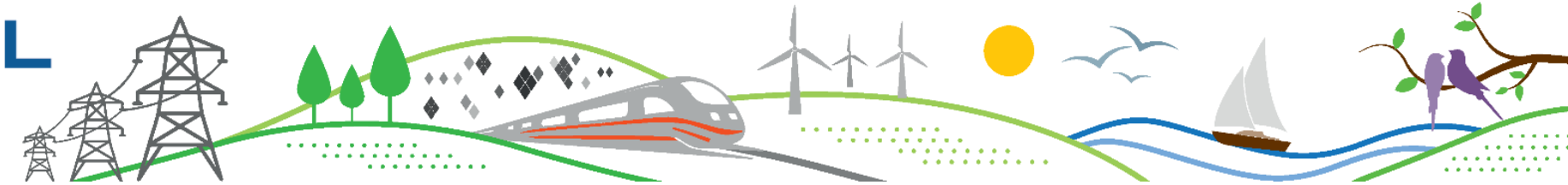
EURACOAL

European Association
for Coal and Lignite



Coal, lignite and mine methane under EU climate and energy policy

40th Pittsburgh International Coal Conference
TÜYAP Congress Center, Istanbul, 4-6 October 2023

Brian Ricketts
Secretary-General

EURACOAL: 24 members and an observer from 14 countries

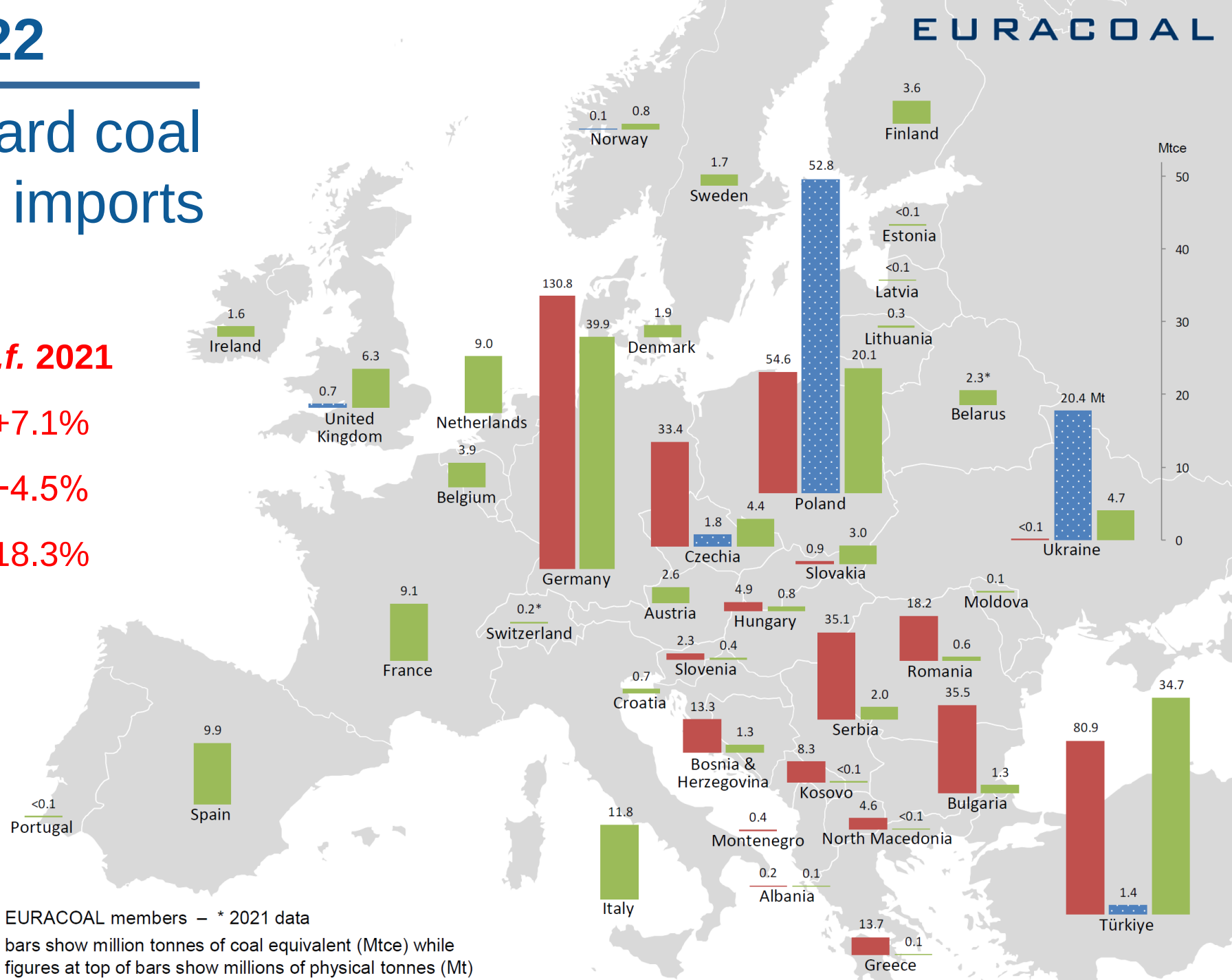
- DEBRIV – Deutsche Braunkohlen-Industrie-Verein (DEU)
- ZSDNP – Czech Confederation of Coal and Oil Producers (CZE)
- PPC – Public Power Corporation (GRC)
- PGG – Polska Grupa Górnicza S.A. (POL)
- PPWB – Confederation of Polish Lignite Producers (POL)
- GIPH – Górnicza Izba Przemysłowo-Handlowa (POL)
- PATROMIN – Asociaţia Patronală Minieră din Romania (ROU)
- BAZ – Borsod-Abaúj-Zemplén County Government (HUN)
- MMI – Mini Maritza Istok (BGR)
- GIG – Central Mining Research Institute (POL)
- CPERI/CERTH – Chemical Process and Energy Resources Institute (GRC)
- BSN – Branchenverband Steinkohle und Nachbergbau (DEU)
- DTEK (UKR)
- Donetsksteel (UKR)
- Lubelski Węgiel „Bogdanka” S.A. (POL)
- Premogovnik Velenje, d.o.o. (SVN)
- HBP – Hornonitrianske bane Prievidza, a.s. (SVK)
- EPS – Electric Power Industry of Serbia (SRB)
- TKI – Turkish Coal Enterprises (TUR) – observer
- RMU “Banovići” d.d. (BIH)
- IMG-PAN Strata Mechanics Research Institute (POL)
- Geocontrol S.A. (ESP)
- Subterra Ingeniería S.L. (ESP)
- DMT GmbH & Co. KG (DEU)

