



EUROPEAN OUTLOOK CONFERENCE  
**LONDON**

# **Euro Utilities – Are the Stars Aligning?**

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# The big themes

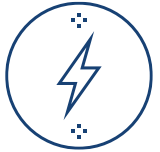
## Energy transition, energy transition, energy transition



Clean power and electrification of the economy



Renewables, battery storage, hydrogen



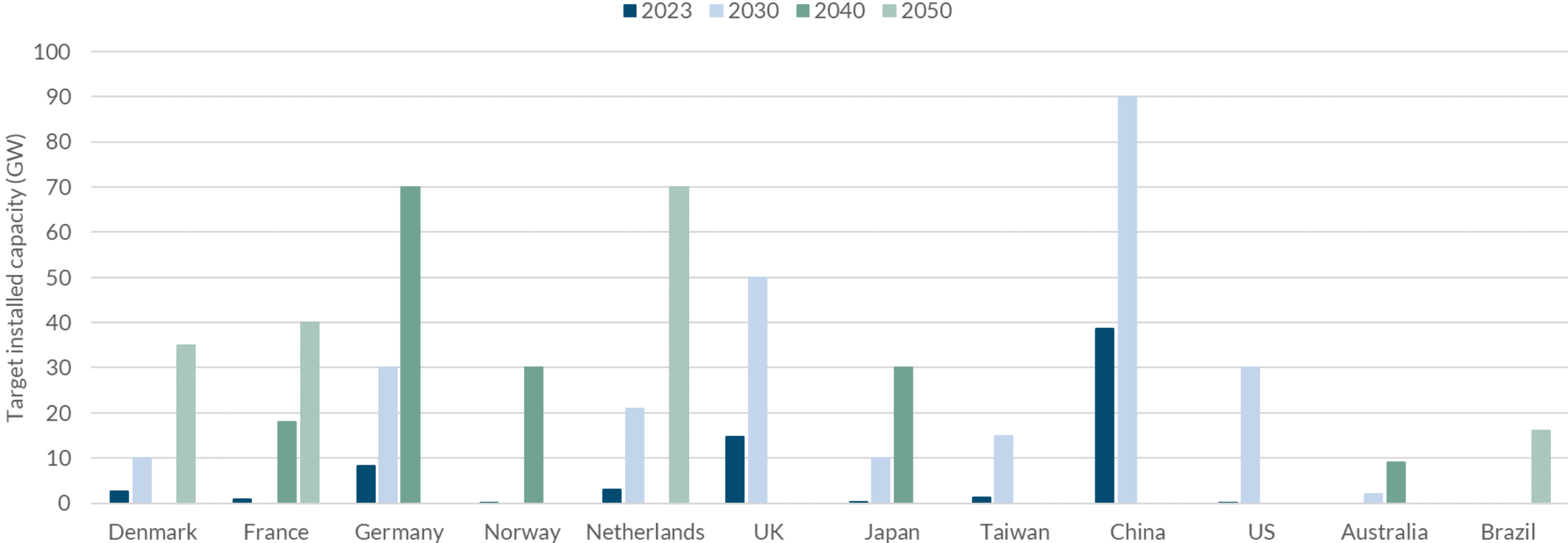
New connections, network growth and upgrade



A capex supercycle

# Will Trump scupper offshore wind?

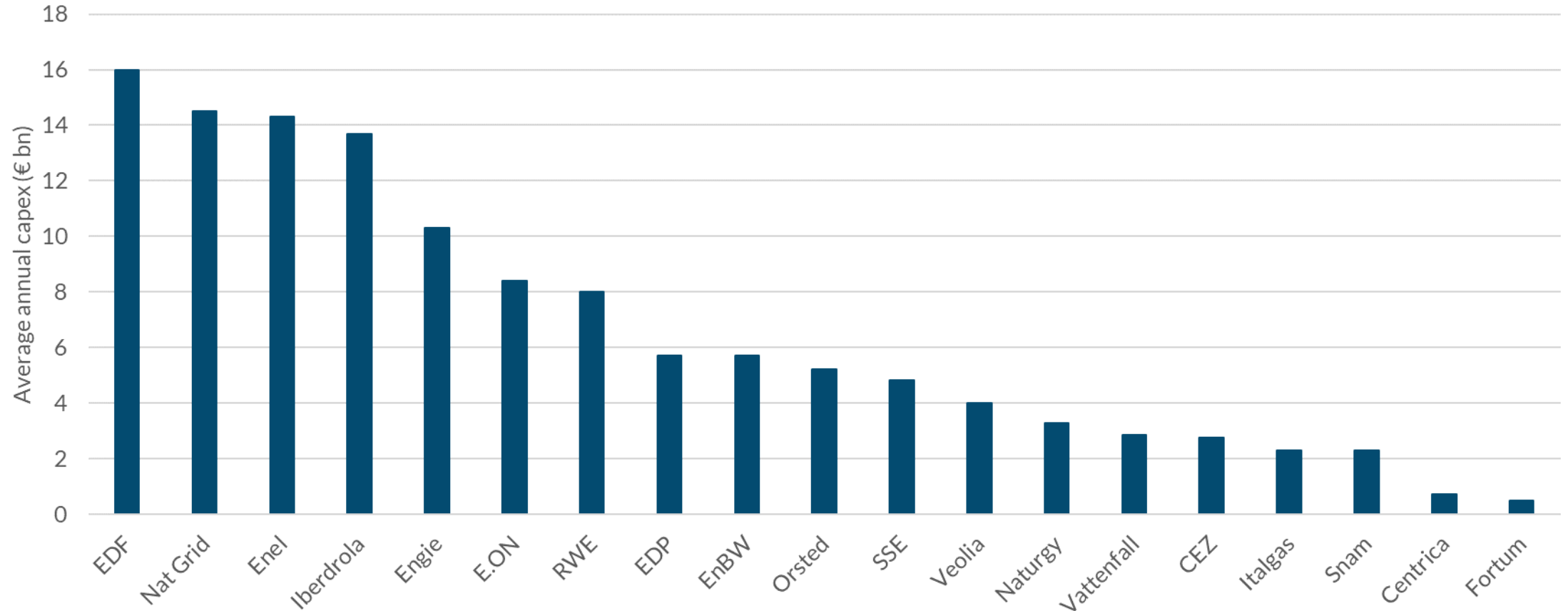
## Offshore wind installed capacity targets (GW) for selected countries



Source: US DOE - Offshore Wind Market Report 2024 dataset.  
Note: France 18GW target is for 2035. Japan 30GW target is a minimum for 2024 (range 30-45 GW). Taiwan 15GW target is to be achieved between 2026 and 2035

