

# Effect of the energy crisis on short-term and long-term market design, an economic assessment.

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Prepared for:



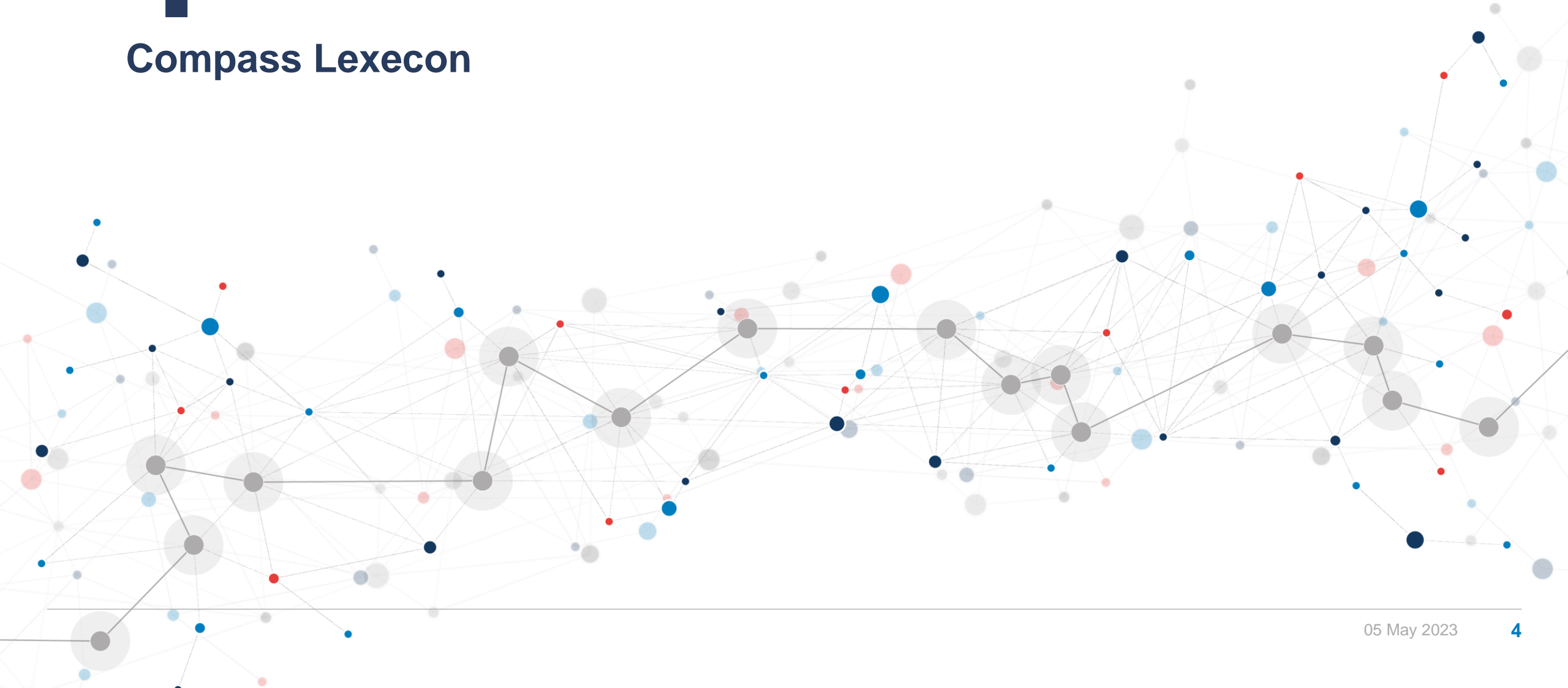
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# 1

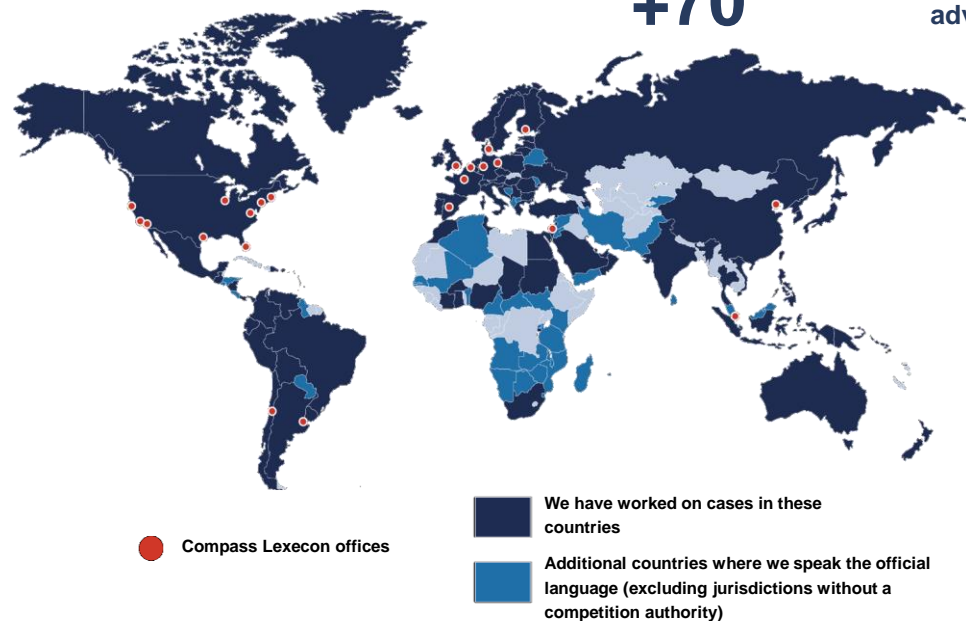
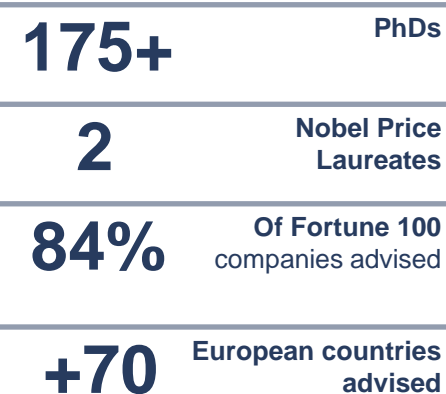
## Compass Lexecon



# About Compass Lexecon (1/4)

## Compass Lexecon Global

One of the **world's leading economic consulting firms**, Compass Lexecon provides **law firms, corporations, and government** clients with **clear analysis of complex issues**.



