

The role of Renewables in European Electricity generation

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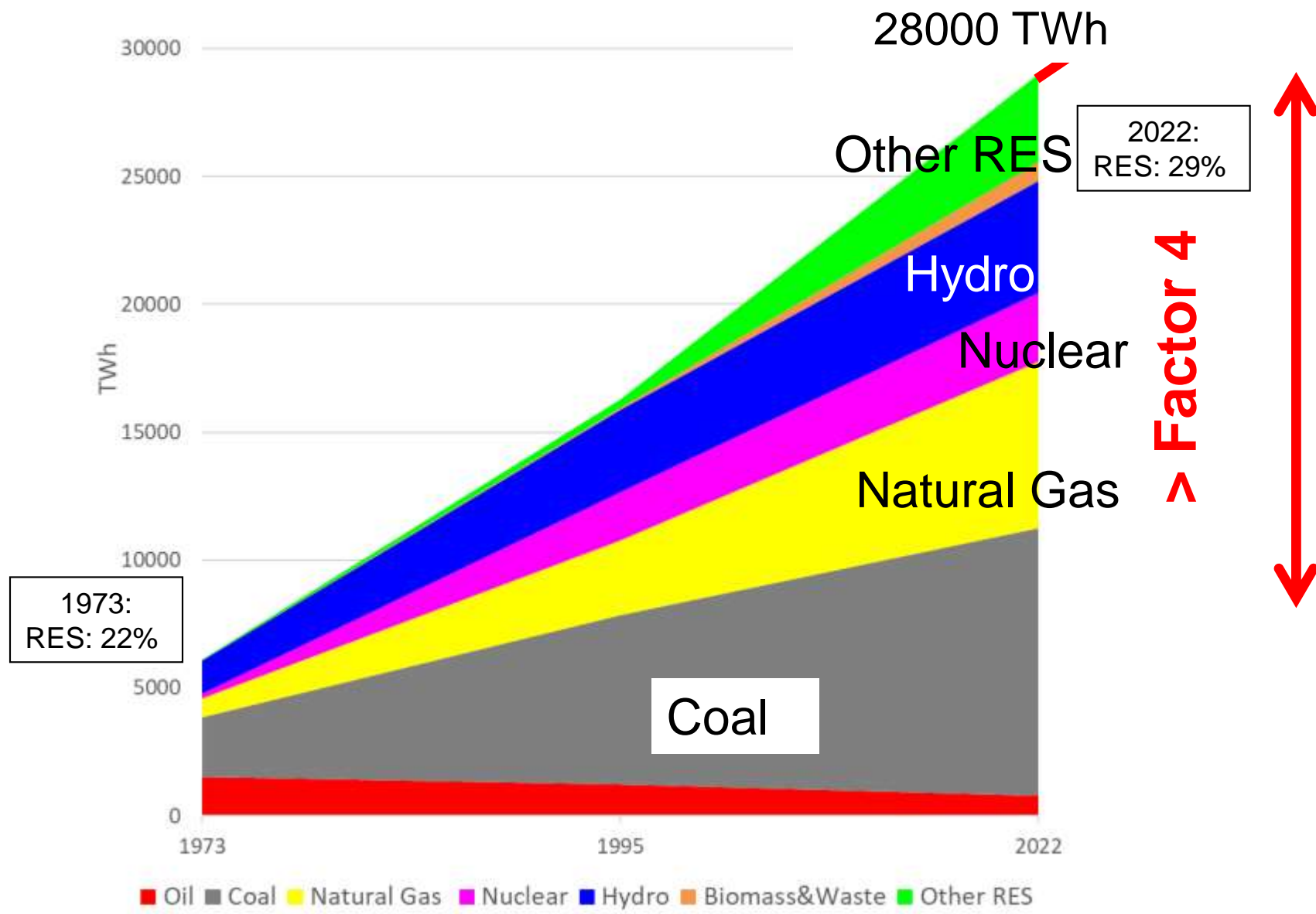
Praha, 12 November 2024

- 1. Introduction**
- 2. Targets and strategies of the EU**
- 3. Renewable electricity in the EU**
- 4. Current challenges**
- 5. Conclusions**

Motivation:

- * **European targets for Renewables**
- * **It is not possible to force variable renewables into the system**
- * **Strong desire of customers to participate increasingly in electricity supply**
- * **Highly volatile electricity prices**
- * **How to retain supply security**

