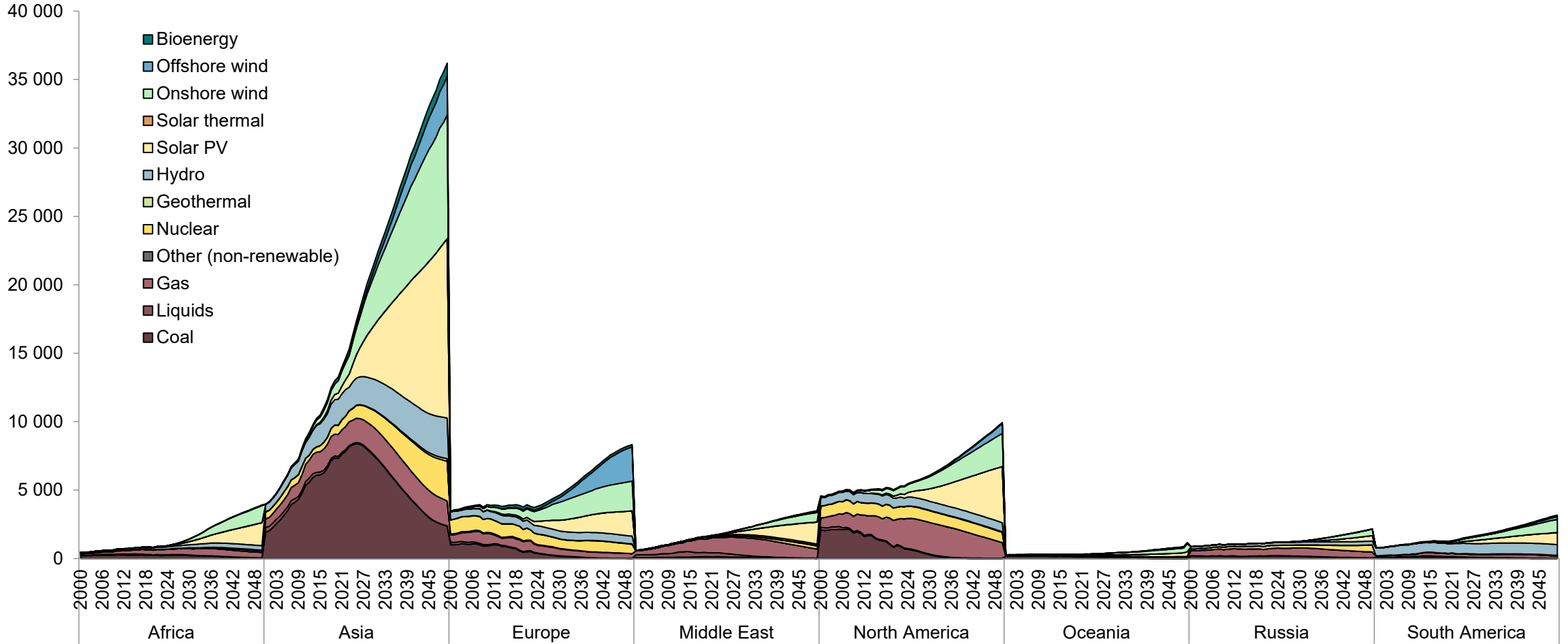
\*Buildings, energy production, waste

\*\*2024 estimate is based on preliminary power generation, natural gas, petroleum product and coal consumption statistics for 2024

Source: Rystad Energy research and analysis

# In absolute terms China drives the renewables market

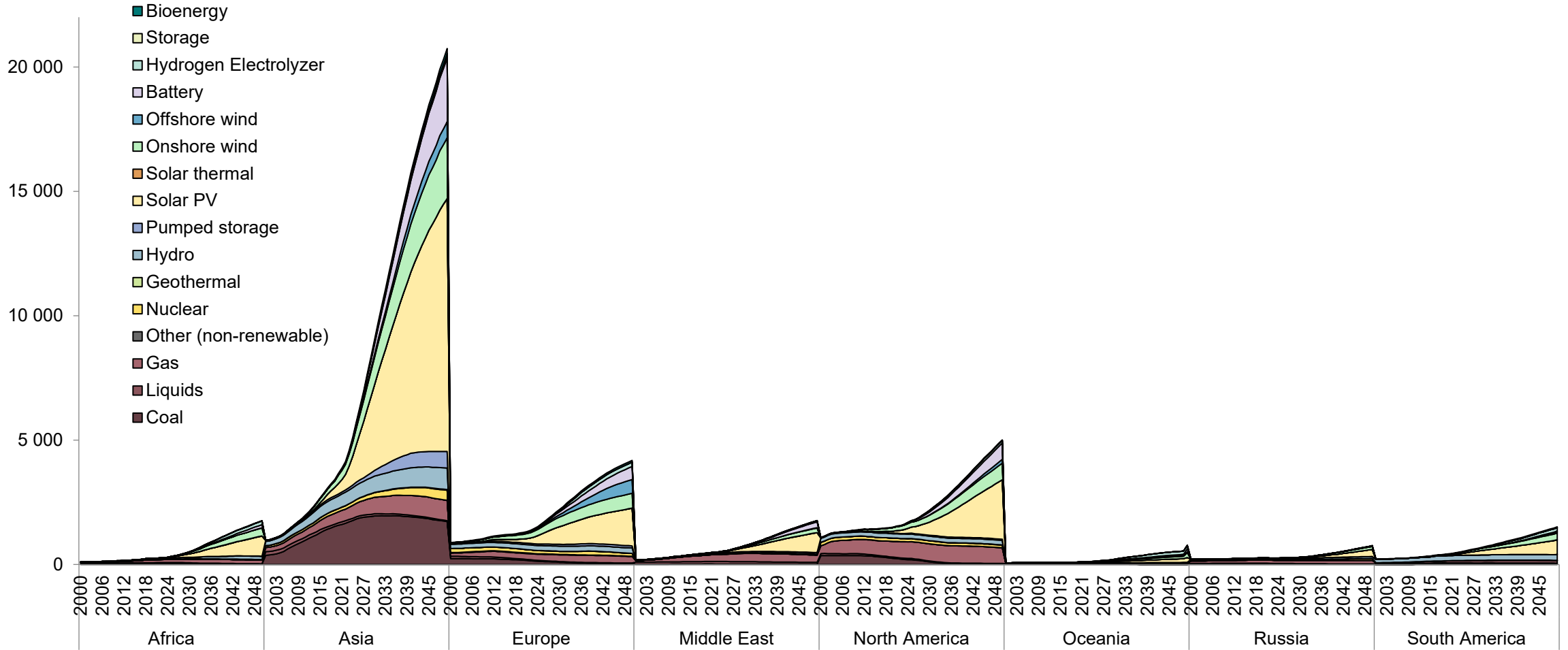
Generation by energy source  
Terrawatt-Hours (TWH)



