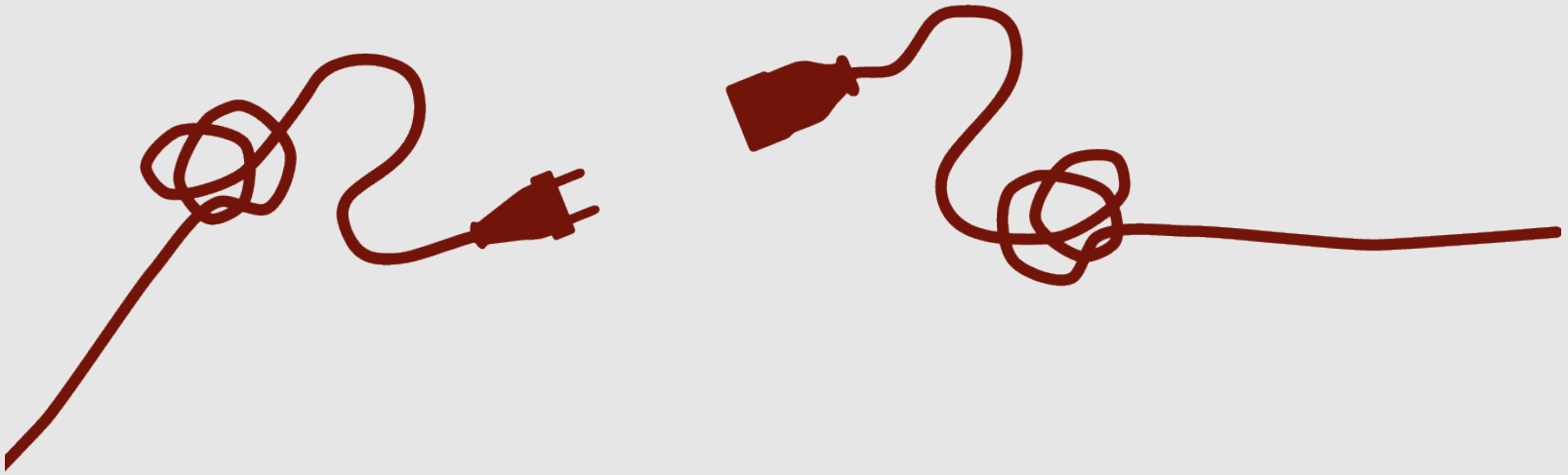
Watts Next: Securing Europe's Energy and Competitiveness

