

# Welcome!

We will begin shortly...

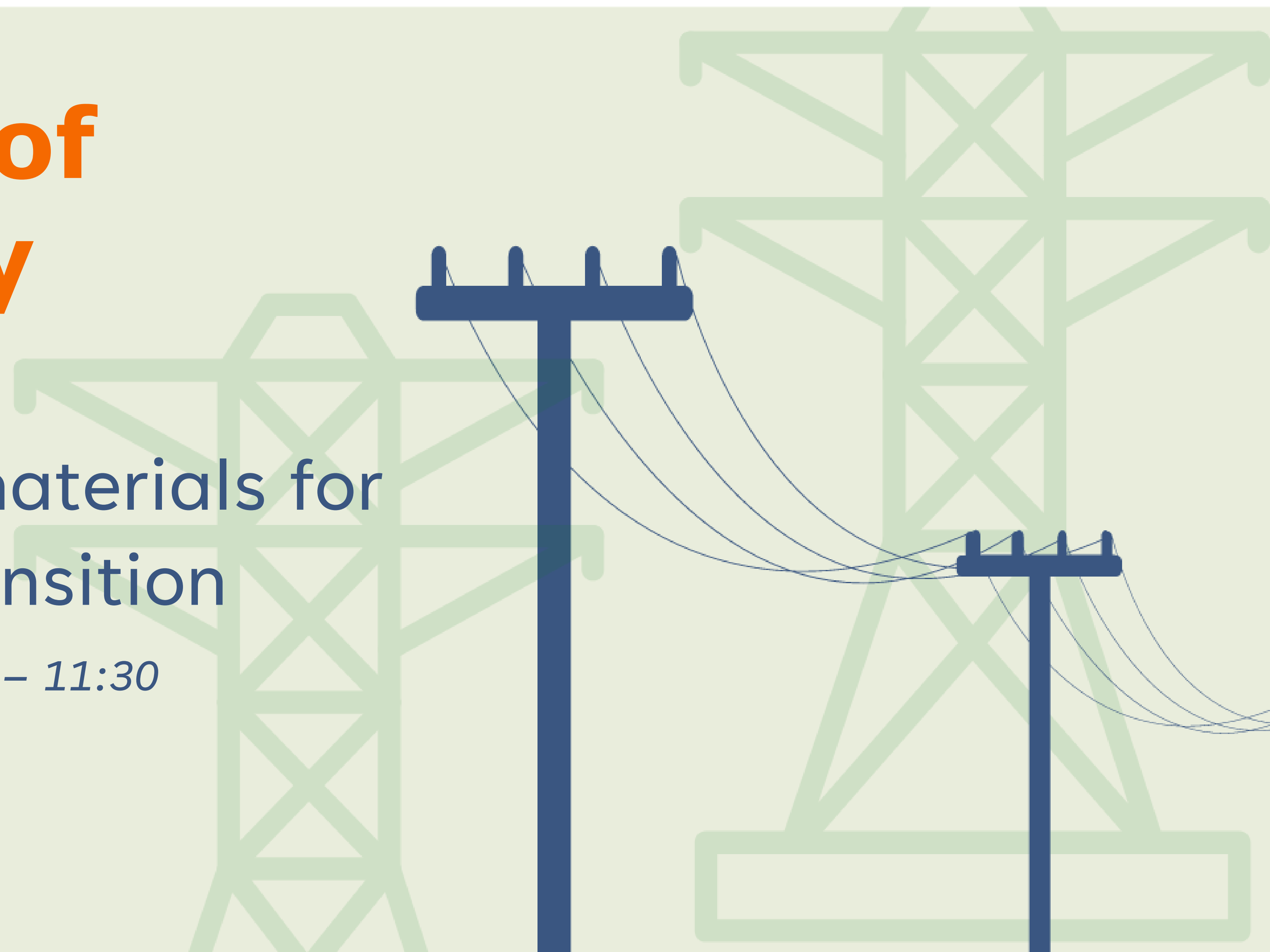
 Please mute your microphones

 Write your questions in the Zoom Chat

# A future-proof EU electricity market

The role of R&I on materials for  
the clean energy transition

*Wednesday 26 April 2023, 10:00 – 11:30*





# Agenda

Time	Title	Speaker
10:00 – 10:05	Welcome & Introductory remarks	<b>Rosita Zilli</b> - Senior Policy Officer - <b>EERA</b>
10:05 – 11:05	Panel Discussion Moderates: <b>Adel El Gammal</b> , Secretary General - <b>EERA</b>	<b>Mathilde Lallemand-Dupuy</b> - Policy Officer, Internal Energy Market Unit, DG ENER, <b>European Commission</b>
		<b>Vilislava Ivanova</b> - Research Manager, Electricity Market Design, <b>E3G</b>
		<b>Charlotte Renaud</b> – Head of Markets and Customers, <b>Eurelectric</b>
		<b>Laurens de Vries</b> - Coordinator of the Joint Programme on Energy Systems Integration (ESI) – <b>EERA</b>
11:05 – 11:25	Q&A Session	
11:25 – 11:30	Concluding remarks	<b>Adel El Gammal</b> – Secretary General- <b>EERA</b>



# Introductory Remarks

Rosita Zilli, EERA

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**What is your background?**





**What do you expect to primarily take out from this webinar?**



# ► Panel Discussion

Moderates: Adel El Gammal,  
EERA



# Mathilde Lallemand-Dupuy

# Policy Officer, Internal Energy Market Unit

European Commission, DG ENER



**What should be in your view the objective of this reform?**





# Electricity market design

Mitigating the impact of high gas prices on electricity bills, protecting consumers and boosting RES investment



# Objectives of the reform

- **Better protect and empower consumers**
- **Enhance stability and predictability of the cost of energy contributing to the competitiveness of the EU economy**
- **Accelerate the integration of renewables with flexibility services**
- **Better energy market monitoring and surveillance (REMIT)**

# 1. Better consumer protection and empowerment

**Problem:** *Energy crisis has exposed consumers to high and volatile electricity prices and market risks have been forced on consumers*

## Protect consumers

- **Right to fixed price contacts**
- **Hedging requirements on suppliers**
- **Supplier of last resort**
- **Protection from disconnection**
- **Retail price regulation**

## Empower consumers

- **Energy sharing**
- **Right to multiple contracts**
- **Better and clearer contractual information**



## 2. Enhance stability and predictability of the cost of energy contributing to the competitiveness of the EU economy

**Problem:** *Energy bills can be overly impacted by short-term electricity prices (now often driven by - volatile fossil fuel costs), with severe impact on EU households and economy. Investors in fossil-free generation require predictability and stability of revenues.*

### Power Purchase Agreements (PPAs)

- **Facilitate** and incentivize PPAs
- **Address obstacles** such as default risk
- Possibility to combine RES tenders and PPAs

### Two-way Contracts for Differences (CfDs) for public support for new investments

- For solar, wind, geothermal, hydro without reservoir and nuclear energy .
- **Collected revenues** to be distributed to final customers

### Improve liquidity of forward markets

- Create "**virtual hubs**" with regional reference prices.
- TSOs to issue "**zone-to-hub**" **transmission rights** for the following 3 years.