Source: Rystad Energy PowerCube

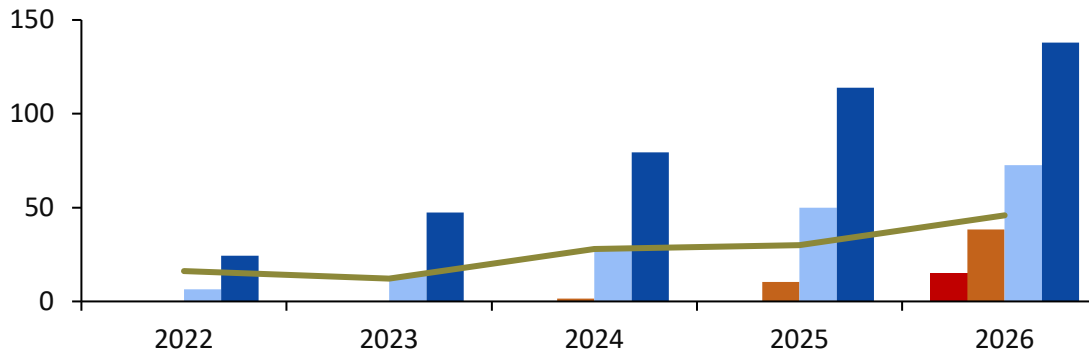
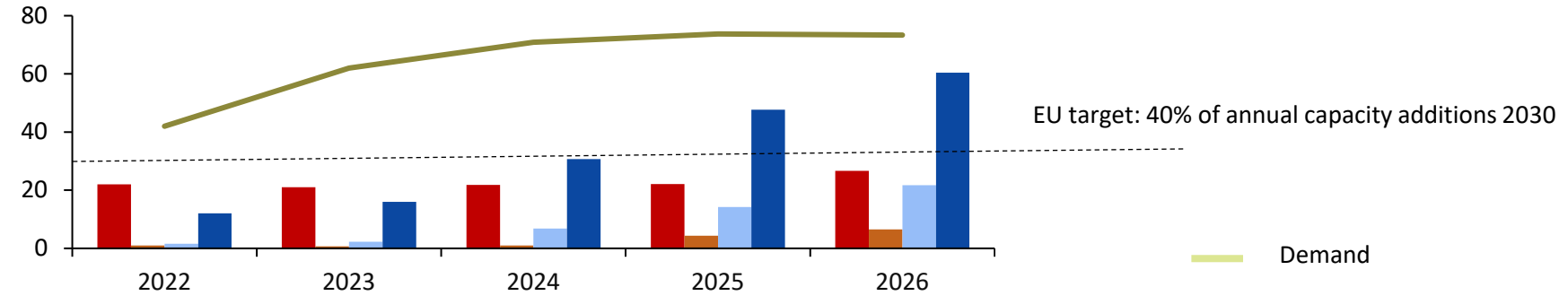
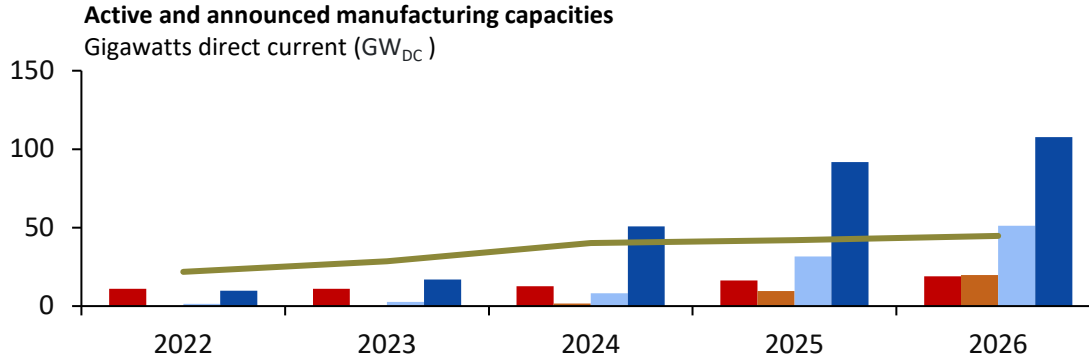
# In absolute terms China drives the renewables market

Installed capacity by energy source  
Gigawatt (GW)



Source: Rystad Energy PowerCube

# Outside of China – backward integration of supply chains: Europe far from meeting domestic demand with own supply



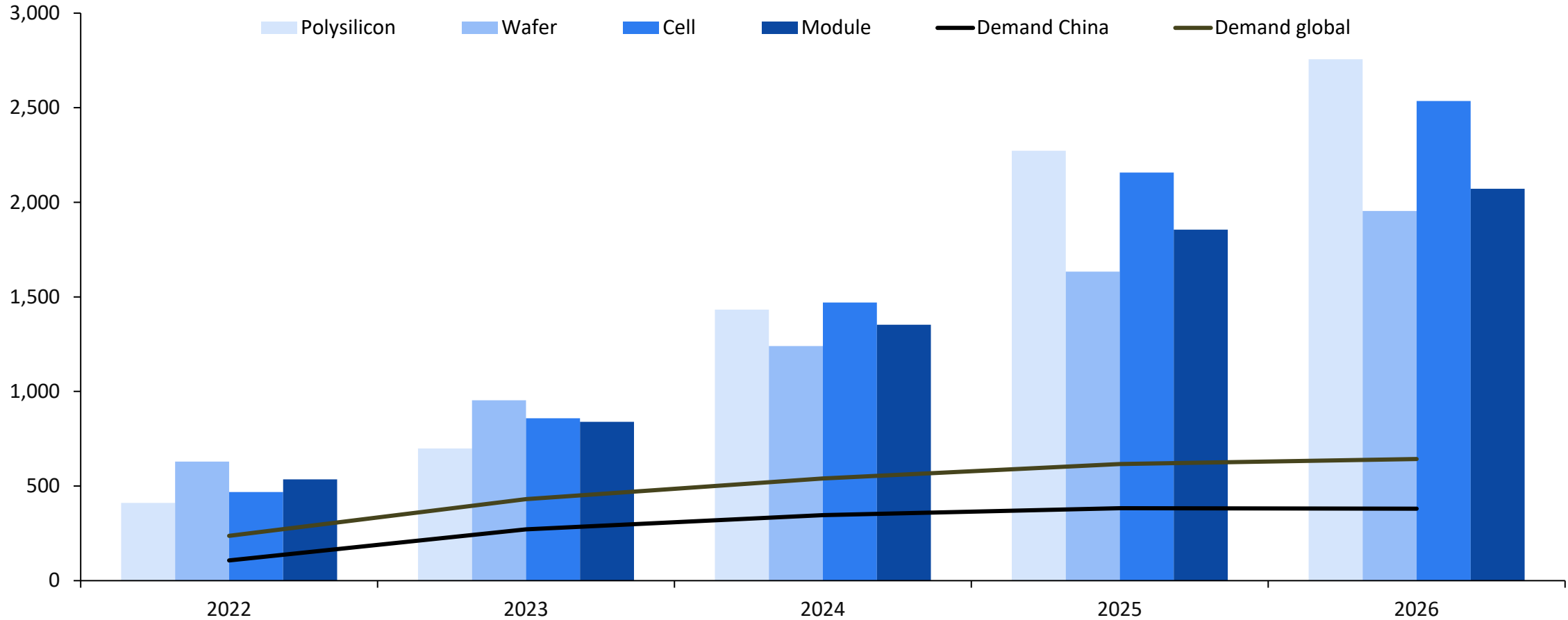
- Demand
- Polysilicon
- Wafer
- Cell
- Module