Where the EU's Energy Policy Should Go Now



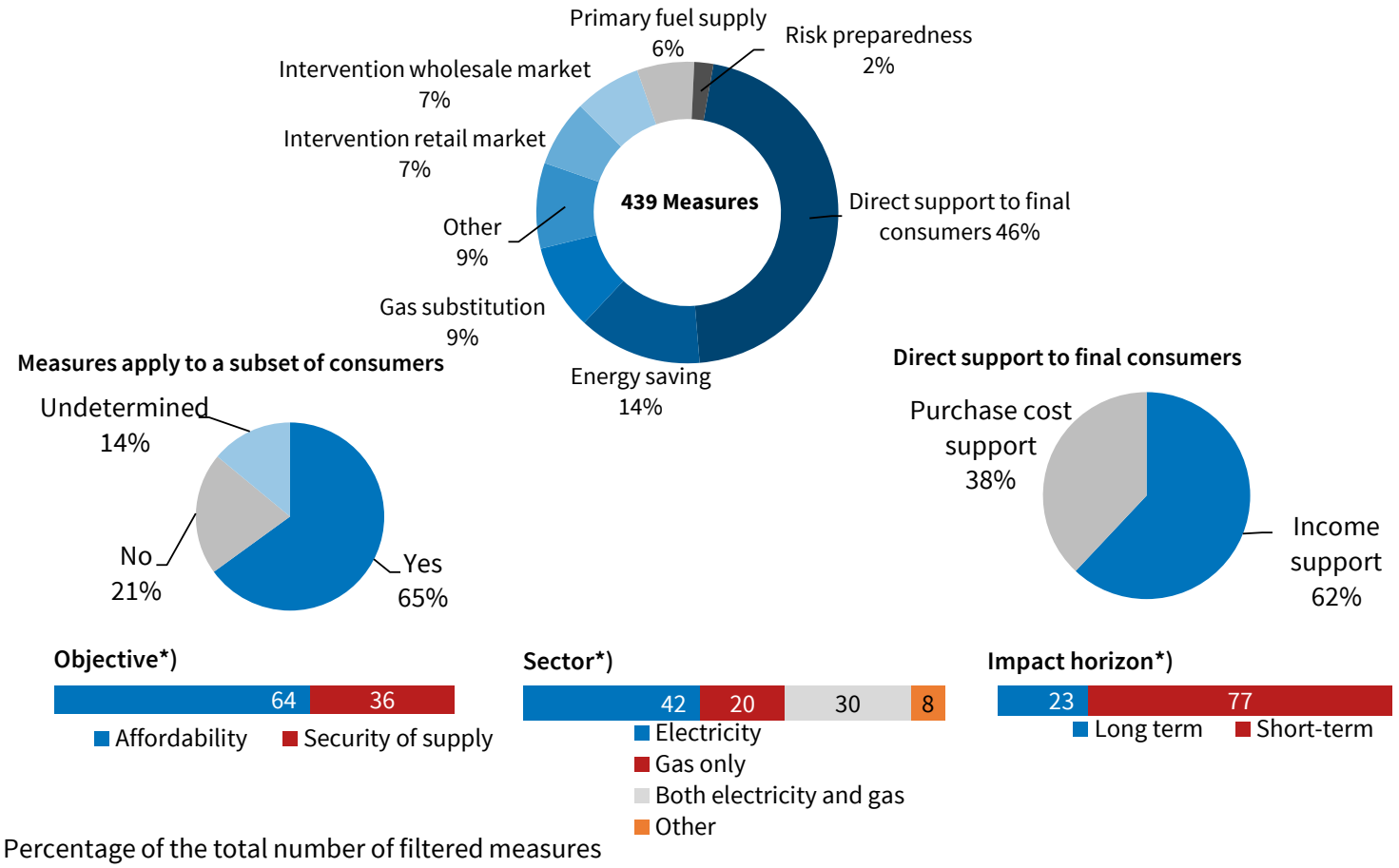
EconPol Webinar, April 15, 2024

Introduction to Report and Lessons Learnt

Karen Pittel