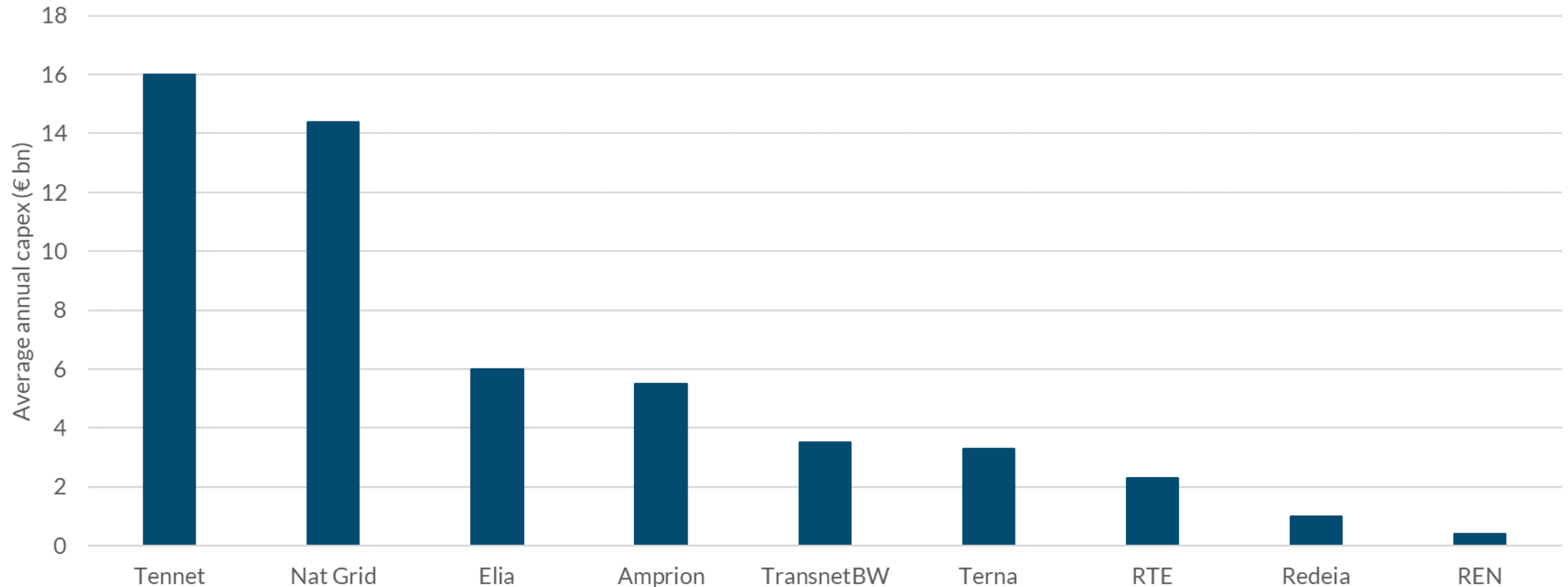
# Capex plans for the Euro utilities

## Average annual capex for the major Euro utilities



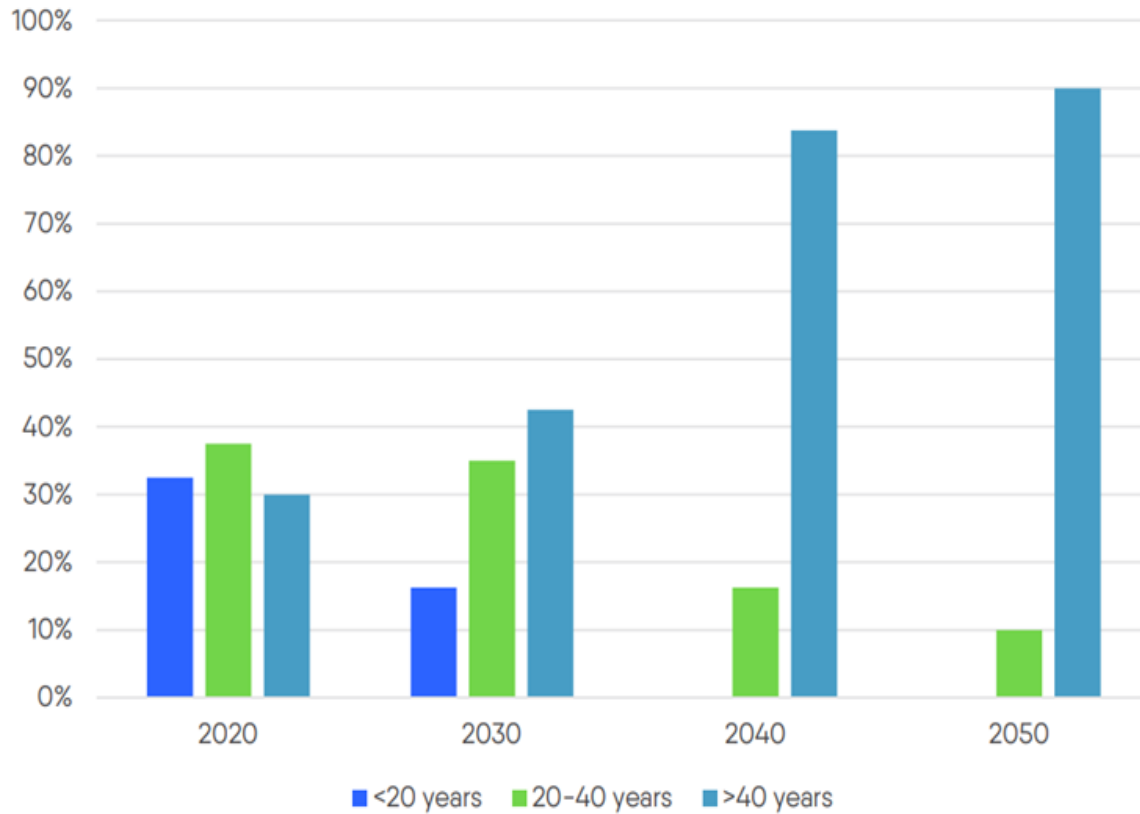
# Investments for the major Euro transmission companies