Source: Rystad Energy Solar Solution



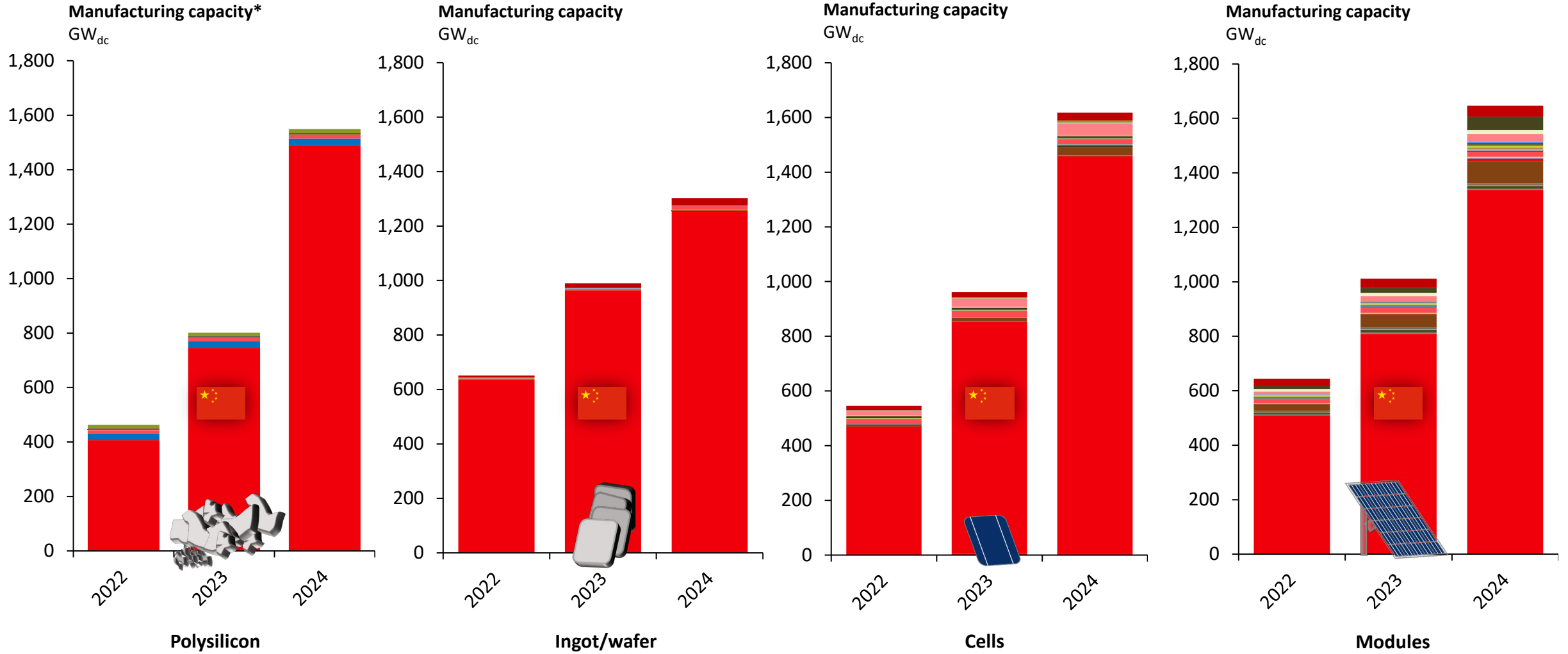
# China plays a crucial role in renewables supply chains

China's announced and active manufacturing capacities vs demand  
Gigawatts direct current (GW<sub>DC</sub>)