ifo Institute and University of Munich

The Way It Was and The Way It Is

National Measures to Ameliorate Impact of Energy Crisis

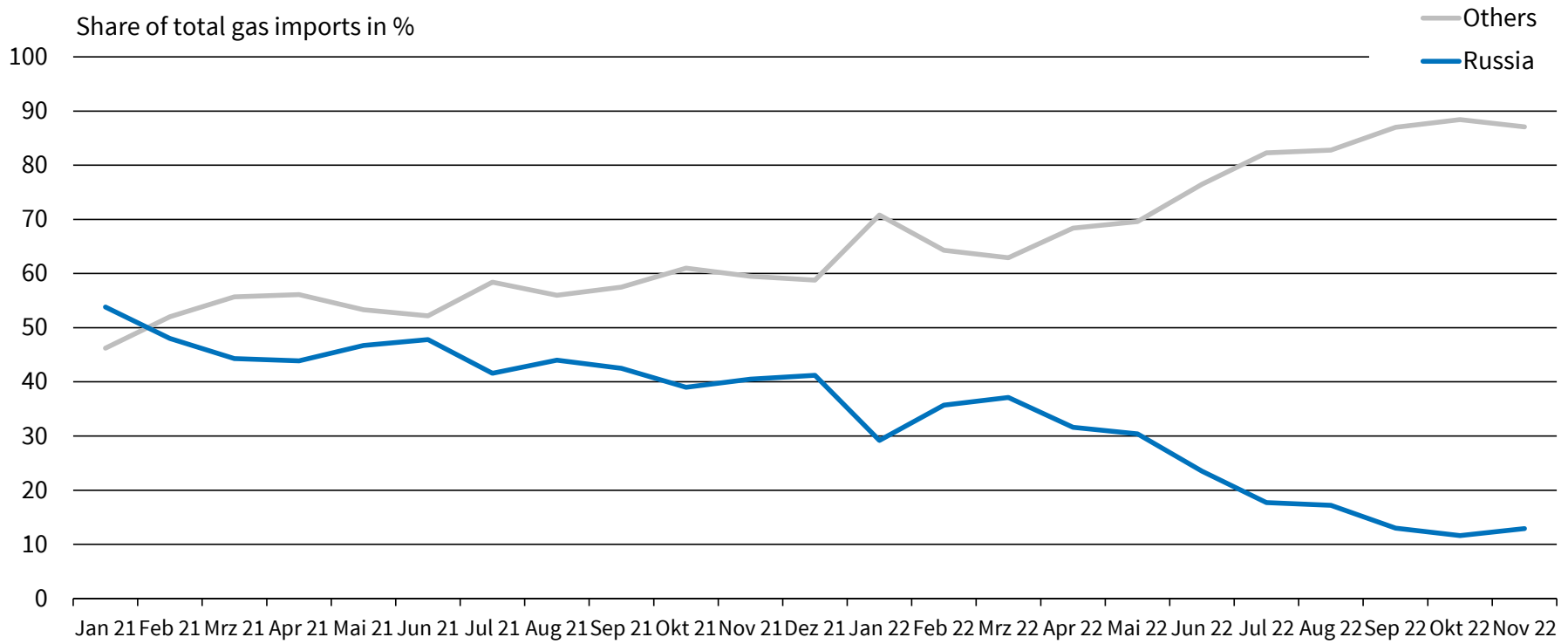