### 3. Accelerate the integration of renewables with flexibility services

**Problem:** *Increasing share of renewables needs to be balanced with non-fossil flexibility (such as demand response, storage) in order to achieve decarbonisation.*

#### Enhance non-fossil flexibility sources, such as demand response and storage

- Assess the **need for flexibility** in the electricity system
- **Indicative national objective** for demand side response and storage.
- MS may apply **support schemes** for available non-fossil flexibility capacity.

#### Clarify the role of system operators

- **Peak shaving product**
- **Transparency on** connection capacity, the status and treatment of the connection requests.
- Possibility to use the data from **dedicated metering**
- **Network tariffs** to incentivize the use of flexibility services.

#### Create more opportunities for trading (of renewables and flexible sources)

- **Cross-border intraday trading closer to real time**

# Thank you



# Vilislava Ivanova

# Research Manager, Electricity Market Design

# E3G



E3G

# A future-proof EU electricity market: the role of R&I in taking up the challenge

Vilislava Ivanova

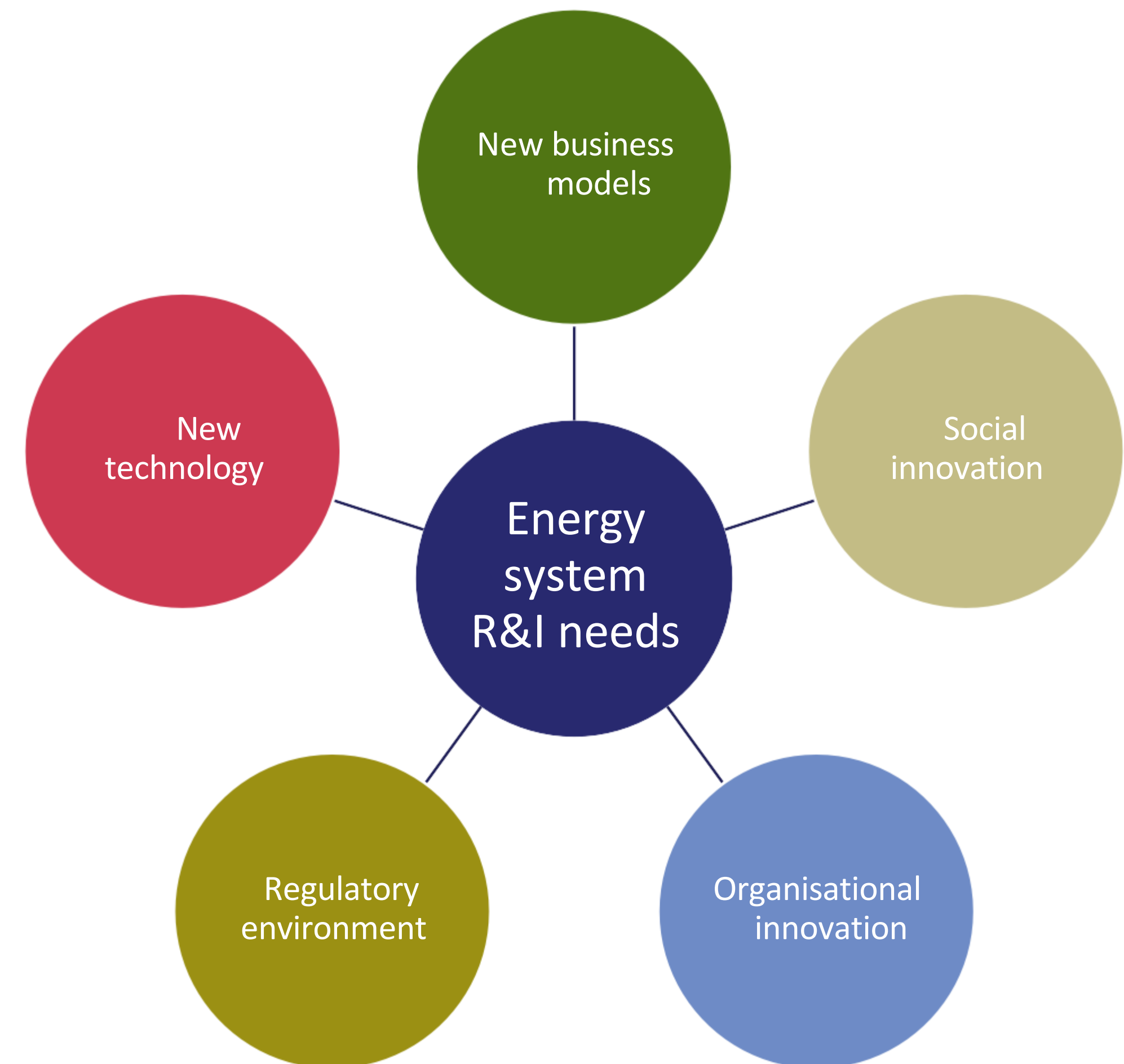
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For SUPEERA policy webinar



# The starting point: most effort needed on smart deployment

- > Basic research
- > Feasibility (*some storage tech*)
- > Development (*smart grids*)
- > Demonstration
- > Test, launch & operation (*wind, solar*)



# Where does electricity market reform fit?

> Focus on RES, phase-out gas and making bills less dependent on volatile fossil prices

## Challenges:

- Access to CfDs & PPAs for less proven technology
- Impact of retail market obligation
- Market participation for smaller assets

## Opportunities:

- Flexibility assessments and member state-level flexibility targets; support schemes
- Trade closer to real time & smaller tech; OPEX & CAPEX
- Energy sharing

Digitalisation?

# Synergies among research, industry and European policies

- > Market signals, non-market incentives, wider R&I policy
- > Creating the right environment for testing & scaling deployment
- > Skills & preparing the next generation of energy professionals
- > More space for socio-economic research for next reforms

## About E3G

E3G is an independent climate change think tank with a global outlook. We work on the frontier of the climate landscape, tackling the barriers and advancing the solutions to a safe climate. Our goal is to translate climate politics, economics and policies into action.

E3G builds broad-based coalitions to deliver a safe climate, working closely with like-minded partners in government, politics, civil society, science, the media, public interest foundations and elsewhere to leverage change.