WORLD-WIDE TREND IN ELECTRICITY CONSUMPTION



2. Targets and strategies of the EU

Commission welcomes deal on electricity market reform

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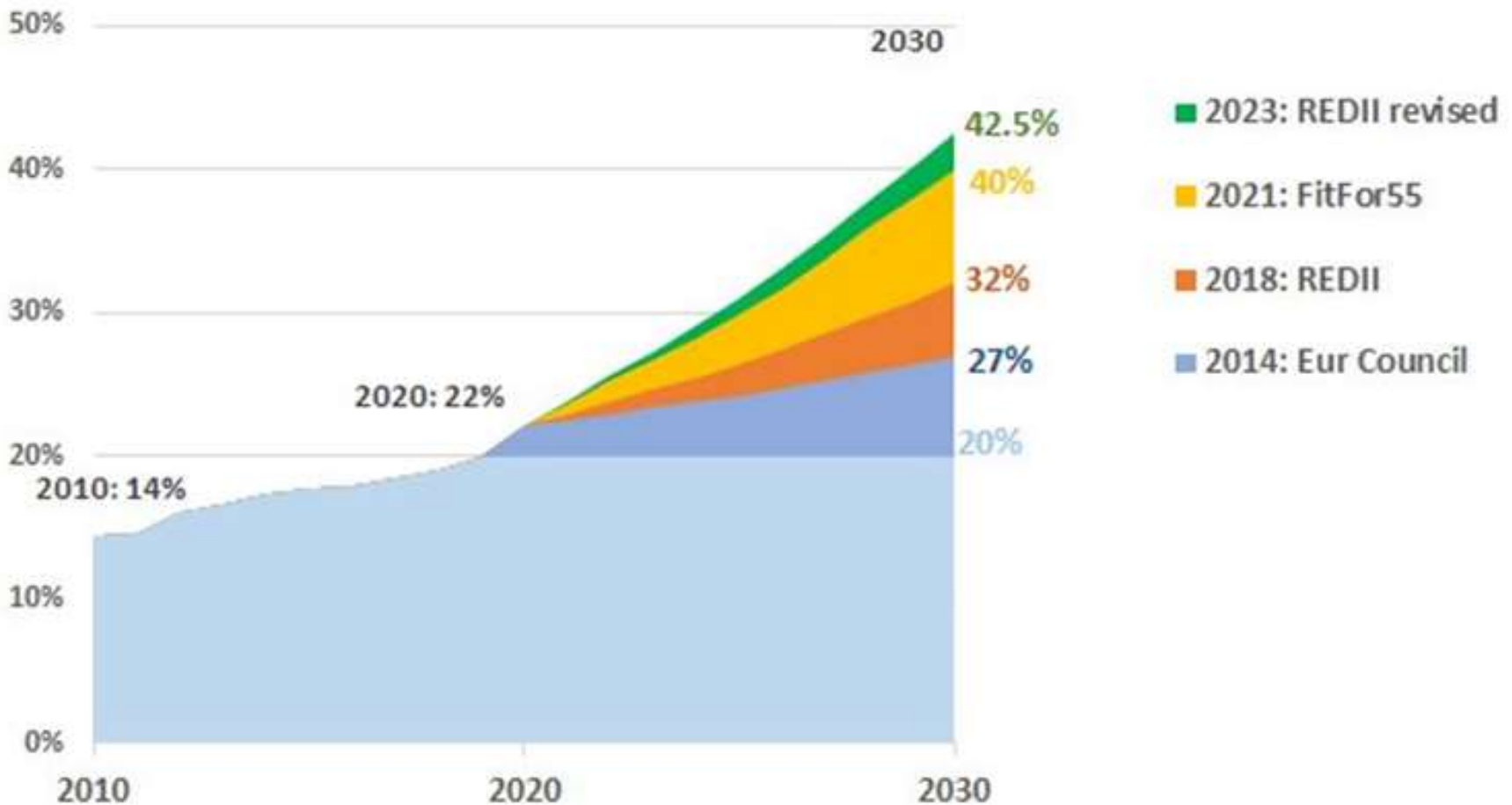
The Commission welcomes the provisional agreement reached today by the European Parliament and Council on the **reform of the EU's electricity market design**. This deal will help the EU build a **renewables-based energy system**, **lower energy bills** and **better protect consumers** from price spikes and empower them to benefit from the transition. It will ensure a **sustainable and independent energy supply** to the EU, in line with the [European Green Deal](#) and the [REPowerEU Plan](#). This reform, which was proposed by the Commission as part of the [Green Deal Industrial Plan](#), will also make the **European industry cleaner and more competitive** thanks to better access to affordable renewable, non-fossil energy.

The reform provisionally agreed today by the EU co-legislators features revisions to several pieces of EU legislation— notably the Electricity Regulation, the Electricity Directive, and the REMIT Regulation. Building on the lessons of the energy crisis spurred by Russia's invasion of Ukraine, the agreed reform will bring **more price stability** to both consumers and suppliers thanks to a broader use of **long-term contracts for clean power production** and will bring more **non-fossil flexible solutions** into the system such as demand response and storage.

Better protected and empowered consumers

- * **Better protected and empowered consumers;**
- * **energy market integrity and transparency (ACER) ;**
- * **A competitive European industry with predictable energy costs**
- * **Long-term contracts: PPAs and CfD**
- * **integration of renewables**

Evolution of RE targets for 2030



1. What needs to be done? Energy Commissioner Kadri Simson says it all ...

*“Europe faces a fundamental challenge in ensuring its **energy independence and deliver on its climate goals.**”*



*It is time to **shift our attention from targets and rules to what is needed to make things happen.***



This means placing the issue of grids at the heart of the debate.



“Upgrading the power grid will plug Europe into a sustainable future”

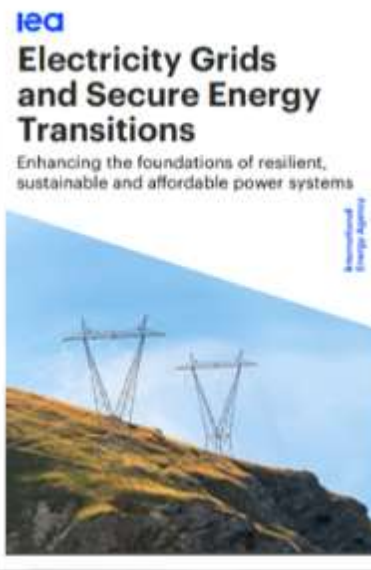


Energy Commissioner Kadri Simson in Financial Times article, 4 September 2023

2. Late acknowledgement in 2023: No Grids – No Green Deal

“The EU is bringing grids to the centre of its agenda.”

