



Current State of EU Energy Market and Outlook

30.11.22

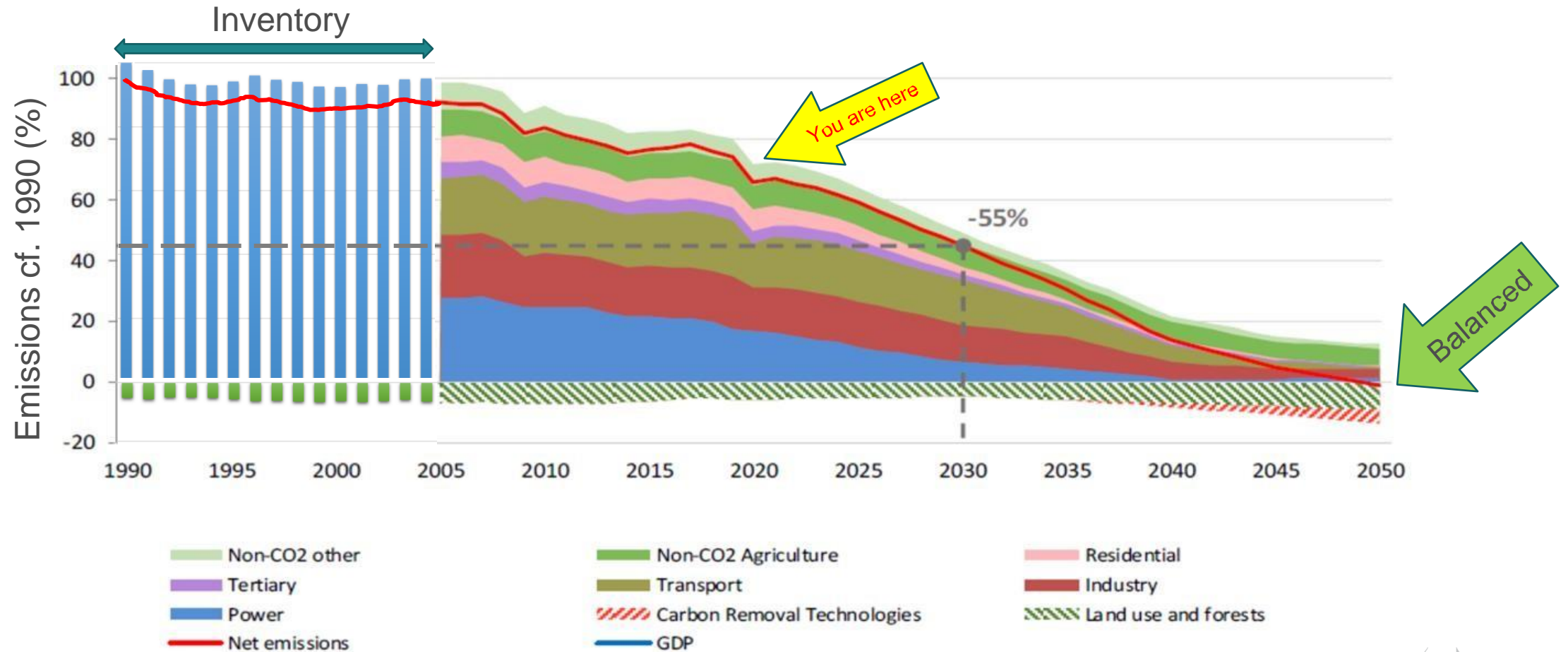