More information is available at [www.e3g.org](http://www.e3g.org)





# Charlotte Renaud

# Head of Unit, Wholesale and Retail Market Issues

# Eurelectric



#MarketDesign

eurelectric

# Electricity Market Design

A MARKET FIT FOR NET ZERO

Charlotte Renaud, Head of Markets & Customers, Eurelectric

SUPEERA webinar: "A future-proof EU electricity market: the role of R&I in taking up the challenge", 26 April 2023



# Presentation Outline

In the next 7 minutes, I will cover the following;

1. **Who is Eurelectric?**
2. **The Challenge** — why market design needs to facilitate the colossal level of investment needed to reach net zero
3. **Learning from the Crisis**— What we have learned from the energy crisis and how can we make the system more resilient
4. **What we can improve**— Changes that will make our energy system resilient and ready for net zero
5. **Our assessment of the EC proposal for a market design reform**





# 1. Who is Eurelectric?

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

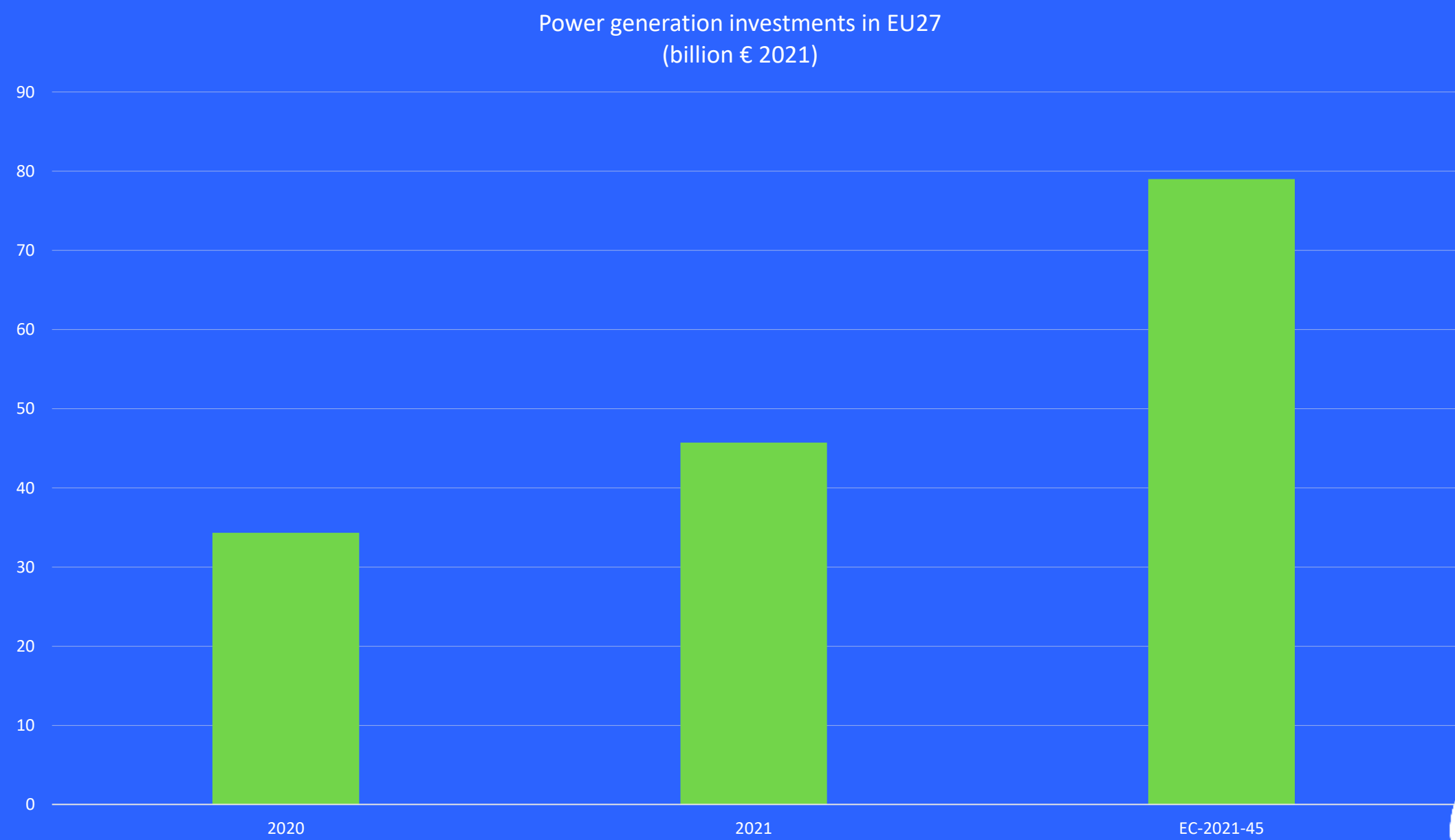
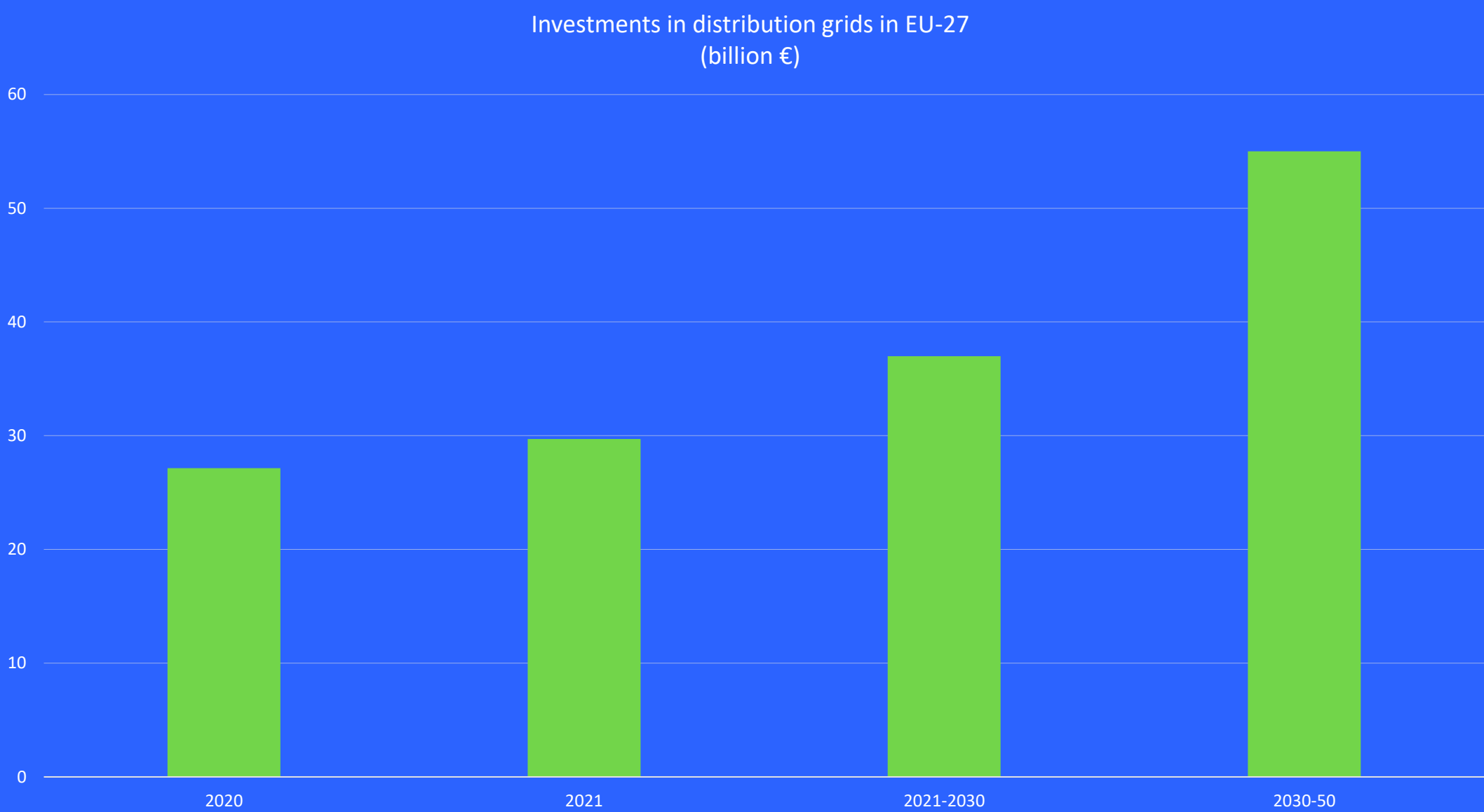
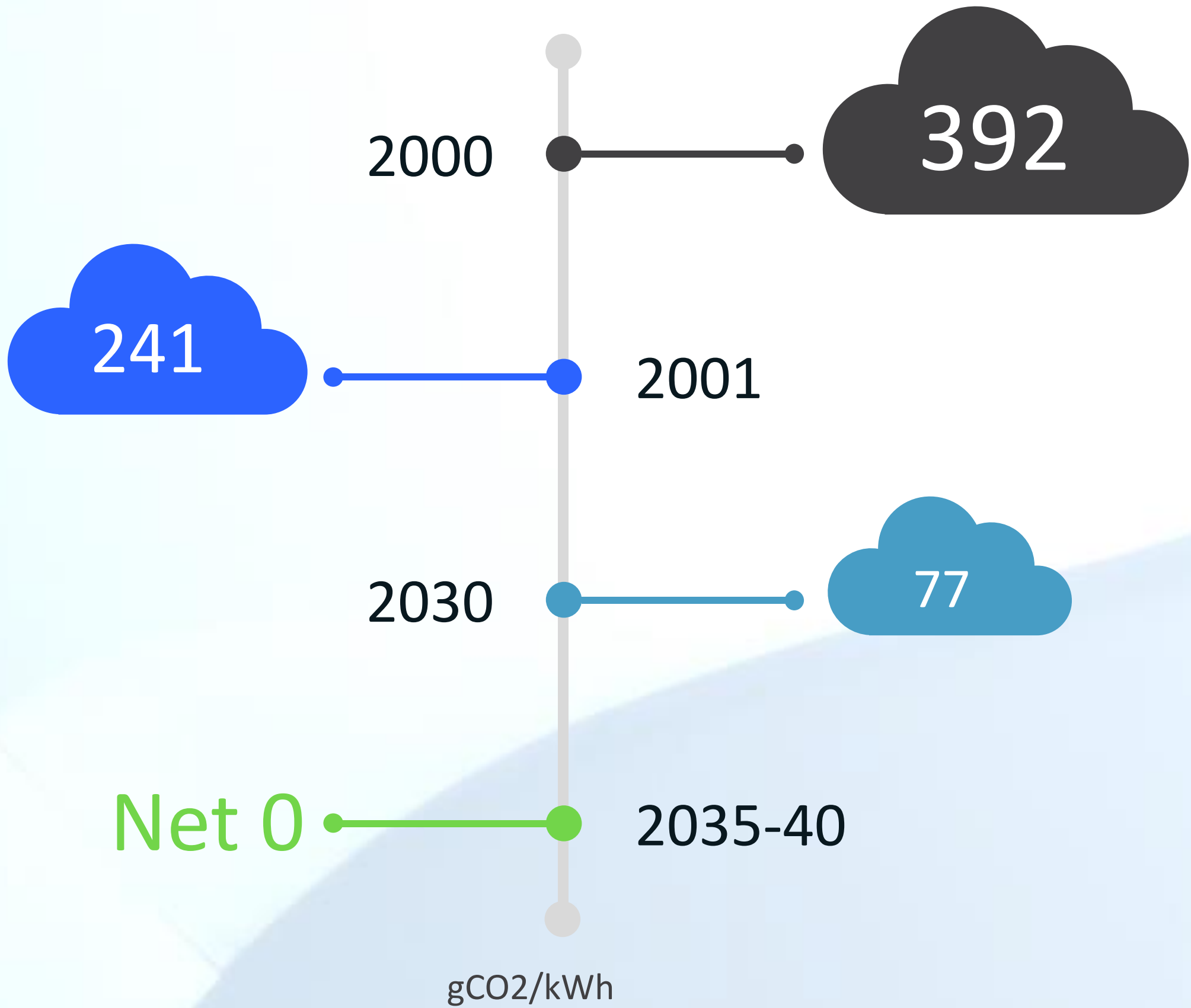
The Union of the Electricity Industry - Eurelectric is the sector association which represents the common interests of the electricity industry at pan-European level, plus its affiliates and associates on several other continents

Our mission is to lead the energy transition with clean electricity



# 2. The SCALE of the challenge

Speedy decarbonisation, colossal investment in electricity



# The SCALE of the challenge

Massive electrification of end-use sectors, with electricity's share more than doubling in size

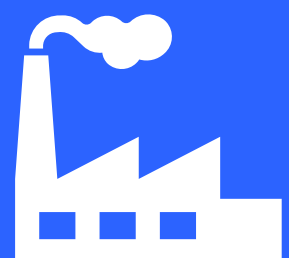
A dramatic change by 2050



200 million heat pumps and decarbonised district heating will be brought to European buildings

