

The background is a high-contrast image of Earth from space, showing the dark blue of the atmosphere and the bright yellow and orange lights of cities at night. Overlaid on this is a network of blue lines and dots, resembling a circuit board or a data network. The lines are thin and blue, connecting various circular nodes. Some nodes are larger than others, and the lines form a complex, interconnected web across the image.

Redefining **#EnergySecurity** in the age of electricity

**America has
cheap gas**



x3–5

cheaper than Europe

\$10 vs **€45** /MWh



**What about
Europe?**

**China has
clean tech**



Controls

80% of global solar PV

64% of global battery sales

Investing in security

Instead of
recurrent
import costs....



OpEx

Annual spend in fossil
fuel imports

€451bn

Investing in security

Instead of
recurrent
import costs....

Investing in security

Instead of
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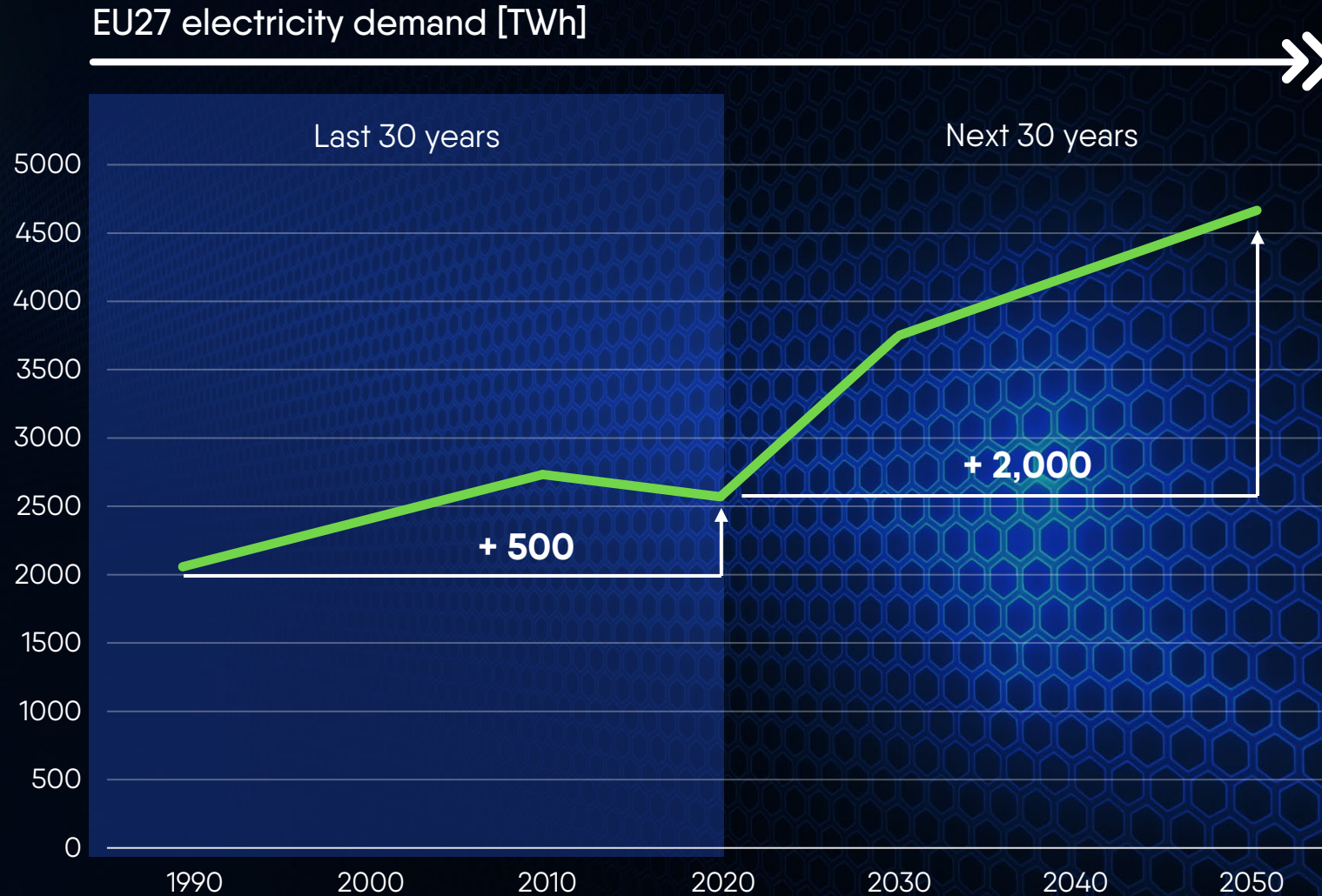
...investments
in a secure
system

CapEx

Investment 2031-2040 for
90% decarbonisation

€308 bn/ year

ELECTRICITY is bound to be the dominant energy carrier



Two different realities...