Source: Rystad Energy Solar Solution

# China plays a crucial role in renewables supply chains

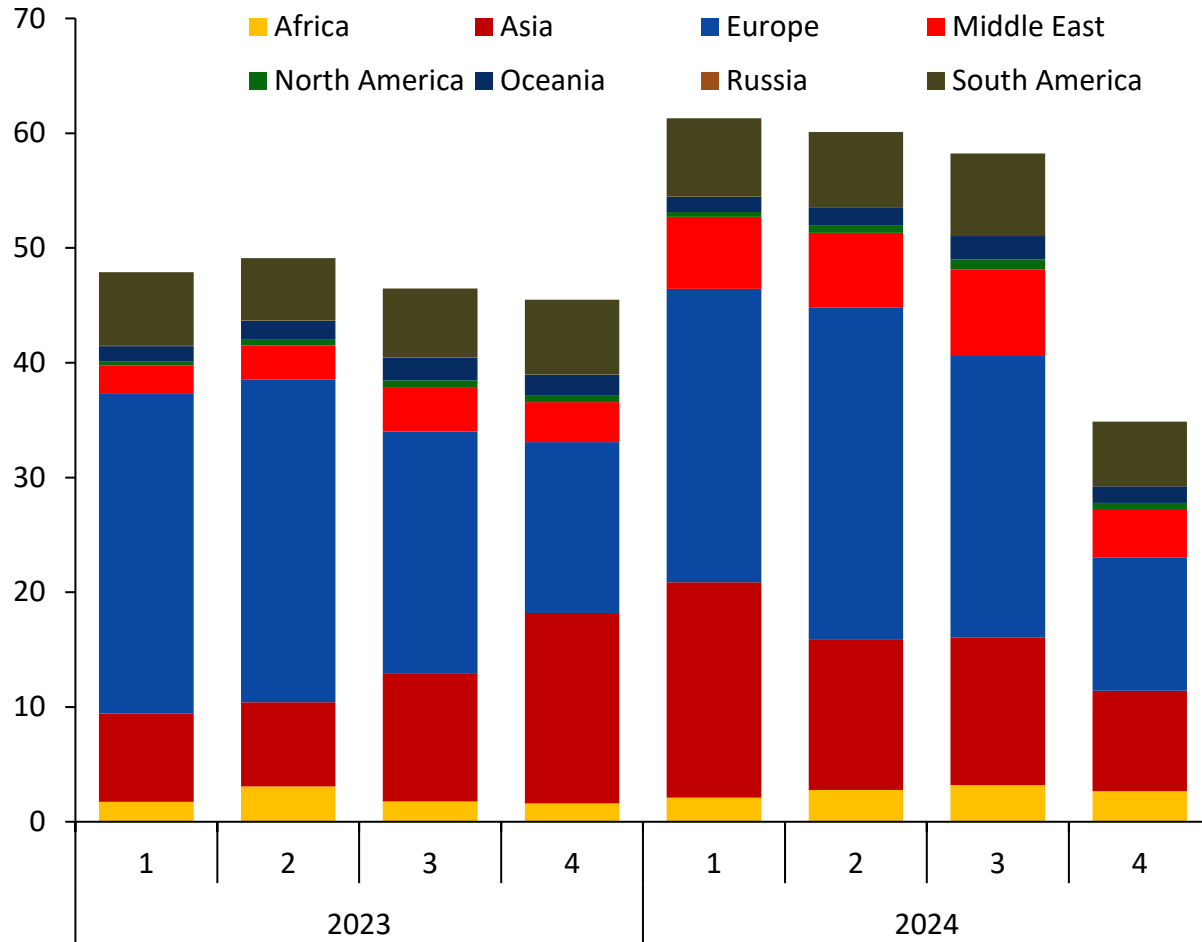


\*assuming 2.500 tonnes per MWdc  
 Source: Rystad Energy Solar Solution

# China plays a crucial role in renewables supply chains – Europe largest export market for modules

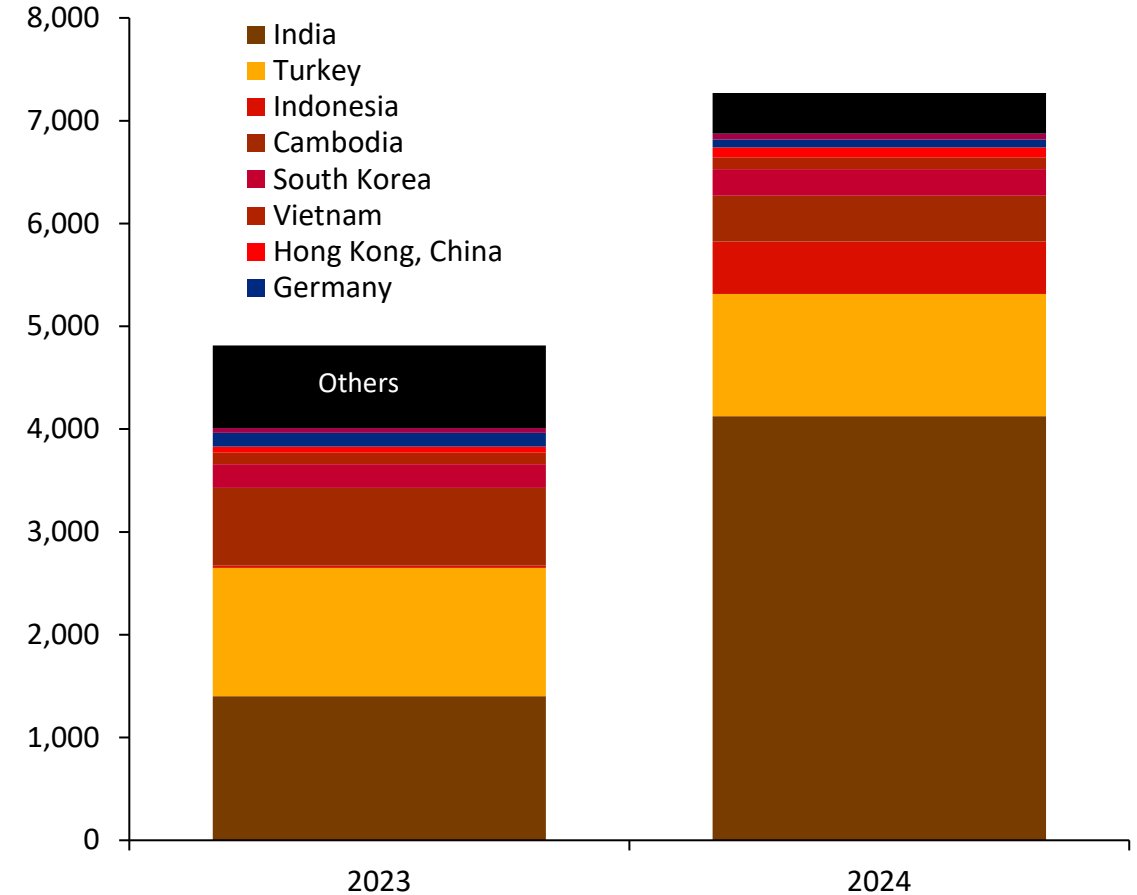
China's module exports by export quarter and destination

Gigawatts direct current (GW<sub>DC</sub>)