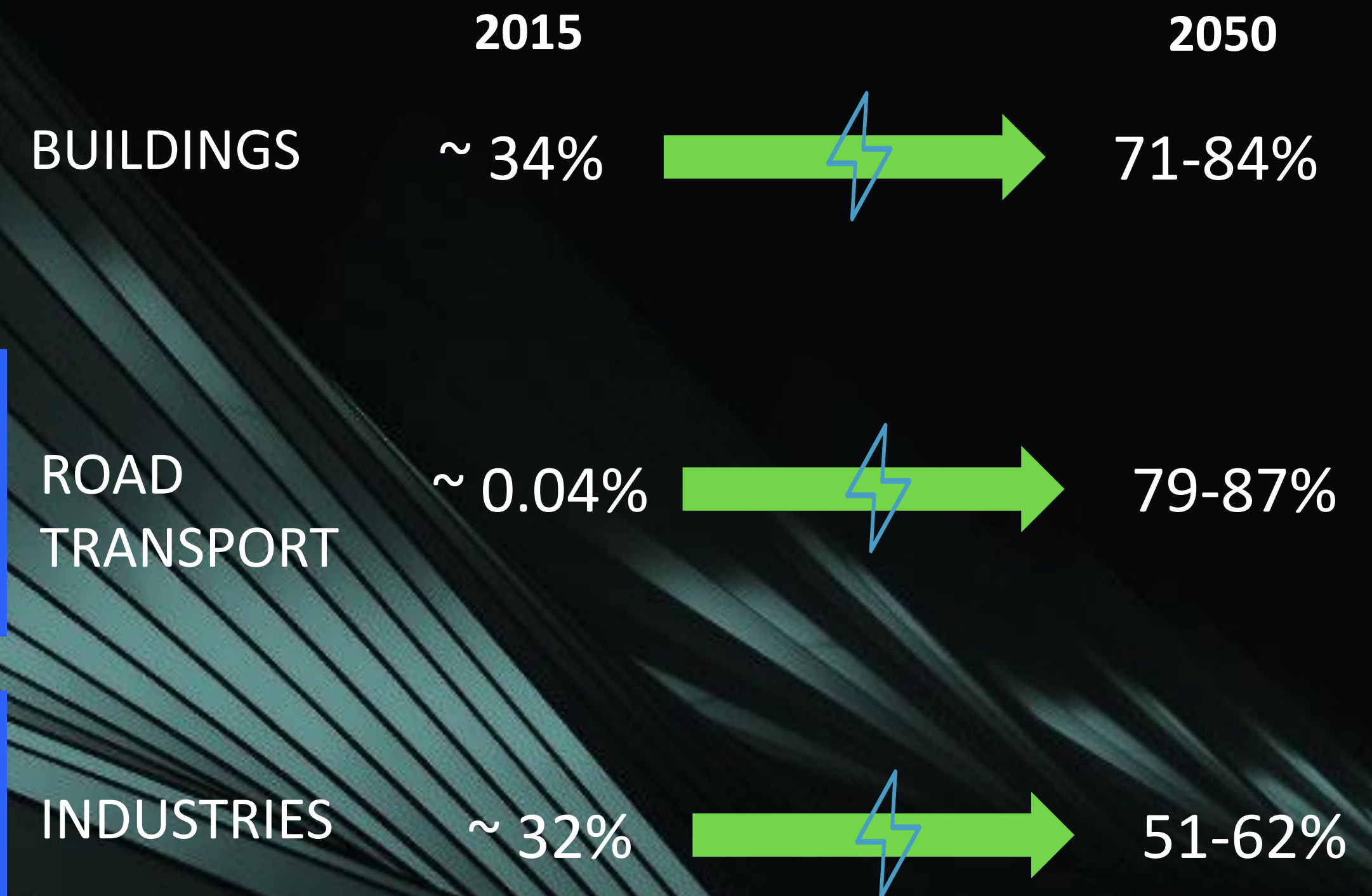


220 M passenger EVs will be on European roads



74% of light industries will be electrified.  
For heavy industries, the figure will reach 25%.

Electricity to represent 60-70% of final energy demand



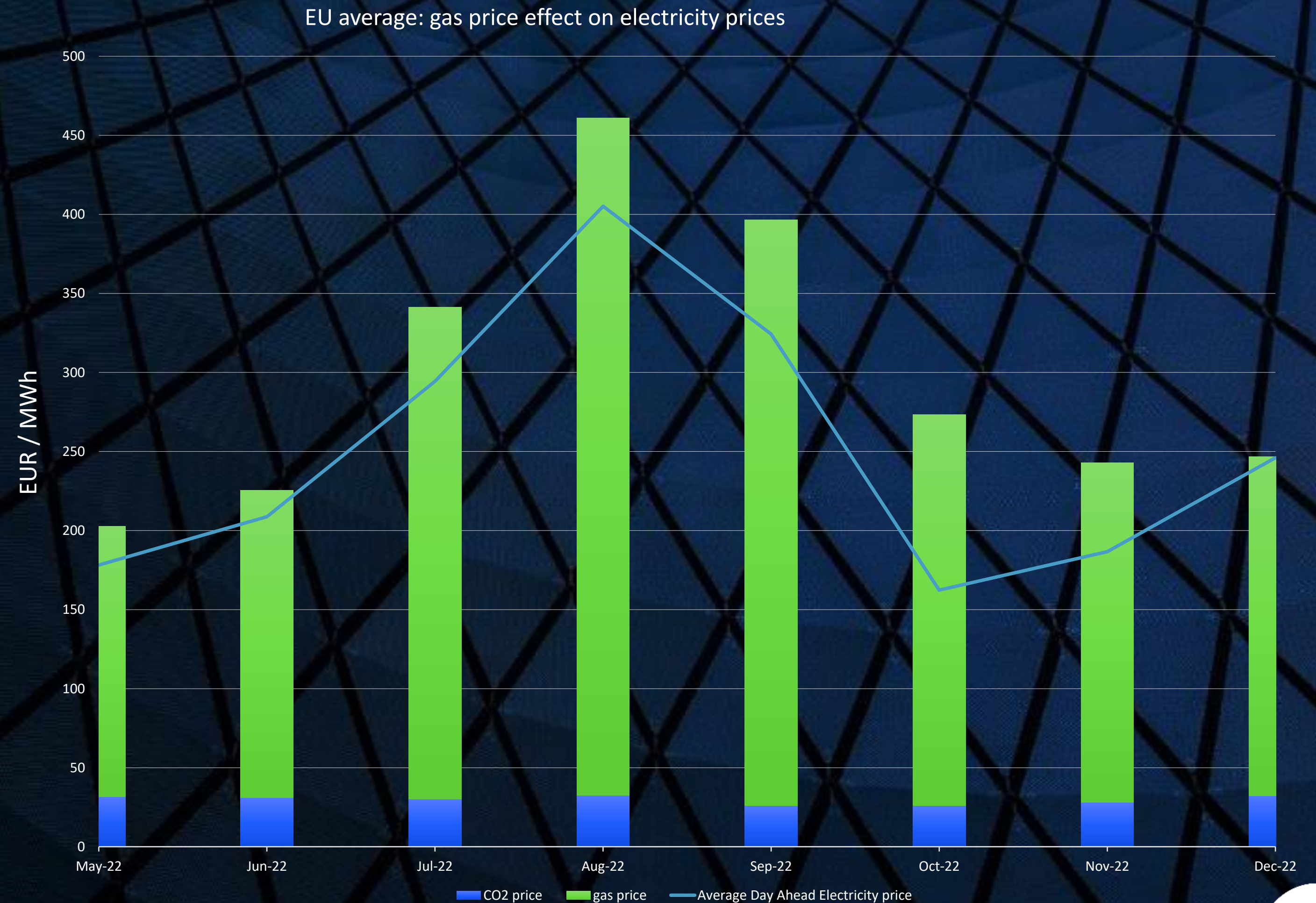
Share of electricity in the final energy demand





