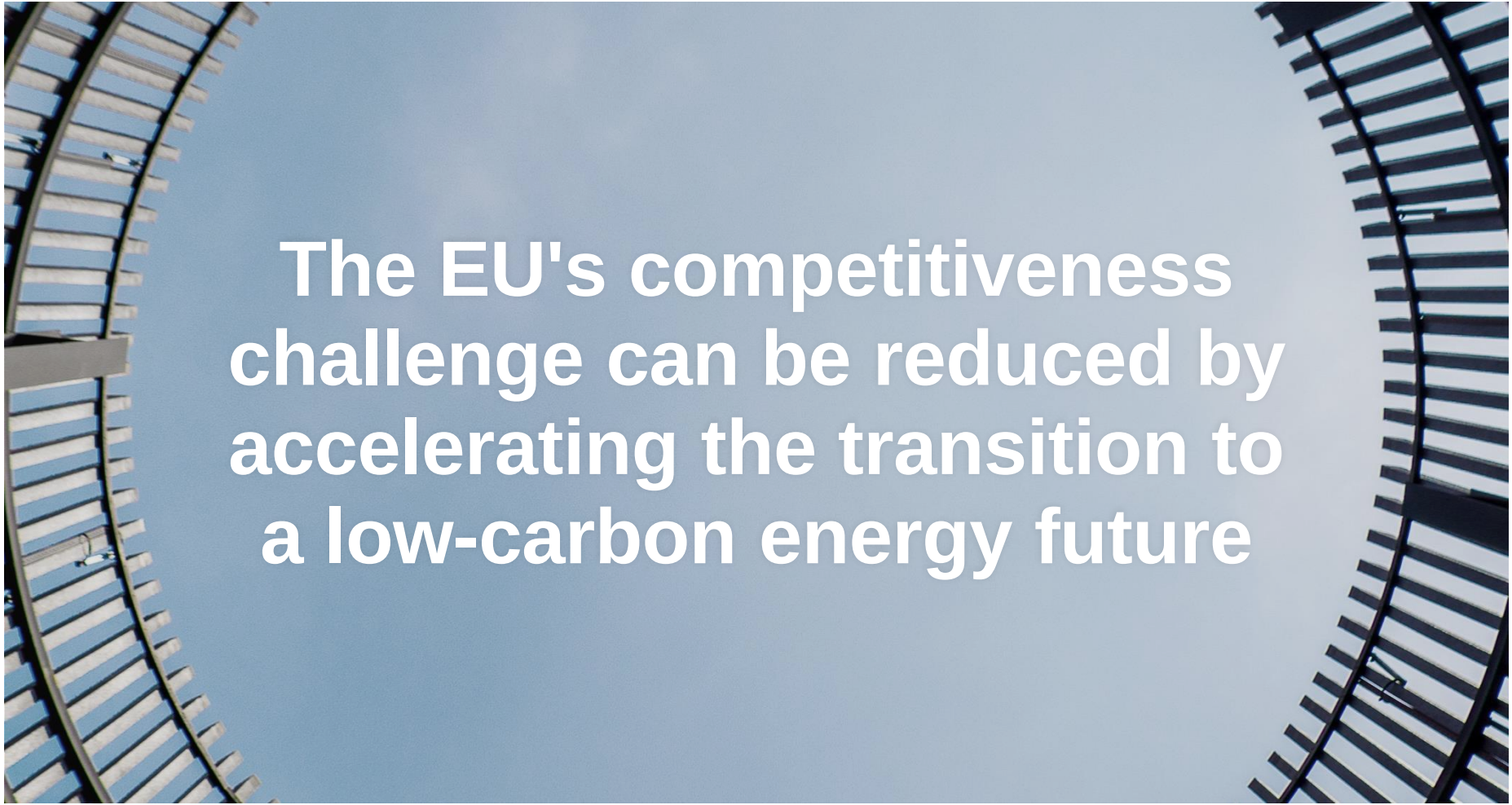
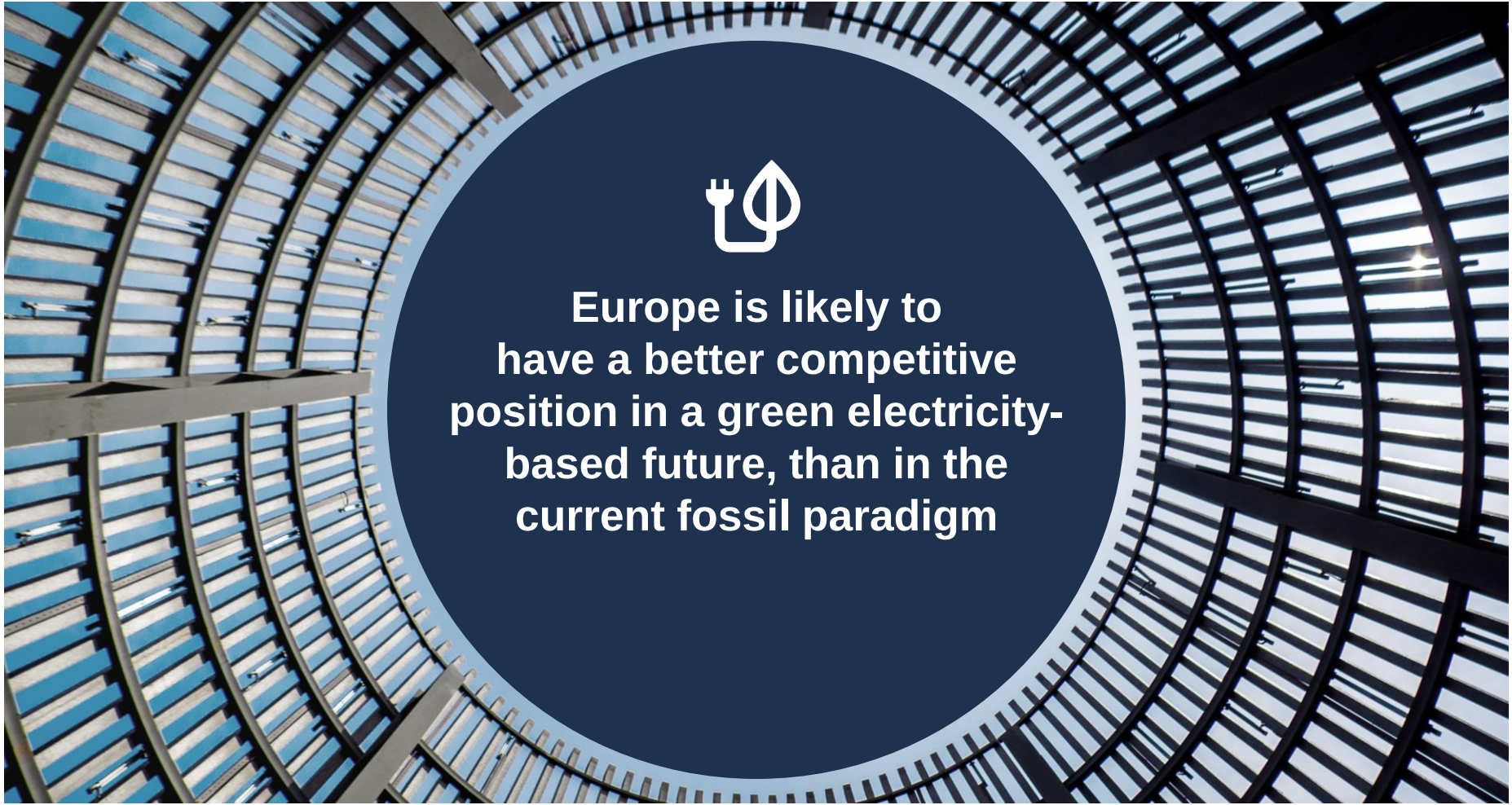