*) Percentage of the total number of filtered measures

Source: ACER (2023)

The Way It Was and The Way It Is

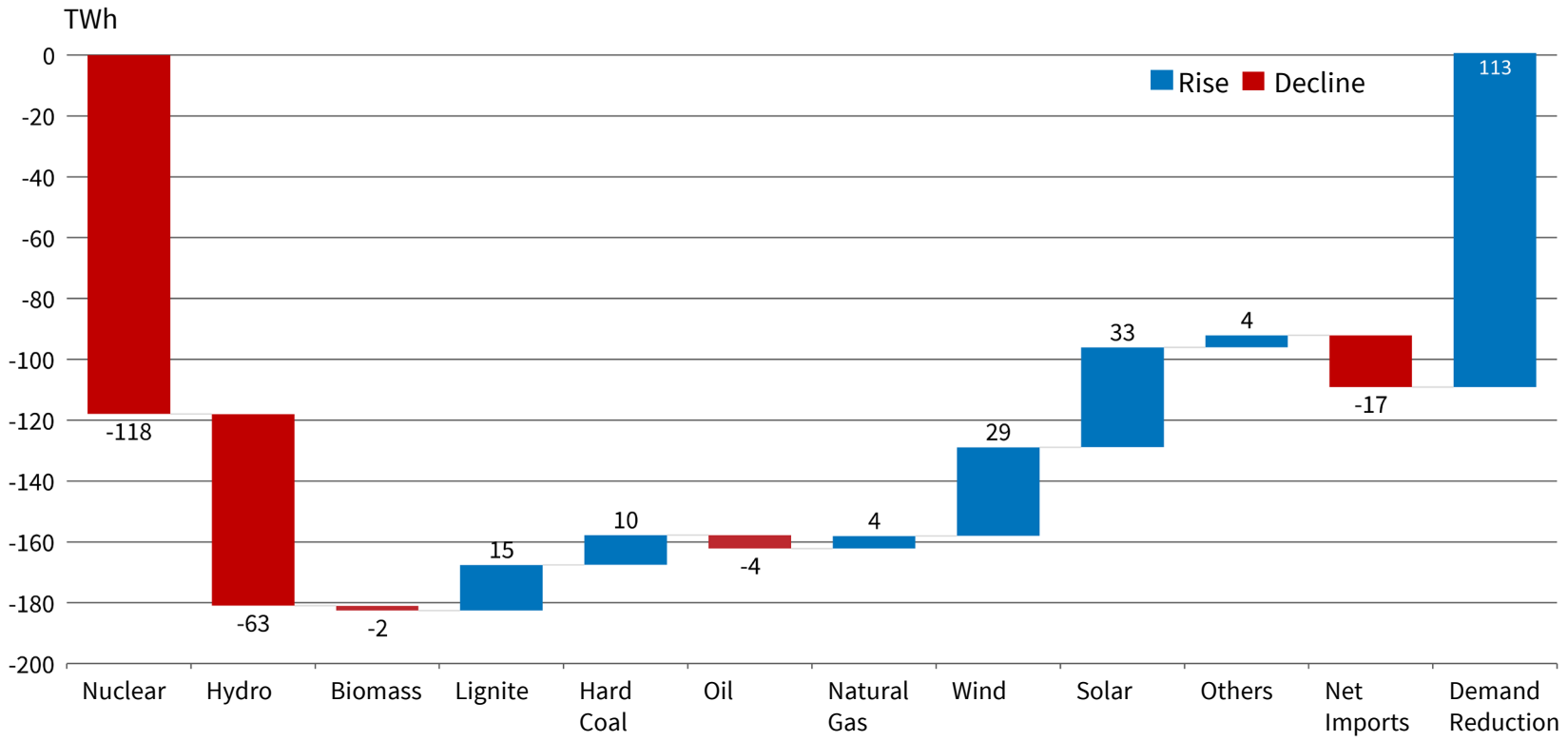
EU Diversification Away from Russian Gas



