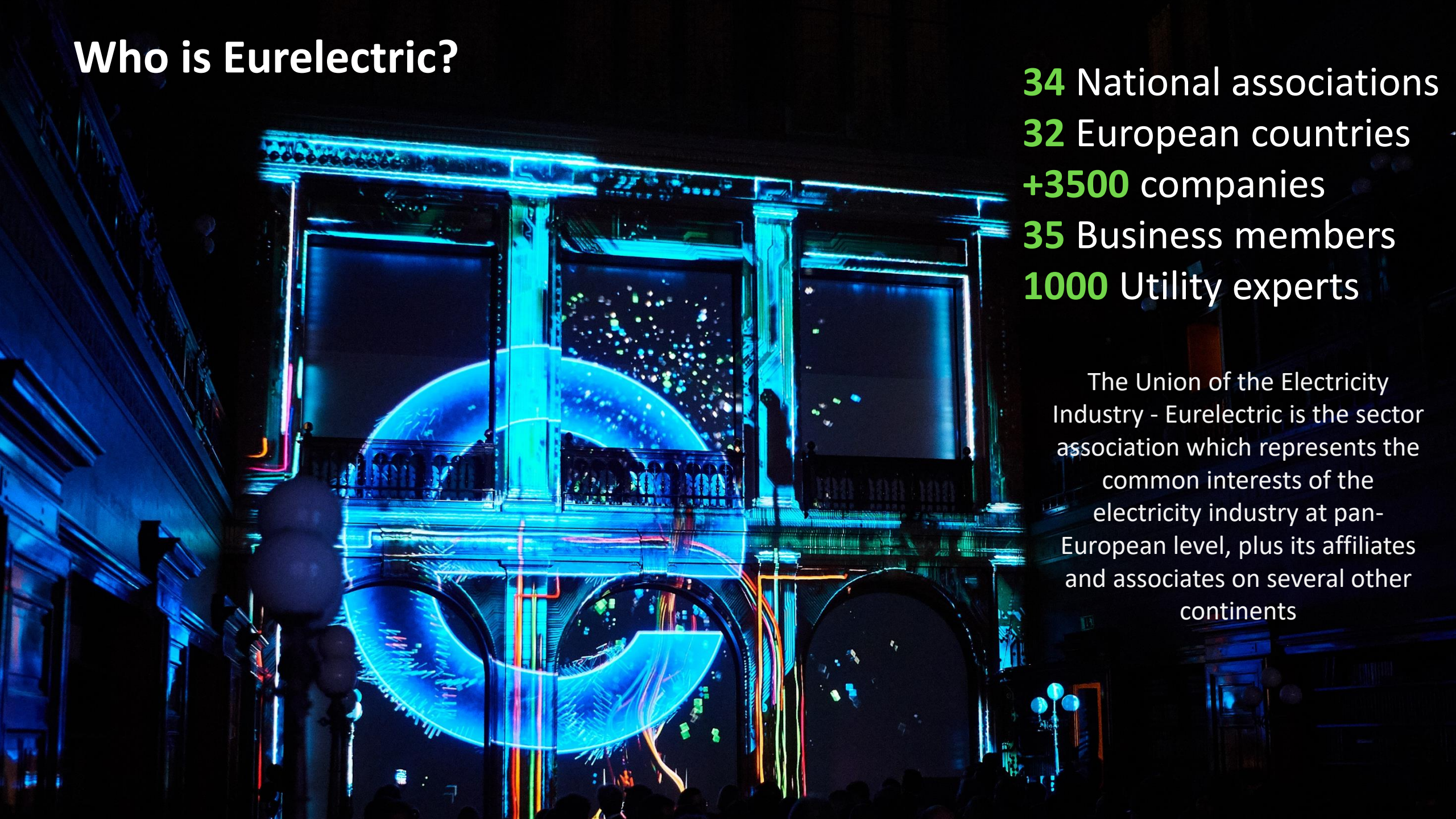

eurelectric
Redefining
#EnergySecurity
in the age of electricity
3 April 2025, Ljubljana