Technical perspective

ERAAs
NIS2
MAF
NCSs
NRAAs
CRM^s
VOLL
TYNDP
DSR
NECPs

Political imperative

Tariffs
High prices
Elections
Climate
Competitiveness
Public acceptance
Geopolitics
Security
War

Germany
November 2024

€800/MWh

1,000,000
Ireland
Customers lost power January 2025

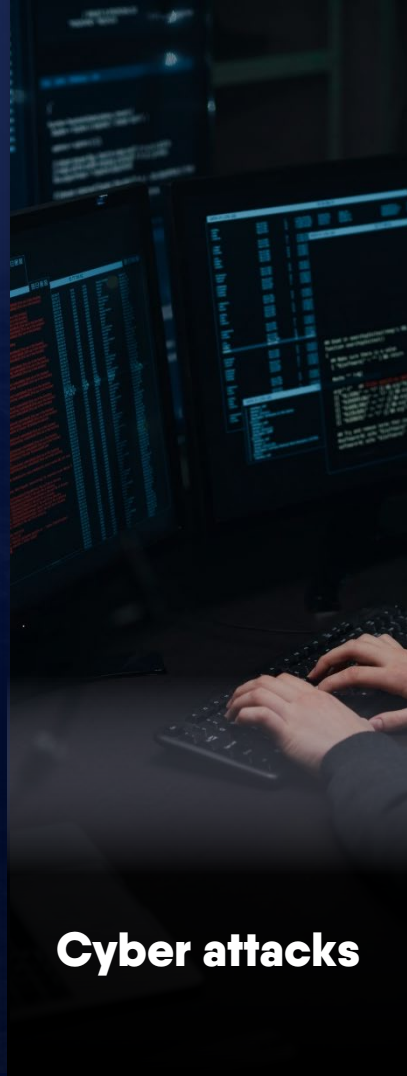
Threats are piling up...