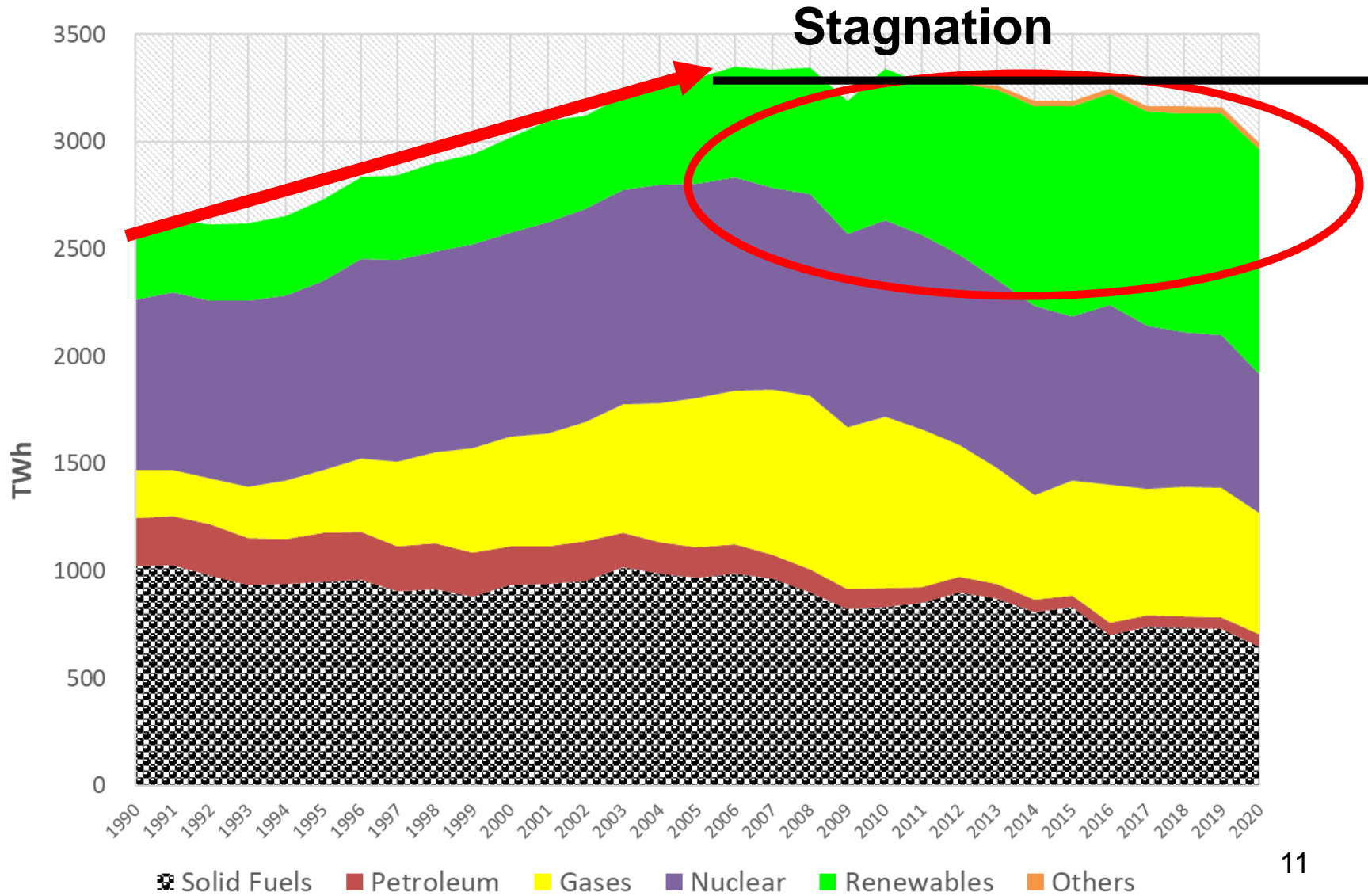
European Commission, Grid Action Plan



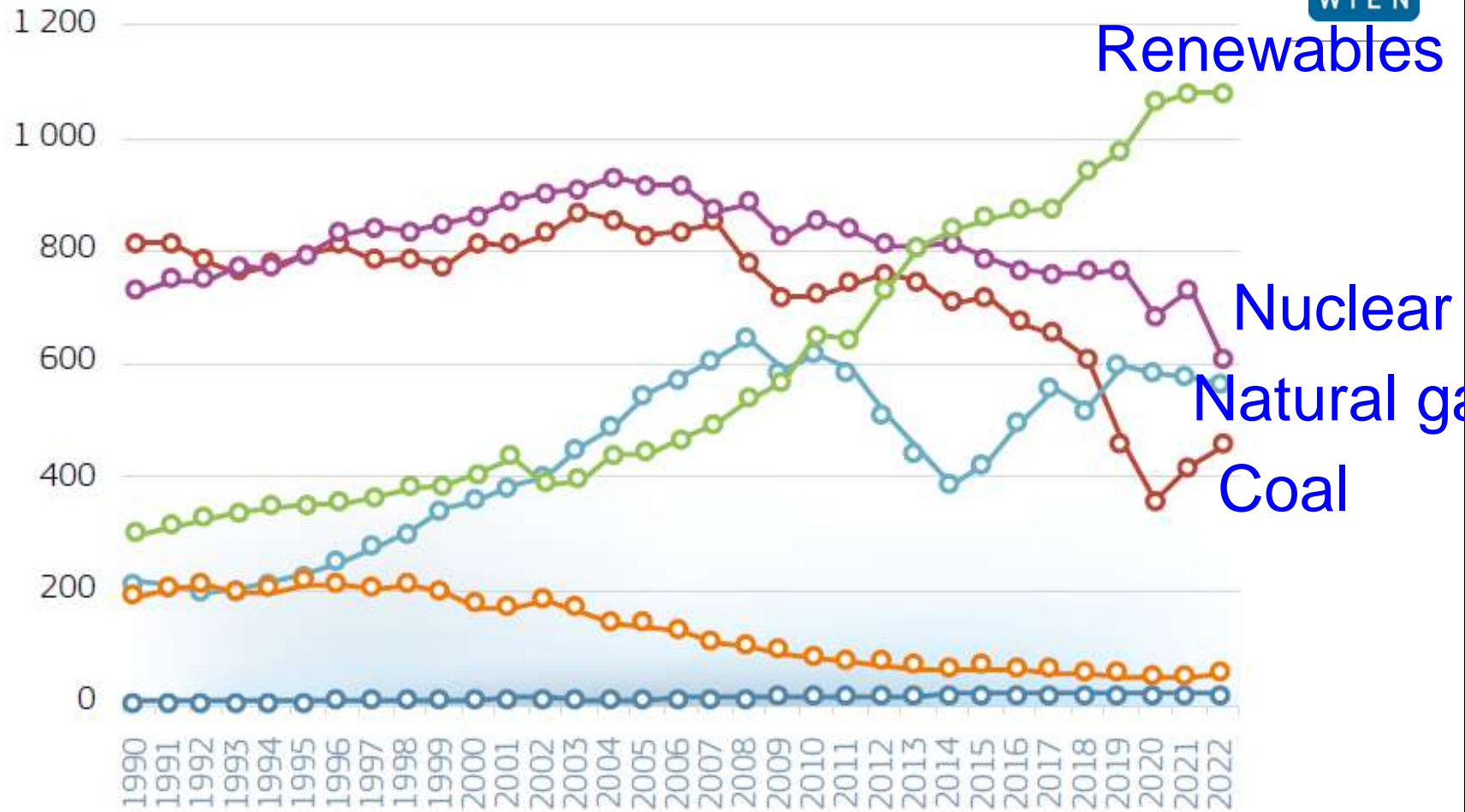
“With this special report, we aim to put an urgently needed spotlight on power grids.”