## Compass Lexecon Energy

Electricity



Gas



Emissions



Heat



Market modelling	Regulation
Strategy	Contract design
Environment and decarbonisation	Competition & State Aid
Transactions	Disputes

# About Compass Lexecon (2/4)

Our EMEA team comprises of senior energy experts:

## Senior energy experts in Europe

FTI-CL's senior energy experts are supported by a team of 50+ experienced consultants.



**Joe Perkins**



**Lorenzo Coppi**



**Jason Mann**



**Martina Lindovska**



**Boaz Moselle**



**Nicholas Brooks**



**Ljubo Mitrasevic**

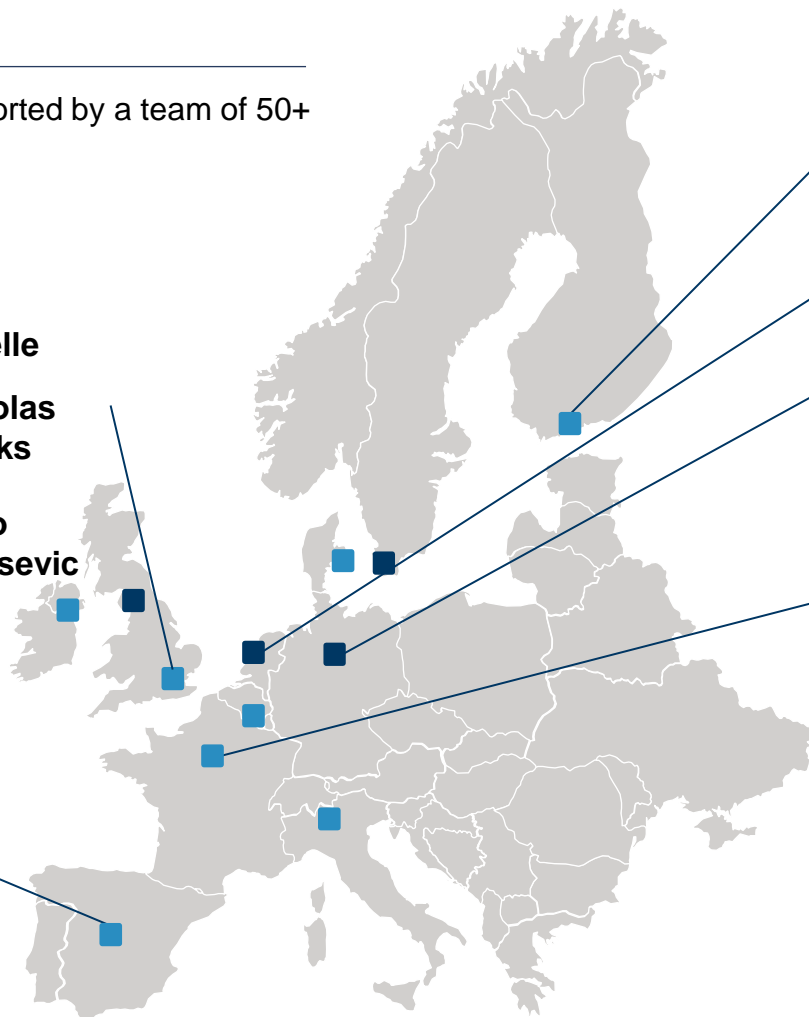


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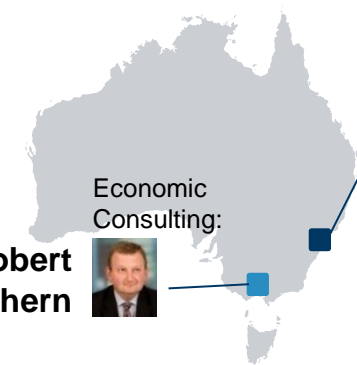


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**Emmanuel Grand**

## Experts in Australia



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**Robert Prydon**

Strategic Communications:



**Ben Hamilton**



**Robert Skeffington**

## Experts in the US



**William Hogan**



**Scott Harvey**



**Susan Pope**



**John Cochrane**

# About Compass Lexecon (3/4)

## Market design in Europa and globally:



### National Grid ESO – Market design in context of Net Zero

Support on the Net Zero Market reform. We helped NG ESO develop and assess the range of credible market design options. Locational market design is a core area of interest, in particular the relative advantages of national, zonal and nodal market designs.



### The Swedish Energy Markets Inspectorate (Ei)

Assessment of the risk hedging opportunities in the Swedish electricity market.



### Octopus Energy – Nodal GB price modelling

We investigated the benefits and challenges of implementing nodal pricing in the GB market. As part of this engagement, the FTI team developed a detailed nodal GB pricing model



### Electricity Market Design and RES Deployment

We analysed the reforms of market design in a wide range of jurisdictions to accommodate high shares of renewable energy in a timely, cost-effective and secure fashion.



### Impact of a possible 550g CO2/kWh emission standard in EU capacity mechanisms

As part of a detailed modelling of European electricity markets, we analysed the impact of the "Emissions Performance Standards" proposed by the European Commission under the Clean Energy Package.



