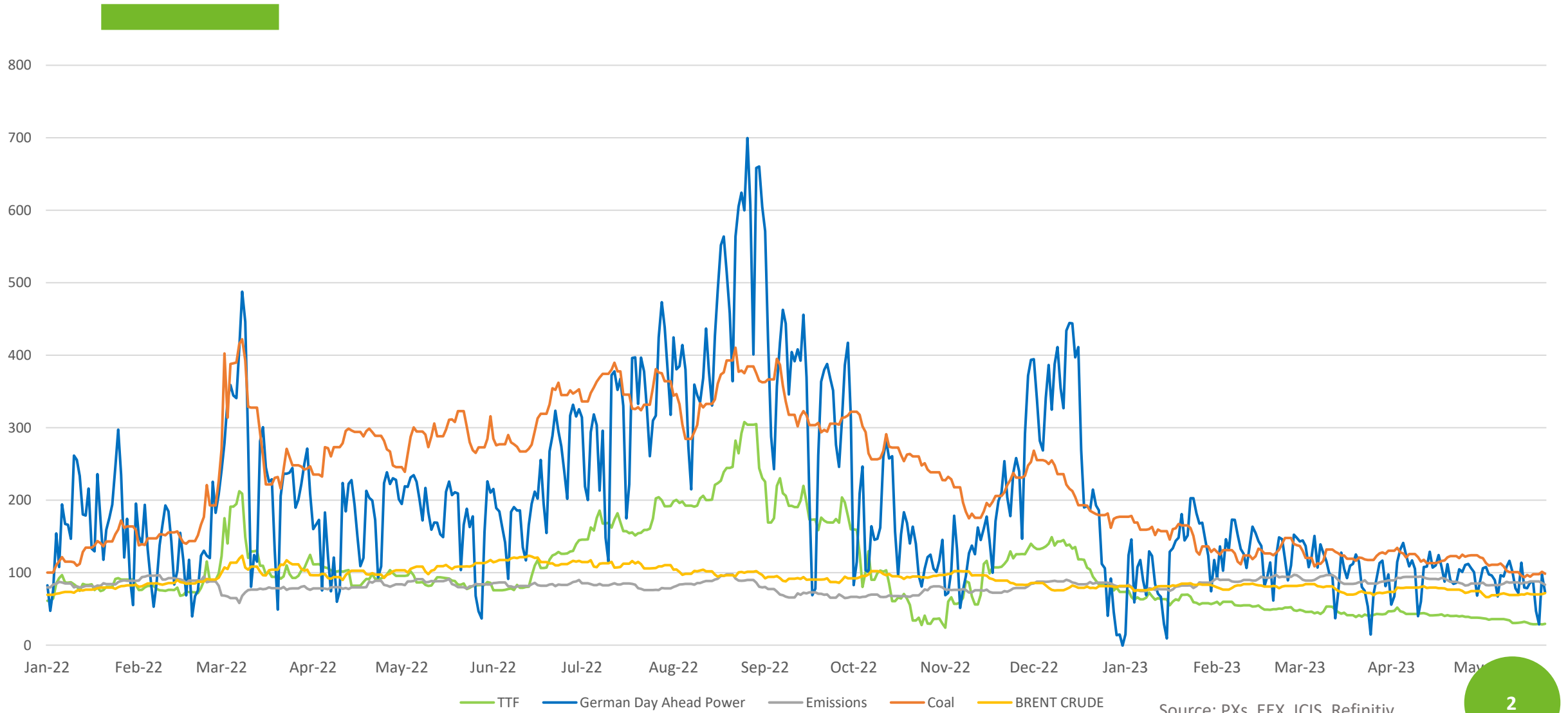


14th SE Europe Energy Dialogue

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Electricity & Gas Market Dynamics
Efi Milioni, Middle & Back Office Department Manager