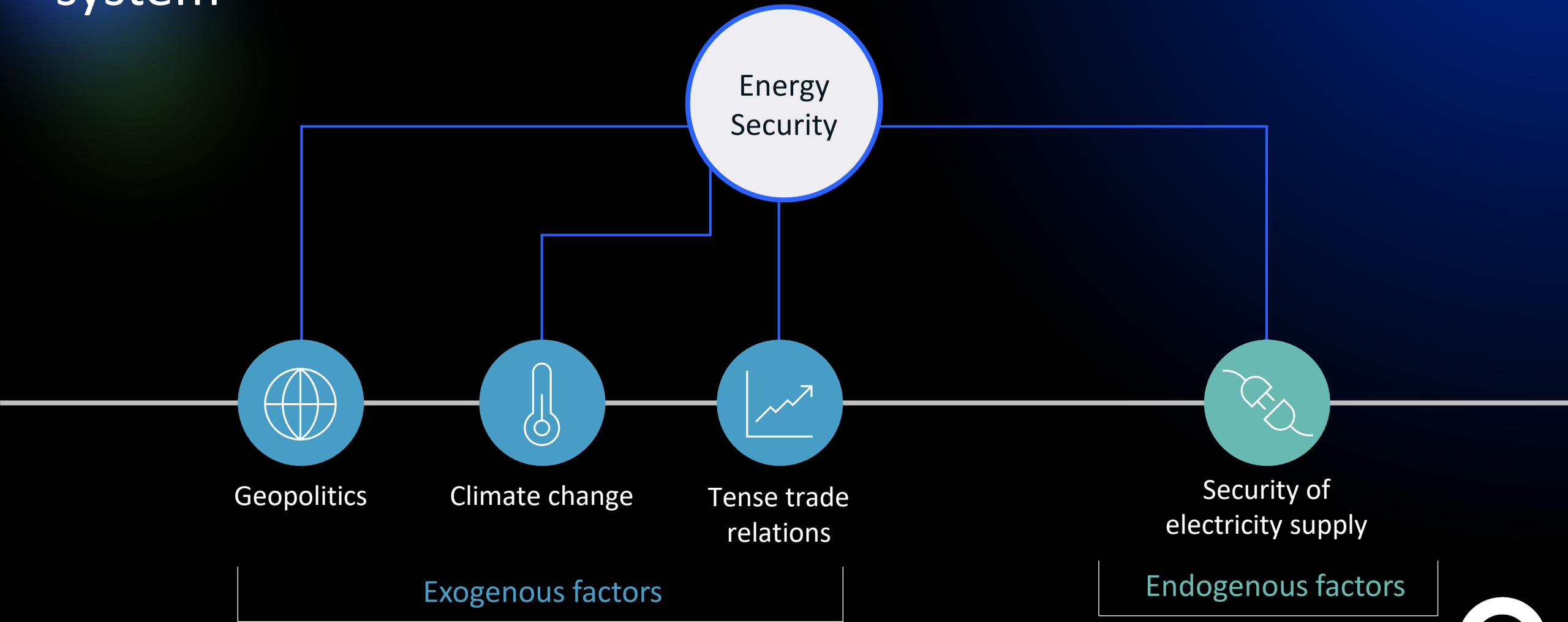
Who is Eurelectric?



34 National associations
32 European countries
+3500 companies
35 Business members
1000 Utility experts

The Union of the Electricity Industry - Eurelectric is the sector association which represents the common interests of the electricity industry at pan-European level, plus its affiliates and associates on several other continents