IEA October 2023

3. Electricity generation EU-28



Electricity generation EU-27



Solid fossil fuels, peat, oil shale and sands

Renewables and biofuels

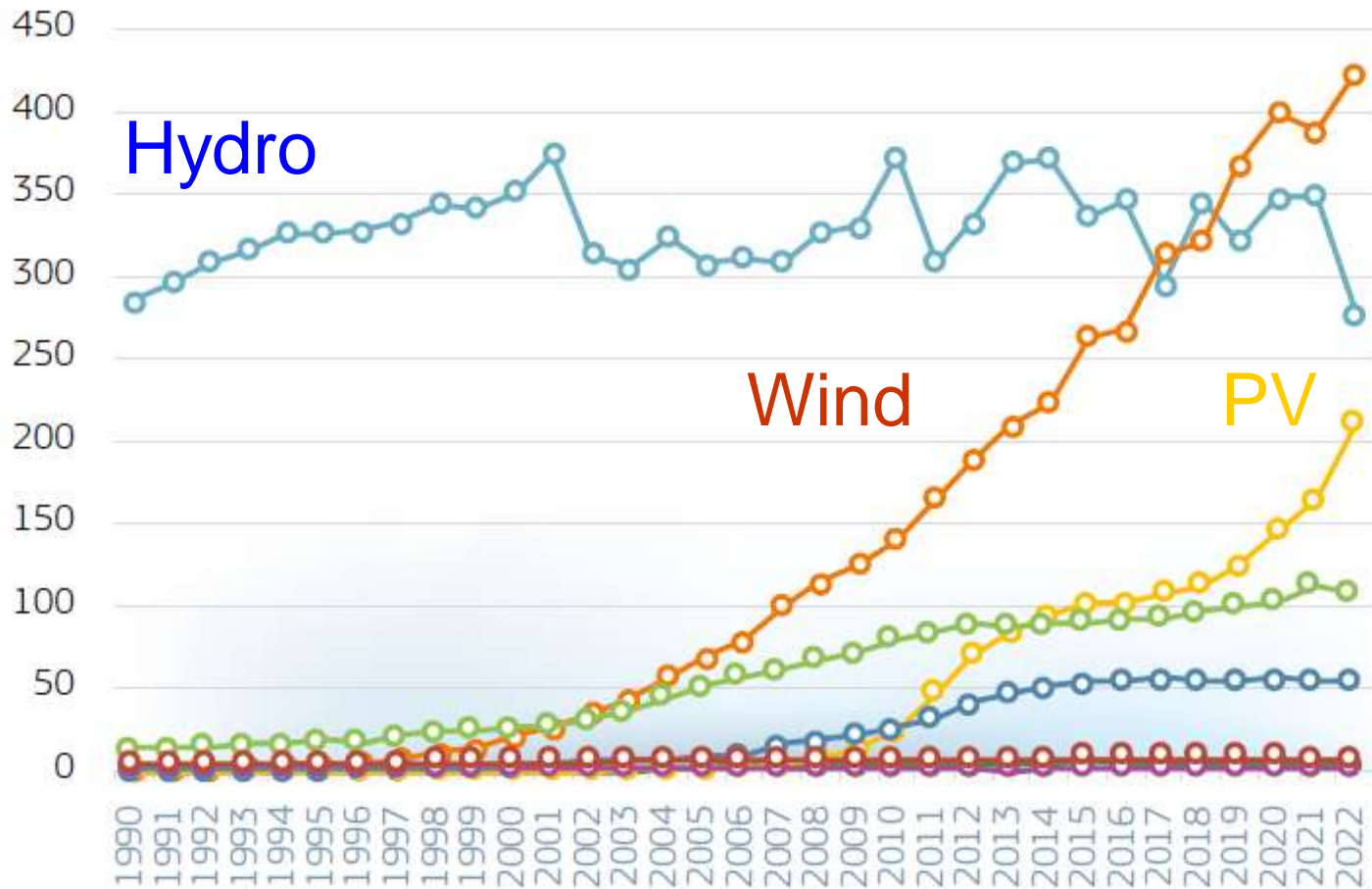
Nuclear