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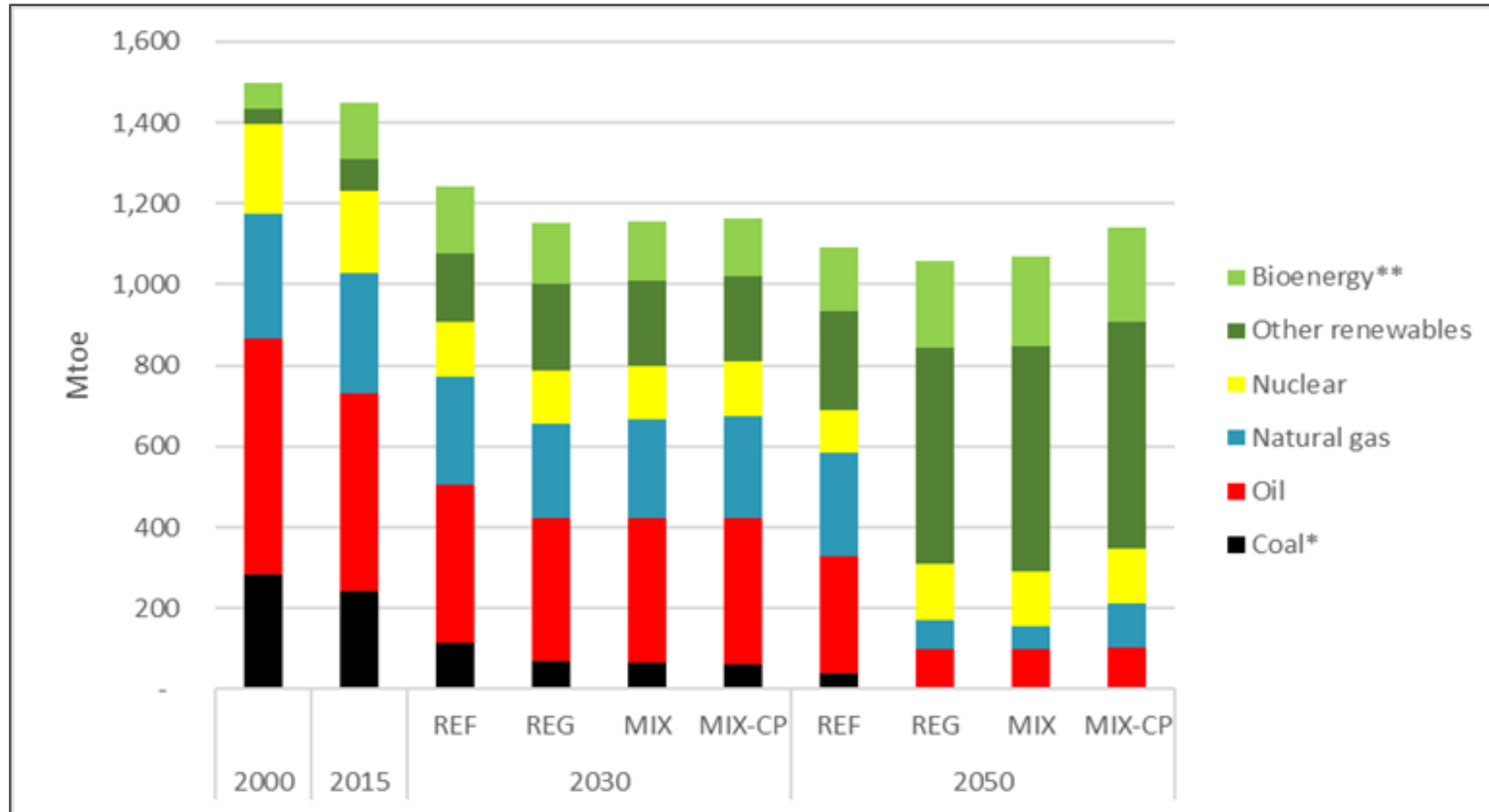
The European Climate Law