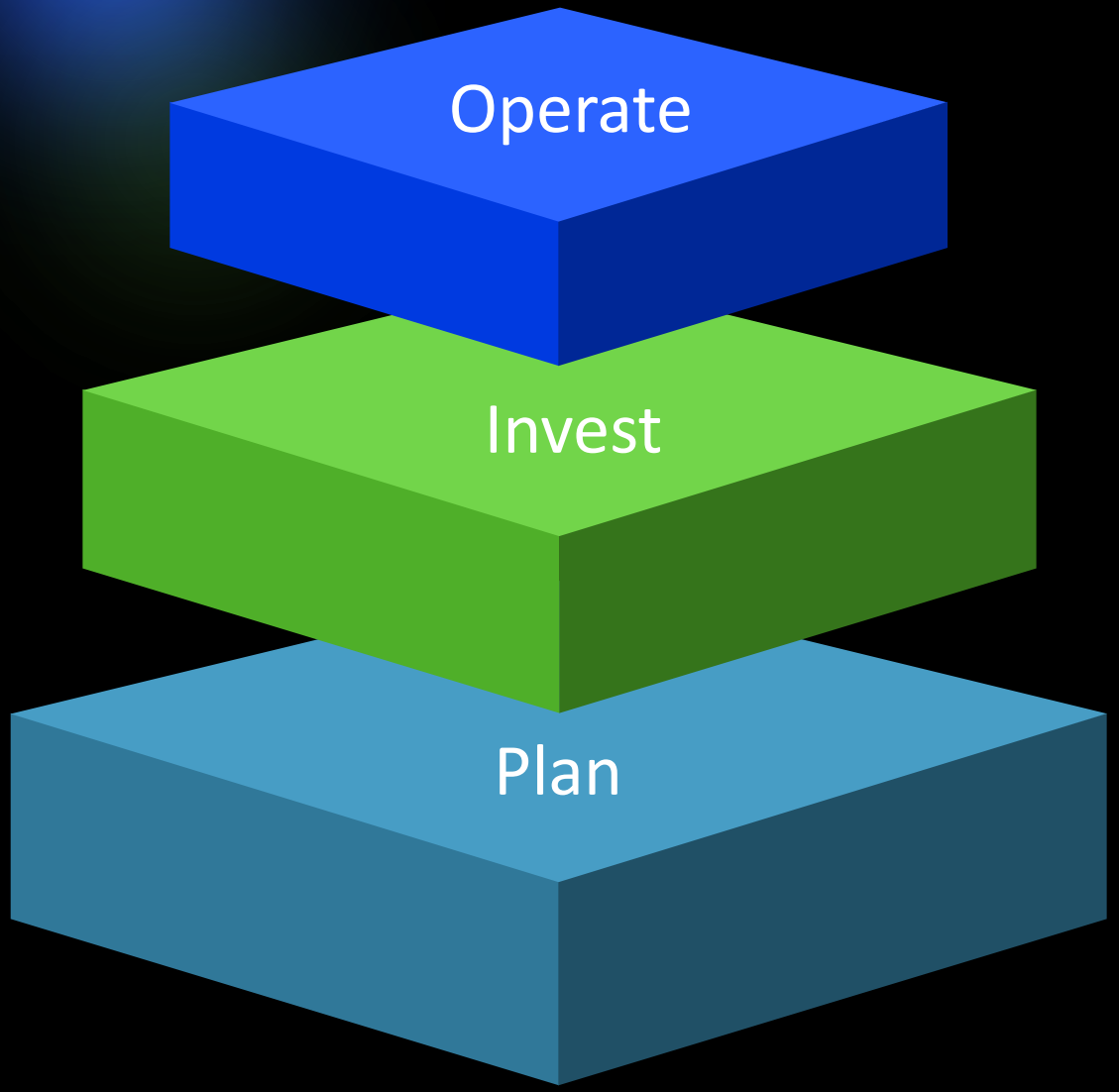
Electrification means decarbonised, affordable and secure system



Electrification means decarbonised, affordable and secure system

- Europe’s large and diverse RES potential can reduce fossil fuel import dependency and enhance energy security
- Transitioning to an electricity-based and decarbonised economy means swapping fossil fuels for critical raw materials
- The transformation changes cost structures, resulting in investments in Europe rather than spending on imports
- Diversified power supply, combining centralised and decentralised assets improves resilience of the power system
- A clean, electrified and efficient system improves affordability and competitiveness for consumers
- A more integrated EU market combined with cross border transmission could bring significant benefits

Our policy recommendations in summary



Markets and operation frameworks

- Improve short-term markets by implementing existing regulatory framework to send efficient signals reflecting system needs, not forgetting removing barrier on forward markets for the development of LT hedging tools
- Encourage greater consumer participation to provide DSR, both implicit and explicit.