Natural and manufactured gases

Oil and petroleum products

Waste non-RES

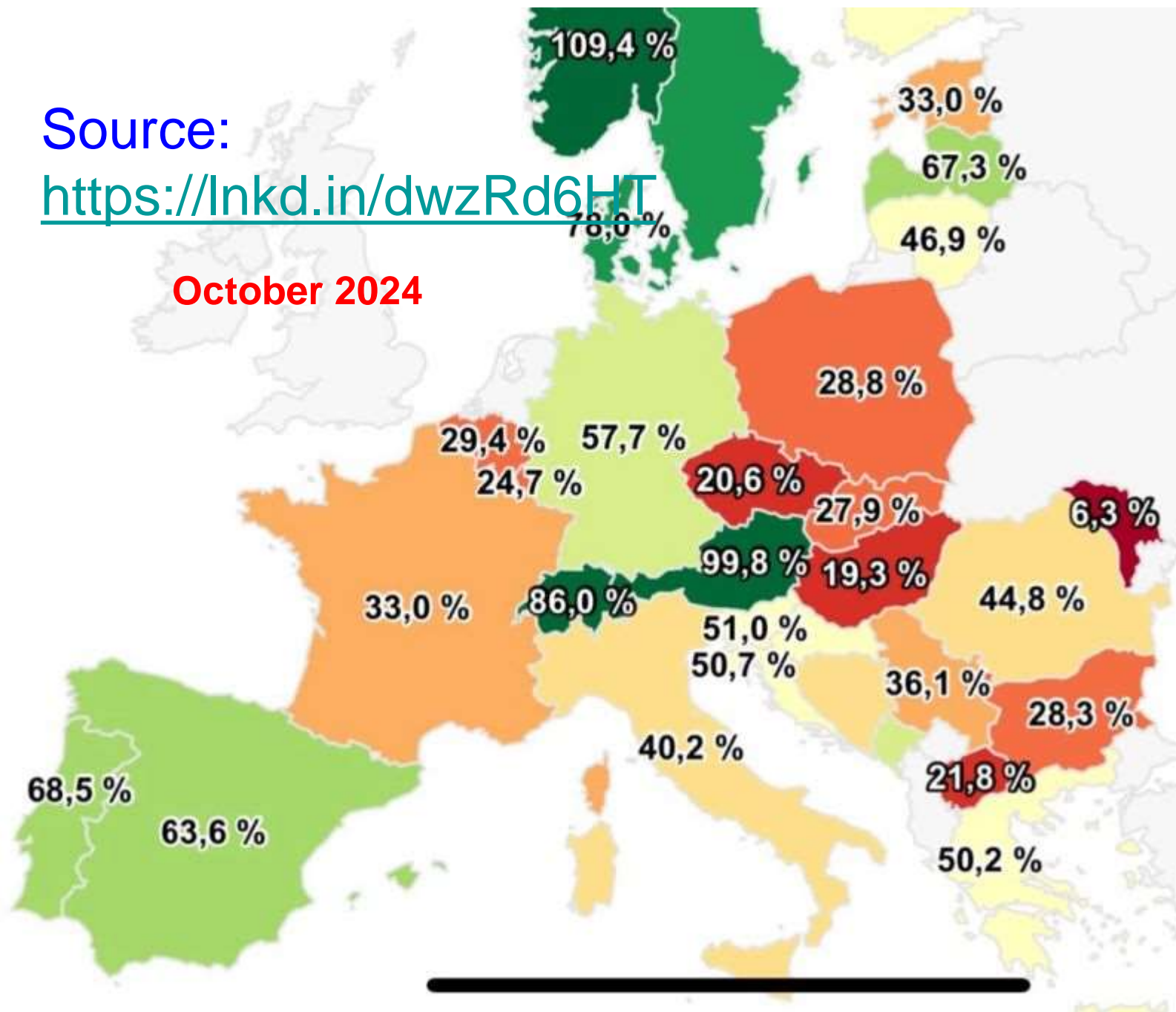
EU27_2020 – BY FUEL – GROSS ELECTRICITY GENERATION, BY FUEL: RENEWABLES – 1990-2022 (TWh)



Source:

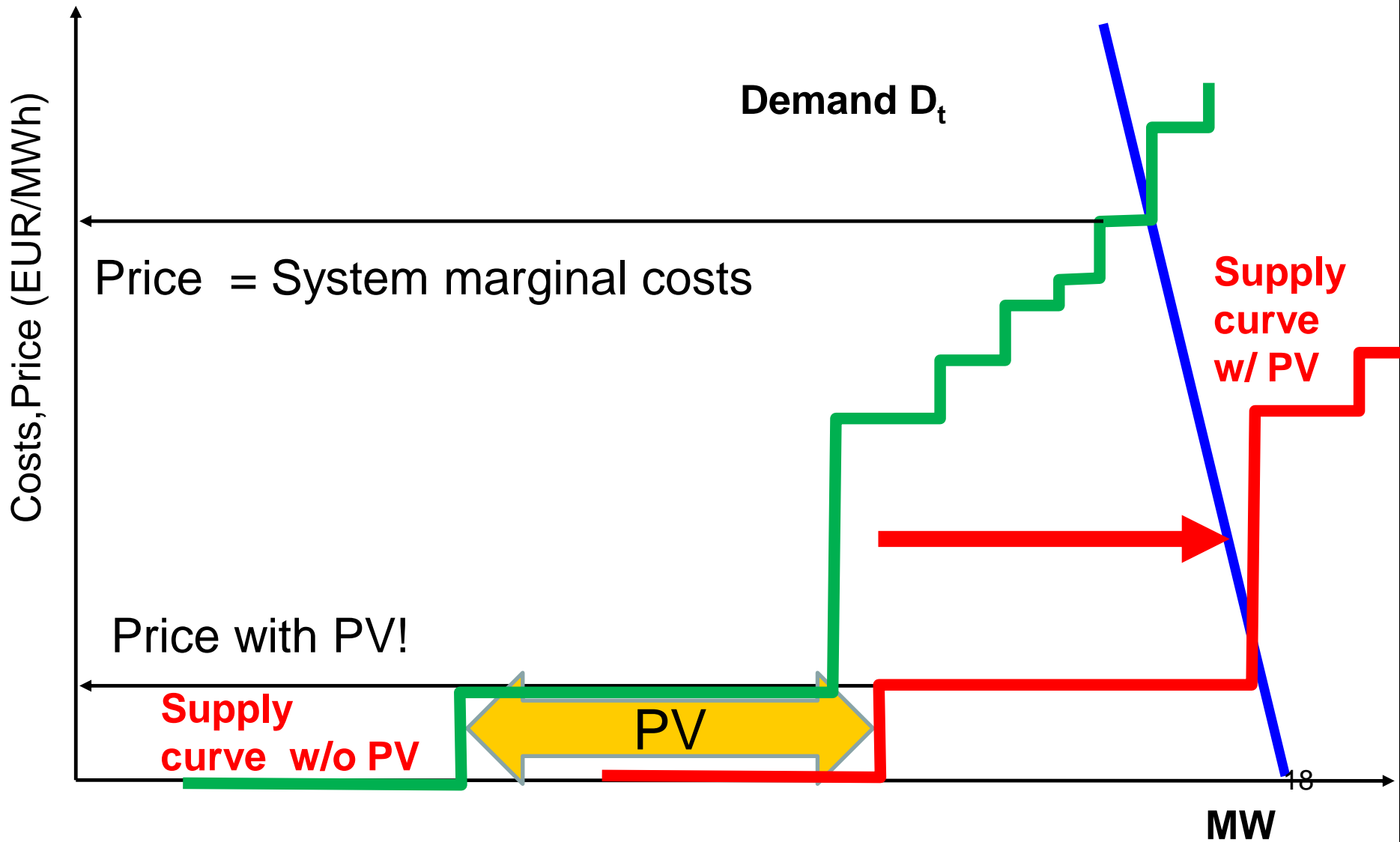
<https://lnkd.in/dwzRd6HT>

October 2024



4. Current challenges

Example: prices without and with PV



✓ On time

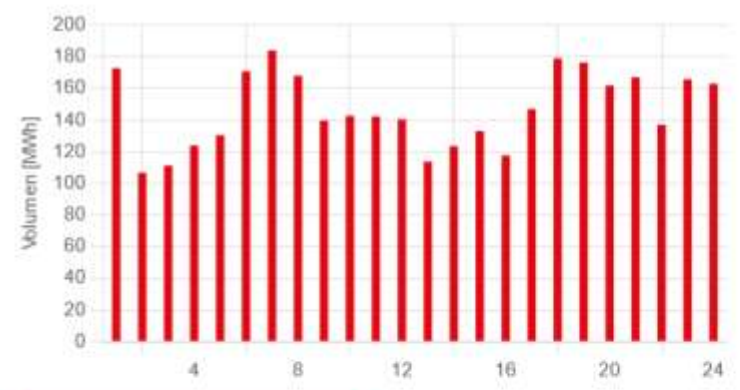
Day Ahead Auktionen Strom

EXAA Austria

Liefertag: 12.11.2024
Auktion: 10:15
Markt: AT



MCP Base 167,11 €/MWh Peak 207,51 €/MWh

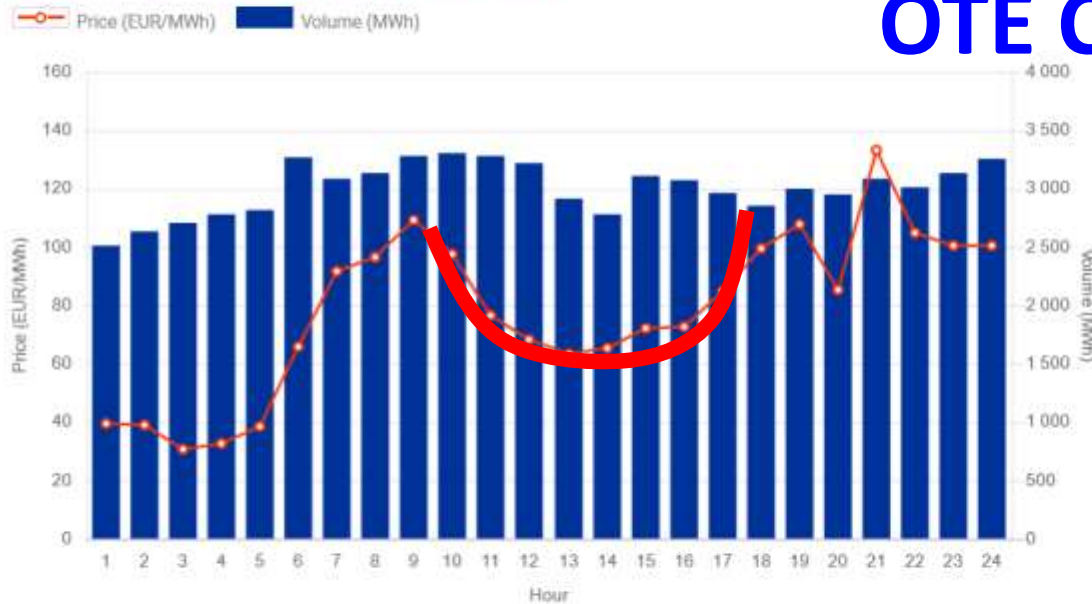


Aktuelle Handelsergebnisse

Day-Ahead Market – DAM

11. September 2024

Day-Ahead Market CZ Results - 11.09.2024



OTE CZ

Electricity

Parameters of short-term markets

Day-Ahead Market – DAM

DAM profile data

DAM CORE - PTDF and RAM

DAM Matching Curves

DAM Spot Market Index

Intraday Market - Continuous IM

Intraday Market - Auction IDA

IDA profile data

IDA Matching curves

IDA Market Index

Mobile application OTE IM Power

Gas

REMIT

Market Coupling - Day-Ahead market

Market Coupling - Intraday Market

Index	EUR/MWh	Change (%)	Total volume CZ (MWh)
BASE LOAD	78,16	1,92 ↓	72 142,7 ↓
PEAK LOAD	83,53	16,14 ↑	36 713,7 ↓