European Energy complex in 2022- 2023

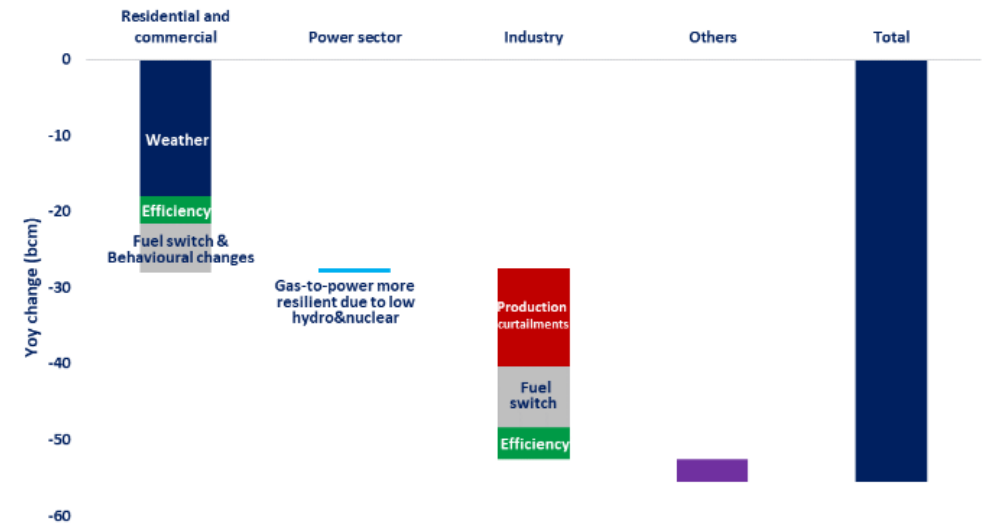


Source: PXs, EEX, ICIS, Refinitiv

Gas demand



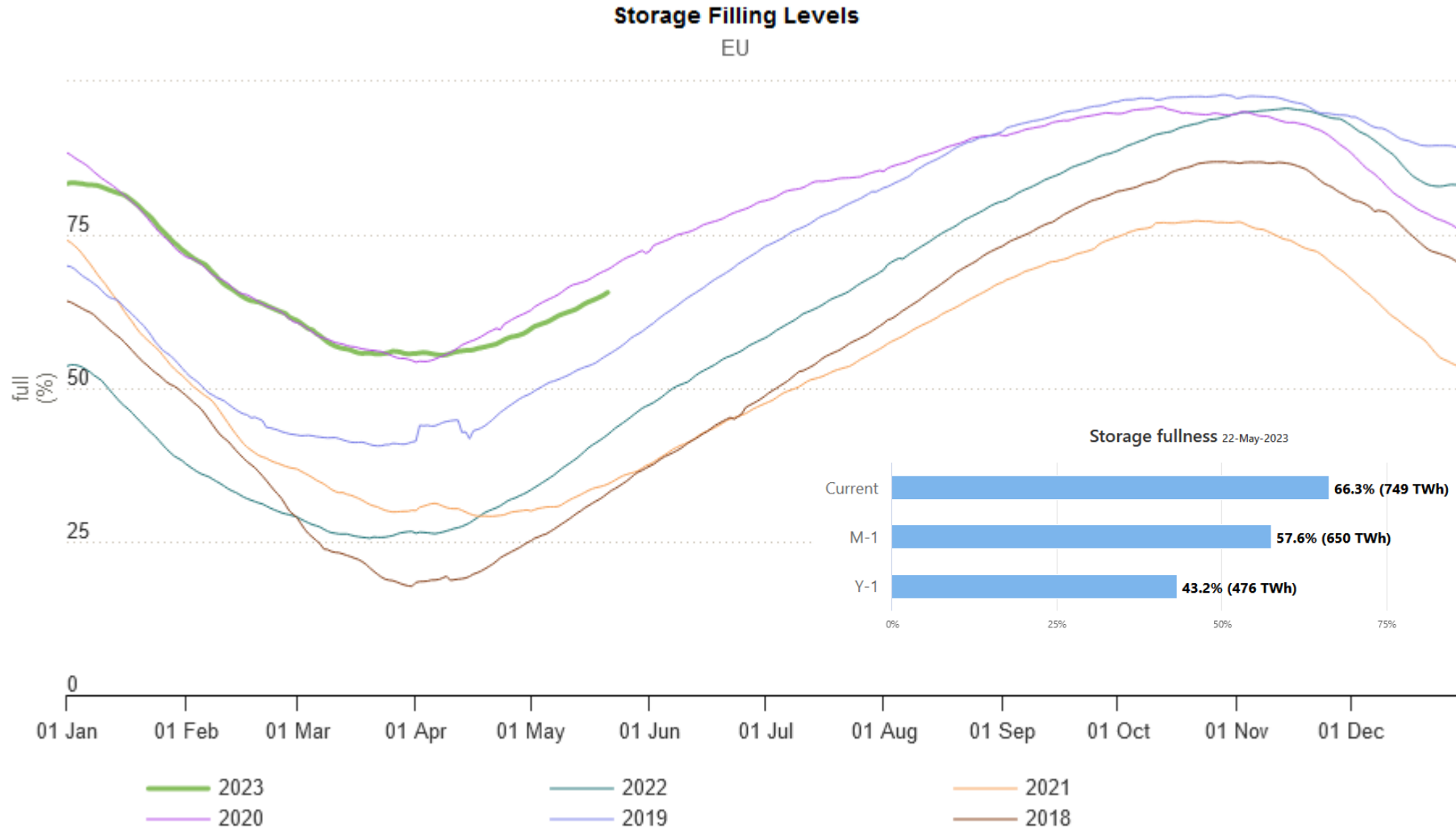
Estimated year-on-year change in natural gas demand in the European Union in 2022