### Applicability of nodal pricing in Europe

Analysis of the implementation of the nodal electricity market design in various jurisdictions of the United States, with the aim to provide answers to the problems encountered in Europe.



### Support to ENTSOE on the resource adequacy methodologies

We addressed the definition of the reliability standards, the choice of the relevant indicator (Loss of Load expectation, Energy not served...) and the economic approach to determine an optimal reliability standard.



### New interconnectors in the Australian market

Analysis of the Australian National Electricity Market on the development of new interconnectors, and the upgrading of existing interstate links, with advice and services in relation to the development of further interconnection in the NEM, and in particular to consider the impact on consumer outcomes.



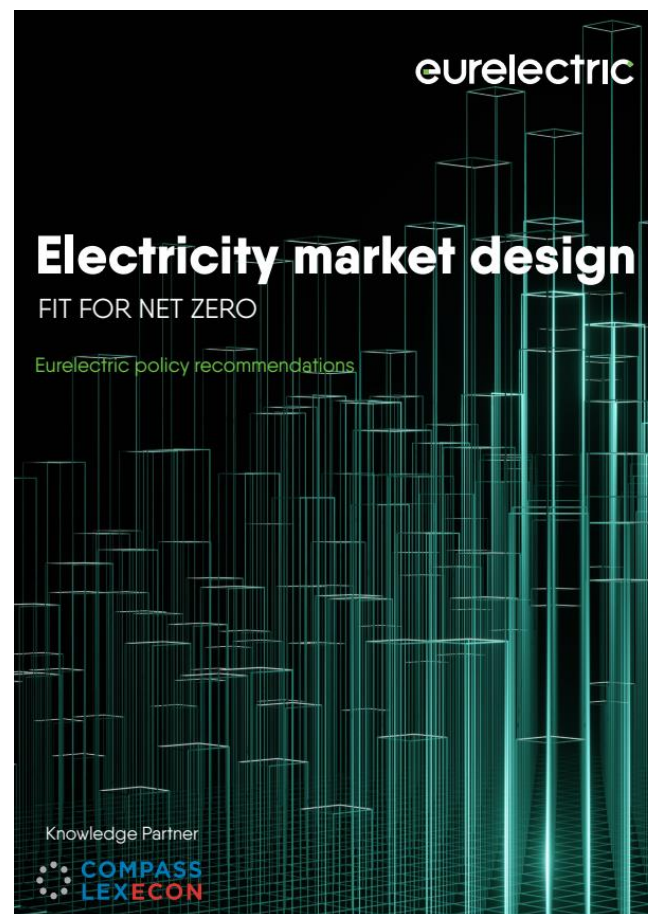
### Reform of Australian electricity market

Supported the Australian Energy Regulator (AEMC) to reform the architecture of Australia's electricity markets to better meet the challenges of developing renewable energies.



# About Compass Lexecon (4/4)

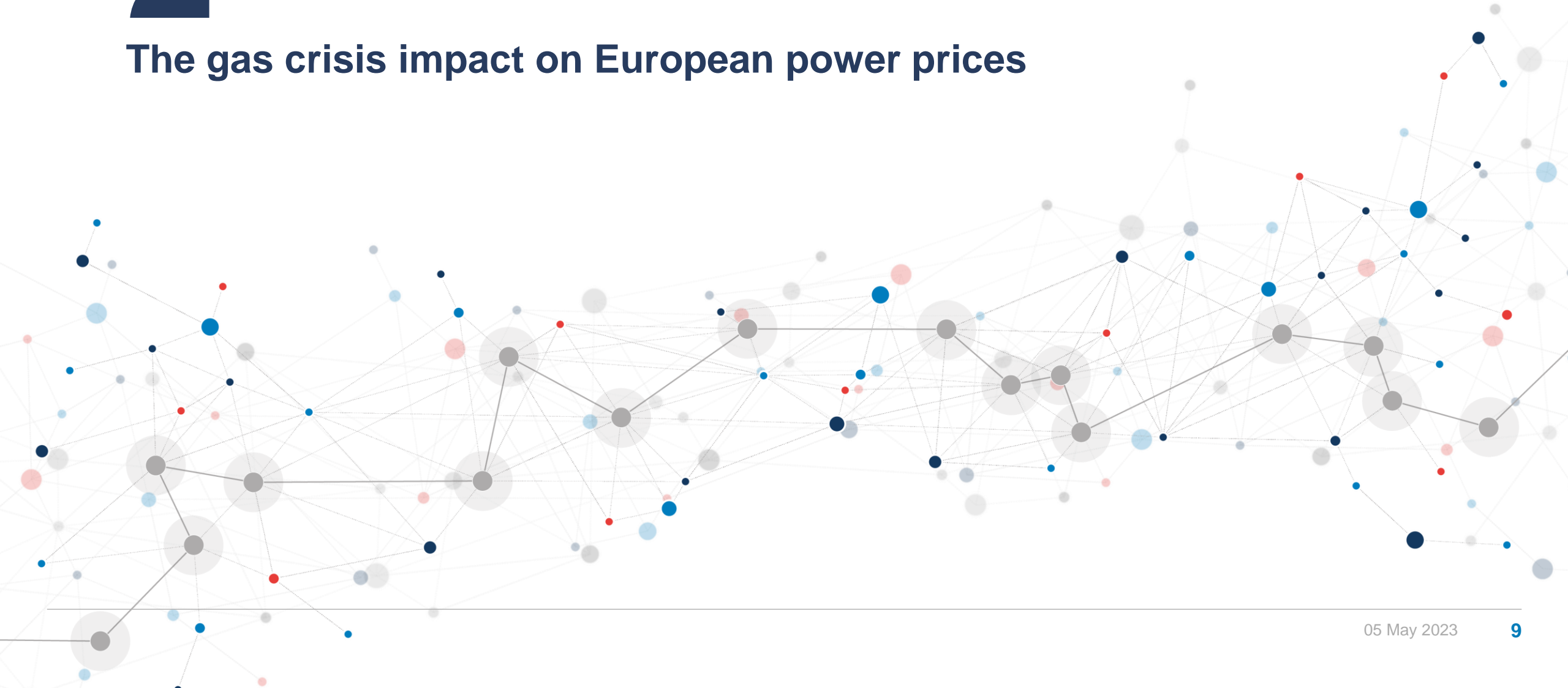
## Recent electricity market design studies