- The European Climate Law Regulation of 30 June 2021
- Union-wide climate-neutrality objective 2050
- New **2030** target of at **least 55% net** greenhouse gas emissions reduction
- Implementation through binding legislation across all Member States and sectors of the economy
- Recognition of the need to enhance the EU's **carbon sink**

Pathway to climate neutrality

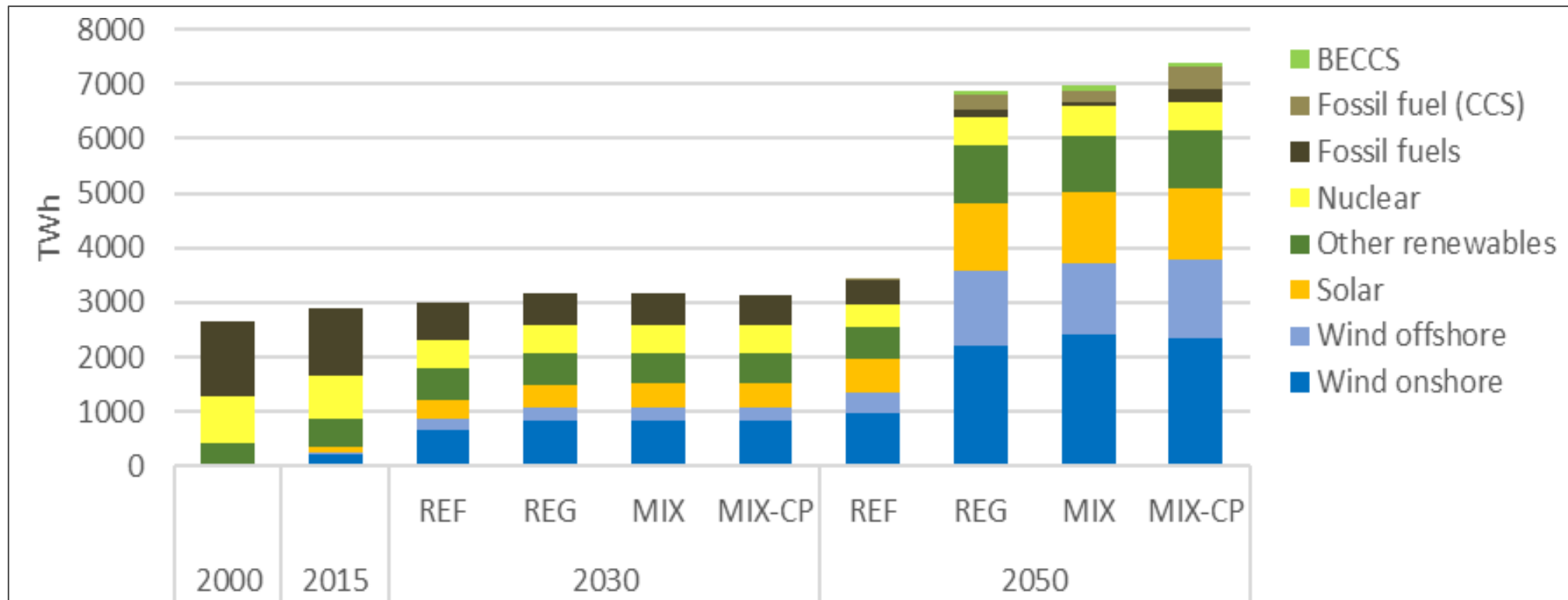


Analytical insights: energy mix



Gross Available Energy in EU-27, source: PRIMES, ESTAT

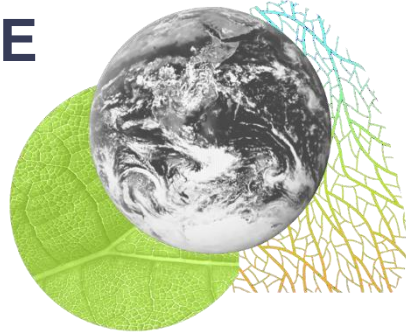
Analytical insights: power mix



Gross electricity generation in the EU; Source EUROSTAT, PRIMES

Delivering on the “Fit for 55” commitment