Source: European Commission (2023)

The Way It Was and The Way It Is

Change in EU Electricity Generation, 2021 vs. 2022



Source: Fraunhofer Institute for Solar Energy Systems (2023); own calculations

Lessons Learned from the Energy Crisis

Strengthen energy security

Reducing dependencies and improving flexibility within Europe, increasing energy efficiency

Avoid distortionary policy and use the power of markets

As little as possible dampening of market prices as short term palliative (balance between HH and firms)

Adjust existing and built new infrastructure

Decommission gas grids and repurpose them

Establish a strategic Foresight Office

Reducing risks of future pandemics, energy crisis, raw material shortages, or large-scale cyberattacks

Communicate honestly!

Policy Coordination

Pedro Linares
ICAI School of Engineering

Policy Coordination

Creation of a single European long-term electricity market: lower costs, more security

- Regulators: promote long-term contracting at the European level

  Standardized products, trading platforms

  Contracts for Difference: Not mandatory, not distortionary, not unfair, not only public

  Carbon Contracts for Difference

- Governments: refrain from interfering in markets (emergencies may be different)

Policy Coordination

While this is done: **temporary coordination arrangements**, e.g.:

Concerted RES auction

Concerted price for Reliability Options

Common design for promoting storage

Resilience

Georg Zachmann
Bruegel and Helmholtz-Zentrum Berlin

Resilience

What went well

Keeping the market open

- Limited border closures
- Little energy-price subsidies (joint demand-reduction pledge most important)
- Maintain ETS

What went okay

New coordin'/inform'ation fora emerged

- Ad-hoc coordination of energy ministers (good on demand reduction, bad on joint diversification)
- IEA

What went wrong

Lack of preparedness

- Modelling of major disruptions (RU gas, FR nuclear)
- N-1 for countries

MS tried to withhold sensitive elasticities

- Groningen, nuclear, demand reduction

Lack of data crucial for effective policies

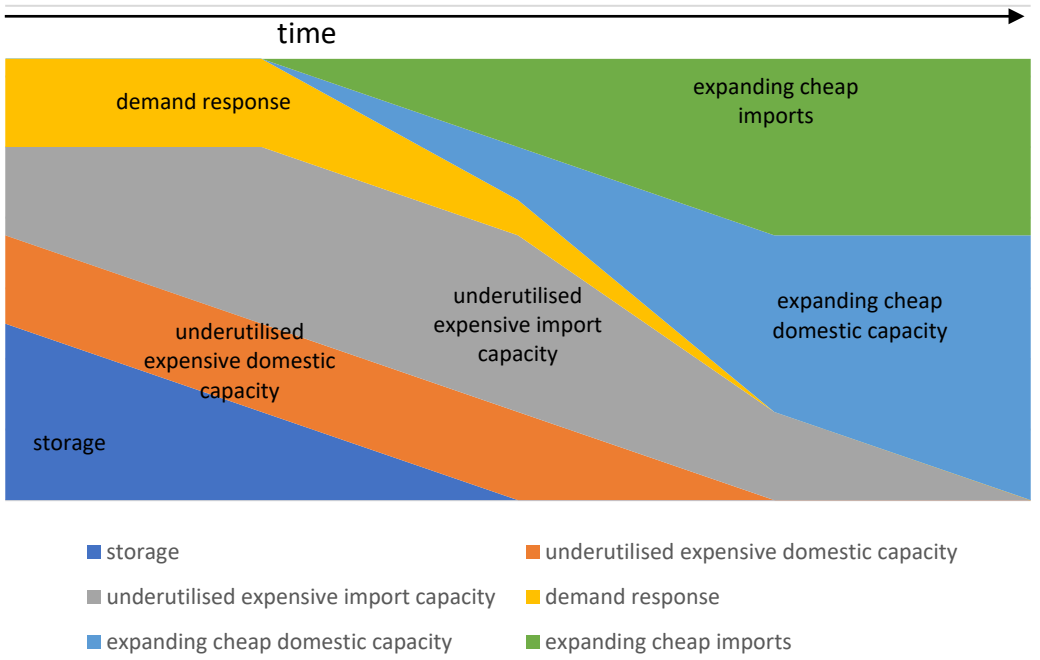
- granular data on prices, contracts, flows, demand was missing (comp's used info strategically)
- Much of academia/modelling capacity was under-utilised