## Average annual capex for the major Euro transmission companies

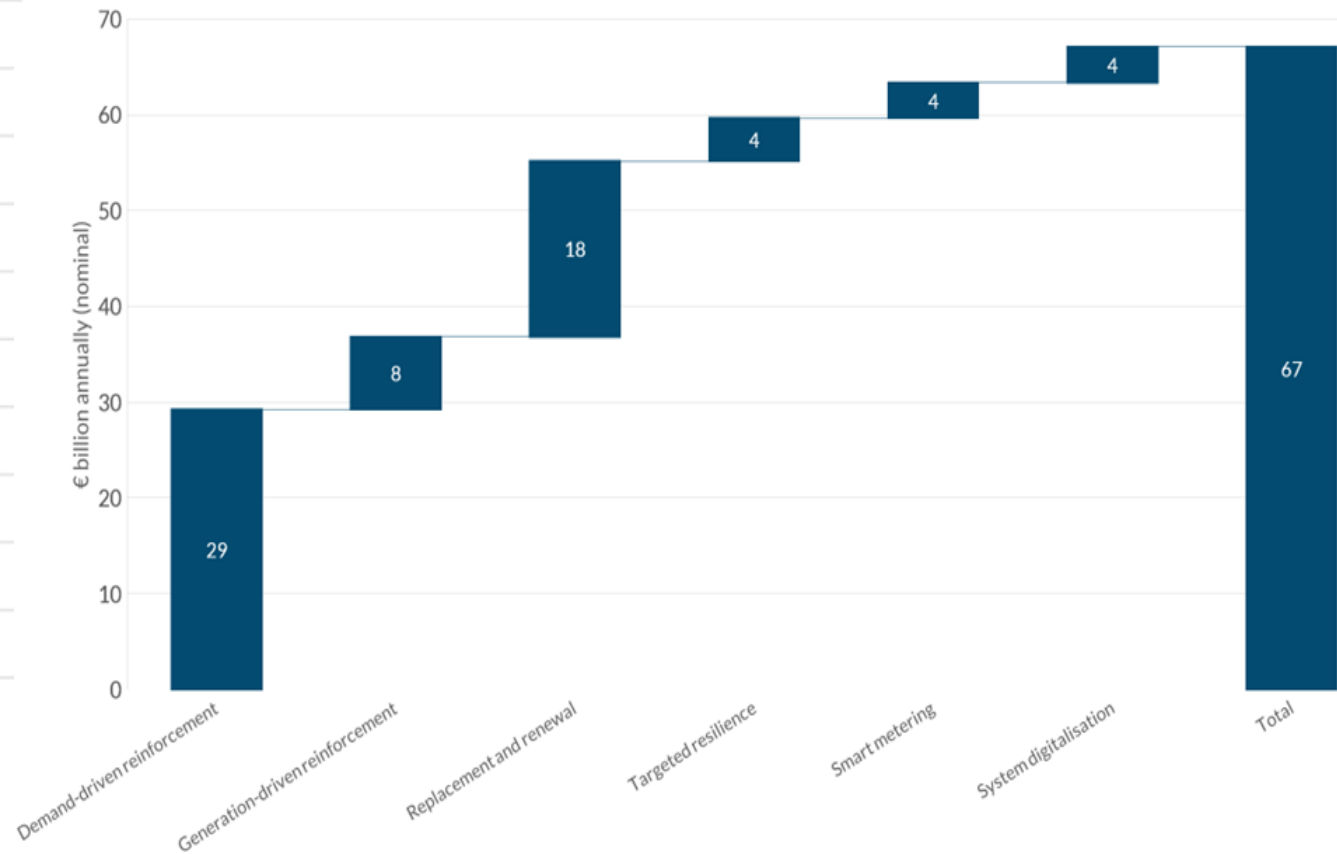


# Asset ageing and investment for LV and MV infrastructure

## Age of grid infrastructure (LV power lines) if there is no replacement



## Annual average grid investment 2025-50 (EU27+Norway)



# How will the capex supercycle be financed?

## Financing the growth

- Growing EBITDA and cash flow from operations
- Increased debt and increased hybrid debt
- Non-core asset sales and asset rotations
- New equity?
- Absent any aggressive corporate actions we expect credit metrics and ratings to be maintained

# The big themes

## AI, data centres and demand growth



Data centres need reliable power 24/7



Intermittent renewables will not do it



Renewables with another energy source – battery storage?



Flexible gas?



Nuclear power, SMRs?

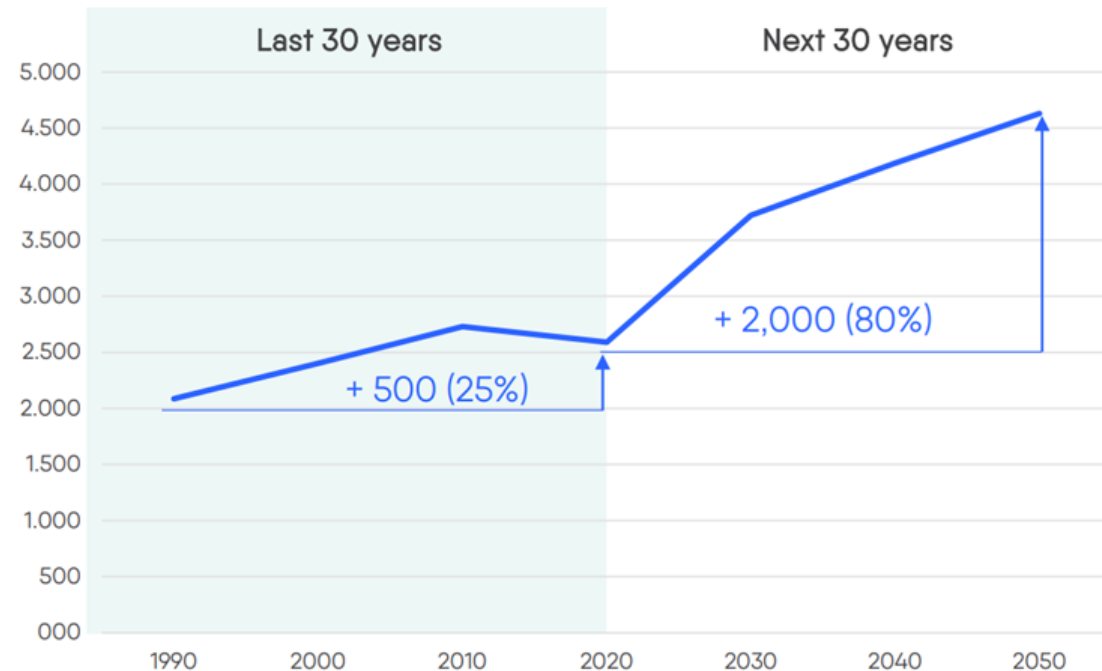


# Surge in Electrification and Consumption

Electricity demand growth is accelerating, but which factors – including data centres and artificial intelligence – will determine how fast it grows?

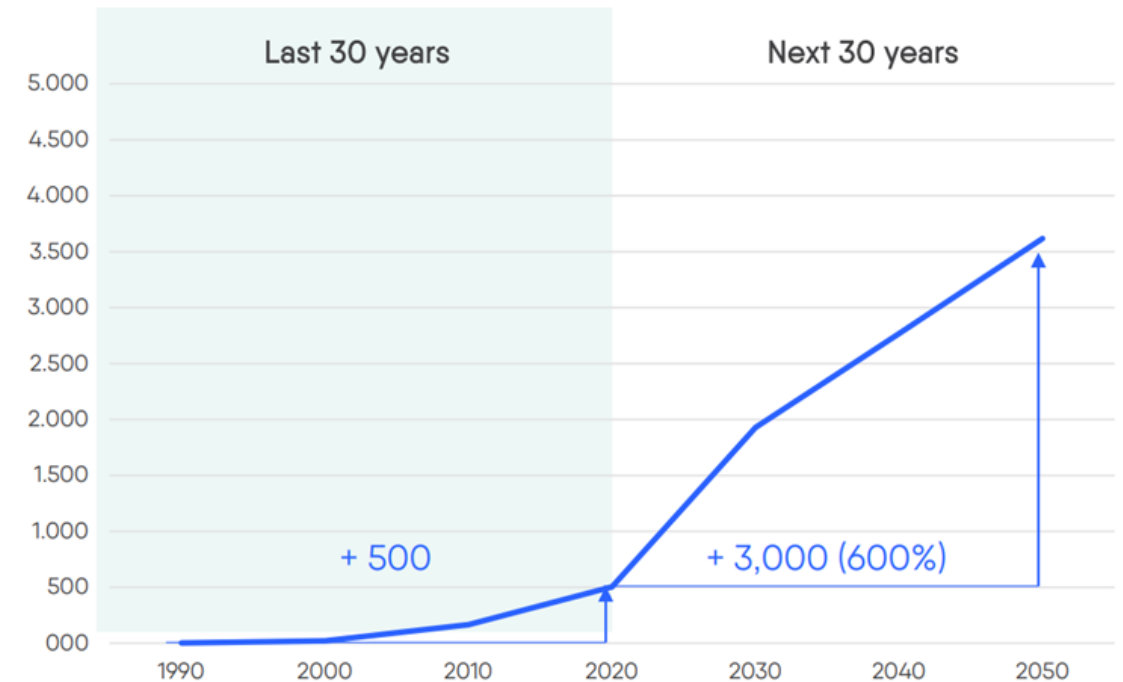
## Electricity consumption (TWh)