China's cell exports by export year and destination

Million units

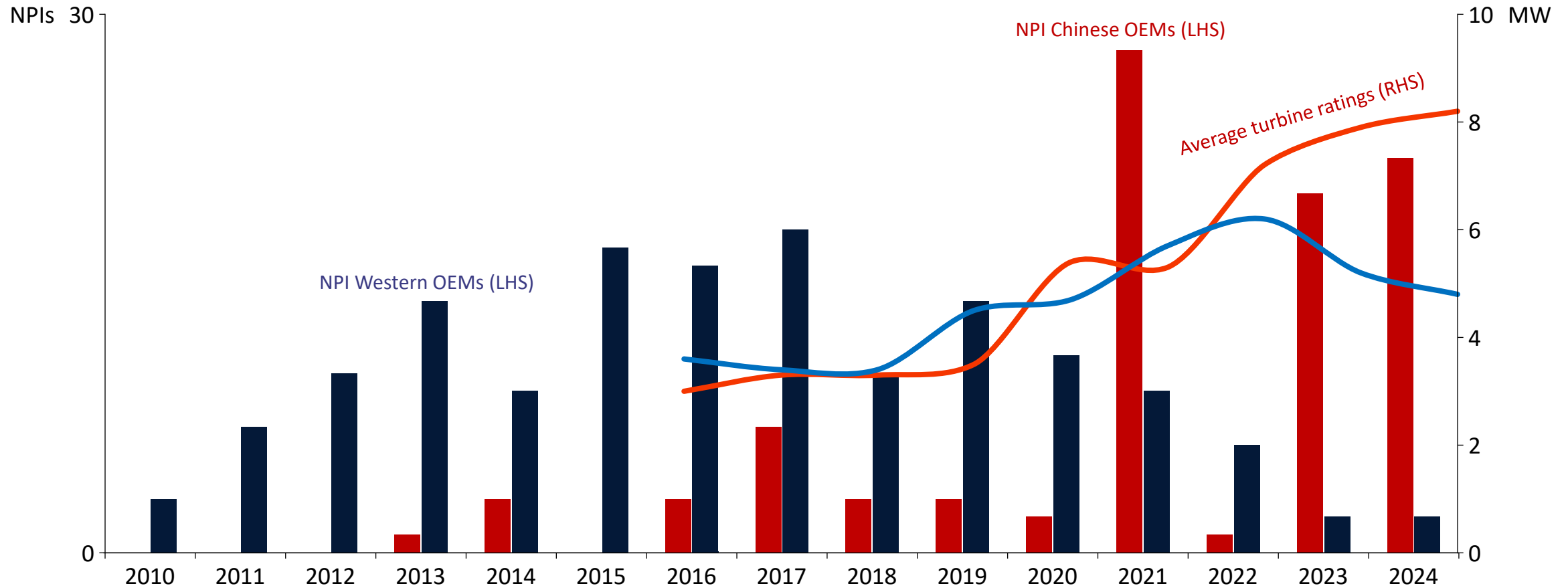


\*export data for December 2024 not included  
Source: Rystad Energy Solar Solution

# In the wind space, Chinese OEMs gear up for competing with Western OEMs

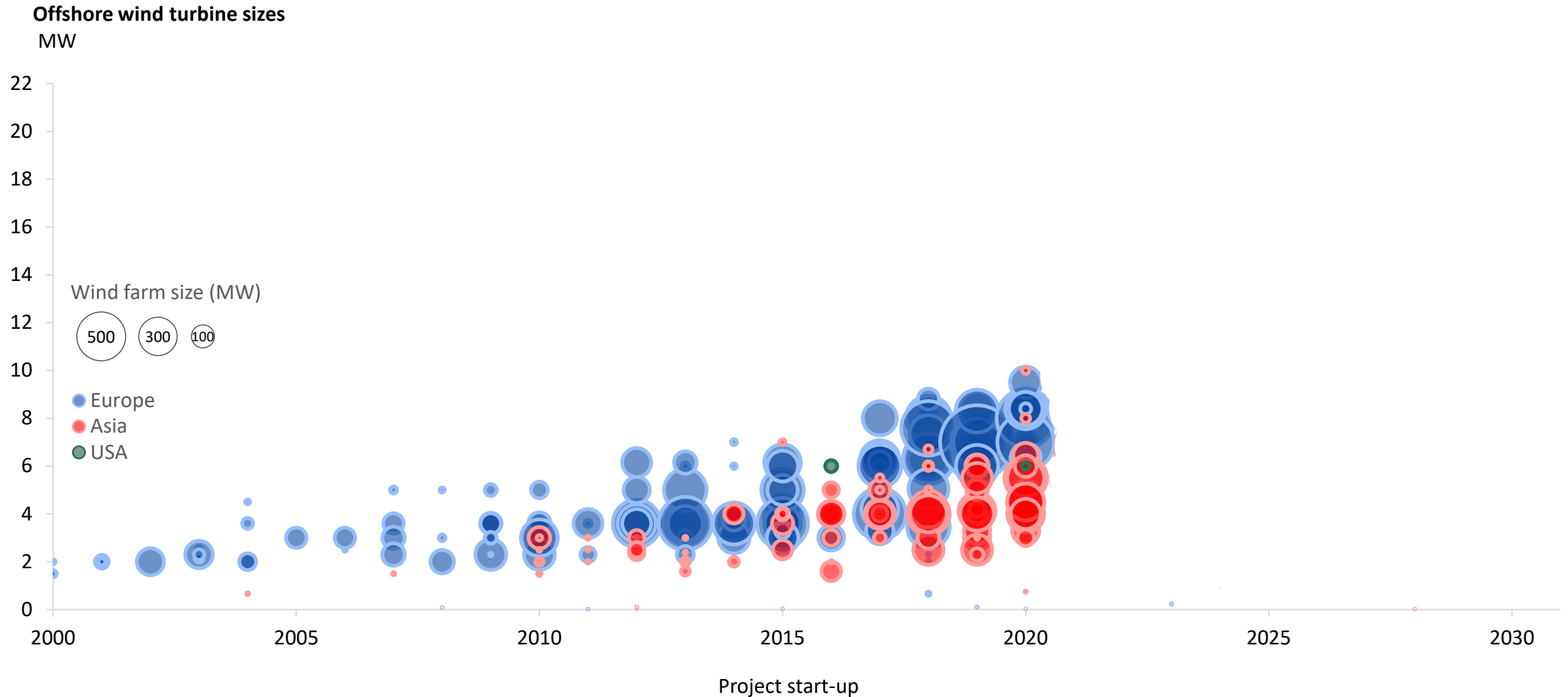
## New onshore product introductions (NPI)

Number of new onshore product introductions (NPIs) and average turbine ratings (MW)