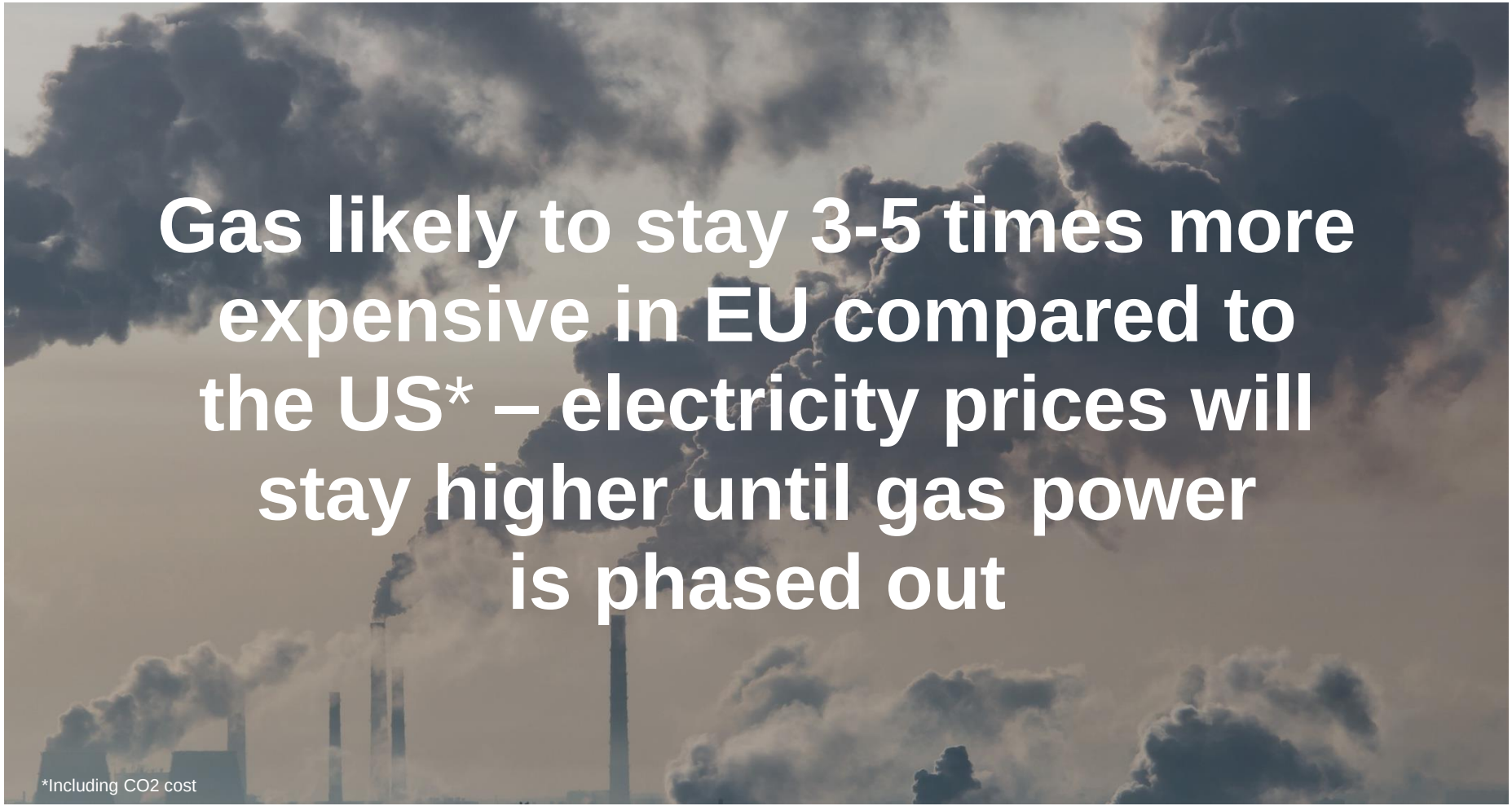