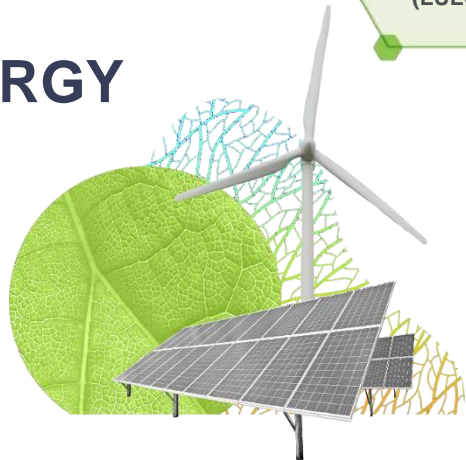
CLIMATE



TRANSPORT



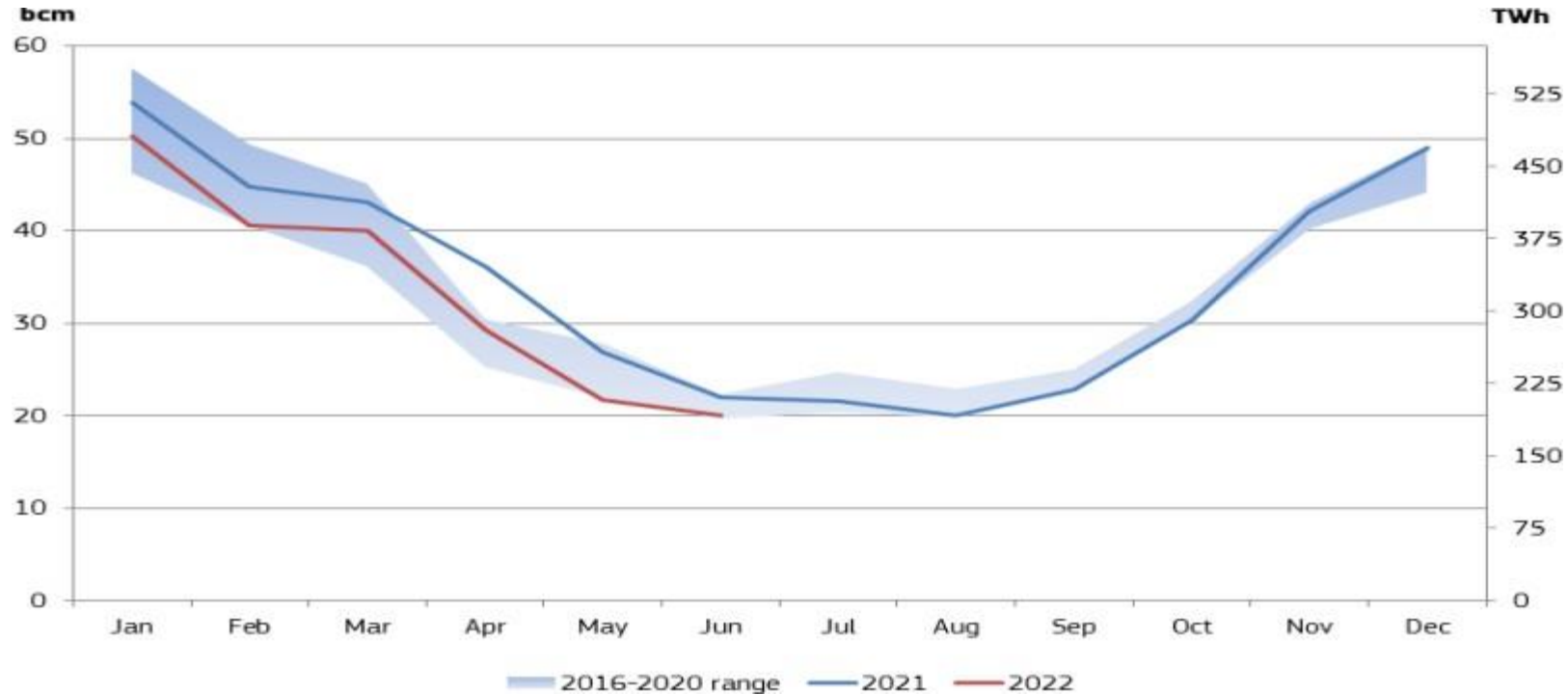
ENERGY



TAXATION AND TRADE

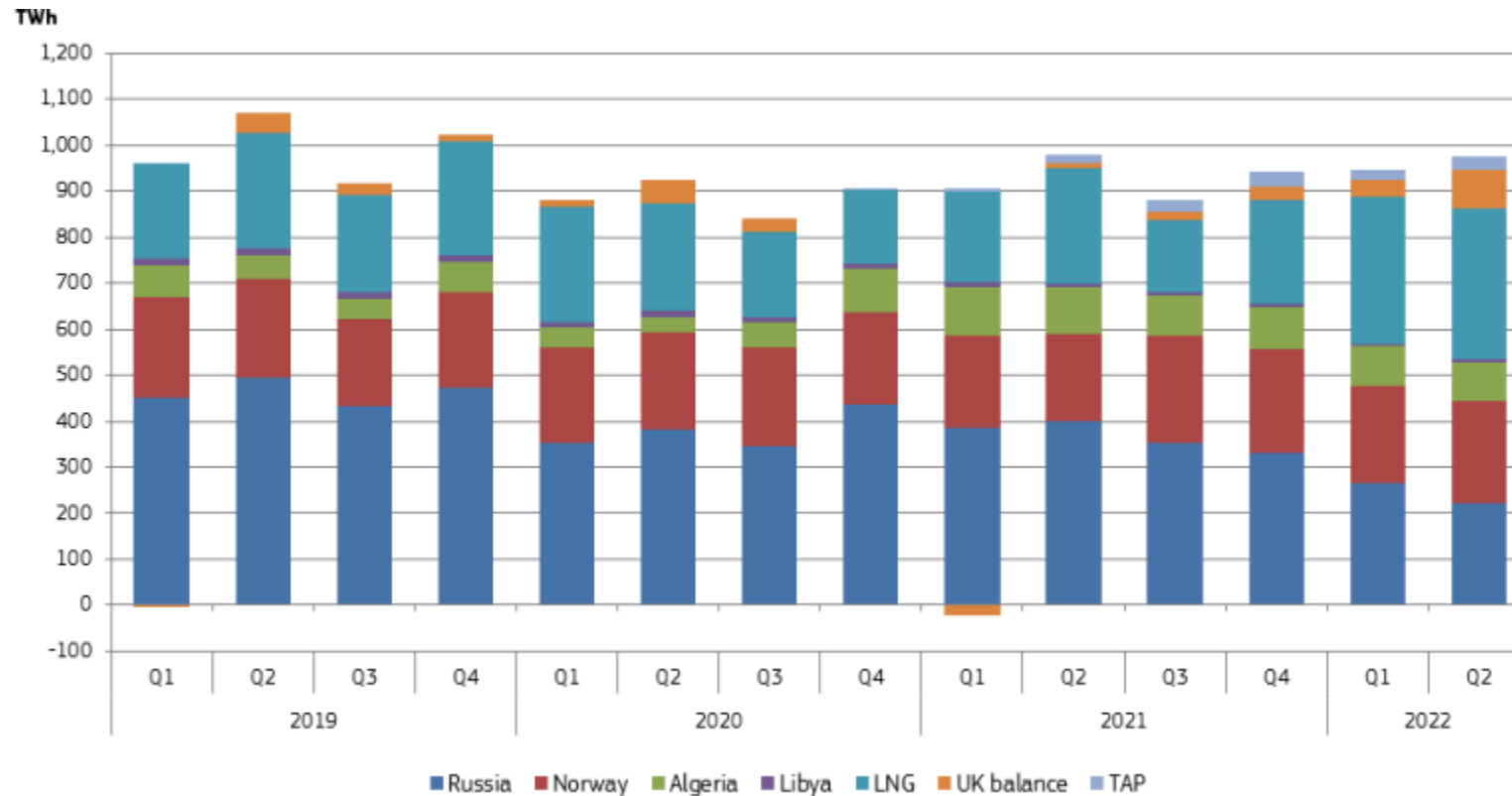


EU gas consumption



Eurostat, data as of 15 September 2022 from data series nrg_103m. In the next edition of this report numbers might change retrospectively