Resilience

What can we learn?

- Energy policy needs to prepare for major disruptions
- Diversification and excess capacities have cost
- Foresight allows to balance the cost of preparation and disruption
    1. Understand systemic risks
    2. Identify lowest-cost options to reduce the cost of such disruptions (remembering the elasticity of the system)
    3. Sufficient foresight to trigger adjustments in time
- -> need for transparent, reliable and relevant data and modelling to coordinate efficient policies in time

Illustration



Infrastructure: location signals and GB energy market reforms

David Newbery
EPRG, University of Cambridge

GB Reform Status

Reform of Electricity Market Arrangements 2023-4

- "market forces alone are currently unable to deliver our objectives"
- Need better locational signals for massive renewable investment

➢ consultation (2024) rules out LMP*, consider zonal charges
And/or network charging reforms

Electricity Networks Commissioner's report 2023

- New generation very different locations to fossil plant
- Currently 14 yrs to deliver new transmission => reduce to 7yrs
- Need to reform planning system to avoid massive delays

National Energy System Operator (NESO) 2024

- Taken into public ownership to coordinate all networks

Deliver Strategic Spatial Energy Plan & Regional Energy System Plan(s)

* Locational Marginal or nodal Prices

Variable Renewable Electricity VRE: wind, PV

Peak:average output for wind 2-4:1, PV 8-11:1

⇒ increasing volumes curtailed as VRE rises

⇒ exacerbated by transmission constraints

Marginal curtailment is **3+ times average**

⇒ critical to locate new VRE at uncongested nodes

⇒ need strong locational connection signals

⇒ + integrated network and generation location planning

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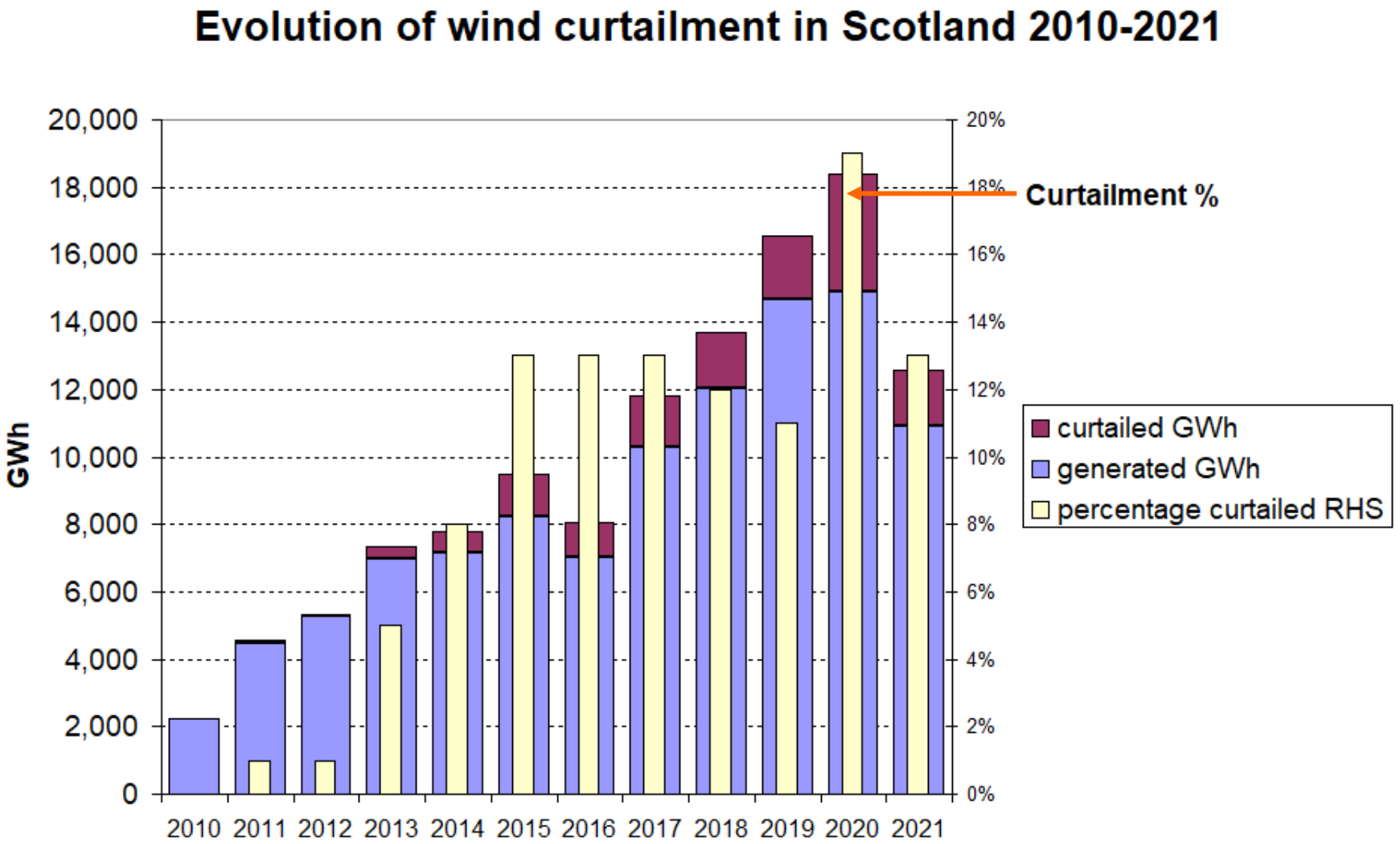
Transmission congestion curtails Scottish wind