## 2. Learning from the crises - the vulnerabilities and improvement needed

- Short-term markets are **exposed to the extreme price fluctuations** of imported fossil fuels.
- **Liquidity in the forward market** is necessary to hedge against spot market fluctuations

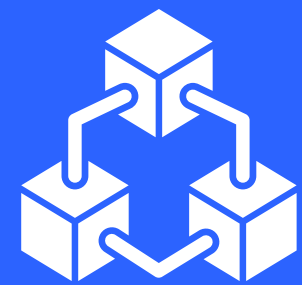




# Our key message for today

The primary focus of the reform should be on further developing long-term markets

In reforming Europe's market design we need to:



**Preserve what works:** the EU Internal Energy Market based on marginal pricing, & its key features **& Implement current legislation (CEP)**



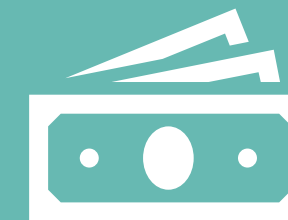
**Develop a long-term market to;** 1) protect customers against excessive price volatility by offering them more choice and 2) promote the colossal level of investment needed.

Strong long-term markets will be a win—win-win for:



## CUSTOMERS

= more competitive and predictable prices with less fluctuations



## INVESTMENTS

= more competitive and predictable prices with less fluctuations



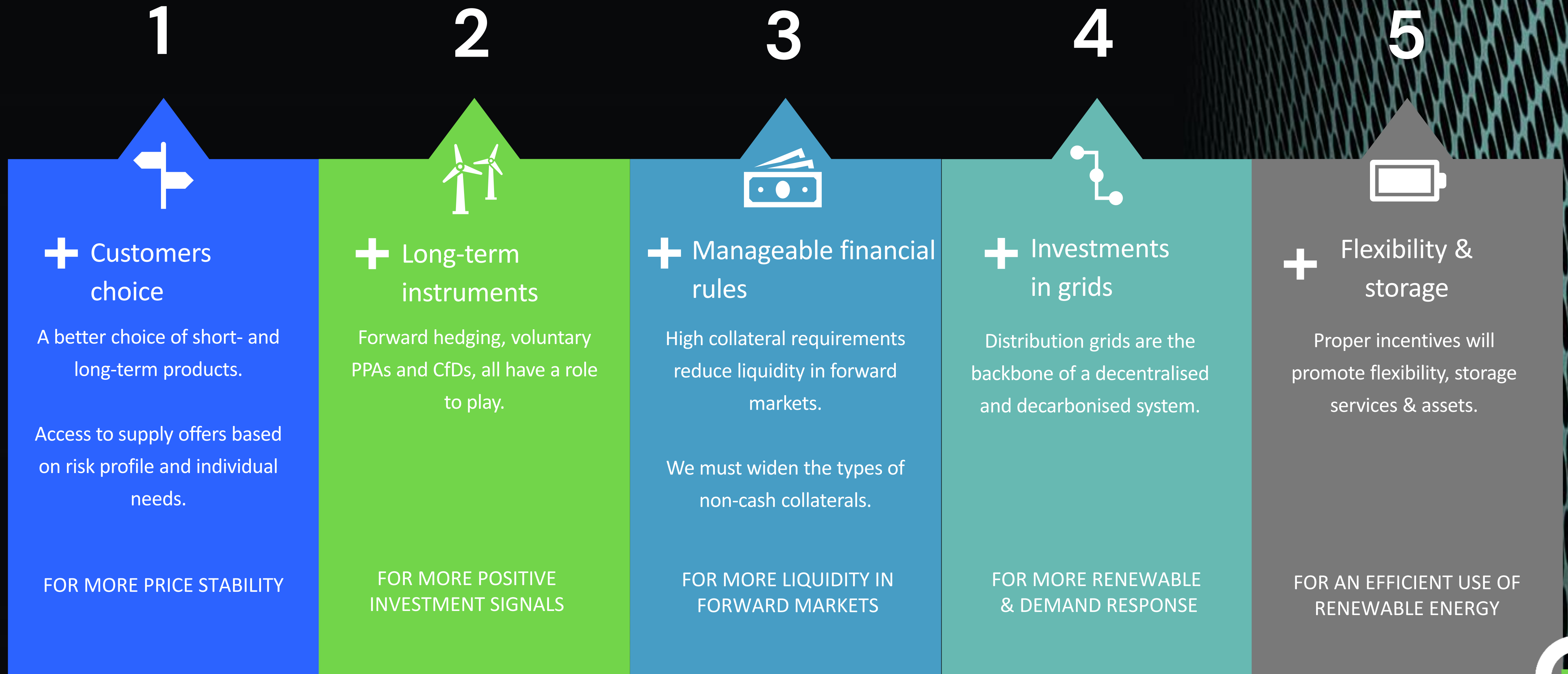
## SECURITY OF SUPPLY

= more competitive and predictable prices with less fluctuations



# 3. What can we IMPROVE?

How to make the electricity system ready for the net 0





# Our assessment on the European Commission's proposal

**Retaining merit-order and marginal pricing across wholesale markets**

**1**

**Hedging obligation on suppliers: Stress tests & reporting requirements through licensing**

**Focus on forward markets through enhanced hedging and contracting**

**2**

**Regional virtual trading hubs: Non-tested solution with lengthy implementation time**

**No mandatory requirement for two-way CfDs**

**3**

**Energy Sharing: Ensure level playing field with traditional supply to ensure customers' protection**

**No extension or institutionalisation of revenue limitation for inframarginal technologies**

**4**

**Flexibility should be addressed in a technology neutral way: all providers to be considered for cost-efficiency**

**Promote anticipatory investment in grid tariff design**

**5**

**Fail to properly address massive grid investment challenge: ensure proper tariff design for balance between modernisation and reinforcement**





The background of the slide is a black field filled with numerous glowing green wireframe cubes. These cubes are of various sizes and are scattered across the entire frame, creating a sense of depth and a futuristic, digital atmosphere. The cubes appear to be floating or stacked in a non-uniform pattern.