Investment mechanisms

- Contracting mechanisms for firm and flexible technologies may be needed to secure and coordinate investments across the value chain, ensuring electricity supply
- Enhance incentives for network operators to deliver necessary infrastructure investments, such as anticipatory investments

Power system needs assessment

- Adopt a more integrated approach to ensure consistency across EU and national frameworks
- Operationalise and develop new methodologies for the assessment of flexibility needs effectively
- Implement methodological guidelines at EU level to incorporate resilience to extreme weather events and capture interdependencies

External risks

A new holistic approach to energy security…

Physical

Protect critical infrastructure:

- Enhance critical asset monitoring capacity to provide greater situational awareness
- Enable utility collaboration with local, national and EU security services to respond to threats
- Ensure two-way information sharing between authorities and utilities

Climate

Climate-proof infrastructure:

- Support adaptive building techniques to mitigate future climate impacts
- Improve cross-border cooperation in case of disaster
- Introduce a "Resilience Incentive Mechanism" to encourages system hardening, operational enhancements and recovery planning

Cyber

Secure and resilient data and systems:

- Fully implement cybersecurity legislation like NIS2, NZIA, NCCS and the CRA in EU Member States
- Permit the requirement that suppliers guarantee their data centers are based in the EU

Trade

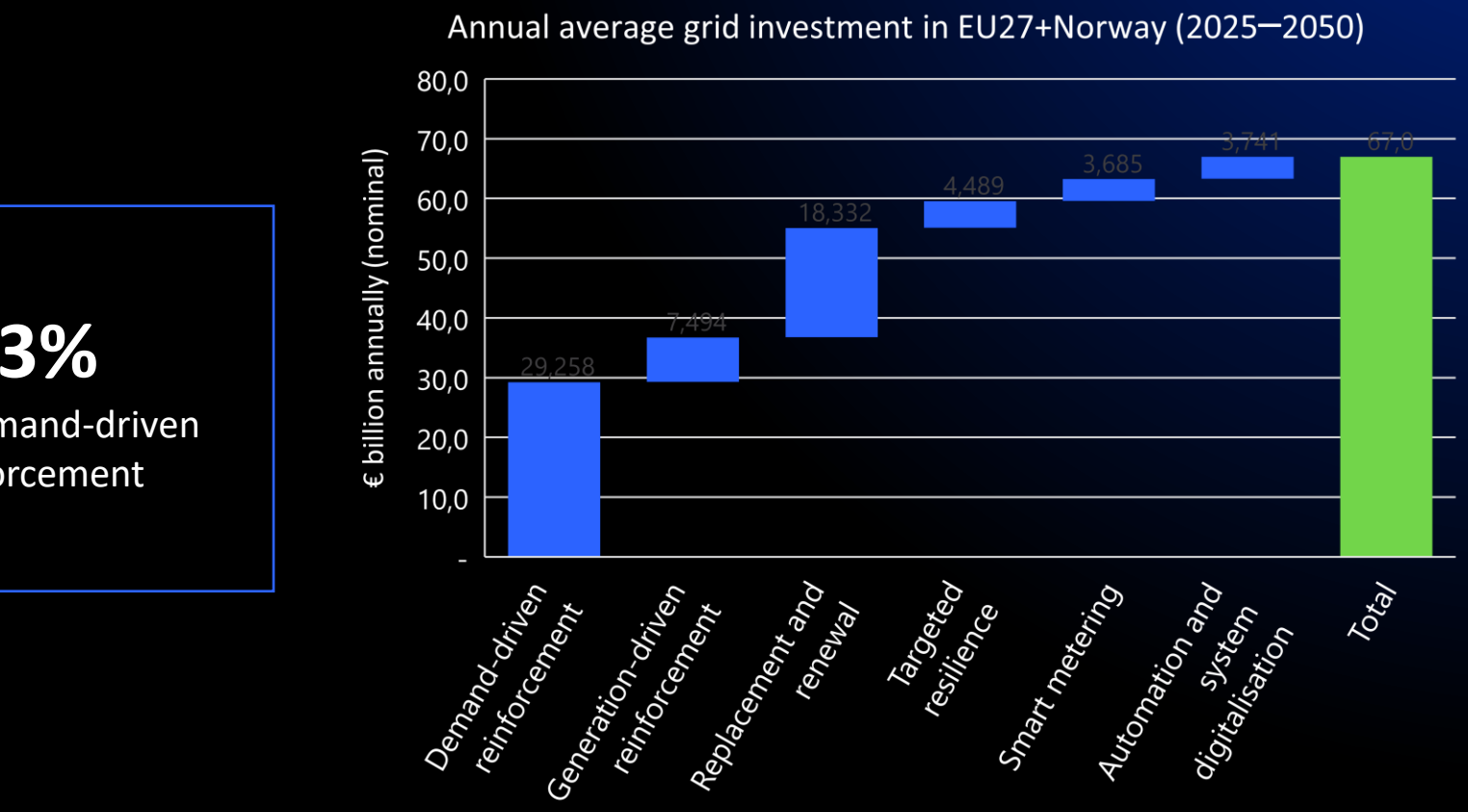
Secure supply chains:

- Foster synergies and diplomatic ties with like-minded non-EU countries
- Promote recycling of critical materials to reduce recuring import dependence
- Diversify supply chains and introduce non-price criteria, like local content requirements to support EU suppliers

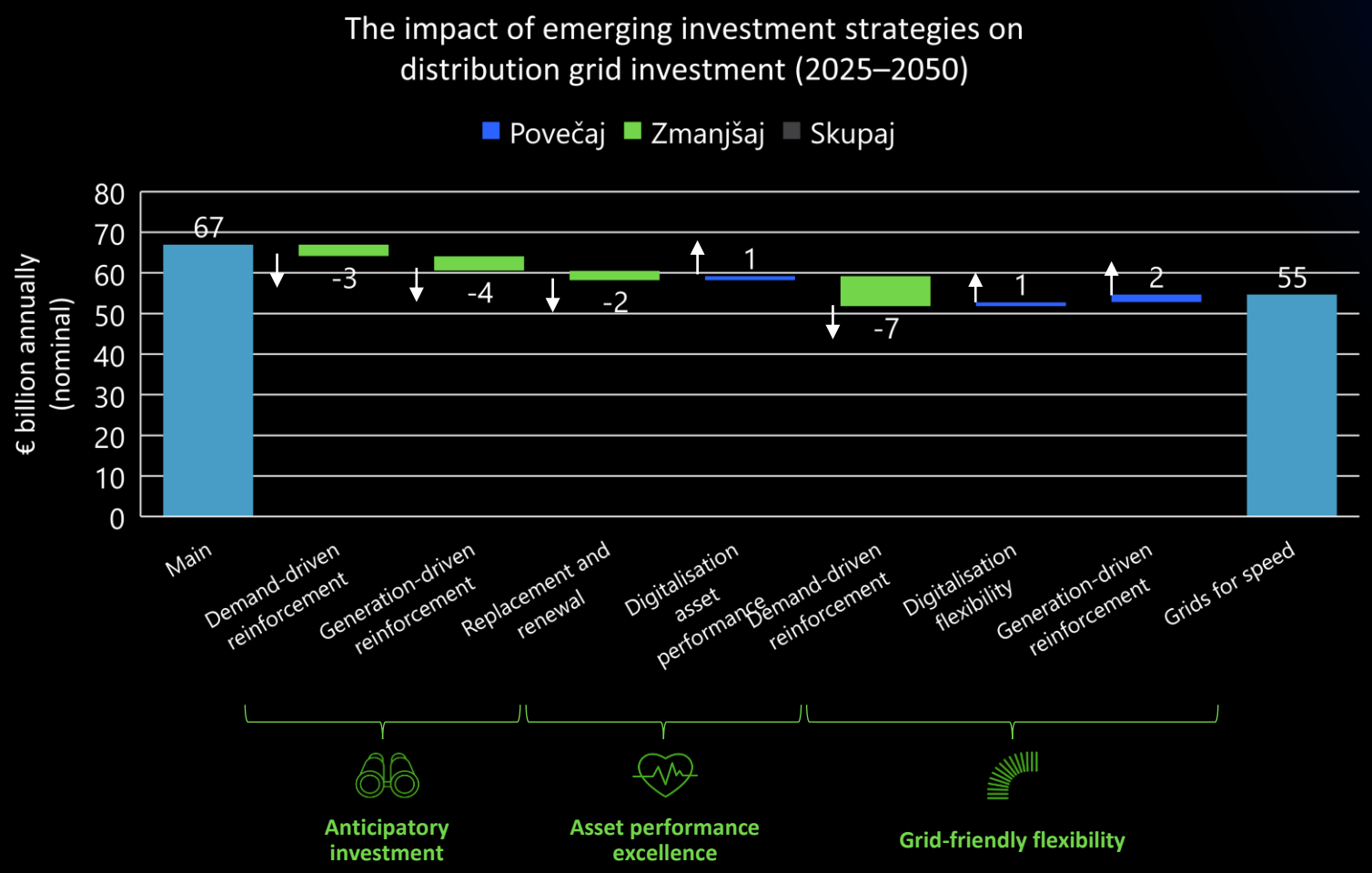
Grid investment needs to nearly double from current €36 billion to €67 billion annually