On-going study in  
German speaking area

# 2

## The gas crisis impact on European power prices

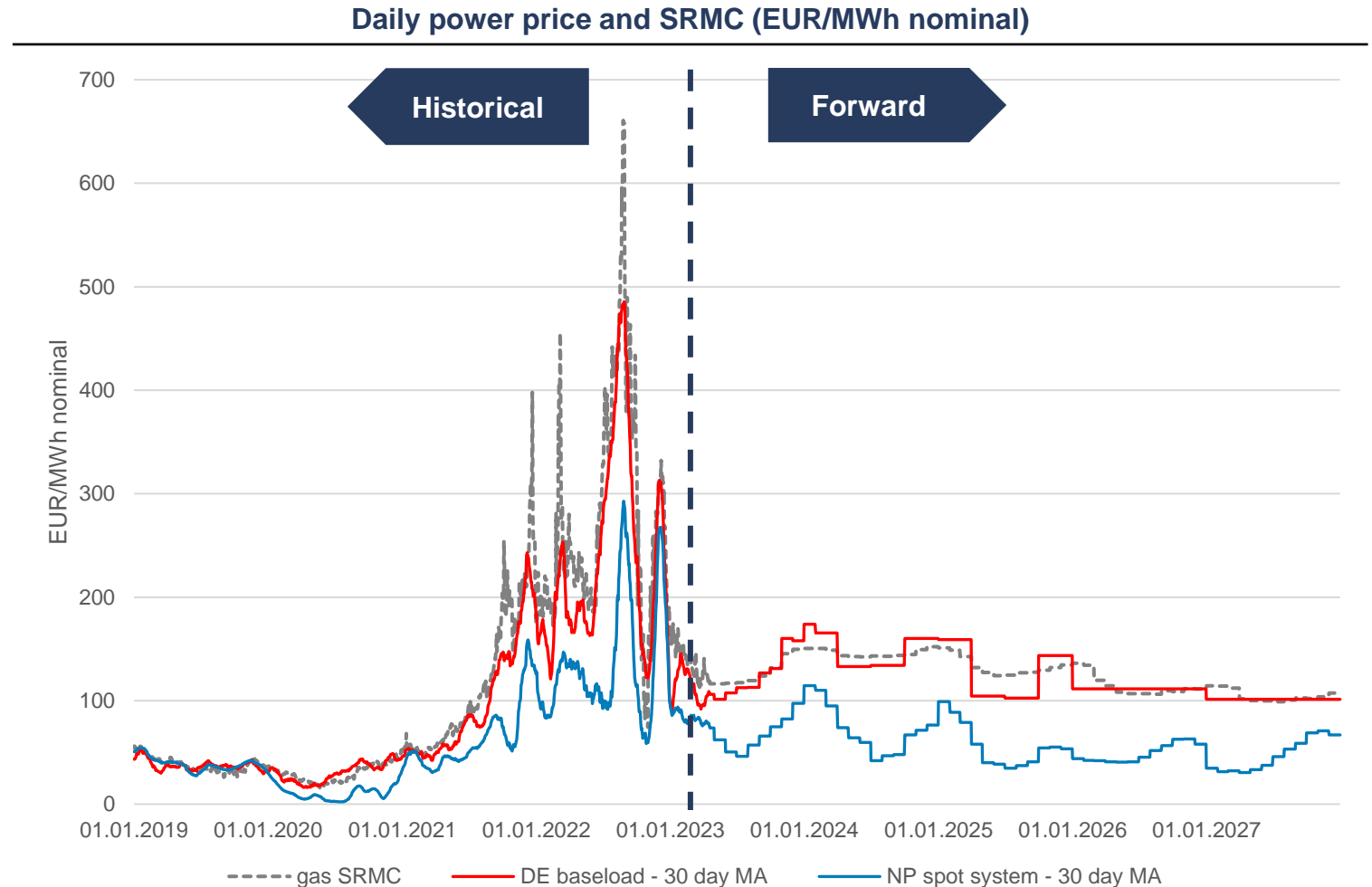




# Wholesale power prices increased massively as a result of the gas crisis

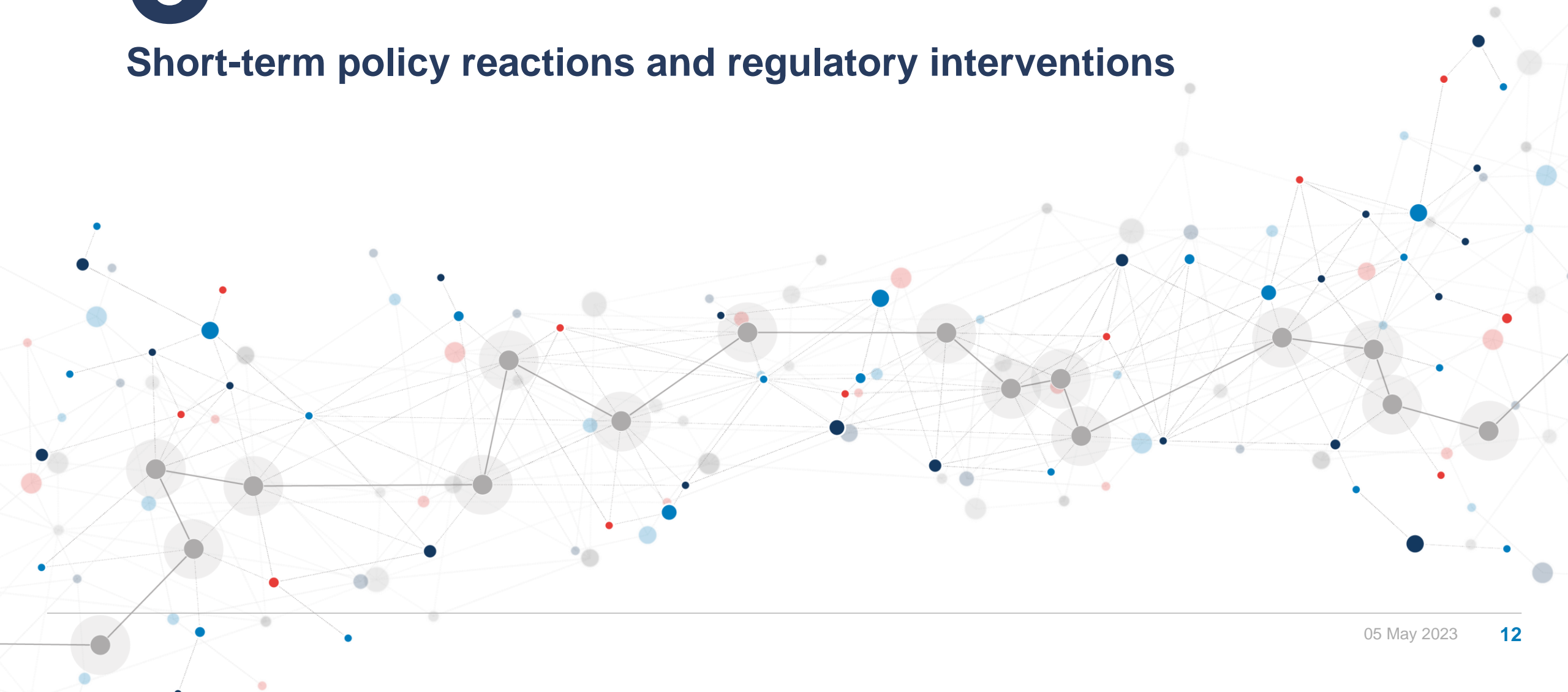
Power prices increased by 3 to 5 depending on the country compared to pre crisis levels

- The increase in wholesale prices differed across countries, depending on the generation mix (**role of gas fired generation**) and **interconnection** with other markets.
- Some of the bidding zones in the Nordic market, for instance, were less affected (“decoupled”) by the rising gas prices due to electricity generation relying more on hydropower and in some countries on nuclear.
- The **increase of CO2** prices also impacted power prices but to a much smaller extent than gas prices.



# 3

## Short-term policy reactions and regulatory interventions



# The three stages of the policy response to the crisis

Interventions first focussed on retail markets, before reaching wholesale markets







# In retail markets, a broad range of tools have been used to limit the impact on consumers

But EU countries differ regarding the types of consumers targeted, and the types of measures implemented

	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovenia	Slovakia	Spain	Sweden	United Kingdom
																												
Direct subsidy for energy costs	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•	•	•		•	•	•	
Reduced energy tax/ VAT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•	•	•	
Decrease/ exemption from network tariffs	•							•			•			•	•						•			•	•		•	
Retail price regulation	•		•			•	•	•		•	•		•				•	•	•	•		•		•	•		•	

Not covered today