Rising consumption in the EU27+Norway



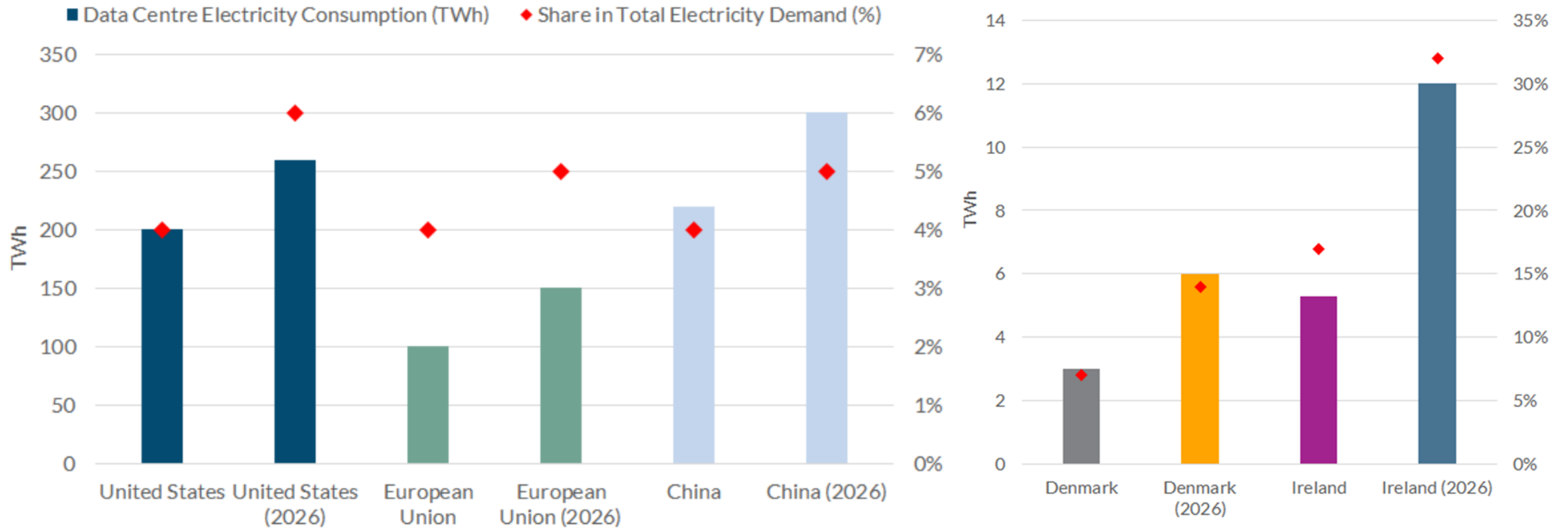
## Renewables production (TWh)

How onshore wind and solar PV will impact distribution grids in the EU27+Norway



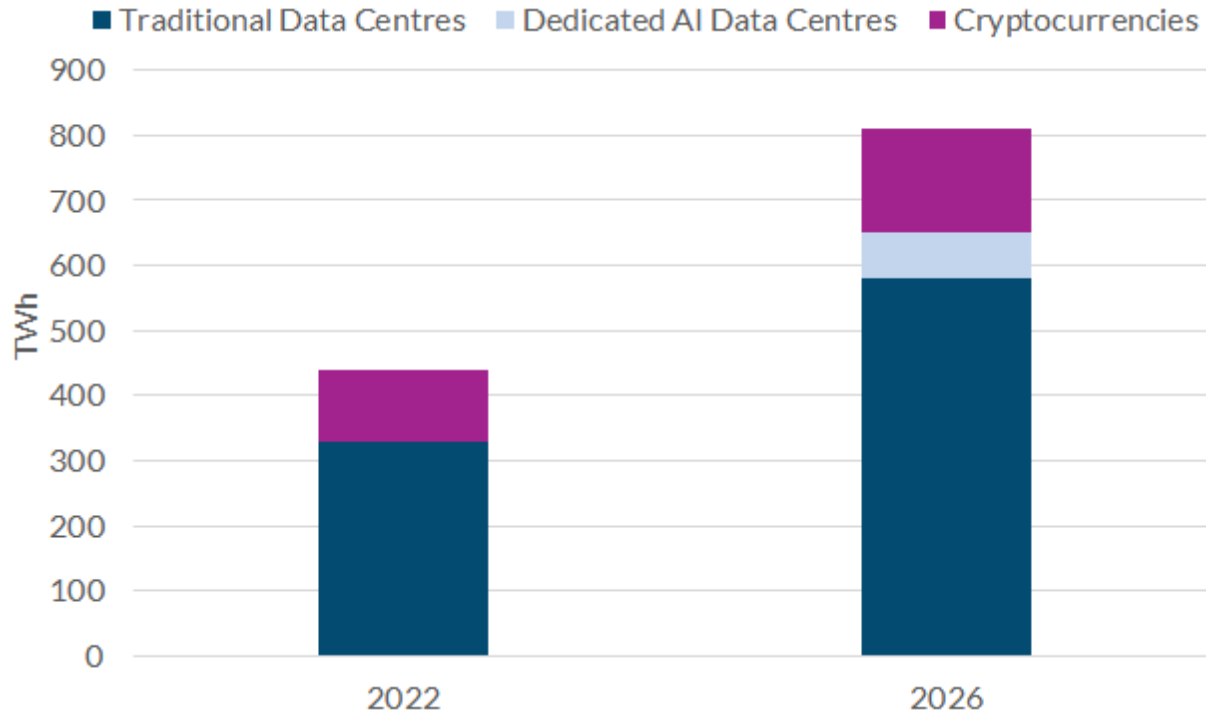
# Data Centres

## Estimated data centre electricity consumption and its share in total electricity demand in selected regions in 2022 and 2026



# Efficiency improvements and regulation will be crucial

## Estimated global electricity demand from traditional data centres by data centre type



- The primary drivers of data centre electricity demand are the cooling systems and the servers, with each typically accounting for 40% of total consumption. The remaining 20% is the power system supply, storage devices and communication equipment.
- The adoption of high efficiency cooling systems has the potential to reduce electricity demand in data centres by 10%.