War



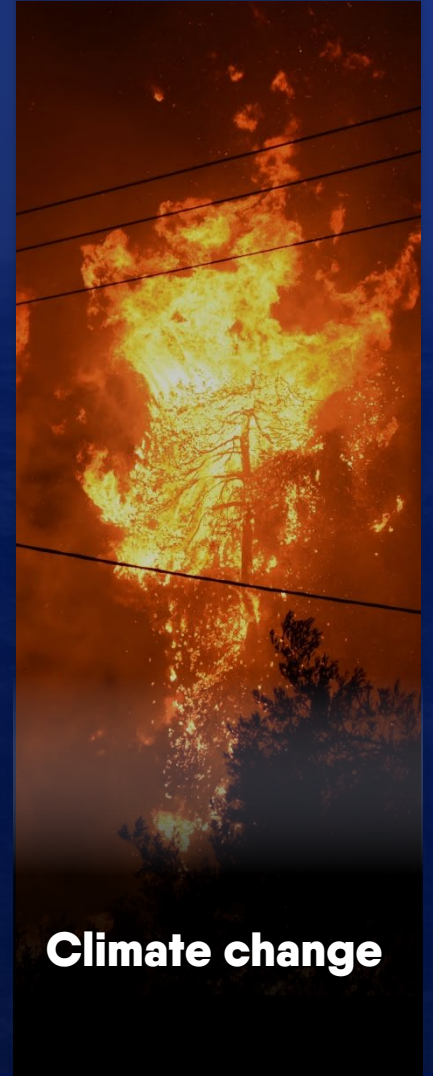
Hybrid attacks



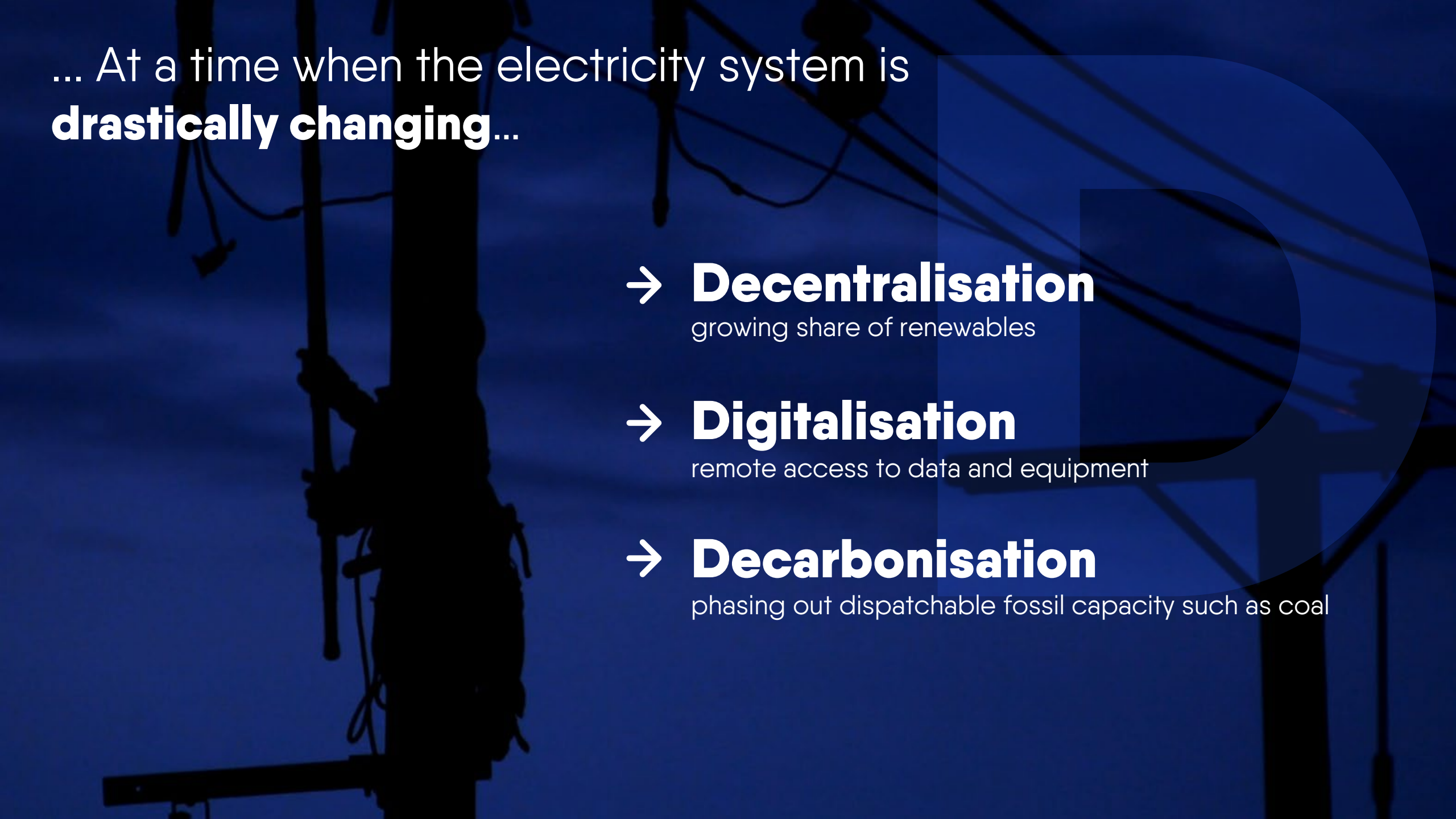
Cyber attacks



Espionage



Climate change



... At a time when the electricity system is
drastically changing...