# Short-term policy interventions in electricity wholesale markets can be clustered into four groups

A. Cap on wholesale electricity price	<ul style="list-style-type: none"> <li>Maximum electricity price set at a predefined level and applicable on the entire wholesale market</li> <li>Can be tied to monitoring of margins of generators to prevent excessive profits</li> <li>On a wholesale level, price caps exist in Texas and Australia</li> </ul>	
B. Negotiated contracts for electricity	<ul style="list-style-type: none"> <li>In France and Slovakia, the government has induced national energy companies to sell part of their electricity generation to customers at a negotiated cost below market prices</li> <li>The EC has proposed to implement a central buyer model for gas purchasing, which would see a European public institution purchase gas for Europe to reduce costs</li> </ul>	
C. Cap on fuel price, fuel use, or fuel subsidy (for fossil generators)	<ul style="list-style-type: none"> <li>Fossil-fuel generators, mostly gas-generation, is subsidised in order to induce a reduction of their wholesale market bids</li> <li>This measure attempts to work on the source of the problem, high gas prices</li> <li>This measure has been implemented on the Spanish/Portuguese wholesale electricity market</li> </ul>	
D. Claw-back on windfall profits of inframarginal generators	<ul style="list-style-type: none"> <li>Temporary fiscal measure on economic rents, actually an “income tax”, where plants have to return “excess income” obtained in the electricity market (for example, compared to what they would have obtained if the gas price would have been capped)</li> <li>Spain implemented a claw back which excluded forward sales. Because electricity may have been sold forward, the amount of rent a generator earns on wholesale markets often cannot be estimated reliably.</li> </ul>	

**Focus on these two short-term intervention forms today with the example of Spain. See how market interventions can distort competition and reduce incentives for investment in RES.**