# Implication of the big themes

## Our view



### Generation

- Continuing growth in renewables, but a need for flexible, dispatchable generation such as gas or nuclear



### Networks

- Huge opportunities in electricity from new connections and distribution upgrades
- Gas transmission likely to (eventually) benefit from hydrogen transport
- Uncertainty over gas distribution



### Supply

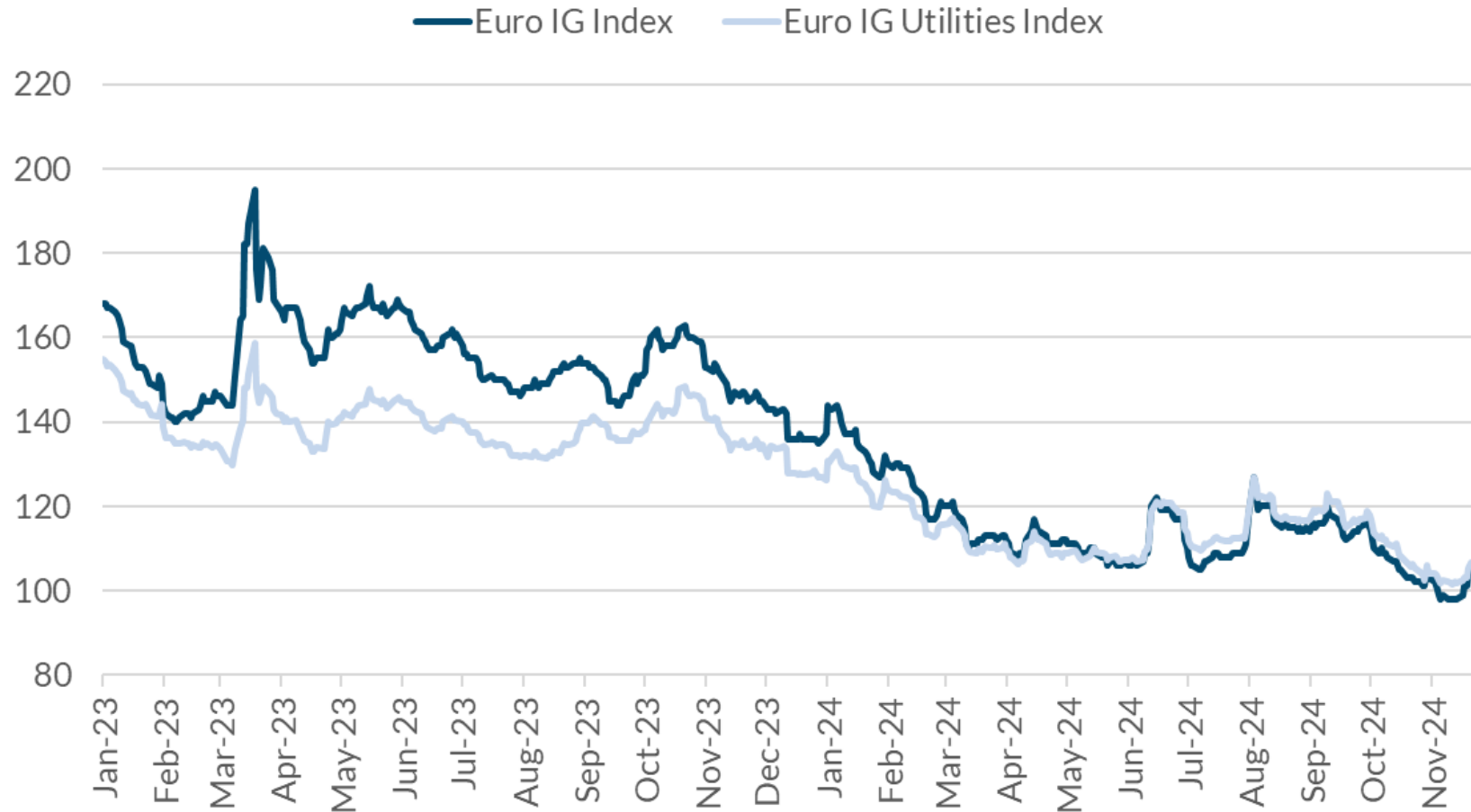
- A low margin but growing business in electricity (domestic heat pumps, EVs)

# Questions and uncertainties

- Will returns be adequate to incentivise the required investment?
- Where will power prices go?
- What happens to gas distribution?
- How widespread will hydrogen be?
- How will supply constraints be tackled?
- Who will ultimately bear the financial cost?

# Move sector view to Outperform

## Euro utilities vs Euro IG index



- Euro IG utilities now trading wide of the Euro IG index
- Sector likely to benefit from the energy transition
- Increased focus on regulated and quasi regulated activities lowers business risk
- Largely Euro domiciled activities, little exposure to a Trump administration

## Sector view – Outperform

### Individual company views

#### Underperform

Italgas

#### Market perform

CEZ

Centrica

E.ON

EDP

EnBW

Enel

Engie

Fortum

Iberdrola

Naturgy

Orsted

RWE

SSE

Severn Trent

Snam

United Utilities

Vattenfall

Veolia

#### Outperform

EDF

National Grid

- Capex plans of the major Euro utilities
- Capex plans of major Euro TSOs
- Offshore wind growth targets
- FY23 financial metrics
- Largest offshore wind developers
- Global weighted offshore wind LCOE
- New onshore and offshore wind installations in 2023 in Europe
- European electricity generation mix



# Capex plans of the major Euro utilities

	Total Investments	Time period	Average per year	Comment
Centrica	N/A	2023-28	£600-800 mn	Building to £600-800 mn in 2028 from ~£400 mn in 2023
CEZ	CZK500-600 bn	2023-30	~CZK70 bn	€20% Renewables, ~30% distribution and 15% nuclear (CZK70 bn =€2.75 bn)
E.ON	€42 bn	2024-28	€8.4 bn	~80% of capex in energy networks, ~12% in energy infrastructure solutions
EDF	N/A	N/A	~€15-16 bn	Historic average but expected to increase (€16.4 bn in 2022, €19.1 bn in 2023)
EDP	€17 bn	2024-26	~€5.7 bn	Gross investments (net €10 bn). Plan updated at 1Q24. 80% renewables
EnBW	€40 bn	2024-30	~€5.7 bn	Gross investments (net €22 bn). 60% networks
Enel	€43 bn	2025-27	~€14.3 bn	Gross investments (net ~€32 bn). 60% networks, 28% renewables
Engie	€29-33 bn	2023-25	€9.7-11 bn	€22-25 bn of growth capex, 70% renewables and energy solutions
Fortum	€1.6 bn	2024-26	~€0.5 bn	Capex lowered following disposal of recycling and waste business
Iberdrola	€41 bn	2024-26	~€13.7 bn	Gross investments (net €36 bn). 2/3 Networks. 1/3 renewables
Italgas	15.8 bn	2024-30	~€2.3 bn	~€14 bn in Italian gas distribution. Includes 2i Rete Gas acquisition and capex
Nat Grid	£60 bn	FY25-29	£12 bn	Accelerated programme, broadly 50% UK/50% US, mostly in electricity
Naturgy	€10 bn	2023-25	€3.3 bn	60% renewables, 30% networks, new strategy in early 2025
Orsted	DKK270 bn	2024-30	~DKK39 bn	Gross capex, ~70% offshore. Figure was reduced following US writedowns
RWE	€53 bn	2024-30	~€8 bn	Net cash investments. 35% offshore, 20% onshore, 20% solar
Snam	€11.5 bn	2023-27	~€2.3 bn	90% in gas infrastructure, 10% in the energy transition
SSE	£20.5 bn	FY23-27	~£4 bn	NZAP Plus update. 55% networks, 45% market based
Vattenfall	SEK65 bn	2024-25	~SEK33 bn	SEK41 bn of growth capex, 45% wind, 15% distribution
Veolia	~€16 bn	2024-27	€4 bn	Half on 'Boosters', half on 'Strongholds'. Some tuck-in acquisitions