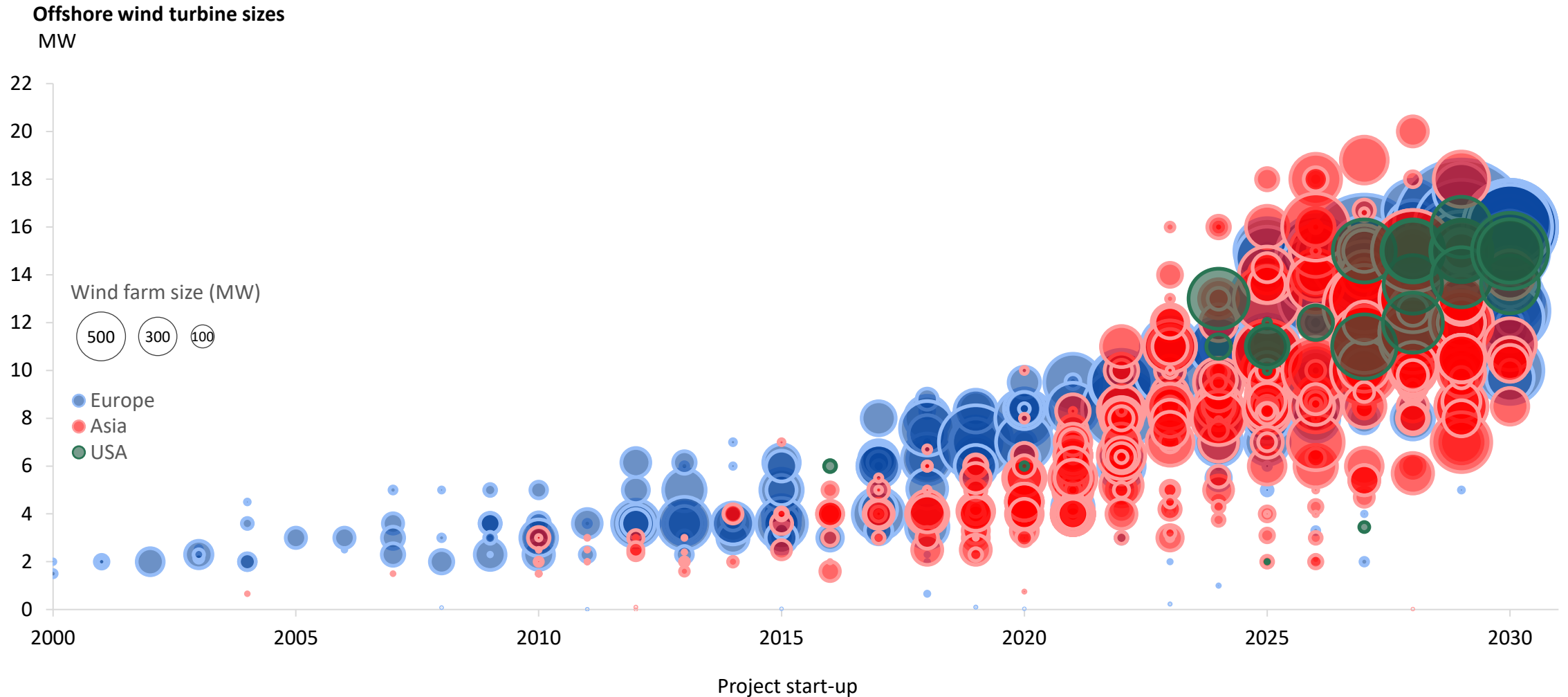
Source: Rystad Energy Wind Solution

# In the wind space, Chinese OEMs gear up for competing with Western OEMs



























Source: Rystad Energy Offshore Wind Solution

# In the wind space, Chinese OEMs gear up for competing with Western OEMs



Source: Rystad Energy Offshore Wind Solution

# Western turbine OEMs converge towards 14-16 MW turbines, while Chinese peers push ahead

Wind turbine OEM	HQ country	8-10 MW	10-12 MW	12-14 MW	14-16 MW	16-18 MW	18-20 MW	20 MW+
 Goldwind	 China	✓	✓	✓	✓	✓	✓	✓
 Envision	 China	✓	✓	✓	✓	✓	✓	✗
 MingYang	 China	✓	✓	✓	✓	✓	✓	✓
 Shanghai Electric	 China	✓	✓	✓	✓	✓	✓	✓
 Windey	 China	✓	✓	✗	✓	✓	✗	✗
 CRRC Zhuzhou	 China	✓	✓	✗	✓	✓	✓	✗
 Sany	 China	✓	✗	✓	✗	✓	✗	✗
 CSSC	 China	✓	✓	✓	✗	✓	✓	✓
 Dongfang Electric	 China	✓	✗	✓	✓	✓	✗	✓
 GE	 US	✗	✓	✓	✓	✗	✗	✗
 Siemens Gamesa	 Spain	✓	✓	✓	✓	✗	✗	✓
 Vestas	 Denmark	✓	✗	✗	✓	✗	✗	✗



Available/marketed product



Not available



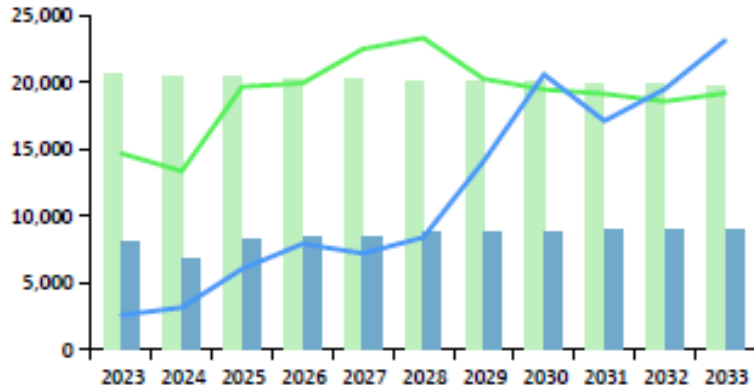
Currently under consideration

\*For >8 MW offshore turbines

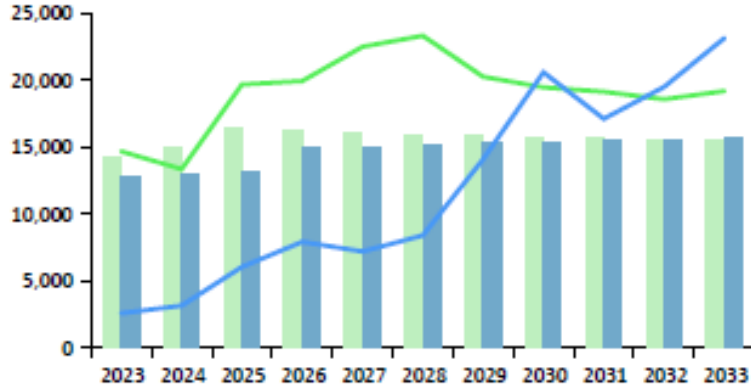
Source: Rystad Energy research and analysis; Rystad Energy OffshoreWindCube

# Starting 2028 EU wind power supply chain falling short of demand; China continues to supply for the world wind power market.