# Spanish state interventions on the market to reduce price level and perception of windfall profit

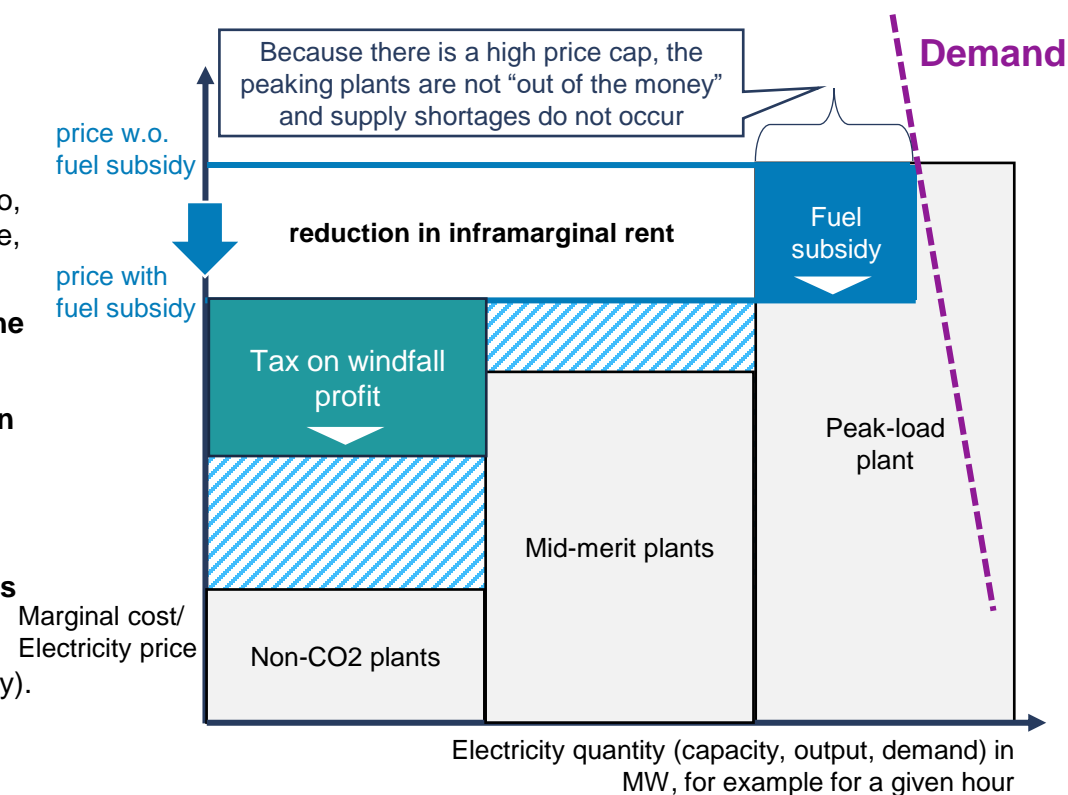
Spain, whose consumers were particularly hit by the price surge, implemented two measures to reduce both market price and perceived windfall profits

- To reduce the marginal power price in the MIBEL (Iberian) market, Spain and Portugal introduced a **subsidy for fossil fuel fired plants**. They are compensated for their fuel costs over a certain cap. This mechanism was approved by the EC ([link](#)), and will be in place until the 31 May 2023.
- To reduce the perceived windfall profit of RES operators, Spain has introduced a **clawback on profits mechanism**. This concerns non-CO2 emitting plants (mainly hydro, nuclear, wind and solar). This excludes facilities under a regulated remuneration scheme, and production covered by a fixed hedging contract.

! These measures create market distortions in the short-term (and to some extent in the long run)

- **Subsidising fossil fuels** for electricity generation constitutes a **cross-border distortion** compared to other EU countries, and so **reduces the efficiency of dispatch** as cheap electricity flows to higher price zones.
- Further, this subsidy gives incentives for the use of gas for electricity generation, which could induce a risk given the Ukraine war context of supply gas issues. Also, **the price is not a signal of scarcity/need** anymore.
- There is a **lower incentive to innovate** (fuel switch away from the expensive technology).
- **Taxing windfall profits** creates **long-term distortions** by reducing incentives in lower short-term costs and low-carbon technologies. Lower returns and possible profit losses impact investment behaviour on possible risky investments.

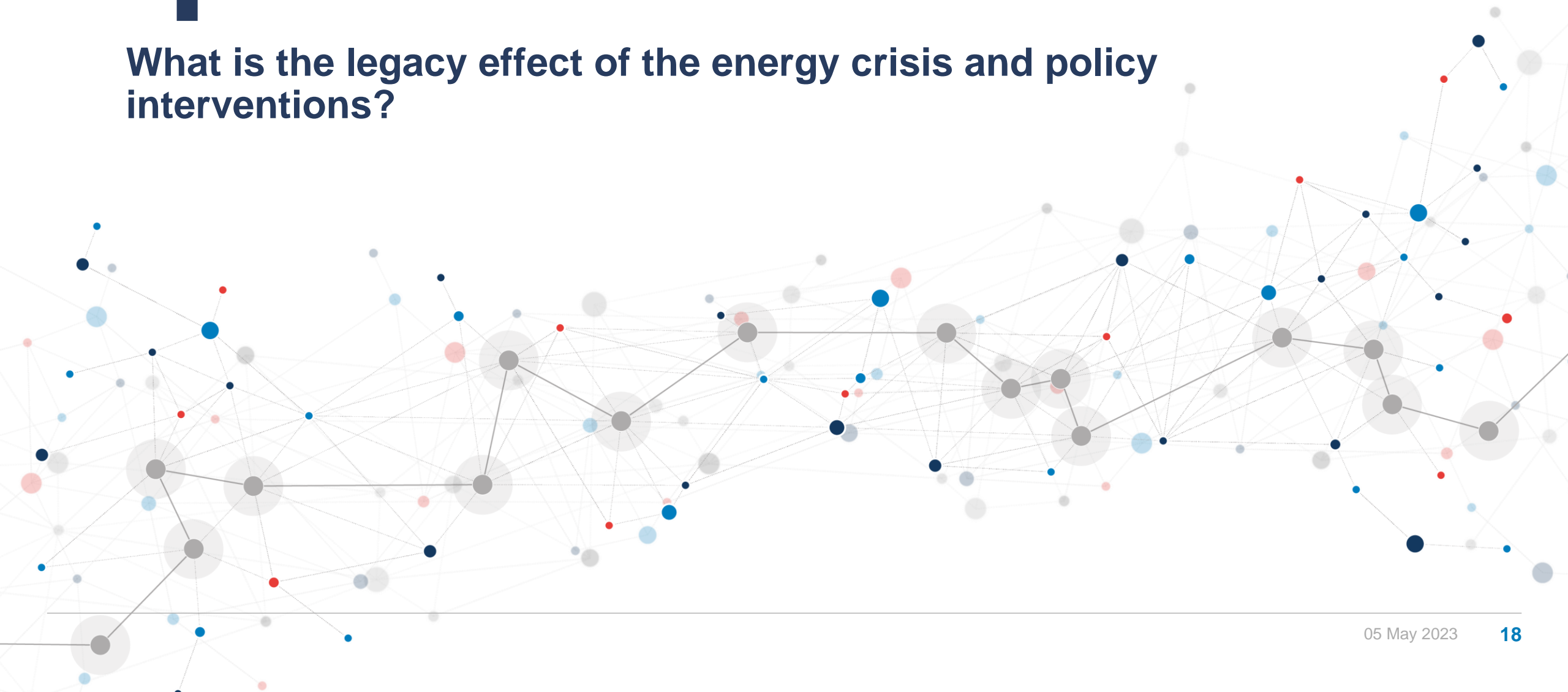
High commodity prices, inframarginal rent and combined measures implemented in Spain