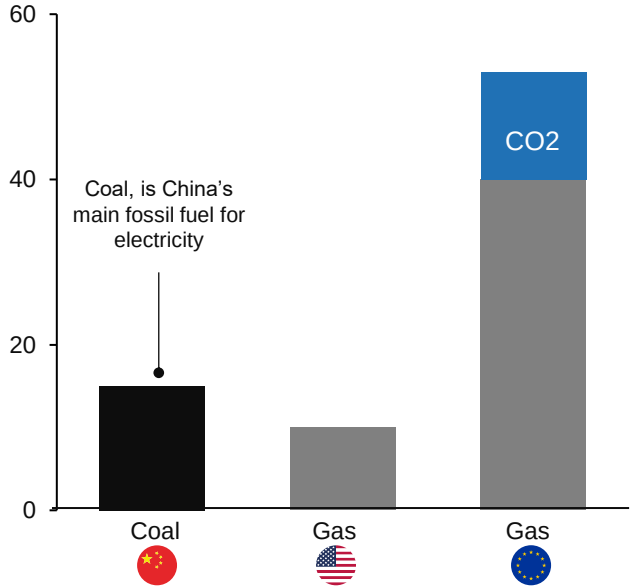


Electrification is an opportunity

Electricity price-setting fossil fuels will stay more expensive in the EU compared to China and the US

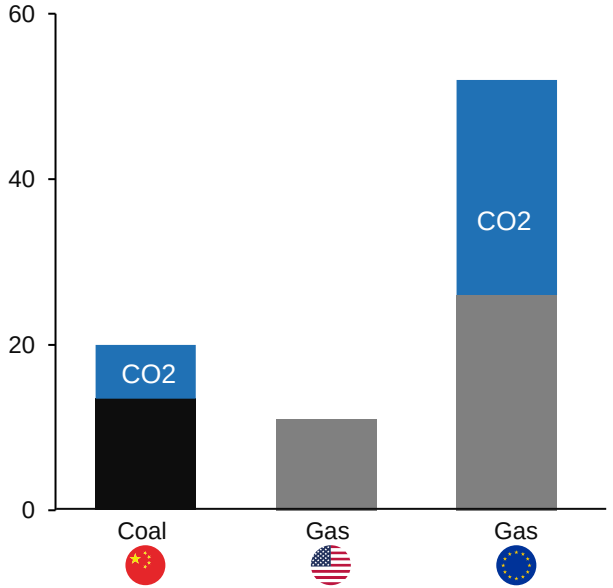
Fossil fuel costs in 2024[1]

(Euro/MWh, wholesale price)



Projected fossil fuel costs in 2030[1]

(Euro/MWh, wholesale price)



1. Vattenfall analysis, based on Bloomberg New Energy Outlook 2024

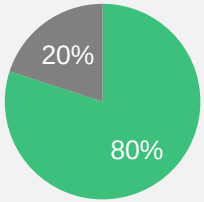
Electrification is an opportunity

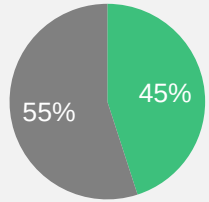
EU reliance on gas power plants means it is likely to continue to set electricity prices for most hours in 2030[2]

Generation by technology
(% of generation, EU average)