# Capex plans of the major Euro TSOs

	<b>Total Investments</b>	<b>Time period</b>	<b>Average per year</b>	<b>Comment</b>
Amprion	€27.5bn	2024-2028	~€5.5bn	~€3.9 bn in 2024, rising thereafter. €15.6 onshore, €11.9 bn offshore
Elia	€30.1.5bn	2024-2028	~€6bn	Elia €9.4 bn, 50Hertz €20.7 bn
Nat Grid	£60 bn	FY25-29	£12 bn	Accelerated programme, broadly 50% UK/50% US, mostly in electricity
Redeia	N/A	2024	~€1 bn	Redeia estimates ~€1 bn per year from 2024. New strategic plan in 2025
REN	€1.5-1.7 bn	2024-2027	~€400 mn	Around 65% in electricity networks
RTE	€2.3 bn	2024	~€2.3 bn	Latest plan for 2024, expected to increase over time
TenneT	€160 bn	2024-2033	~€16 bn	~€10 bn for 2024 but rising over time. Dutch loan of €25 bn for 2024 and 2025
Terna	€16.5 bn	2024-2028	~€3.3 bn	€15.5 bn in regulated assets
TransnetBW	€24 bn	2024-2030	~€3.5 bn	Gross capex from EnBW €40 bn of which 60% in grids

# Offshore wind growth targets

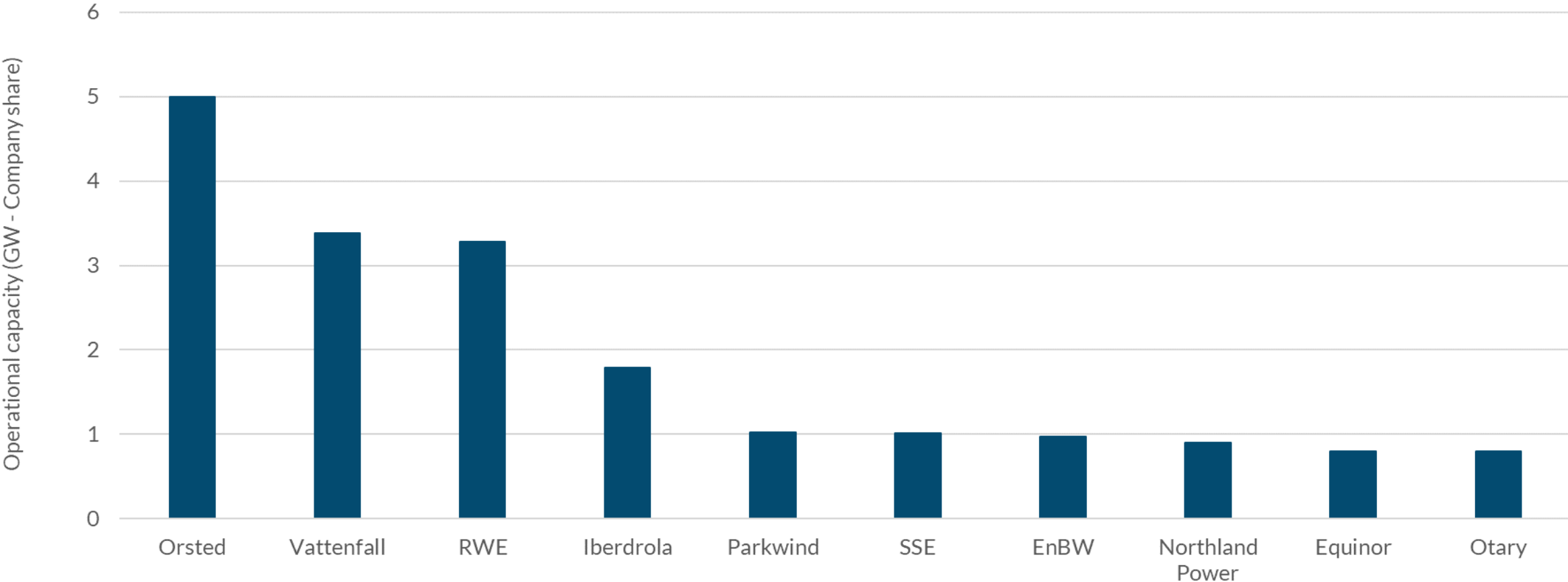
Country	Installed, 2023 (GW)	Target (GW)	Target year
Denmark	2.65	10	2030
		35	2050
France	0.98	18	2035
		40	2050
Germany	8.28	30	2030
		50	2035
		70	2045
Norway	0.09	30	2040
The Netherlands	3.12	4.5	2023
		21	2030
		70	2050
UK	14.75	50	2030
China	38.62	60	2025
		90	2030
Japan	0.27	10	2030
		30-45	2040
Taiwan	1.21	15	2026-2035
US	0.04	30	2030
Australia	0	2	2032
		4	2035
		9	2040
Brazil	0	16	2050

# FY23 financial metrics

(€ mn)			Net debt	FFO	Market	EV
Company	Rating	Net debt	EBITDA	Net debt	Cap	EBITDA
Centrica	Baa2/BBB/NR	-3,290	-0.9x	-99%	7,470	1.1x
CEZ	Baa1/A-/NR	5,988	1.2x	62%	19,270	5.1x
E.ON	NR/BBB+/A-	26,862	2.9x	28%	30,639	6.1x
EDF	Baa1/BBB/BBB+	60,386	1.5x	62%	N/A	N/A
EDP	Baa2/BBB/BBB	15,319	3.0x	23%	14,636	6.0x
EnBW	Baa1/A-/NR	7,558	1.2x	76%	17,703	4.0x
Enel	Baa1/BBB/BBB+	62,172	2.8x	24%	68,981	6.0x
Engie	Baa1/BBB+/BBB+	31,190	2.1x	39%	37,806	4.6x
Fortum	Baa2u/BBB+/BBB	942	0.5x	161%	12,728	7.2x
Iberdrola	Baa1/BBB+/A-	43,707	3.0x	25%	85,217	8.9x
Italgas	Baa2/NR/BBB+	6,634	5.6x	15%	4,531	9.4x
Nat Grid	Baa2/BBB/BBB	51,026	5.7x	13%	57,176	12.0x
Naturgy	Baa2/BBB/NR	12,090	2.2x	33%	21,836	6.2x
Orsted	Baa1/BBB/BBB+	6,352	2.5x	36%	22,285	11.4x
RWE	Baa2/NR/BBB+	-824	-0.1x	-517%	23,810	2.7x
Snam	Baa2/BBB+/BBB+	15,270	6.3x	14%	14,475	12.3x
SSE	Baa1/BBB+/A-u	9,709	2.5x	35%	22,676	8.2x
Vattenfall	A3/BBB+/NR	5,907	1.7x	44%	N/A	N/A
Veolia	Baa1/BBB/NR	19,718	3.0x	22%	21,242	6.3x