Source: IEA analysis based on various market data, including transmission system operators.

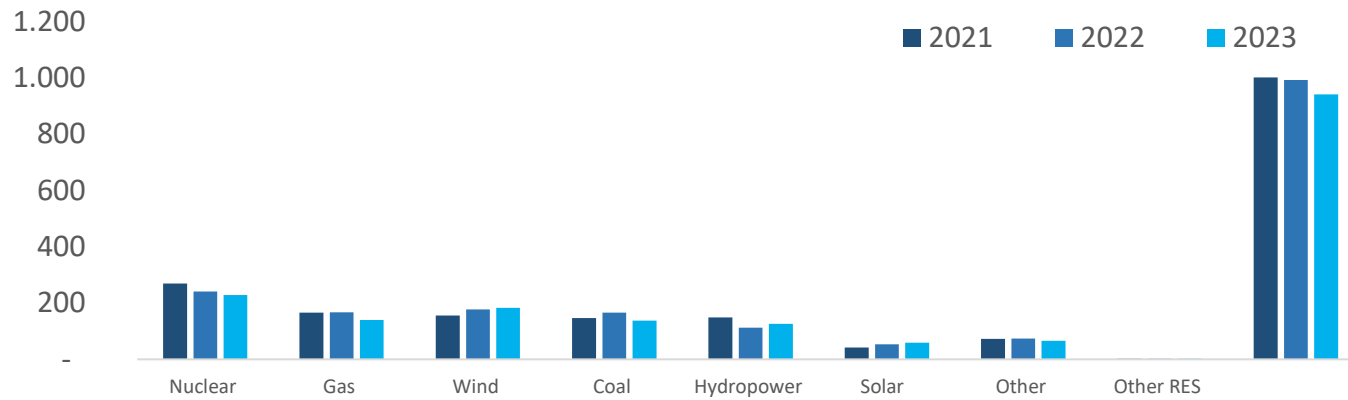
The EU consumption of natural gas has dropped by 17,7% in the period August 2022-March 2023, compared with the average gas consumption for the same months between 2017 and 2022.

Underground gas storage data: EU



Energy Mix-Europe

Power Generation in Europe, 1/1-15/5 (TWh)