€67bn/year
of investment required between 2025–50 in the EU27+Norway

43%
is for demand-driven reinforcement



Three grid strategies could reduce investment by 18% to €55 billion annually



Anticipatory investment involves proactively expanding grid capacity when grid constraints and other works occur, to meet the 2050 demands, rather than merely making incremental increases.

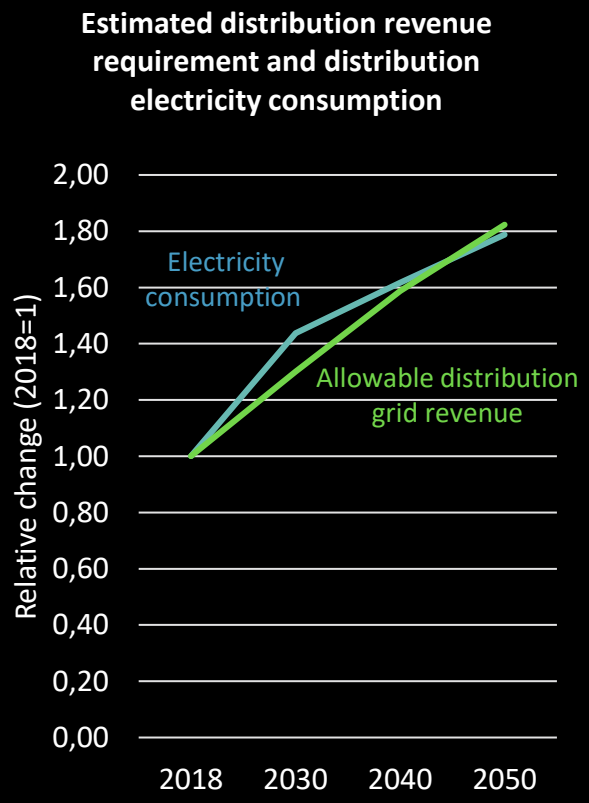
Asset performance excellence is achieved by using real-time data and AI to optimise asset health.

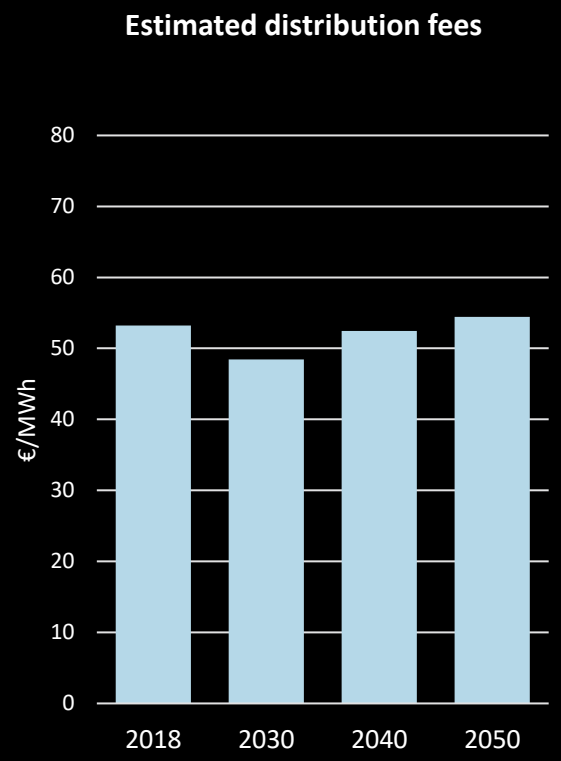
Additional benefits not quantified here include higher reliability, resilience and lower opex.