→ **Decentralisation**

growing share of renewables

→ **Digitalisation**

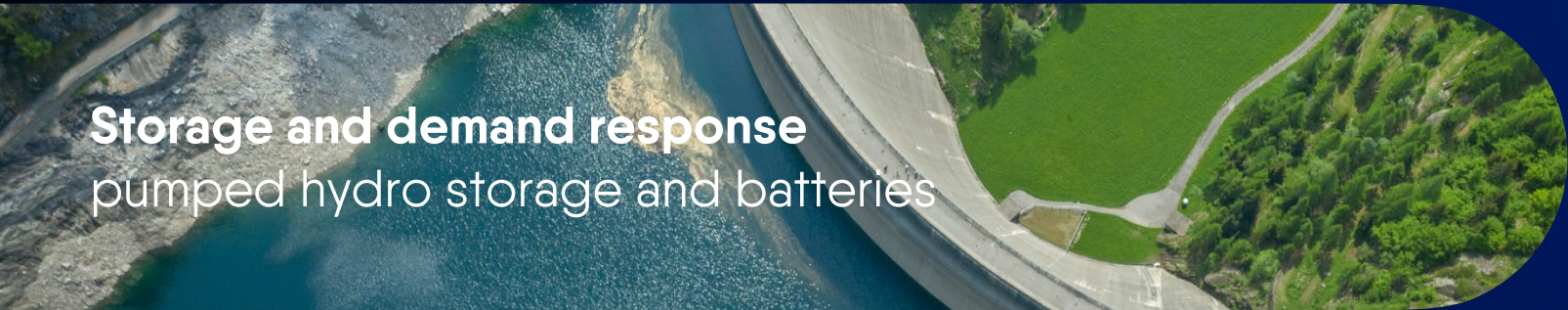
remote access to data and equipment

→ **Decarbonisation**

phasing out dispatchable fossil capacity such as coal

A photograph of several wind turbines in a field under a blue sky with light clouds.

Vast renewables potential
across the continent

An aerial photograph of a large concrete dam with water behind it, surrounded by green hills.

Storage and demand response
pumped hydro storage and batteries

A photograph of several large, cylindrical cooling towers of a nuclear power plant against a cloudy sky.

Firm and flexible technologies like
nuclear and hydrogen-ready gas

A photograph of high-voltage electrical transmission towers and power lines stretching across a landscape.

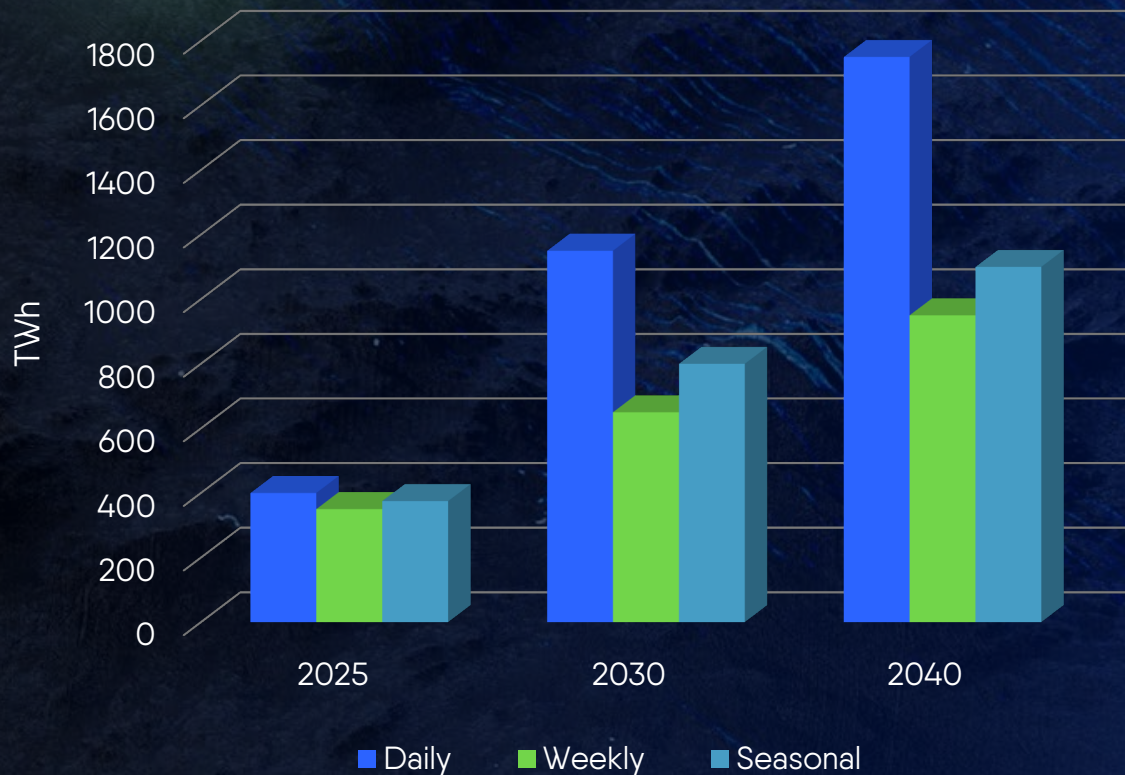
Interconnected grids with strong
distribution networks

**Diversity is
a strength.**

Let our internal
market put it to
use!