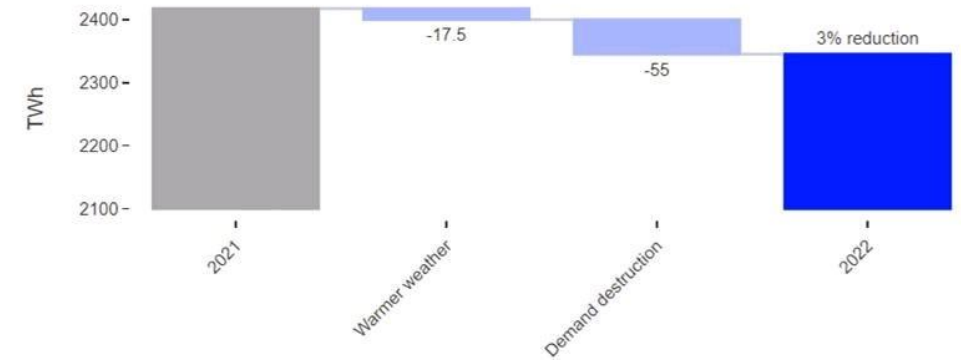


Source: ENTSO-e data

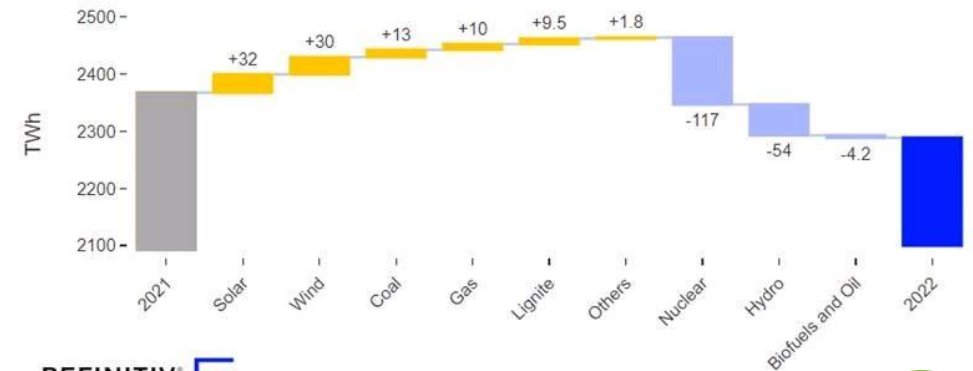
Changes in the energy mix

- Power demand in 2022 was almost 72,5 TWh down from 2021
- There was a shortfall of 117TWh of nuclear production and of 54TWh of hydro production
- Solar and wind production rose and partly offset this deficit
- Coal and gas increased to cover the remaining supply gap

Power Demand



Power Generation



Supply side



Nuclear Production

The last three nuclear power plants in Germany were shut down on 15 April 2023

Improved French nuclear output



Coal-to-gas switching

Gas units' SRMC expected to remain below coal units' SRMC



Hydro

Balkans hydro output surges with further increase expected

Italian hydro stocks improved



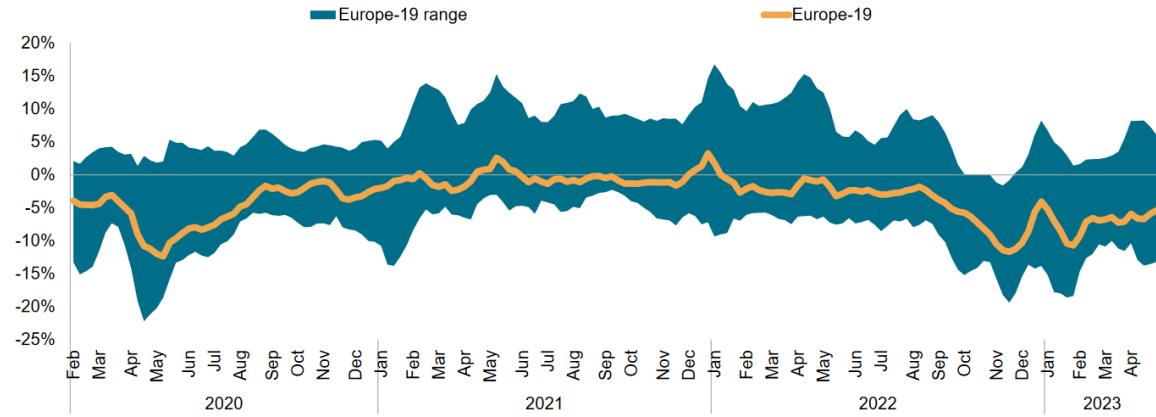
Renewables

The increasing entry of new RES capacity puts more pressure on prices

Electricity demand-Europe



Demand deviation from 2015–2019 (four-week moving average)