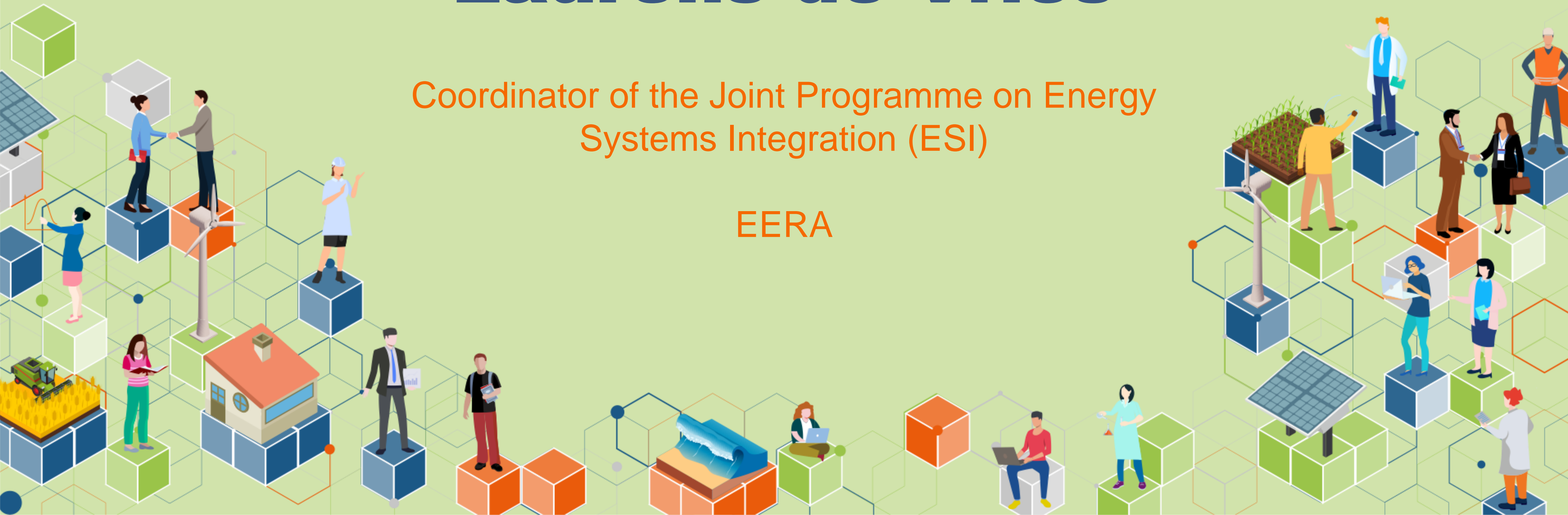
**Thank you for your  
attention - any  
questions ?**



# Laurens de Vries

Coordinator of the Joint Programme on Energy  
Systems Integration (ESI)