Flexibility is the missing piece...

Flexibility needs across timeframes



Flexibility is the missing piece...

And regional sources differ

Batteries

Batteries can store excess wind and solar generation

Pumped hydro

Pumped hydro storage can store on a longer timescale

Nuclear

Nuclear reduces the need for CCGTs

Gas

Will be necessary for the foreseeable future



Grids, baby, grids

Infrastructure to tie the system together

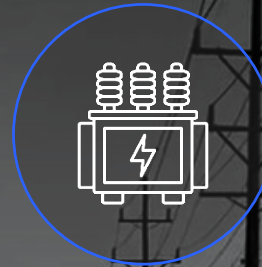
€67bn

Annual investment in distribution grids

While enabling:

- Anticipatory investments
- Asset performance excellence
- Grid-friendly flexibility

And deploying new technologies



On Load Tap Changer
transformers



Dynamic Line Rating



High Temperature Low
Sag conductors



Flexible Alternating Current
Transmission Systems

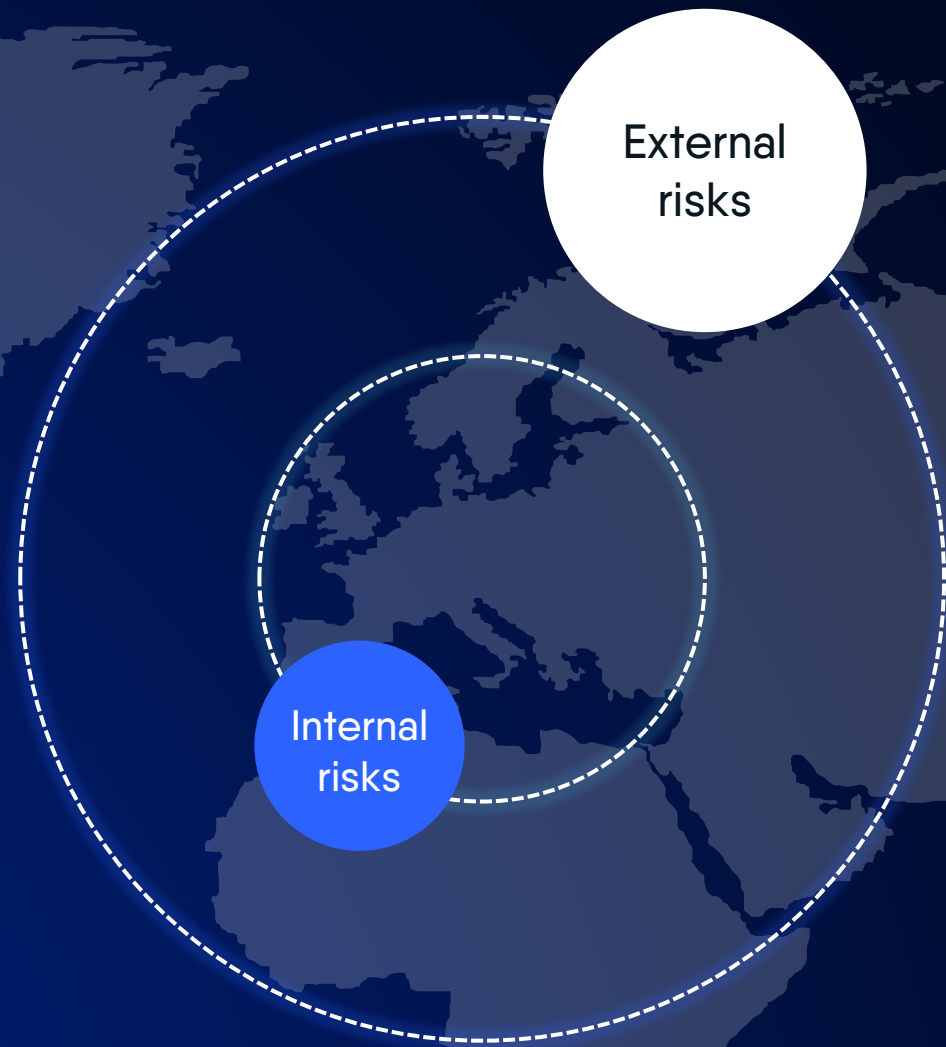


Automatic Network
Reconfiguration



Line Voltage Regulators

What to do?