Suchen



Adresse

Desktop

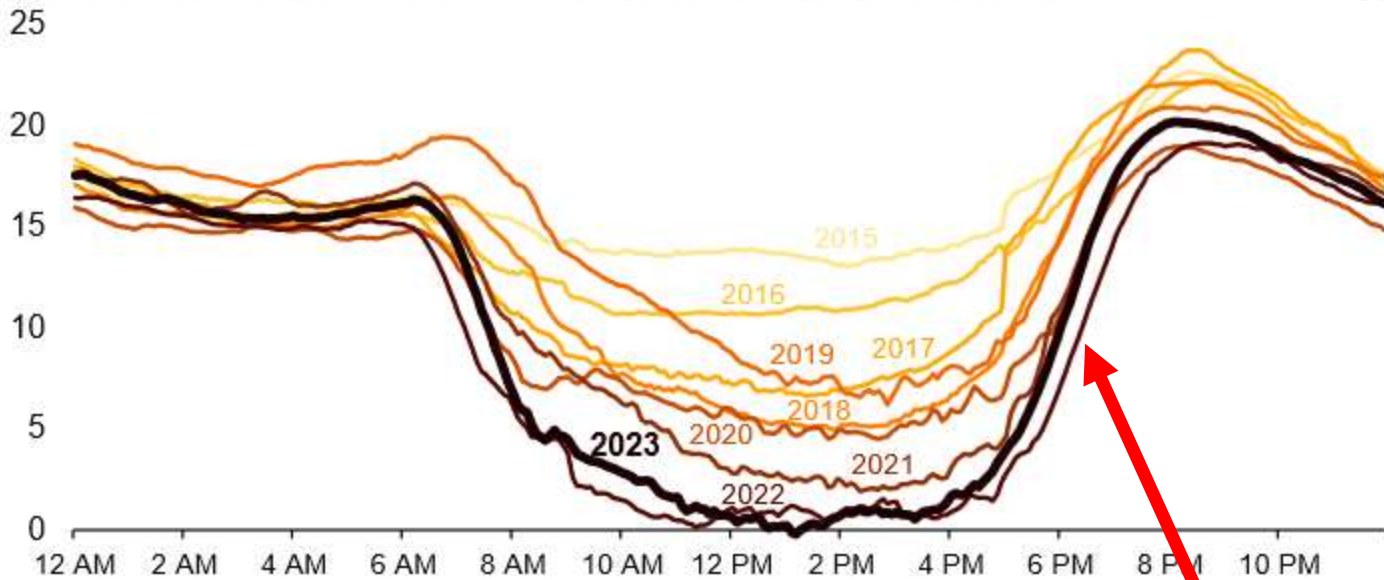
Links



DUCK-CURVE

California's duck curve is getting deeper

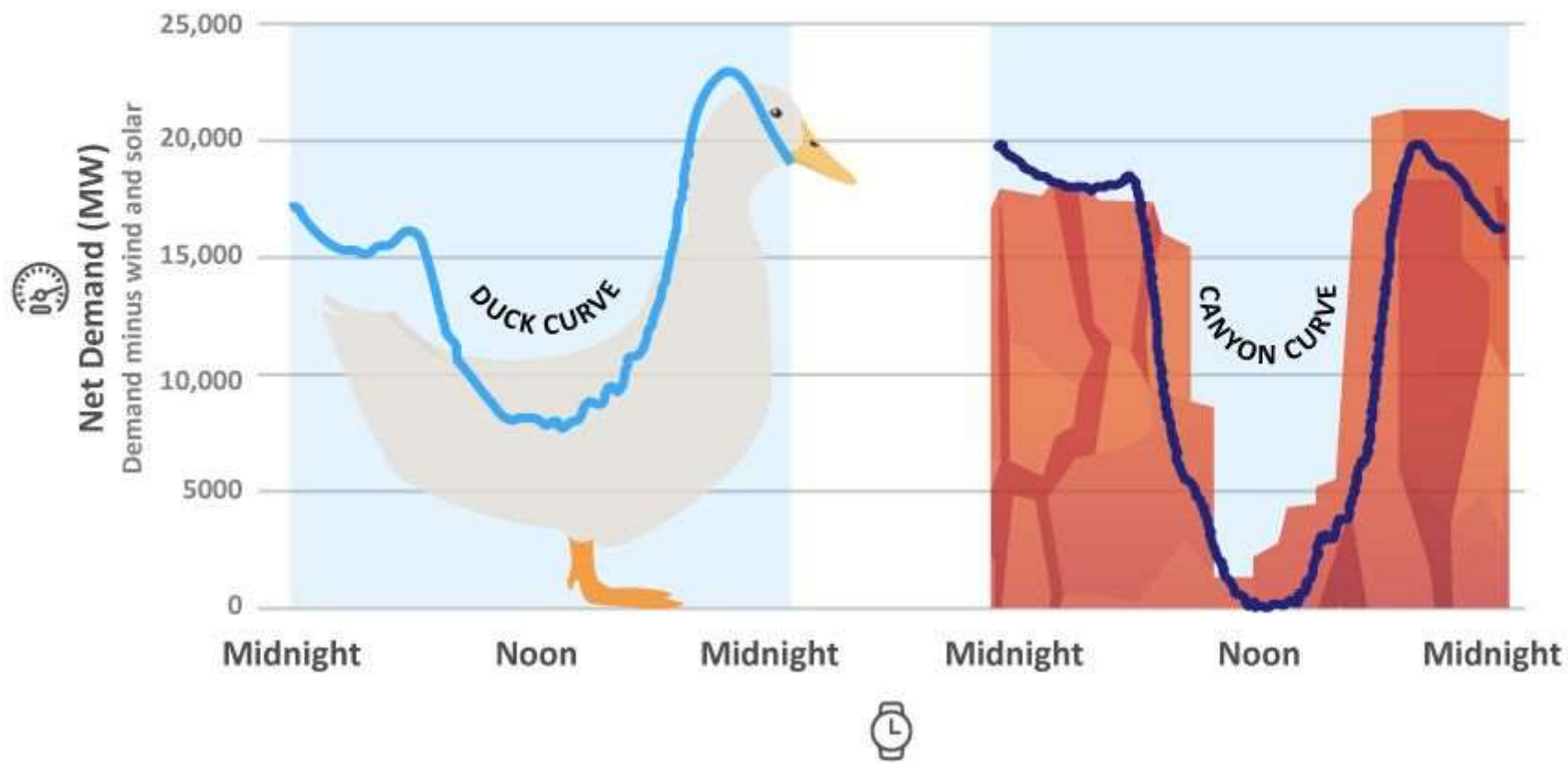
CAISO lowest net load day each spring (March–May, 2015–2023), gigawatts