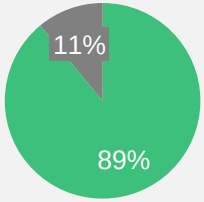
Price setting technology
(% of hours, EU average)

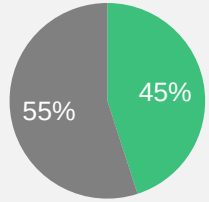
2022





2030
(projected)





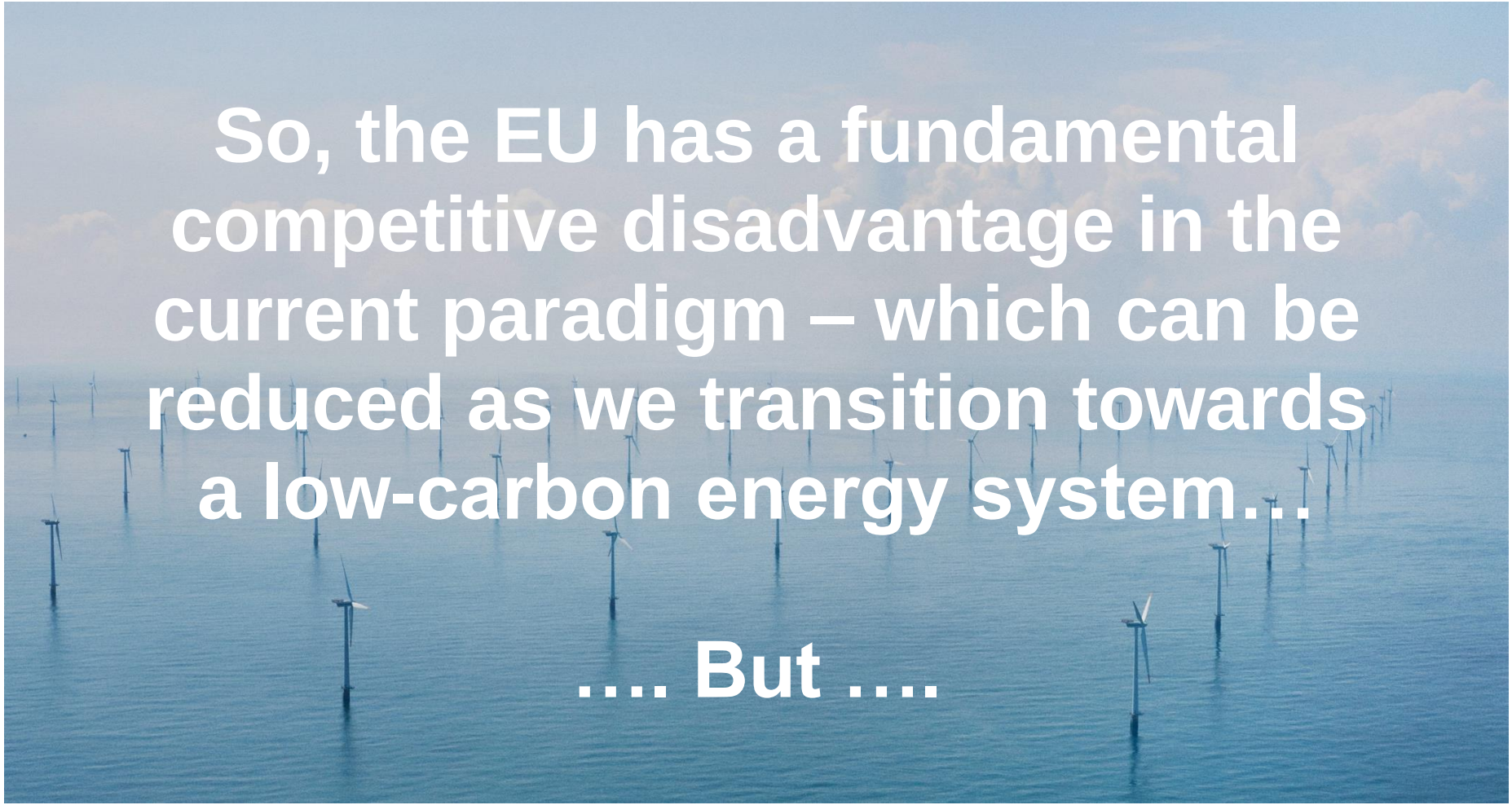
Natural gas
Other

2. JRC Report: “The Merit Order and Price-Setting Dynamics in European Electricity Markets”

Electrification is an opportunity

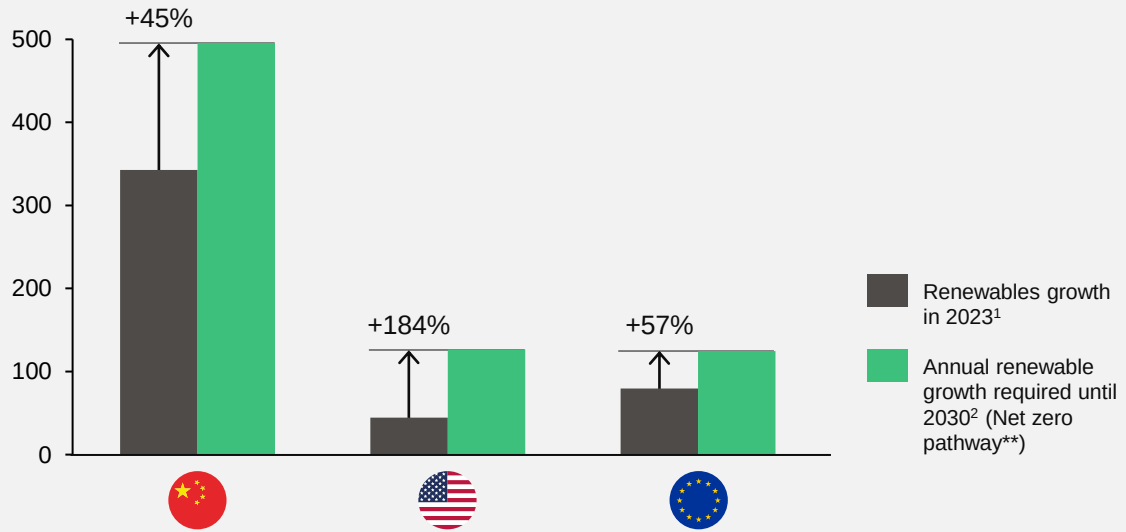
Europe is likely to have a better competitive position in a green future, than in the current fossil paradigm

	Today	Transition scenarios		Future