EU imports of natural gas by source

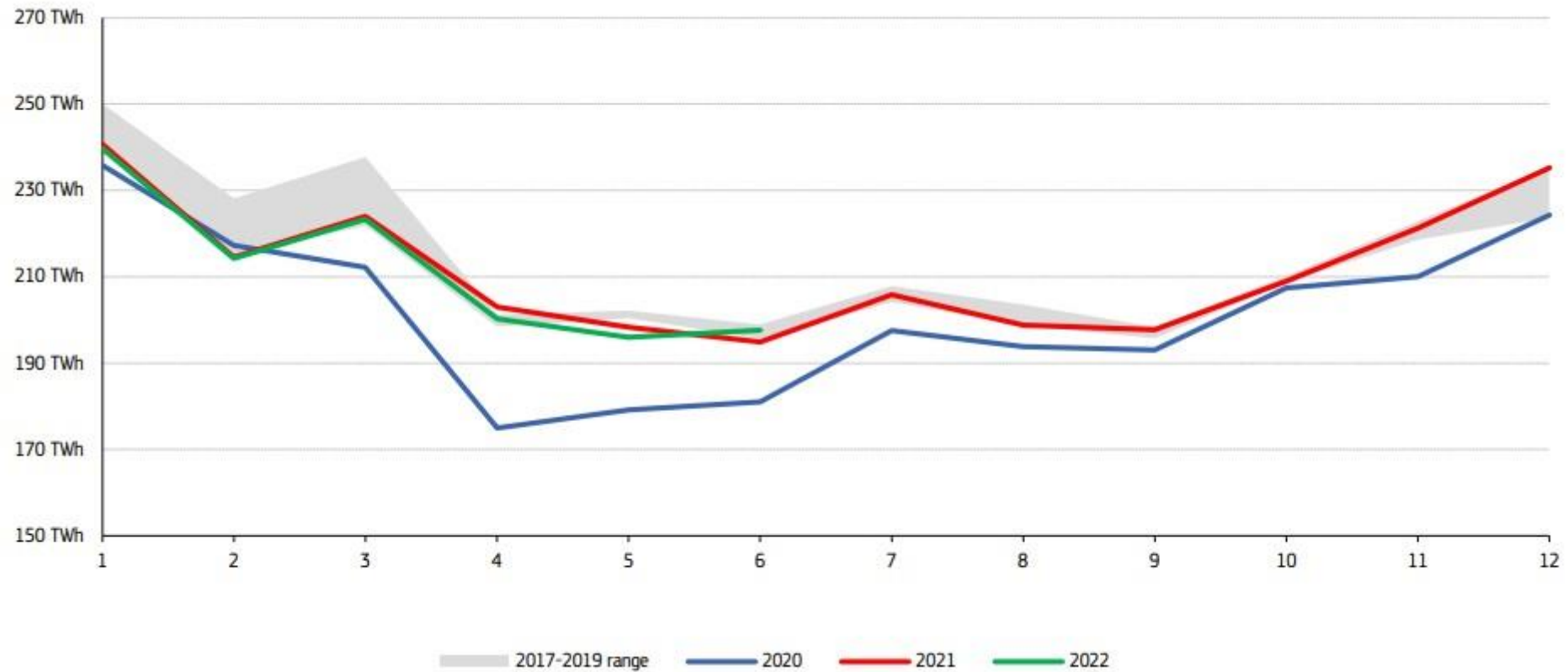


Based on data from the ENTSO-G Transparency Platform, data as of 6 September 2022.

Exports to the Baltic-states and Finland are not included in the chart owing to unavailability of reliable data

Russia, Norway, Algeria and Libya include pipeline imports only; LNG imports coming from these countries are reported in the LNG category. A trade balance with the UK is estimated, reflecting that the UK is no longer part of the EU, and it is not easy to determine the origin of gas molecules arriving to the EU after going through the UK market (it can be UK production, imports from Norway or LNG imports from the UK, etc.). As of 2021, imports via the Trans Adriatic Pipeline (TAP) is also included.