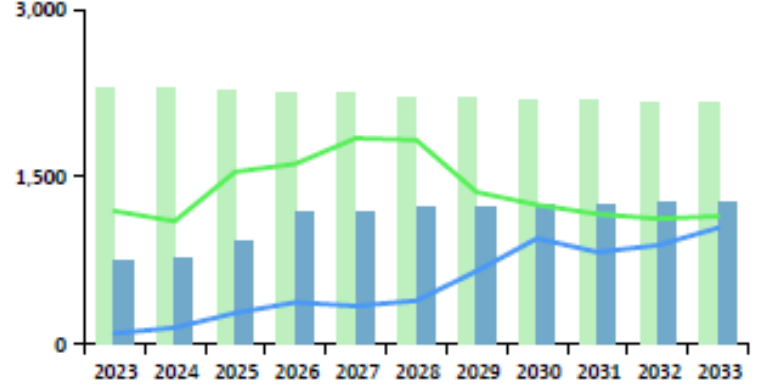
Nacelle supply capacity and demand, Europe\*  
Megawatts (MW)



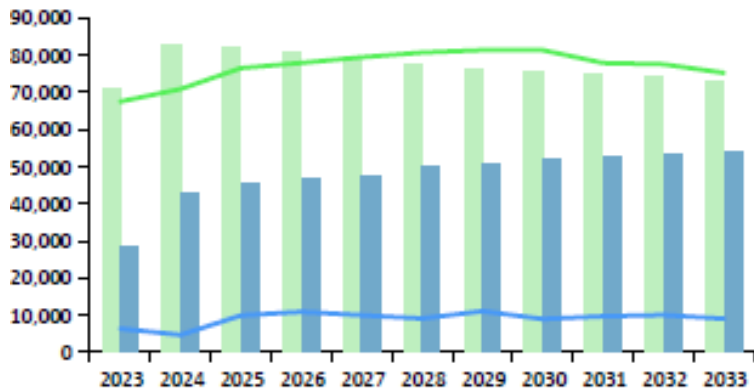
Blade supply capacity and demand, Europe\*  
Megawatts (MW)



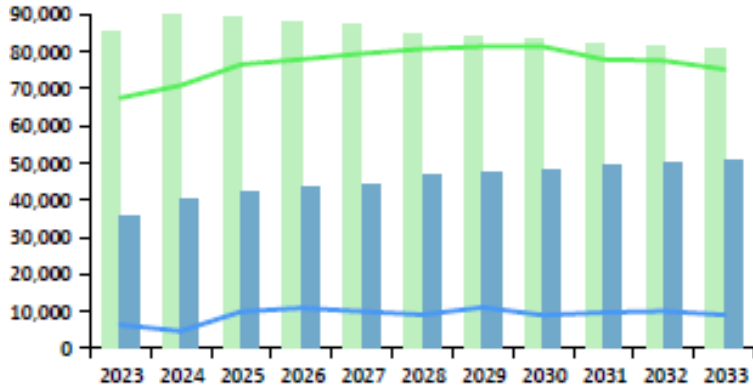
Tower supply capacity and demand, Europe\*  
Kilotonnes (kt)



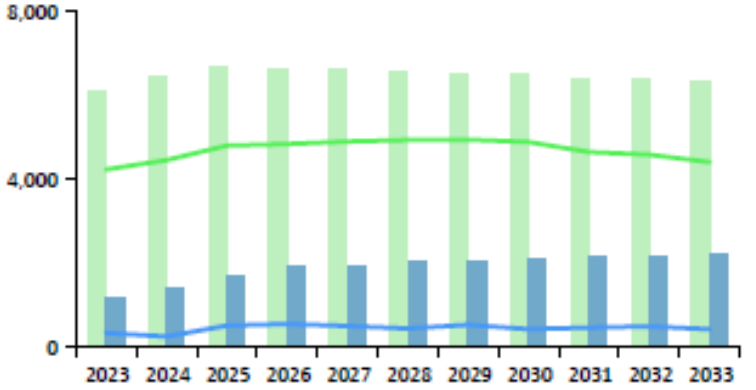
Nacelle supply capacity and demand, China  
Megawatts (MW)



Blade supply capacity and demand, China\*  
Megawatts (MW)



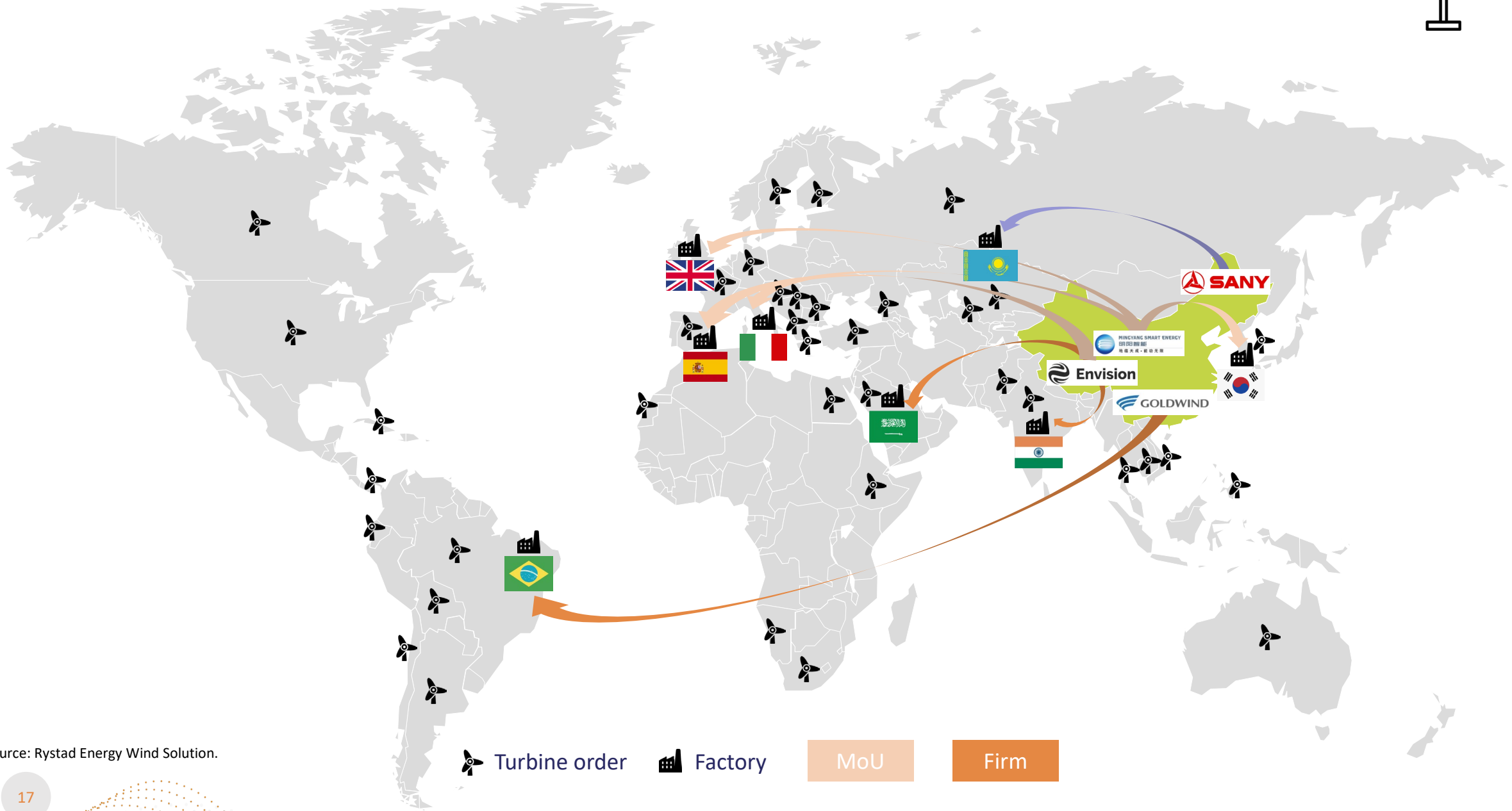
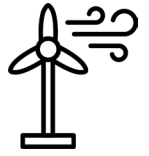
Tower supply capacity and demand, China\*  
Kilotonnes (kt)