	Fossil paradigm	**EU leads the way**	**EU falling behind**	**Green paradigm**
EU heavy industry	Fossil	Green	Fossil	Green
Global industry (competing with EU)	Fossil	Fossil	Green	Green
Keys to industry competitiveness (in each paradigm)	Low cost of fossil fuels	High cost of CO2 + green subsidies	Low cost of fossil fuels + fossil subsidies	Low cost of green electricity



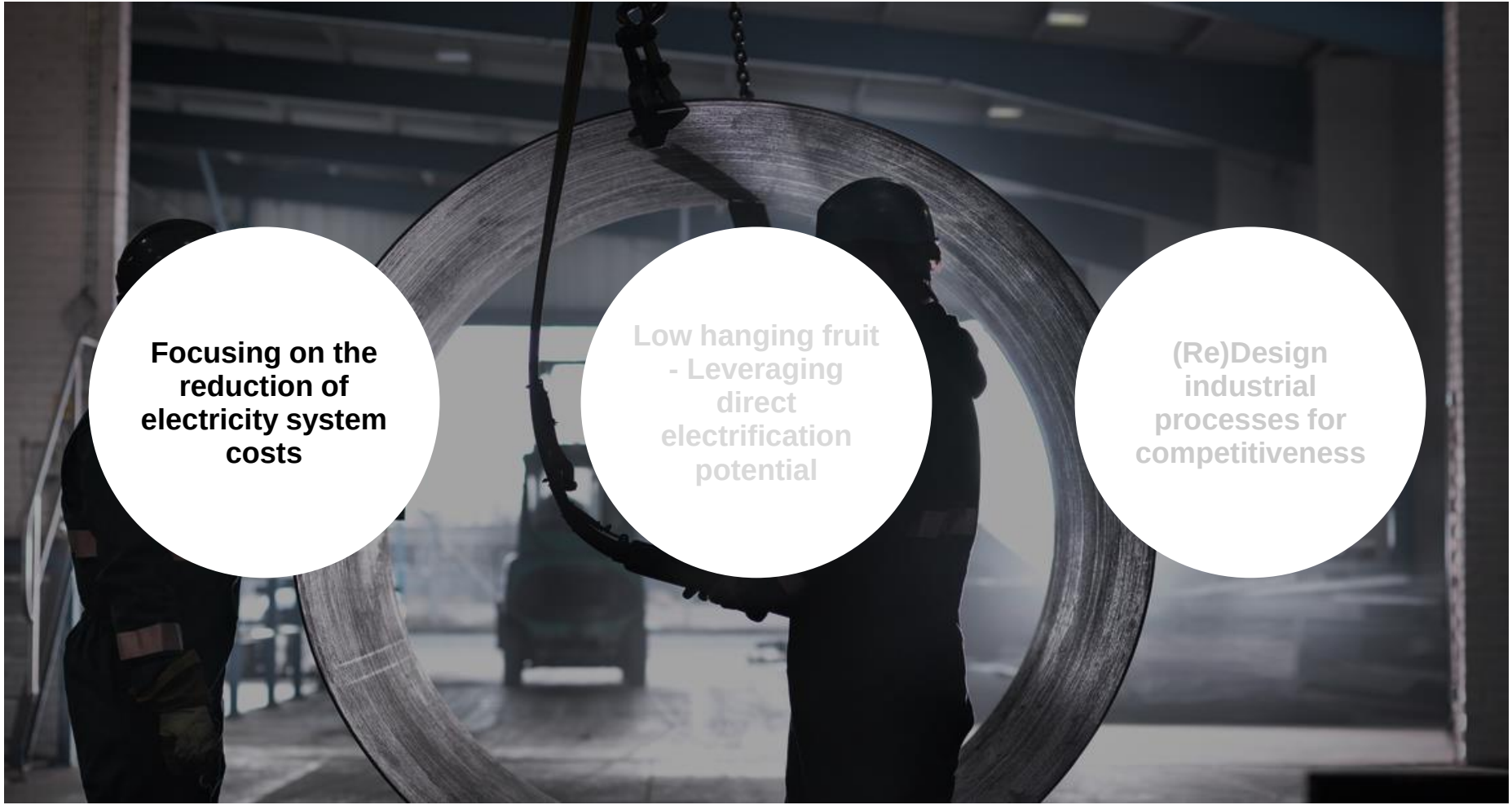
…There is a risk that other regions overtake Europe and go faster to an electrified net zero economy