Grid-friendly flexibility means actively managing demand during peak times across voltage levels to defer grid growth.

The necessary activation payments to market actors have not been included.

Distribution grid fees stay flat to 2050: investment costs offset by higher overall electricity consumption





- The GfS report estimates that €67 billion annually—about double current levels—is needed until 2050 to upgrade distribution infrastructure for REPowerEU.
- Grid investments are recovered over 40+ years, so distribution fees don’t rise directly with new investment. Allowable revenue (capex return + depreciation + O&M) sets what grids can recover.
- While investment grows, rising electricity consumption from electrification spreads costs across more users. As a result, distribution fees are expected to remain flat to 2050, with higher grid investments balanced by increased consumption.

Slovenia

Strong growth in EV electricity demand expected — 24% CAGR (2025–30)

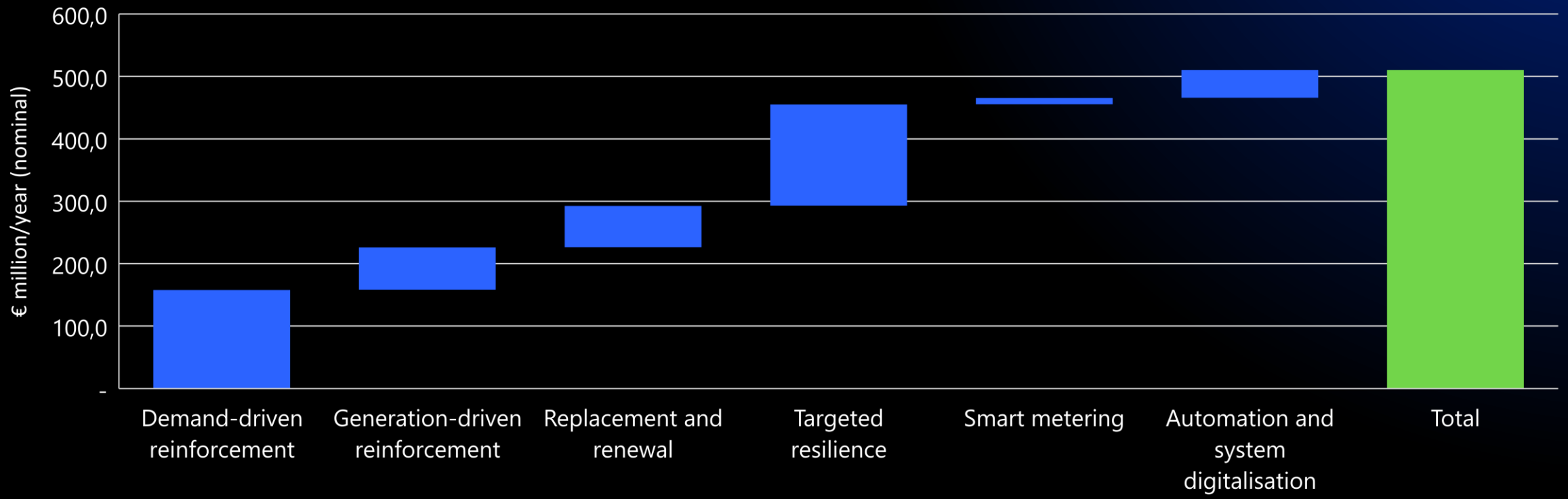
Majority of renewables capacity will come from PV

Replacement of ageing infrastructure

Targeted grid hardening to cope with extreme weather events

Smart meter penetration rate currently over 80% — further first-time rollouts required

Substation automation and workforce management



Thanks for your attention!

If you want to engage further on:

- How to enable the grids of the future
- The EU Electricity Market Design Reform
- The decarbonisation of the energy system

…or other policy topics related to electrification, please do not hesitate to contact us!

www.eurelectric.org

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