Coal in Europe 2022

lignite production, hard coal production and coal imports

EU-27	million tonnes	*c.f.* 2021
lignite	294	+7.1%
hard coal	55	−4.5%
imports	127	+18.3%

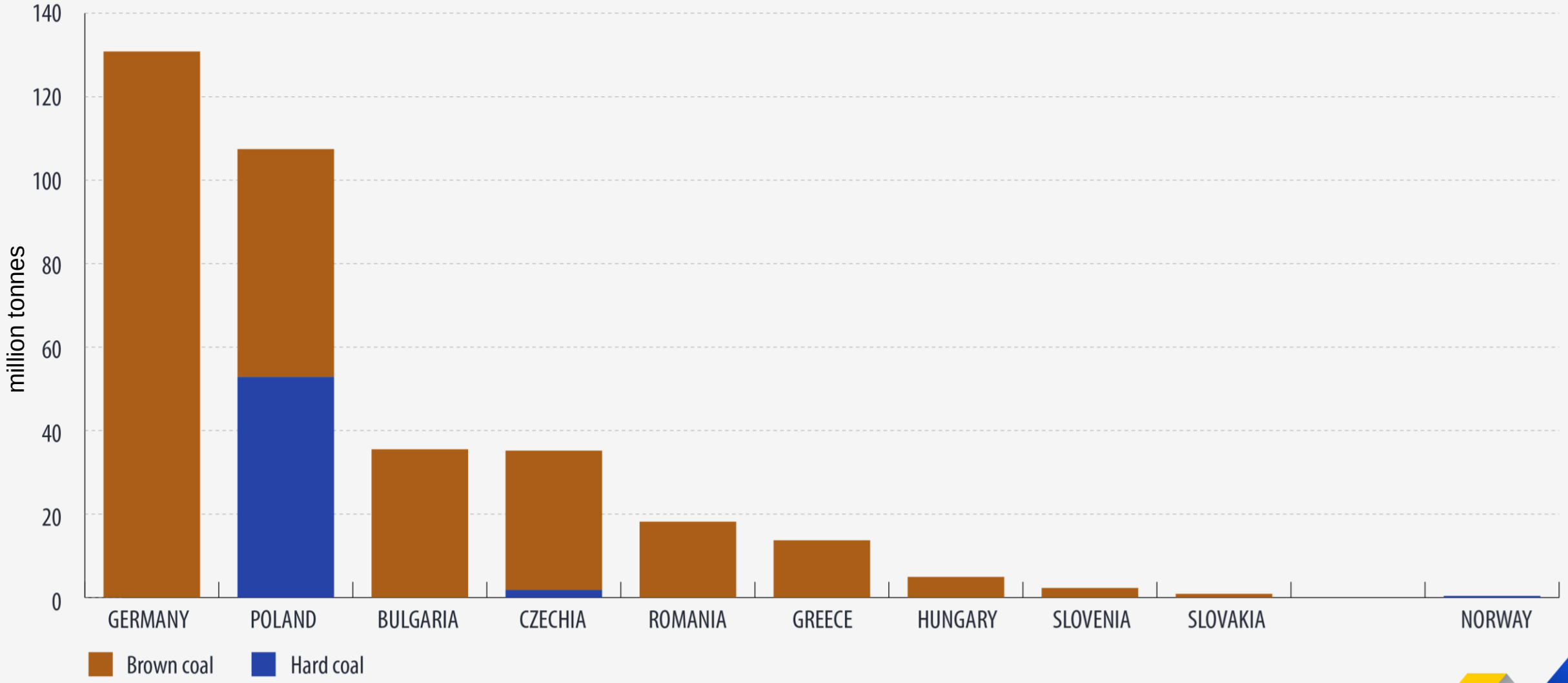
Despite a strong recovery in 2021 and 2022, EU production and imports were below the pre-pandemic levels of 2019.