New renewables capacity added in 2023 vs pace required to stay on net zero 2050 pathway[2]
(GW)

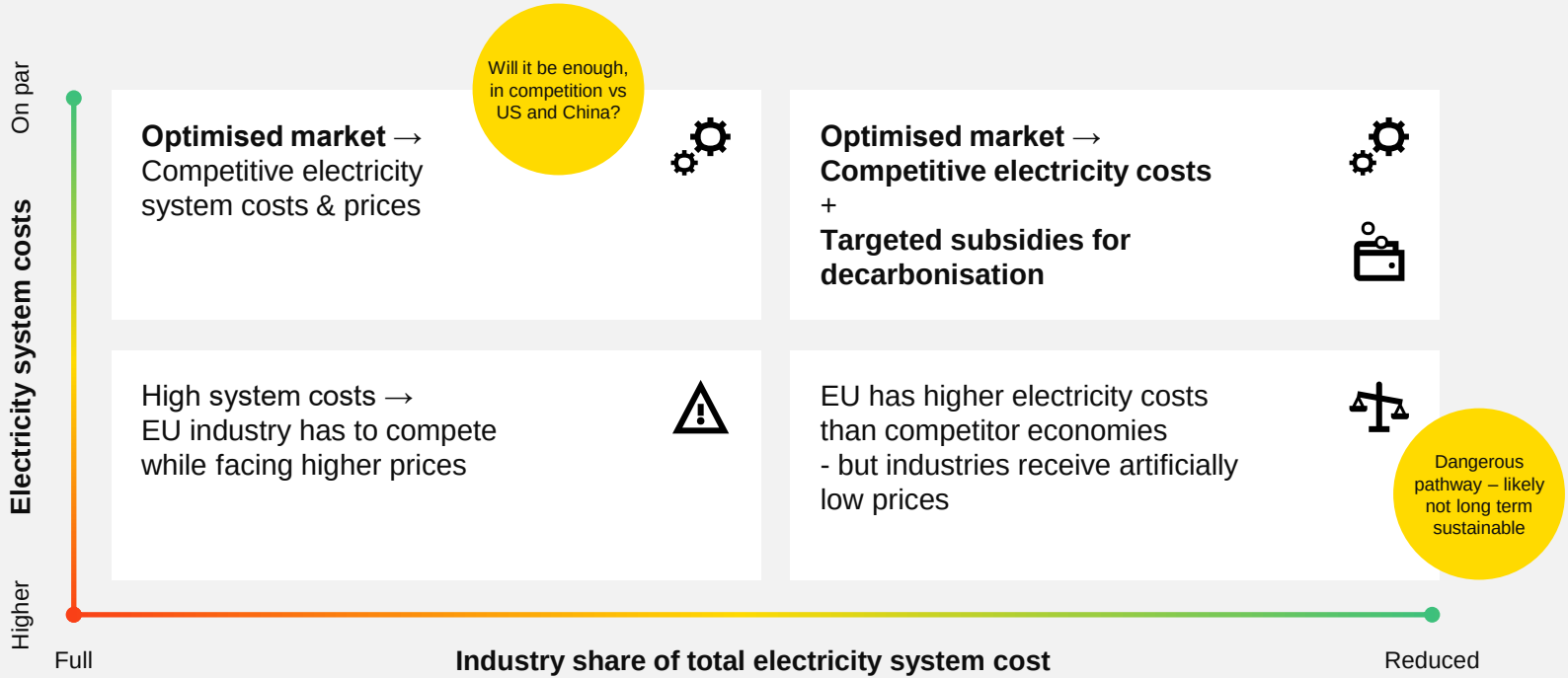


China's renewable buildout is closer to a net zero pathway than either the EU or the US

2. Bloomberg New Energy Outlook, average 2024-2030 capacity additions required in Net Zero by 2050 scenario



To reduce electricity price for industry there are two levers: Reducing system cost and reducing cost share for industry



We have to find ways of creating scale and low cost in Europe – or find sustainable ways to leverage Chinese cost levels – or both…

Technologies where the EU does not currently have a large-scale industry

Solar PV

The EU PV industry produces <3% of panels globally, having been mostly outcompeted by China in the 2010s