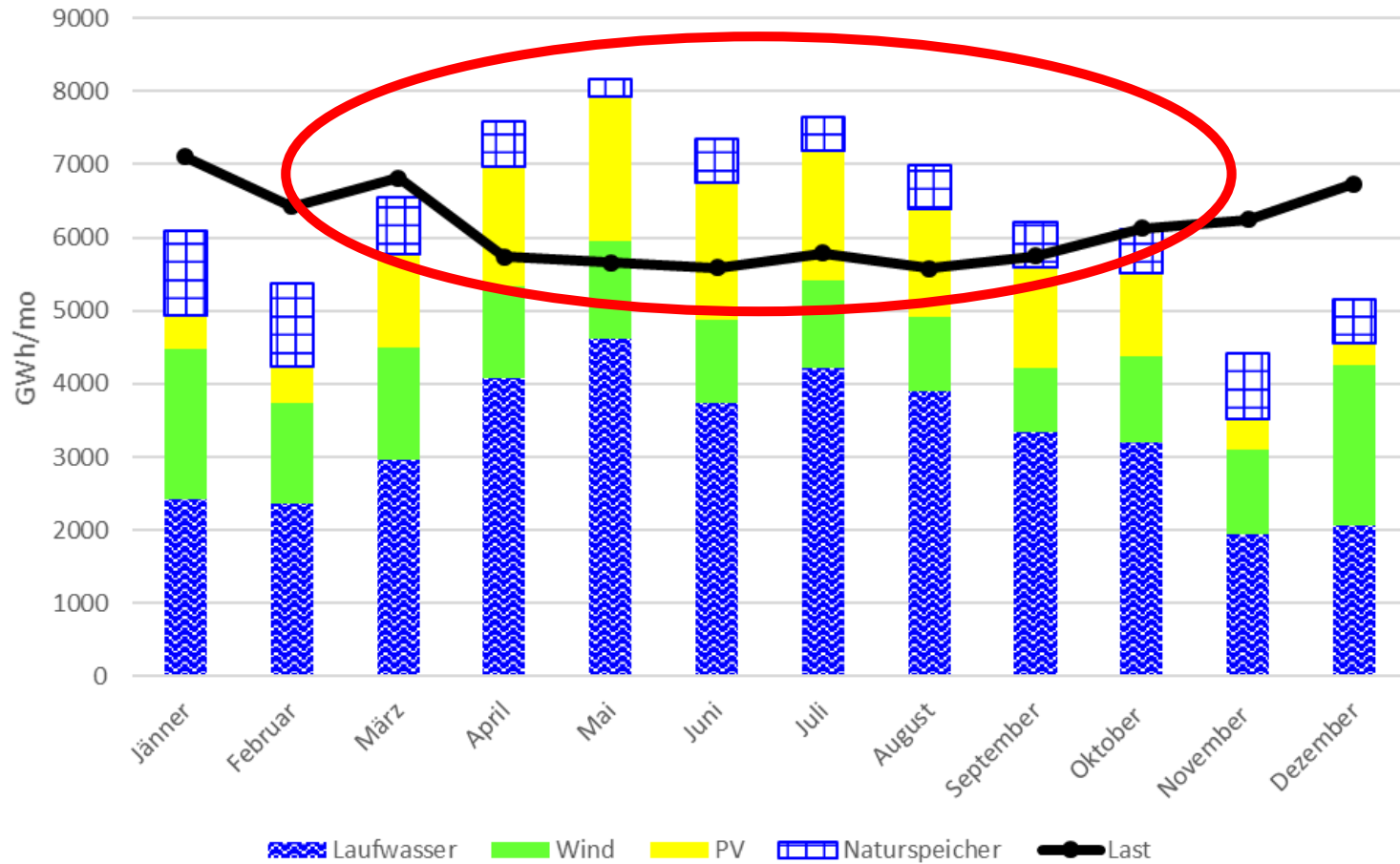
Ramping!

May 27
2018

April 16
2023



Monatliche Erzeugung und Verbrauch



- (i) Higher price volatilities;**
- (ii) Higher bids of flexible plants (e.g. gas-based) reflecting also capital costs (or: capacity mechanisms)**
- (iii) Grid extensions: Not primarily the costs are the problem but ...**
- (v) Increasing relevance of storages and “smart” components**
- (vi) New pricing mechanisms for end users?**
- (vii) How to finance the investments?**

- A more **democratic** system allows customers to participate in **supply, storage and DSM**
- Sustainable electric. system → **integration of a broad technology portfolio & demand-side options!**
- Capacity payments: → most urgent exhaust **full** creativity for **flexibility** of all market participants
 - **back-up** plants needed for **supply security ?**
- Strategies needed to **finance investments in new green energy infrastructure**
- **New** market design? **New** models of long-term contracts? However ... „If it ain't broke, don't fix it“