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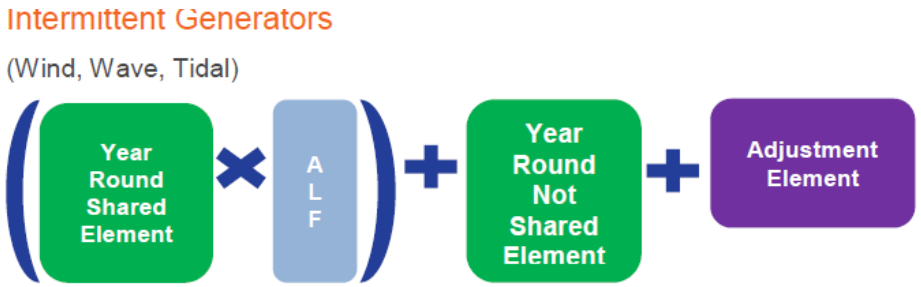
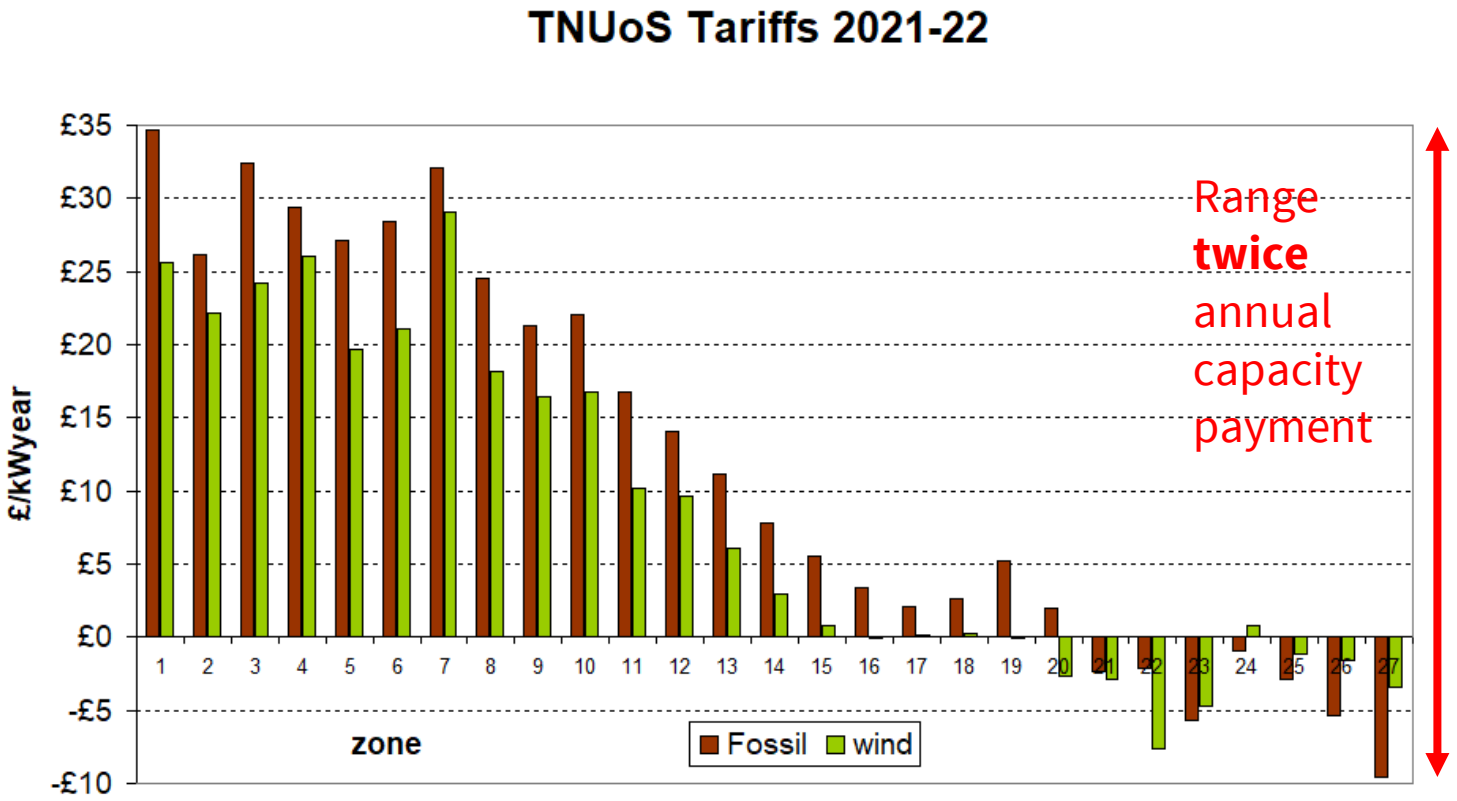
Current transmission charging methodology



Transmission Network Use of System (TNUoS) charges set annually for Generation

Residual regulated revenue recovered from Load



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Guiding location decisions: two approaches

Current: set locational TNUoS charges to guide location

- TNUoS based on Investment Cost Related Prices (ICRP ≈ LRMC)
  - £/MWkm; zones defined by LMPs; assumes **instantly adjustable**

Problems of TNUoS:

- Changed annually even for plant that cannot move
- changes muted to avoid excessive investor uncertainty
- Adjusts slowly at best, poor short-run decisions
- ***Remedy***: long-term TNUoS contracts to guide ***efficient*** location

Alternative: LMPs now ruled out

- Zonal pricing to deliver better interconnector use

⇒ Lower prices in wind surplus zones, higher in import zones

⇒ Export surplus Northern wind, import cheap EU electricity in south

Conclusions: market design

GB recognises market reforms needed

Location decisions for new generation critical

⇒ Better locational investment signals

⇒ **Long-term TNUoS contracts for new entrants**

- only new entrants can choose where to locate
- current TNUoS for existing generators for **smooth transition**

Zonal prices as LMP ruled out (for now)

Network planning through public NESO

- but should be more pro-active in securing good VRE sites

Metals and Raw Materials

Karen Pittel
(on behalf of Frédéric Gonand, Université Paris Dauphine-PSL)