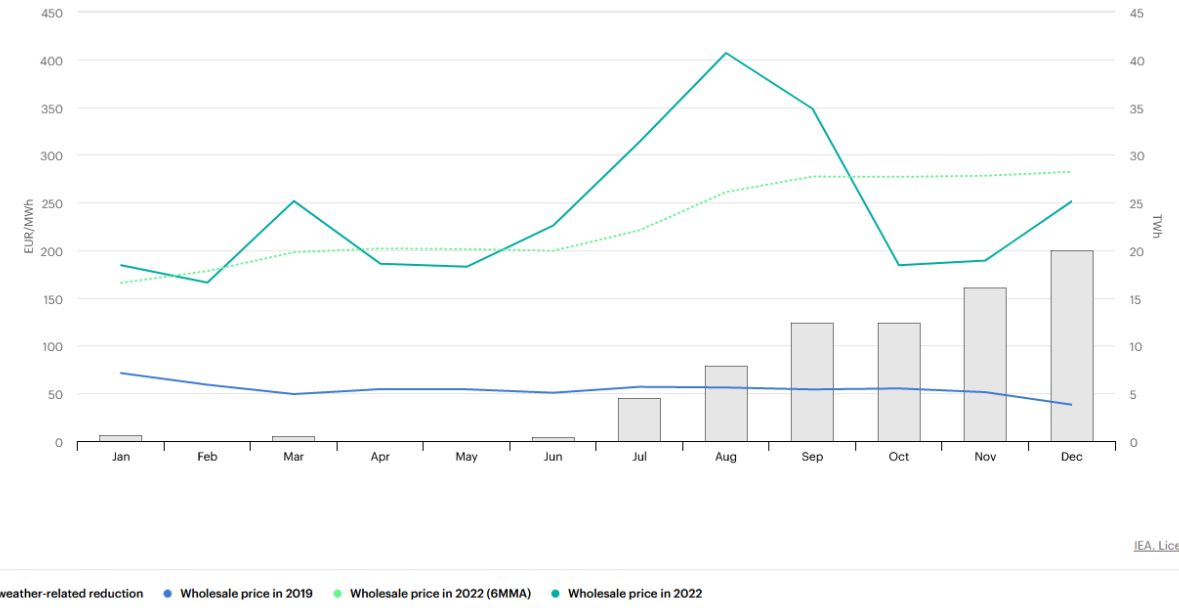


Data compiled May 2, 2023.
 Europe-19 refers to the following 19 countries: Austria, Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Lithuania, Norway, Poland, Romania, Spain, Sweden, Slovakia, and the United Kingdom.
 Sources: ENTSO-E, National Grid ESO data, supported by EnGrid Group Data, S&P Global Commodity Insights.

S&P Global
 Commodity Insights

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Average wholesale price and non-weather-related reduction in electricity demand in the EU, 2022