Monthly EU electricity consumption



Eurostat

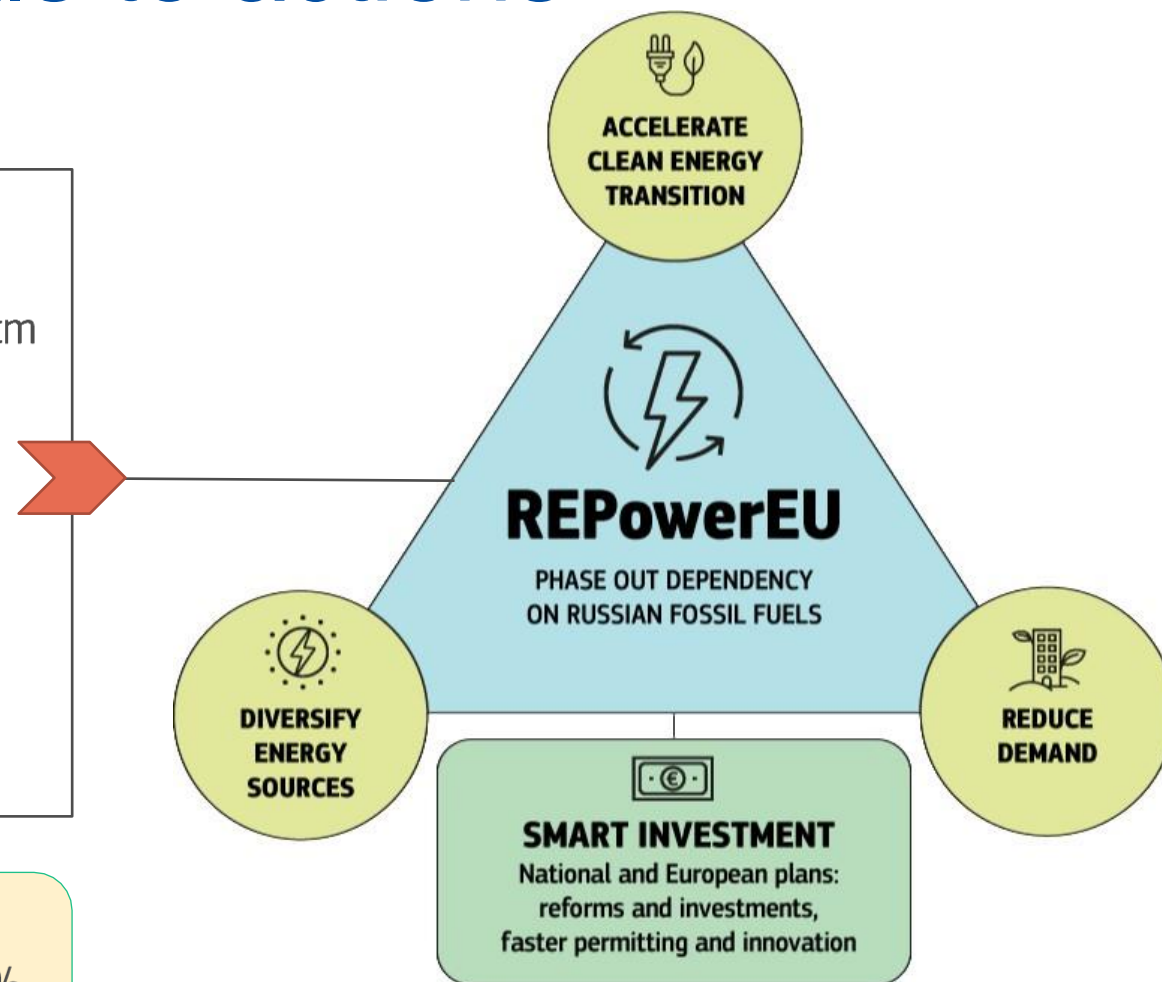
REPowerEU: from goals to actions

Independence from Russian fossil fuels by 2027

- Increase imports of **liquefied natural gas** (LNG) by 50 bcm
- Increase **pipeline gas** imports by 10 bcm
- Increase **biomethane** production by 3.5 bcm
- EU-wide **energy saving** to cut gas demand by 14 bcm
- **Rooftop solar** to reduce gas demand by 2.5 bcm
- **Heat pumps** to reduce gas demand by 1.5 bcm
- Reduce gas demand in the power sector by 20 bcm by deployment of **wind and solar**

Increase the target of renewable energy from 40% to **45%** by 2030

Increase the target of energy savings from 9% to **13%** by 2030



Short-term measures



- An **EU Save Energy Communication** with recommendations for how citizens and businesses can save around 13bcm of gas imports
- **Rapid roll out of solar and wind energy projects** combined with renewable hydrogen deployment to save around 50bcm of gas imports
- Approval of first **EU-wide hydrogen projects** by the summer
- **Increase the production of biomethane** to save 17bcm of gas imports

Short-term measures

- **Common purchases of gas, LNG and hydrogen via the EU Energy Platform** for all Member States who want to participate, as well as Ukraine, Moldova, Georgia and the Western Balkans
- **New energy partnerships** with reliable suppliers, including future cooperation on renewables and low carbon gases
- **EU-coordinated demand reduction plans** in case of gas supply disruption
- **Fill gas storage** to 80% capacity by 1 November 2022