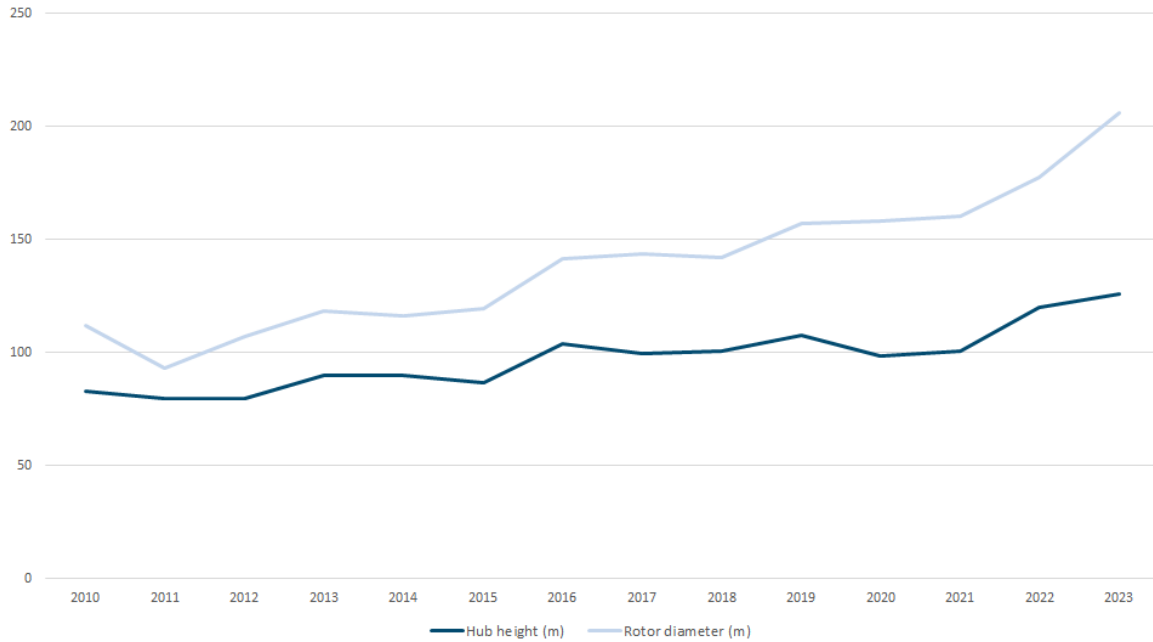
# Who you gonna call?