Batteries

The battery industry has also struggled to scale up in the EU

Technologies where the EU has an industry capable of large-scale production – but is not cost competitive with China – yet…

Wind turbines	Electrolysers	Nuclear power	Power technology and grids
			
Technology price level in China compared to the EU (illustrative)			
30-40%	**25-35%**	**40-50%**	**40-50%**

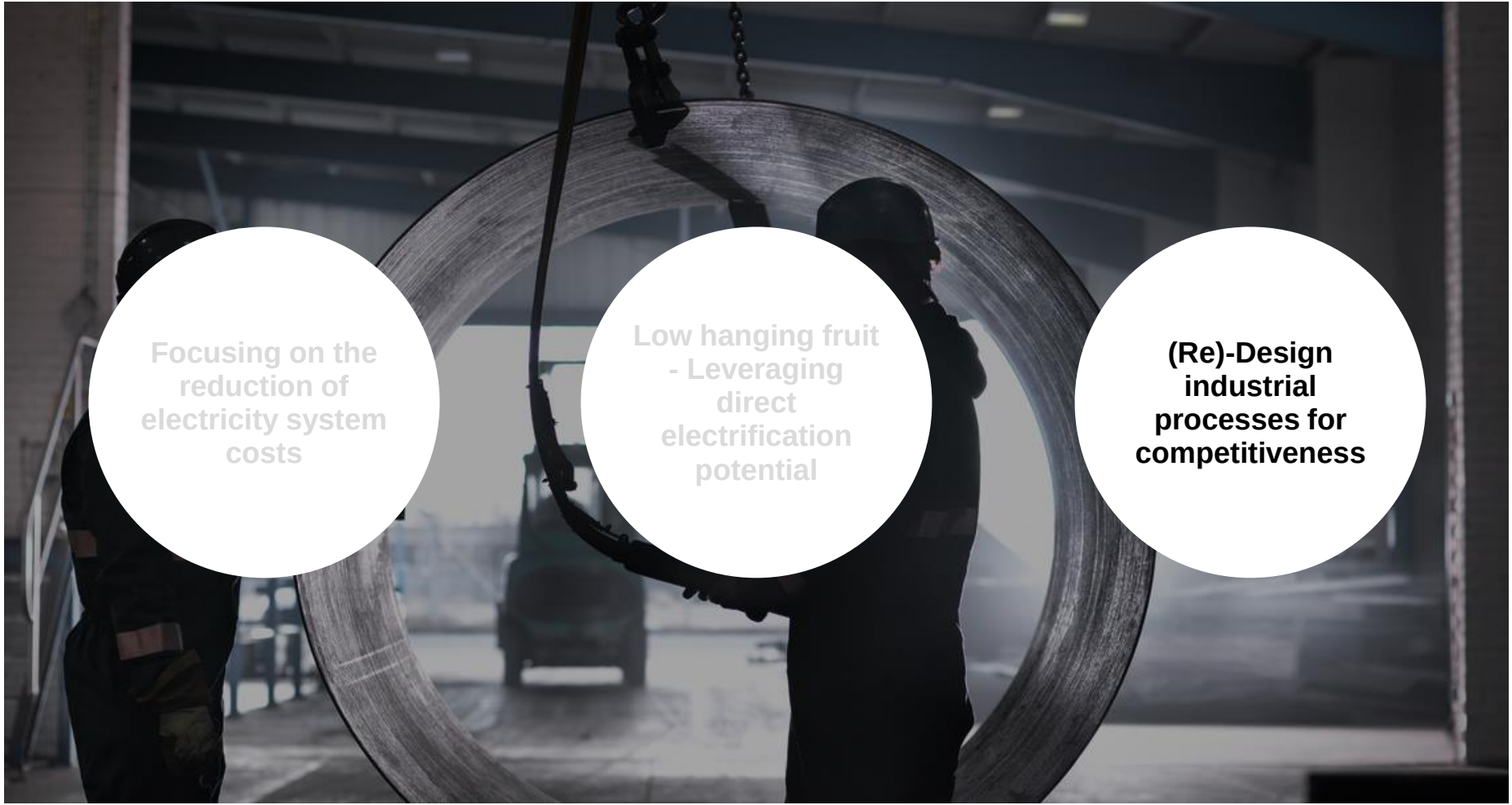
What can European companies learn from China in reducing the costs of key electricity technologies?