# 4

## What is the legacy effect of the energy crisis and policy interventions?



# The EU integrated market ensured an efficient functioning of the power system but needs to be complemented to address policy objectives

Wholesale markets based on marginal pricing ensure an efficient operation of the energy system and have proven resilient in the energy crisis...

- 1 an efficient dispatch of generation and flexibility resources;
- 2 optimised imports / exports to limit costs for consumers;
- 3 a mutualisation of resources to integrate renewables and strengthen security of supply;
- 4 short-term economic signals to coordinate generators, prosumers, flexibility providers and foster demand response

... However, the recent energy crisis has highlighted some of the gaps of the current EU electricity markets to address policy objectives

# The energy crisis has been a catalyst to reveal some of the underlying structural challenges of the market design



**Retail market challenges:** Sending **efficient but sustainable price signals** to consumers for a just transition, including for **flexibility, consumer investment and support to low-carbon investment** through PPAs. **Balancing competition concerns with necessary commitment to facilitate hedging and investment.**

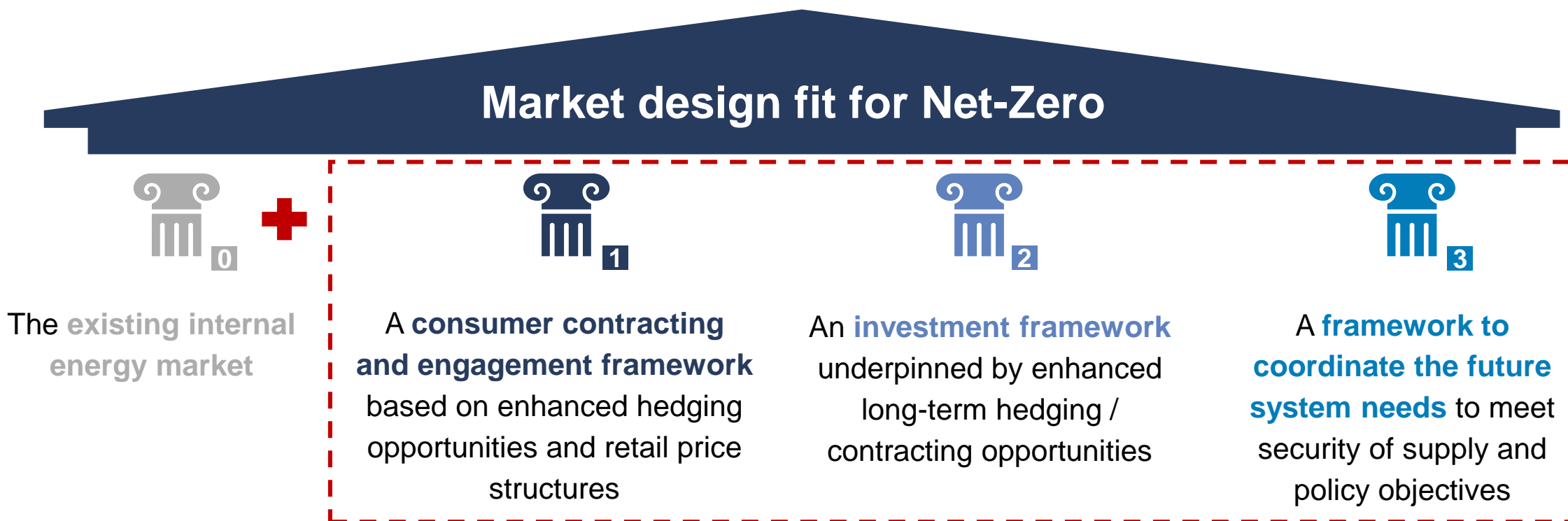
**Wholesale market challenges:** The energy price crisis has led to a **societal and political distrust** in current power market design. Electricity markets are also **facing a change in cost structure towards fixed costs**. Last, **policy, regulatory and geopolitical risks** increasingly embedded in market price signals.

**Investment challenges:** **Stepping up capacity additions to make the EU decarbonisation ambition** a reality. Coordinating and revisiting current support mechanisms, in a context of difficult depoliticization of technology choices, as market entry / exit driven by out-of-market mechanisms. **Securing sufficient capacity to meet demand, with adequate flexibility** to also address intermittency.