Medium-term measures to be completed before 2027



- Increased **EU-wide target on energy efficiency for 2030 from 9% to 13%**
- **Increase the European renewables target for 2030 from 40% to 45%**
- **New legislation and recommendations for faster permitting of renewables** especially in dedicated ‘go-to areas’ with low environmental risk
- **New national REPowerEU Plans under the modified Recovery and Resilience Fund** – to support investments and reforms worth EUR 300 billion

Medium-term measures to be completed before 2027

- Investments in an integrated and adapted **gas and electricity infrastructure network**
- **Boosting industrial decarbonisation** with around EUR 3 billion of frontloaded projects under the Innovation Fund
- New EU proposals to ensure industry has access to **critical raw materials**
- Regulatory measures to **increase energy efficiency in the transport sector**
- A **hydrogen accelerator** to build 17.5 GW by 2025 of electrolysers to fuel EU industry with home grown production of 10 million tonnes of renewable hydrogen
- A modern **regulatory framework for hydrogen**



Complemented by:



- Action Plan for Short Term Market Interventions and **Market Design**



- Strategy on **international energy engagement**

Analytical tools

Energy system

- PRIMES and PRIMES-TREMOVE models are core elements of the modelling framework for energy, transport and CO₂ emissions projections.
- GAINS model for non-CO₂ GHG projections.
- GLOBIOM-G4M models for projections of LULUCF emissions and removals and CAPRI for agricultural activity projections.

Energy markets

- METIS

Macroeconomic analysis

- GEM-E3; E3ME; QUEST

METIS - presentation

- METIS is a project initiated by DG ENER for the development of a computer program consisting of **modules and datasets**, with the aim to further support ENER's evidence-based policy-making, especially in the areas of electricity and gas.
- METIS is developed by Artelys and partners on behalf of COM. Provides ENER with an **in-house tool** that can provide insights and robust answers to complex economic and energy-related questions, focusing on the **short-term operation of the energy system and markets**.
- JRC also acquired a license and is supporting ENER with METIS-based analysis through and Administrative Arrangement (AA).
- METIS studies, technical notes and datasets are available here:
<https://ec.europa.eu/energy/en/data-analysis/energy-modelling/metis>

The METIS model

- METIS is a **multi-energy model** covering in high-granularity (in time and technological detail) the entire energy system, representing each MS and relevant neighbouring countries. Performs **hourly dispatch simulation** (as opposed to PRIMES which has projections every 5 years): hourly utilisation for the different energy vectors of all national generation, storage, sector coupling and capacities.
- Works based on « contexts » prepared also from PRIMES scenarios.
- **Includes database** with modelling assumptions, **datasets** and set of **pre-configured scenarios**.
- **METIS 2** finalised in Autumn 2021: improvement of network representation and modelling, energy system integration, studies, dissemination of results and web-based interface.
- **METIS 3** contract ongoing: upgrade includes capability to model pathways (investments), finer geographical resolution, full sector-coupling with hydrogen and derivatives.

METIS

General overview of the software's interface

General banner of the software *

Navigation bar, with the selected tab highlighted in blue *



** these two bars allow you to navigate easily through the website.

Window corresponding to the selected tab (here, the Map)



Lock button

Editing a context requires locking it through this button, which will block access to other users.

The screenshot displays the Artelys EnergyStudy software interface. At the top, there is a general banner with the Artelys logo and 'Artelys Crystal SuperGrid'. Below this is a navigation bar with tabs for 'Parameters Tables', 'Operations', 'Map' (which is highlighted in blue), 'Indicators', and 'Users'. The main area is a map of Europe showing a complex network of energy assets, represented by various icons like wind turbines, solar panels, and power lines. A 'BaseCase' dropdown menu is visible above the map. At the bottom, there is a 'Network view' section with the text 'The Network Assets' and several control icons. The map includes labels for various countries and cities, such as Poland, Romania, and France. The interface also features a search bar, zoom controls, and a 'mapbox' logo in the bottom left corner.

Thank you



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