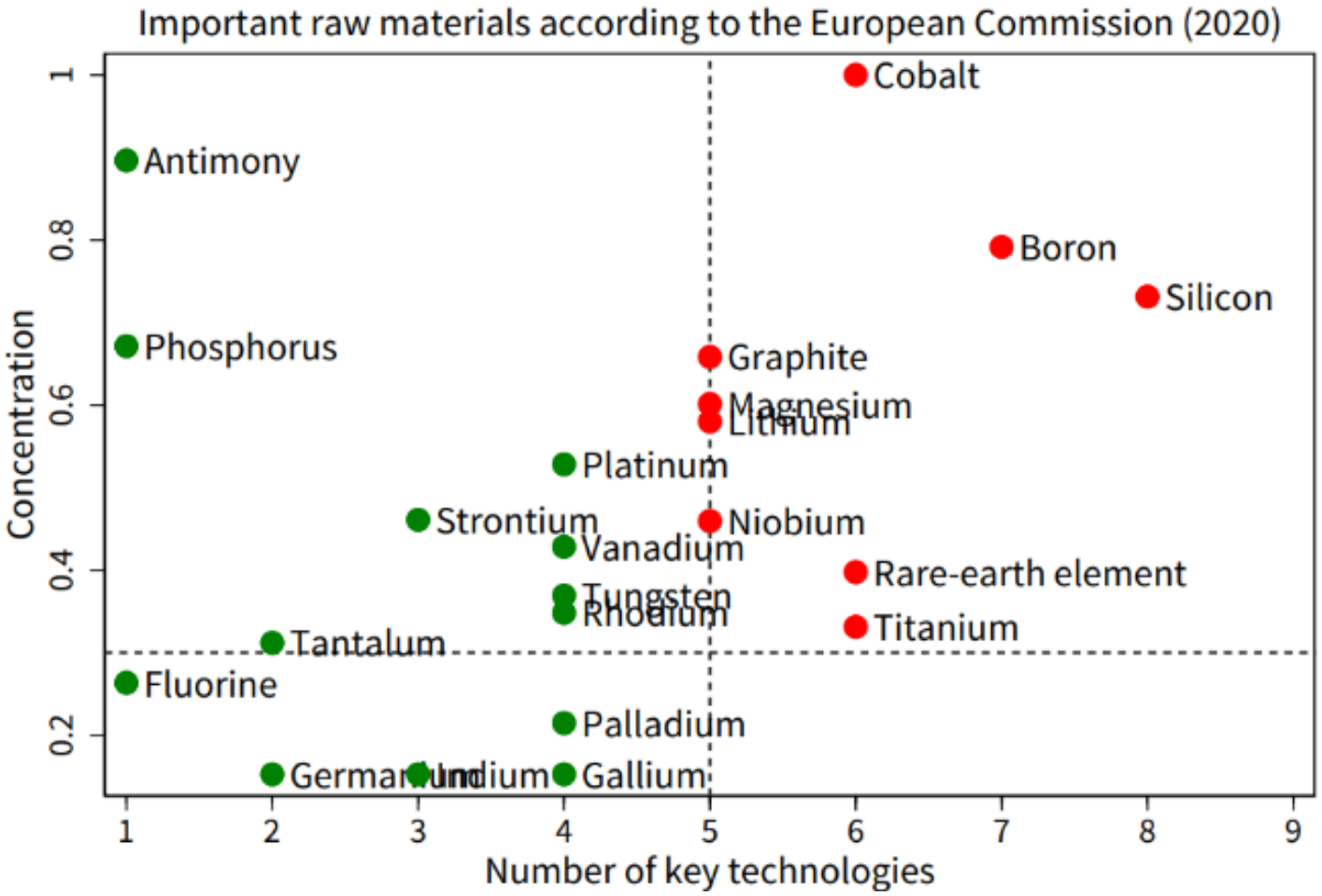
Security of supply in metals

Rising demand for metals needed for the green transition: lithium, cobalt, graphite, rare earths… (-> batteries) + aluminum and copper (cables, PV panels).

Few grounds to believe that **metal prices** will fall significantly in the medium term. Investments low since mid-2010's.

Europe heavily dependent on imports for many of these metals.

Import concentration and key technologies



Source: ifo (2022)

How to deal with rising concerns?

Diversify and reduce risks of supply disruptions

Encourage production of critical metals in Europe

Ramp up circular economy

Getting from outlining framework and measures to **implementation** of, e.g., Critical Raw Materials Act

Risks: **Carbon Border Adjustment Mechanism (CBAM)** may accelerate relocation of downstream (e.g. aluminum industry) to non-European countries.