**Sector coupling challenges:** Linking **multiple energy carriers** with each other and with end-use sectors, in a context of deep uncertainties on transition pathways with large economies of scale for some infrastructure (electrolysers, H2 network, etc.). **Accounting for the role of electricity in the energy transition also in cost allocation to facilitate advocated massive electrification.**

# Towards a new market design: Compass Lexecon study for Eurelectric

The market design we propose for the net-zero model builds on the existing internal energy market, adding three essential elements:



# The European Commission's market reform proposals of 14 March 2023

Whilst it is too early to assess the effect of the temporary interventions in the market, the crisis has triggered a debate on a structural reform of the European electricity market.



## ① Protect customers

- **New retail market rules** to protect consumers from price volatility
- **Crisis' regime** introduced under certain conditions
- Development of **energy sharing** between consumers



## ② Strengthening the stability and predictability of energy costs

- Reduction of barriers and **development of PPAs**
- **Harmonization of public support schemes** for new renewable energy investments (including nuclear) with two-way **CfDs**
- Development of **liquidity in the forwards markets**

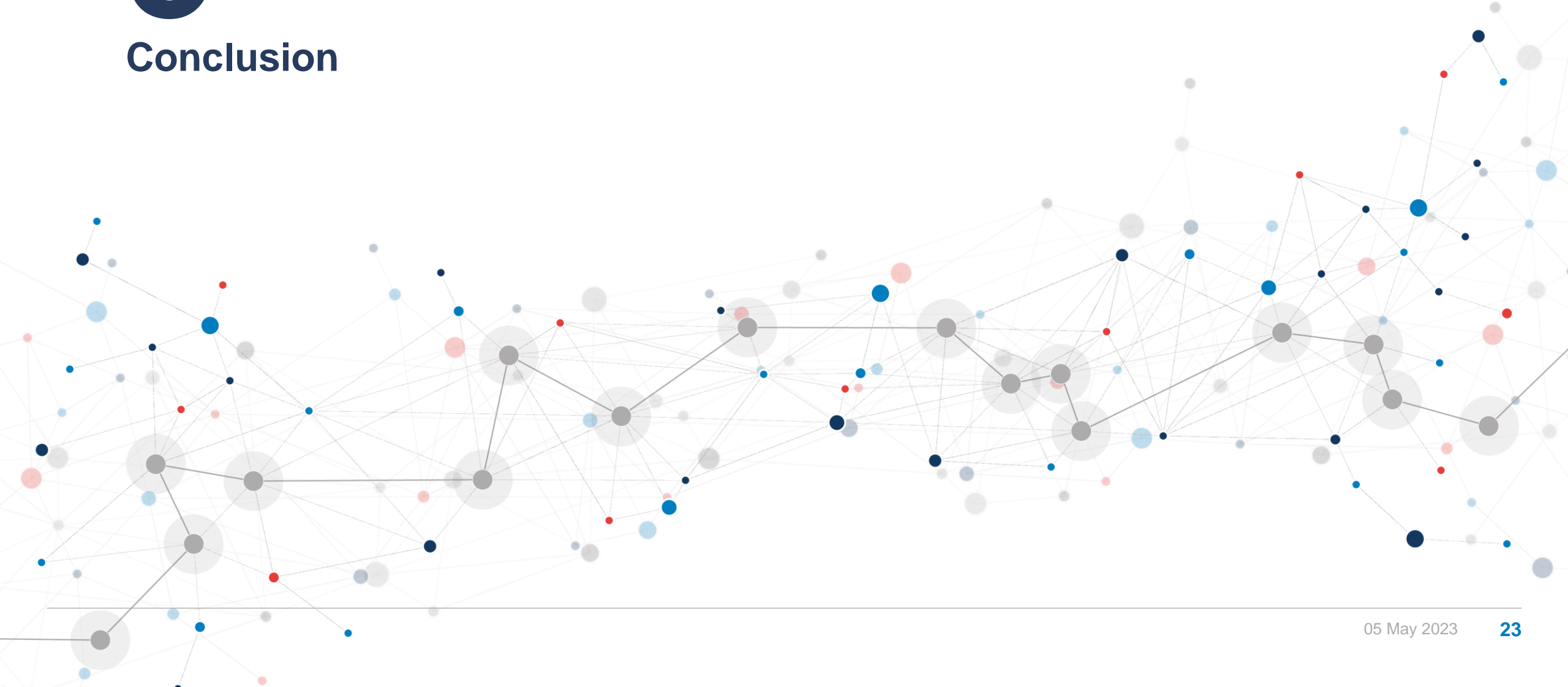


## ③ Enhance the deployment of renewables

- Prospective assessment of **flexibility needs**
- Possibility of adapting **capacity remuneration mechanisms** to stimulate flexible capacity and public support schemes
- Facilitate the integration and connection of renewables to the grid

# 5

## Conclusion





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# Conclusion

- The energy crisis has been the **first stress test of the common internal market for gas and power**.
  - Overall, the market has shown resilience, and has done what it was supposed to do – it has **correctly signaled the scarcity of gas and power** until about September 2022, and the reduction in scarcity of gas and power between September 2022 and now.
  - As such, the existence of a liquid and competitive short-term electricity and gas market in Europe seems to have been an asset.
- Whilst it is too early to identify the **long-term legacy of the crisis and policy interventions**, a consensus seems to emerge on the need to complete the existing EU energy market with a greater role for **long-term contracting and greater opportunities for consumers to hedge** (Eurelectric, Compass Lexecon, 2023).
- The **stated objective of market reform proposal by the European Commission** go into this direction:
  - enhance the **deployment of renewables**
  - **protect customers** from the volatility of short-term market prices
  - **boost the EU's industrial competitiveness** while deploying clean energy sources

Bringing **CLARITY** to the complex.

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