Wind - Making EU wind power competitive with US and China will depend on turbine costs, investment risk, and cost of land

Bring down wind turbine costs via scale & competition

Reduce investment risk and capital costs for wind

Free up as much land as possible for onshore

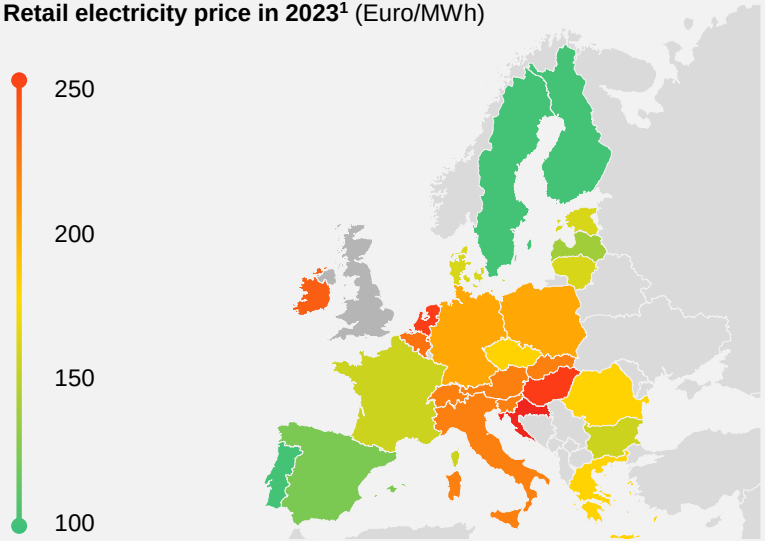


Re-thinking industrial processes

Breaking out the electricity intense process steps can be option to make the total value chains competitive

Electricity-intensive processes might struggle to be competitive in high-price areas of the EU

Retail electricity price in 2023[1] (Euro/MWh)



Splitting up value chains can be tool to reduce costs as industry electrifies – keeping/creating jobs

High electricity price area

Energy intense process
(Ex: Steel via coal-fired blast furnaces)

Low electricity price area

Electricity intense process
(Ex: H2 DRI)

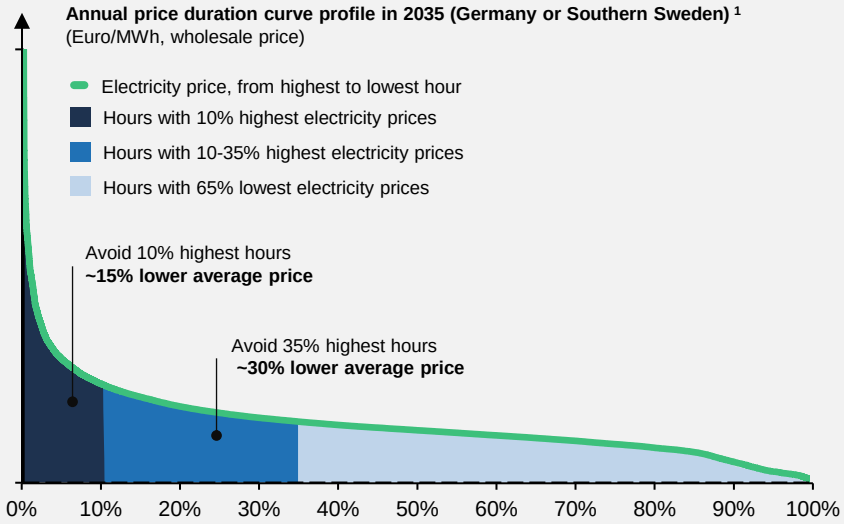
High electricity price area

Less electricity-intense process
(Ex: Steel smelting & processing)

1. Vattenfall analysis, based on Draghi report & Bruegel Electricity tariffs dashboard

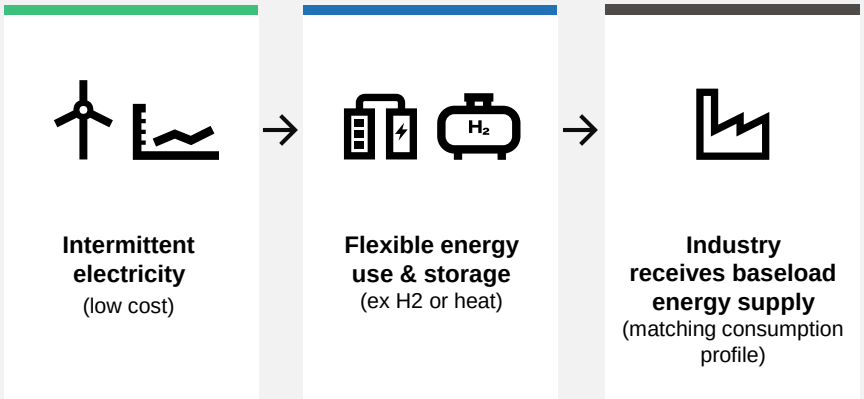
Designing new industrial processes to allow for significant flexibility key driver of cost of electricity

Flexible electricity consumption during ~ 30% of the year can reduce captured electricity prices by ~ 30%



1. Vattenfall analysis

Electricity can be consumed flexibly – with storage to deliver baseload energy through hydrogen or heat



Building energy storage connected to industry demand will reduce the need for expensive balancing/peaking power

- Resulting in lower total electricity system costs

So what for Europe?

Staying in fossil world not an option, for competitiveness or climate reasons

Reaching cost competitiveness in the fossil free world is an urgent must win battle….
- Where China is likely to play a role

…. meaning that waiting mode is not a good idea

What can we as individuals in this room do to get things going (again)?