Onshore supply Offshore supply Onshore demand Offshore demand



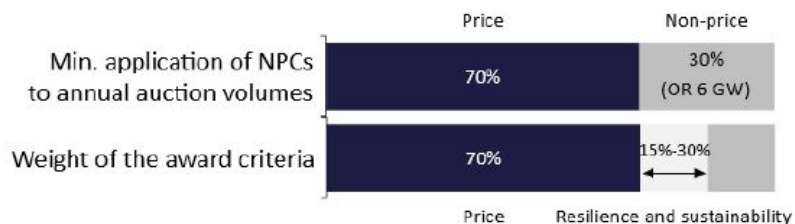
# Chinese OEM's looking outside of China



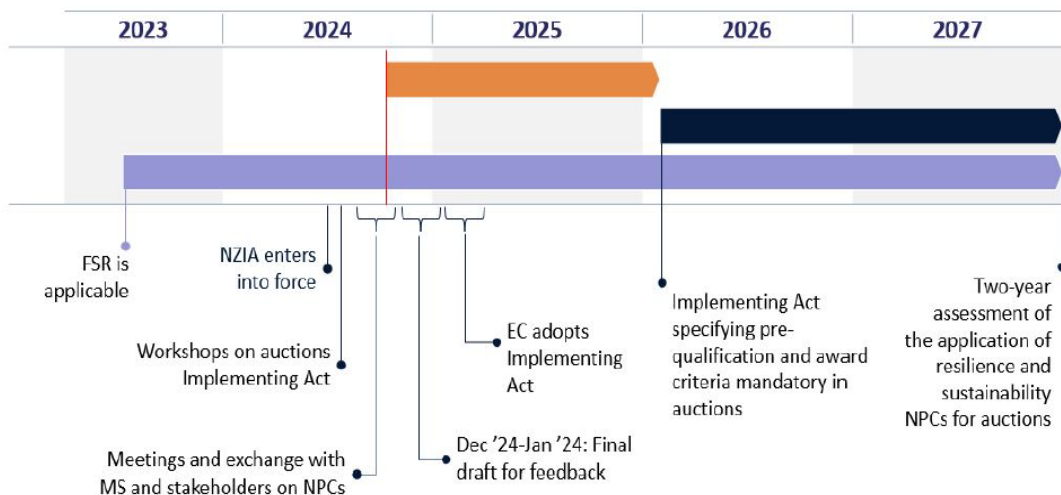
Source: Rystad Energy Wind Solution.

# Europe work together with China to strike a balance between securing supply chains and meeting its clean energy goals – the challenge Chinese new energy suppliers will be willing to accept

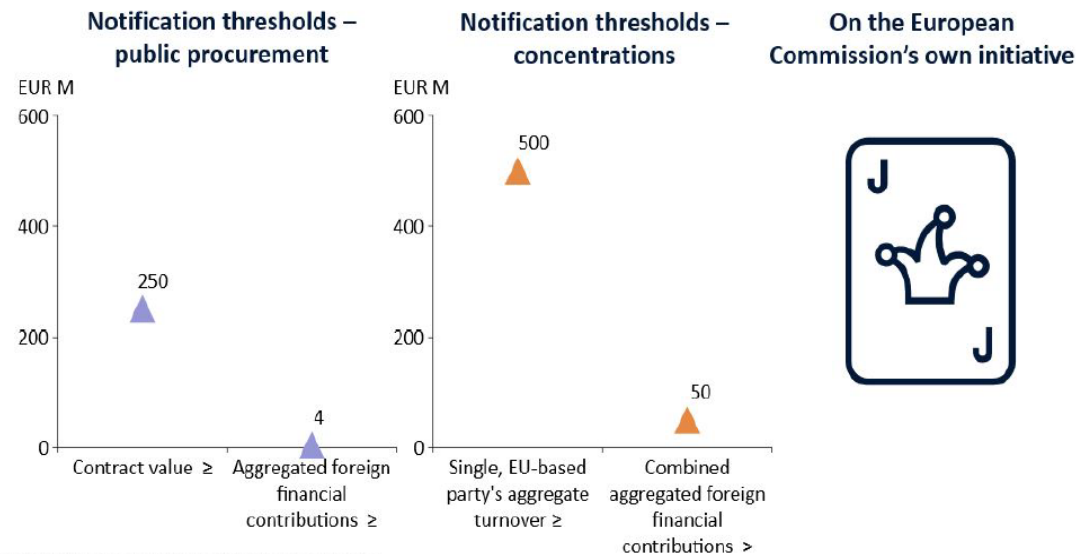
## Application of non-price criteria based on Net Zero Industry Act



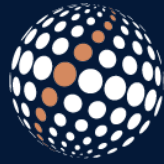
## Timeline for implementation of Net Zero Industry Act and Foreign Subsidy Regulation



## Three instruments of Foreign Subsidy Regulation



Source: Rystad Energy research and analysis; European Commission



# RystadEnergy

Navigating the future of **energy**

Rystad Energy is an independent energy consulting services and business intelligence data firm offering global databases, strategic advisory and research products for energy companies and suppliers, investors, investment banks, organizations, and governments.

Headquarters: Rystad Energy, Fjordalléen 16, 0250 Oslo, Norway

Americas +1 (281)-231-2600

EMEA +47 908 87 700

Asia Pacific +65 690 93 715

Email: [support@rystadenergy.com](mailto:support@rystadenergy.com)

© Copyright. All rights reserved.