EERA



Delft University of Technology

# Long-term electricity market design

Prof. dr. ir. Laurens de Vries

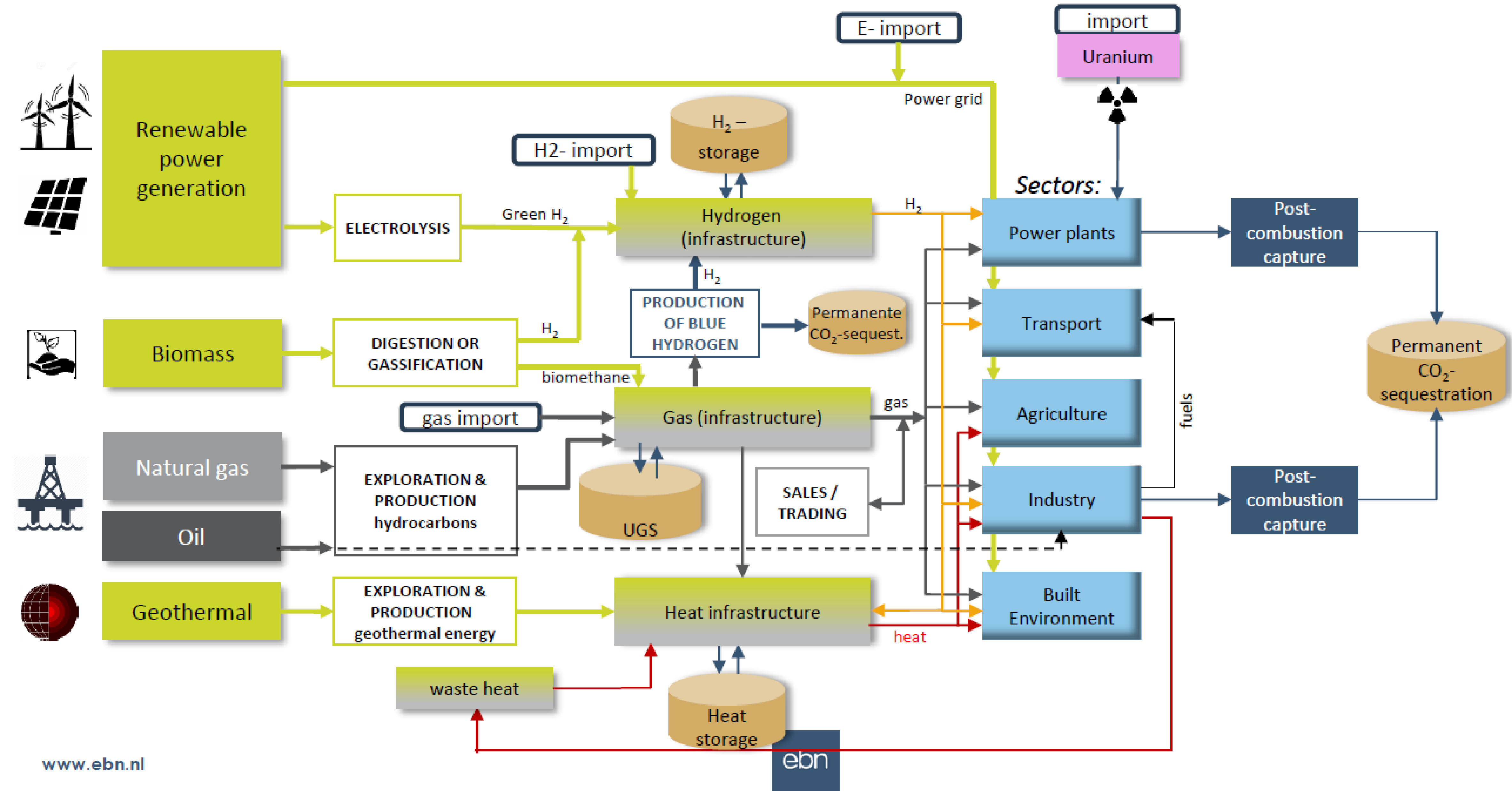


# Lessons from the energy crisis

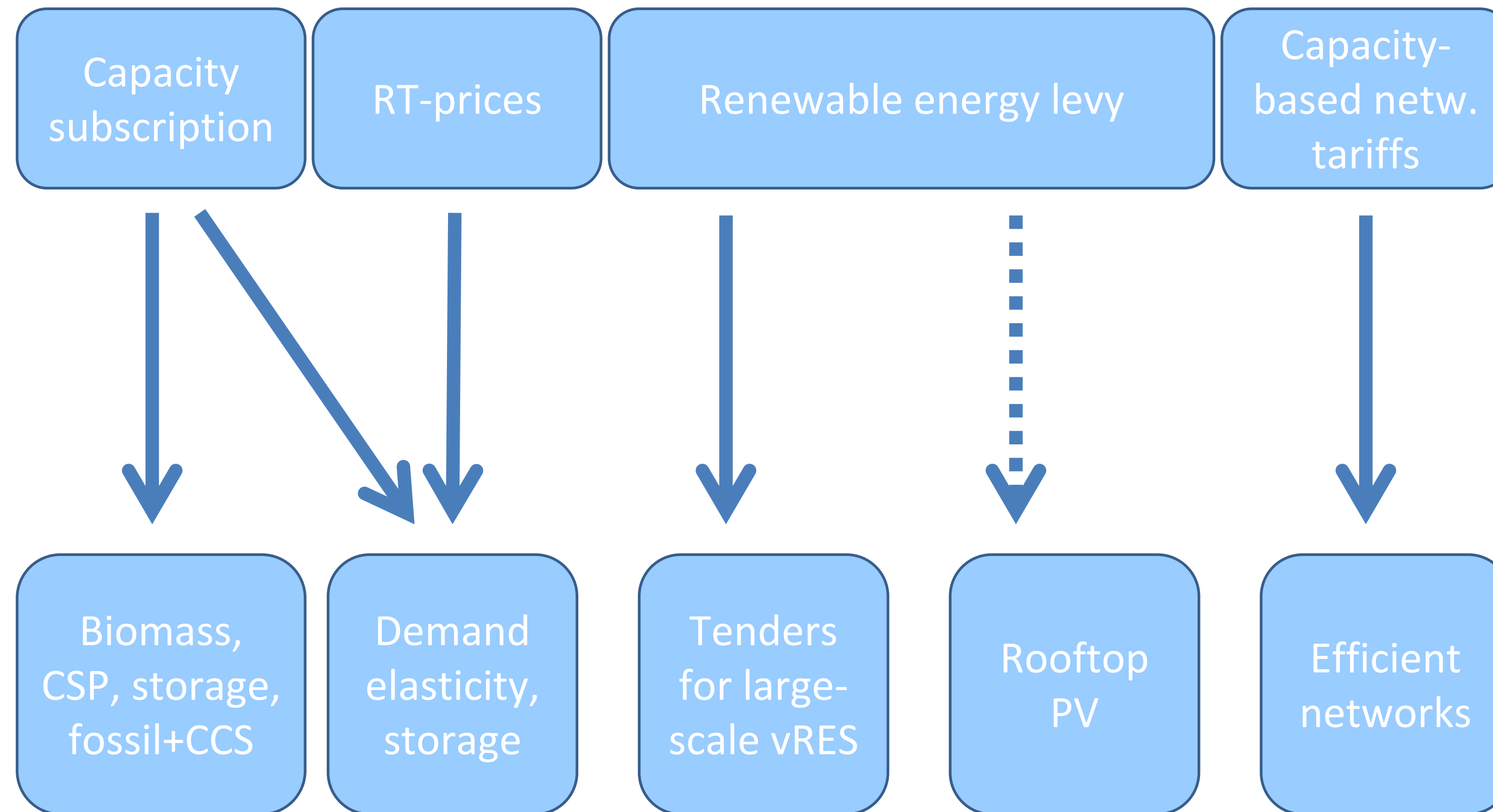
- Short-term energy markets work!
- But we need to derisk investment in controllable generation capacity
- Renewable energy:
  - Also need continued derisking investment
  - But also need to limit windfall profits
- Consumers:
  - Need hedging options

# Future energy value chain\*

\* specific to the Netherlands



# Low- carbon electricity market design





# Research challenges

- Understanding imperfect markets
  - Imperfect foresight, risk aversion
  - How effective will policy interventions be?
- Understanding a system in transition
  - No equilibrium!
  - Many uncertainties
- Understanding system integration
  - Between energy vectors
  - Between European and local energy networks
  - Between large and small producers and consumers
  - Etc.

# Research approaches

- Optimization models
  - Operational optimization
  - Operational + investment optimization for a single year
  - Transition modeling
- Simulation models
  - Energy flow simulations: technical models
  - Actor behavior: socio-technical models, e.g. agent-based models
- Energy system models need to be improved to reflect:
  - New market and network dynamics of integrated energy system
  - Deep uncertainty in planning
  - Wide-open design space in the long term.



# Market design vs. modeling challenges

Market design challenges	Modeling requirements
Long term: system adequacy. Ensuring sufficient flexibility/controllable generation capacity for a Dunkelflaute	Operational market model with sufficient flexibility + ABM investment model
Short-term market design: <ul style="list-style-type: none"><li>- more efficient organization of day-ahead – intra-day – balancing market sequence.</li><li>- more efficient congestion management</li></ul>	<ul style="list-style-type: none"><li>- Detailed market model (ABM?)<ul style="list-style-type: none"><li>- with D-A – I-D – balancing sequence</li><li>- with weather uncertainty</li></ul></li></ul>
TSO-DSO integration: aligning prosumer behavior (operational and investment) with wholesale markets	Local markets, link with wholesale market Distribution and transmission congestion)
European market integration: making efficient use of differences in supply and demand patterns.	Multiple wholesale market models coupled to each other and to (stylized) transmission grid model.



# Q&A Session







# Conclusions

Adel El Gammal, EERA