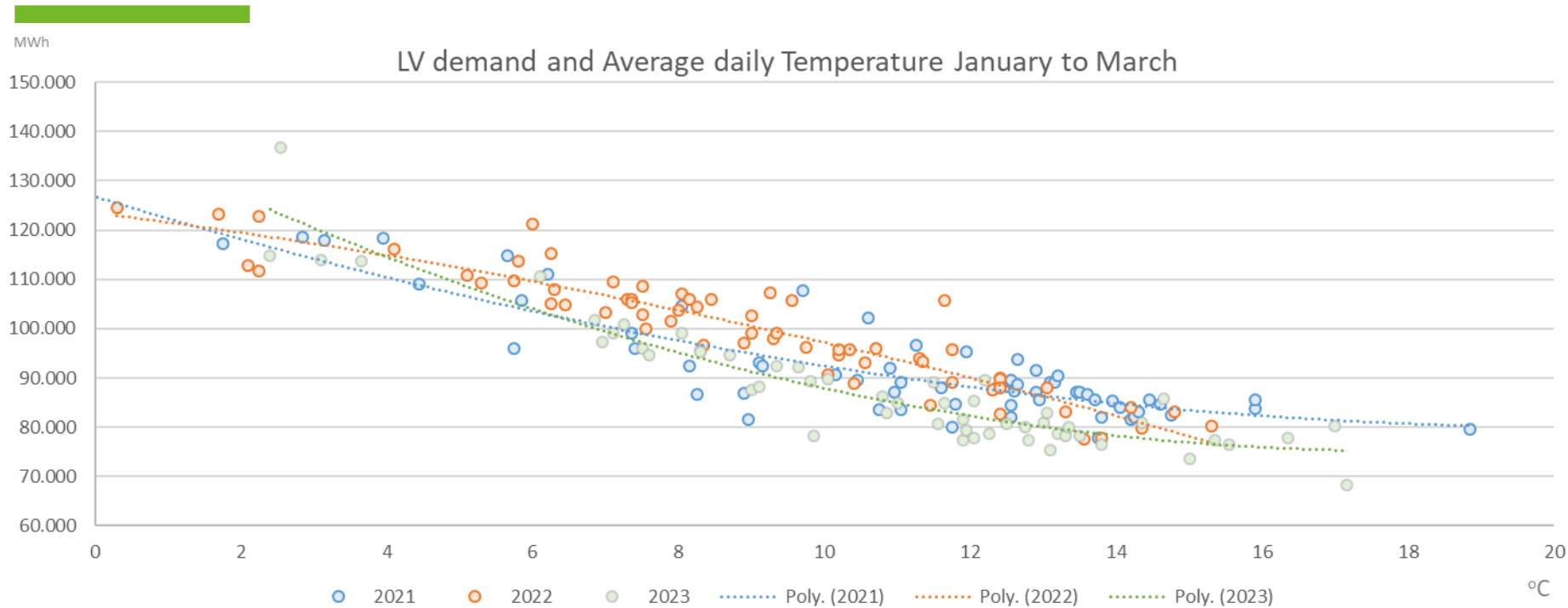
IEA, Licence: CC BY 4.0

● Non-weather-related reduction ● Wholesale price in 2019 ● Wholesale price in 2022 (6MMA) ● Wholesale price in 2022

Electricity demand in the EU dropped 8,7% y-o-y in Q4'2022 primarily due to high electricity prices below 2017-2019 range. This decline in demand applies to both residential and industrial sectors.

Despite the decline in prices, the overall power demand continues to remain low. However, there are indications of a recovery in industrial demand.