## Largest offshore wind developers by operational installed capacity (GW)

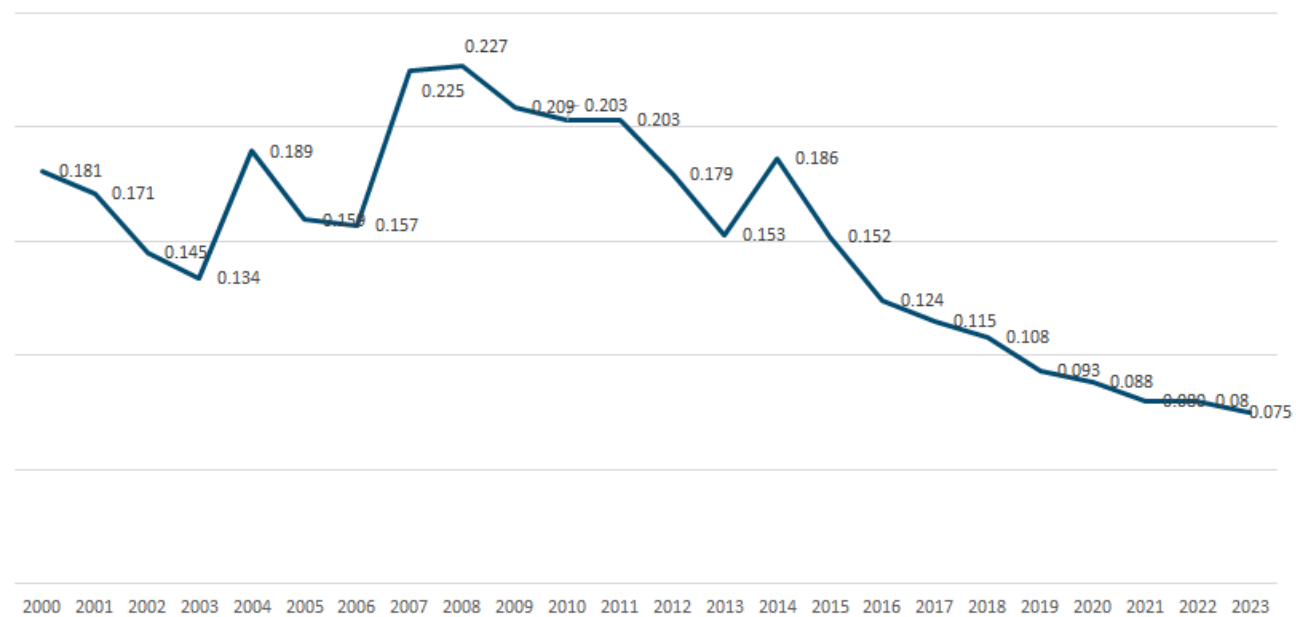


# Does Bigger Mean Better?

## Global weighted average offshore wind turbine rotor diameter and hub height

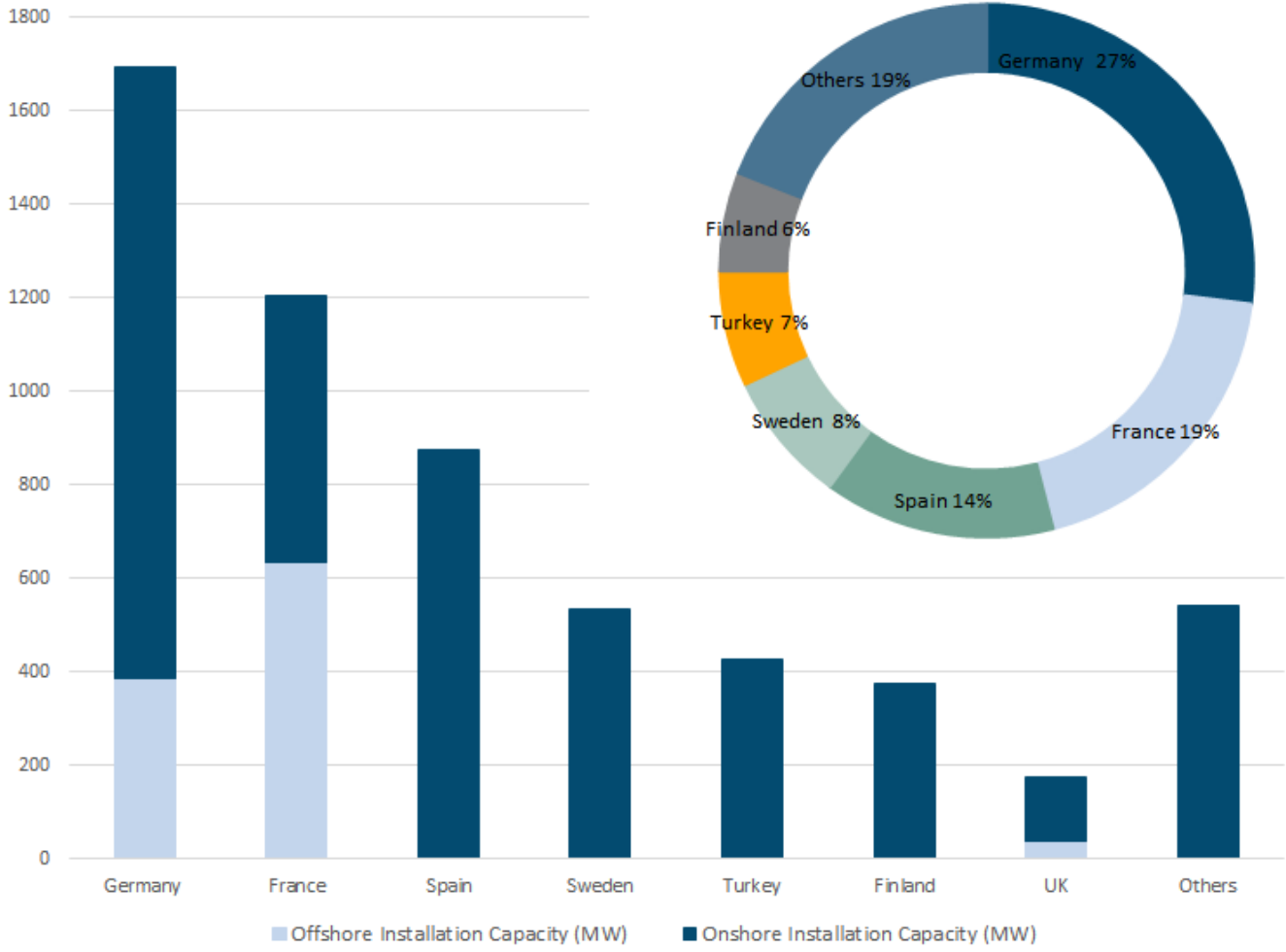


## Global weighted average LCOE for Offshore Wind 2023 USD/kWh



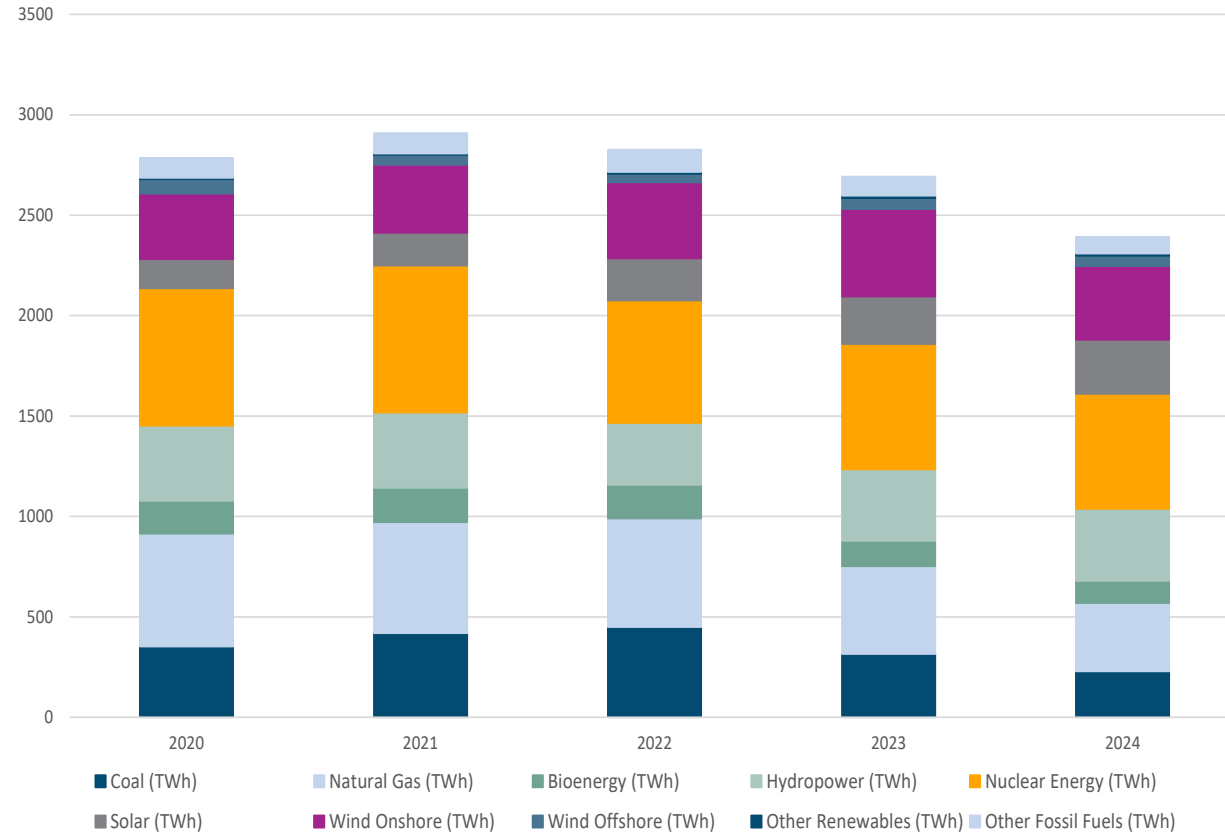
# Wind Power in 2024

## New onshore and offshore wind energy installations in Europe in 2024

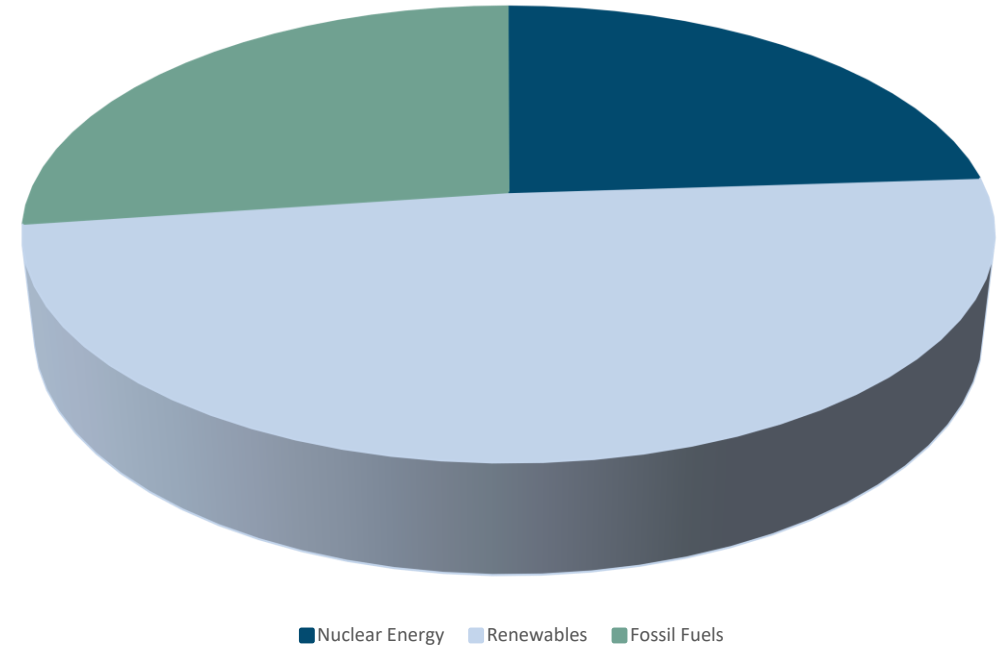


# European electricity generation mix

## European Electricity Generation Mix



## EU Electricity Generation Mix 2024 (YTD)





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