External risks

A new holistic approach to energy security...



Physical

Work proactively with NATO to fortify critical infrastructure



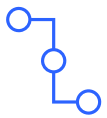
Cyber

Ensure systems and their data cannot be accessed by adversaries



Climate

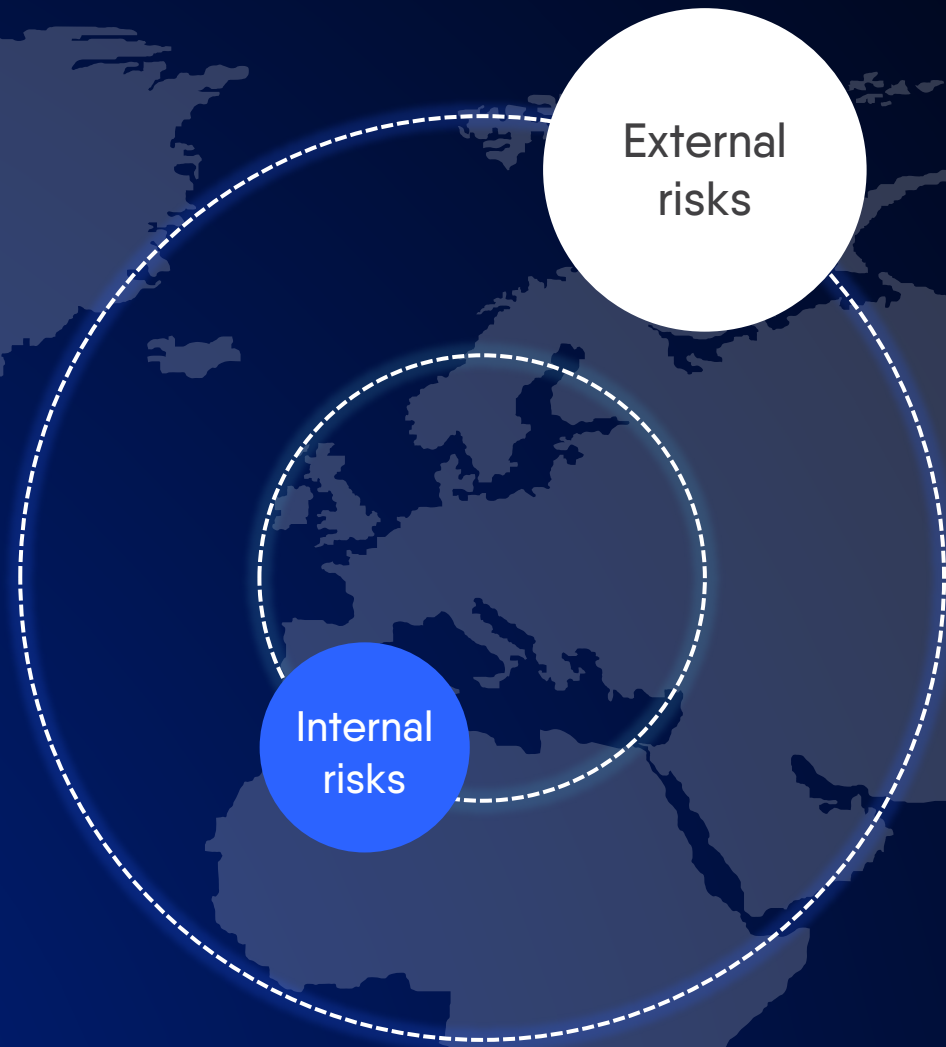
Climate-proof investments to withstand a future of more extremes



Trade

De-risk supply chains to ensure access to system-critical inputs

What to do?



Internal risks

... with a security of supply 2.0 strategy in the electricity sector

Plan for the unexpected

- **Broader:** including all new and arising risks
- **Integrated:** across energy vectors and systems
- **Granular:** identify where flexibility is needed



Invest in resilience

- **Generation:** RES, firm and flexible capacity
- **Grids:** anticipate future needs
- **Security:** recognise the cost of resilience

Operate with efficiency

- **Hedging:** improve forward markets
- **Balancing:** value system services
- **Demand side:** activate consumers

Thank you!

Download the report