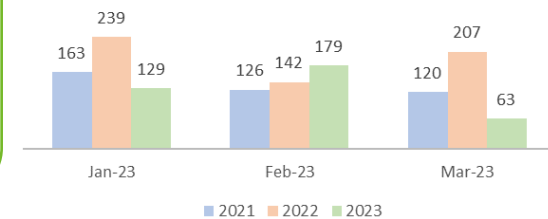
Electricity demand-Greece



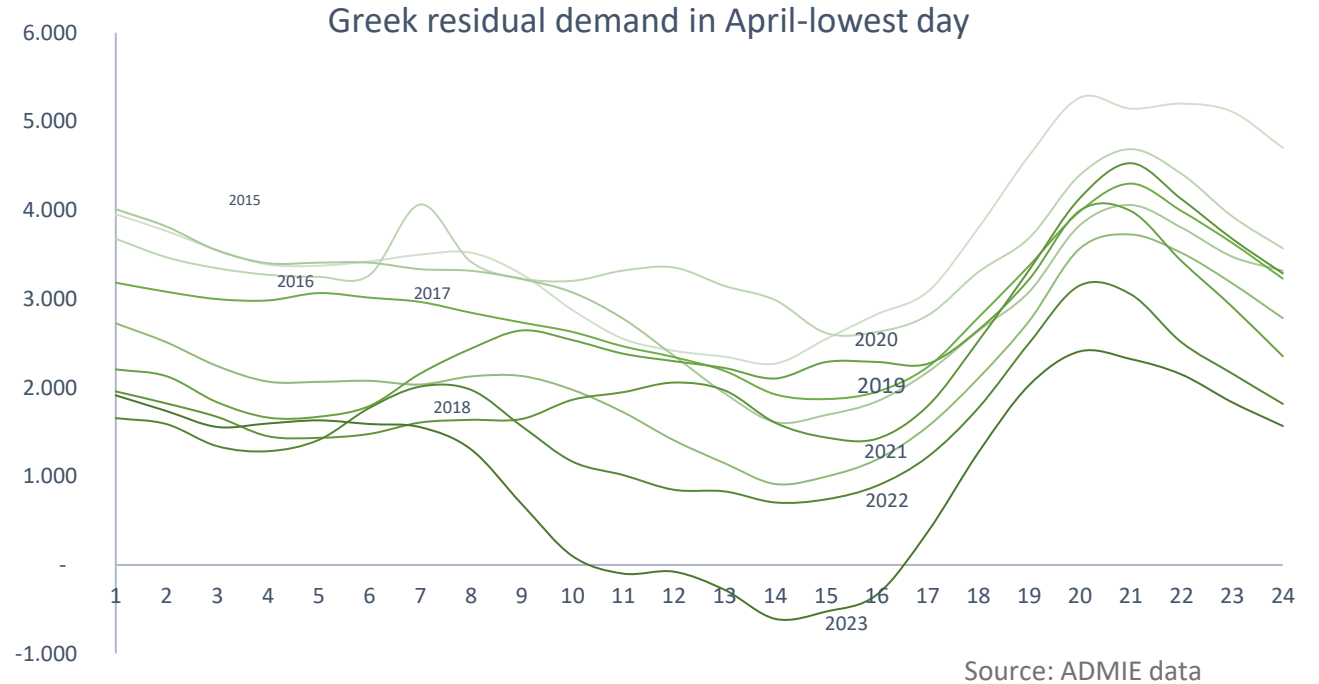
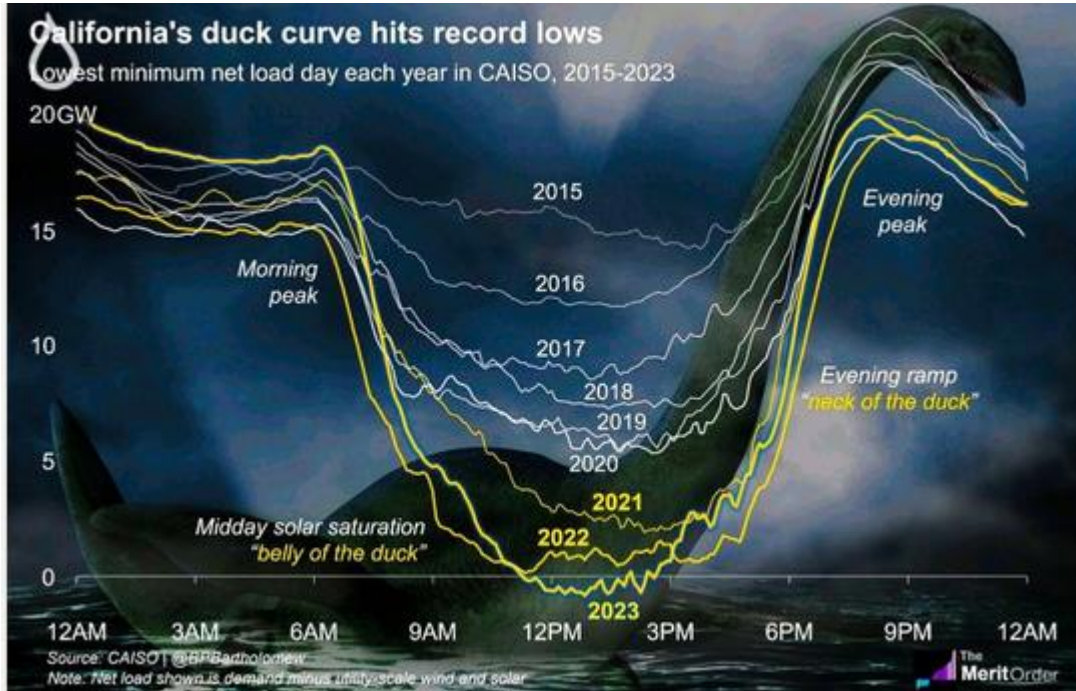
Source: ADMIE, EMY data

There seems to be a downward shift of the relationship between demand and temperature in 2023 as in similar temperatures LV demand is lower by ~10.000MWh/day.

Heating Degree Days-Athens based on 15,5°C Reference Temp



High RES prices and prices



The well-known “duck curve”, originally introduced by California ISO illustrates the residual demand over the course of the day. Each year the increasing solar production during midday covers an larger portion of the demand.

Many days wholesale prices also form a similar curve.

Thank you for attention



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