Source: EURACOAL members – * 2021 data

Note: bars show million tonnes of coal equivalent (Mtce) while figures at top of bars show millions of physical tonnes (Mt)

Production of coal and lignite, 2022



eurostat

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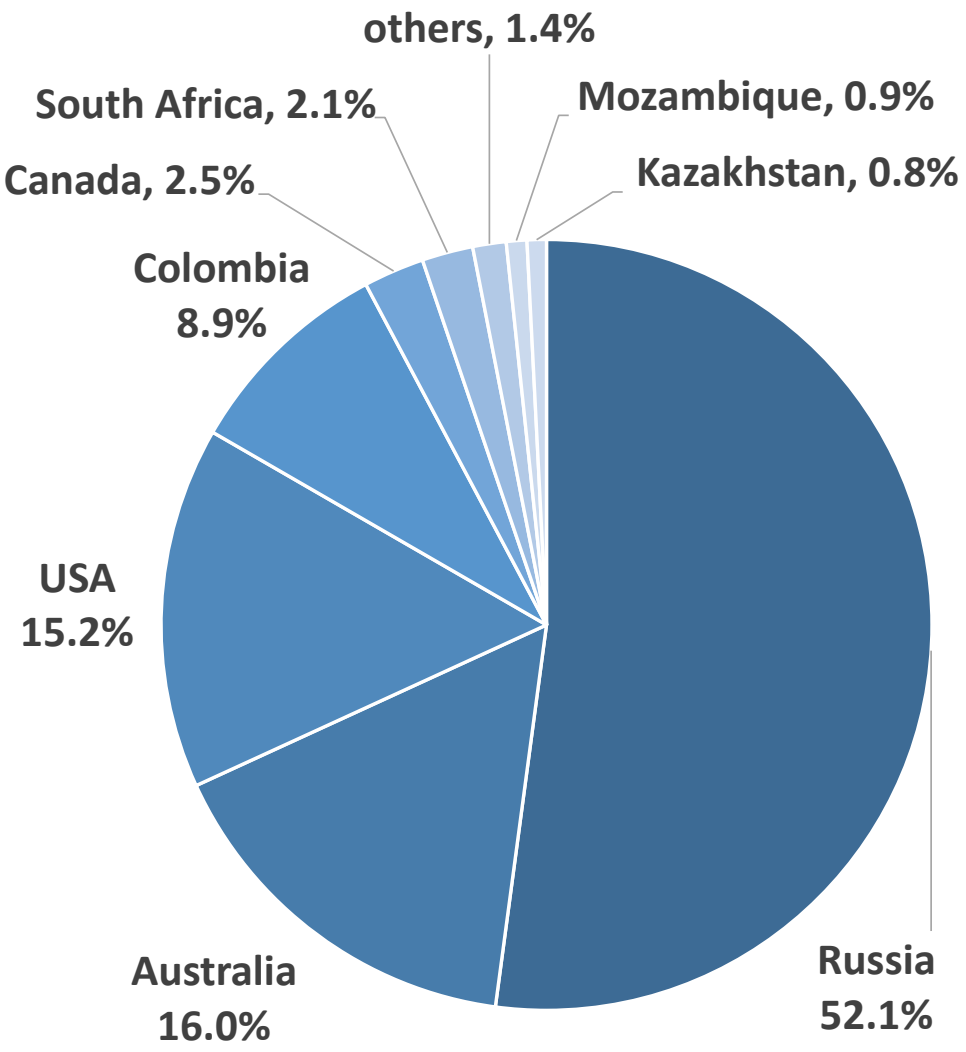
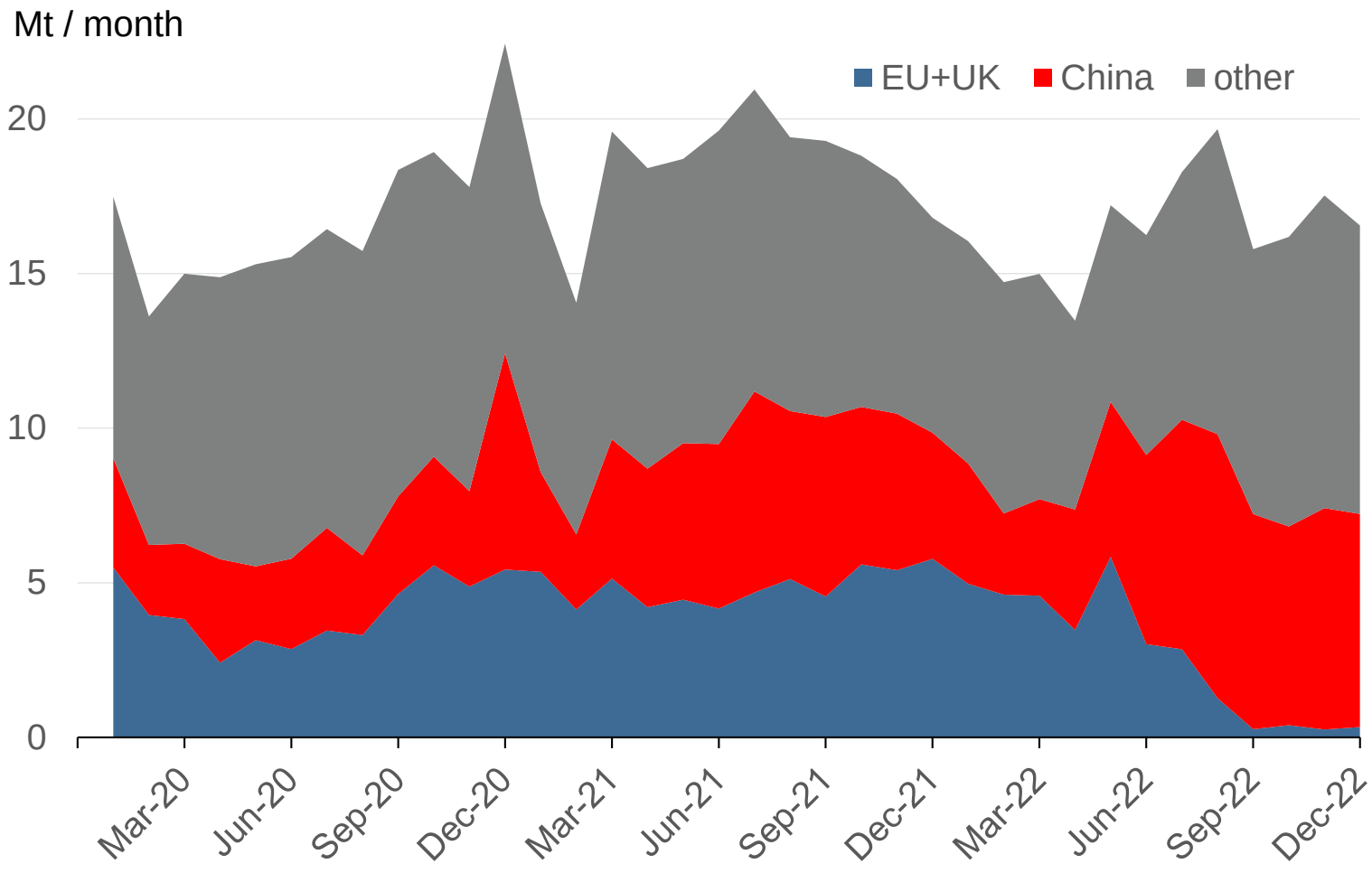
EU coal imports, 2021

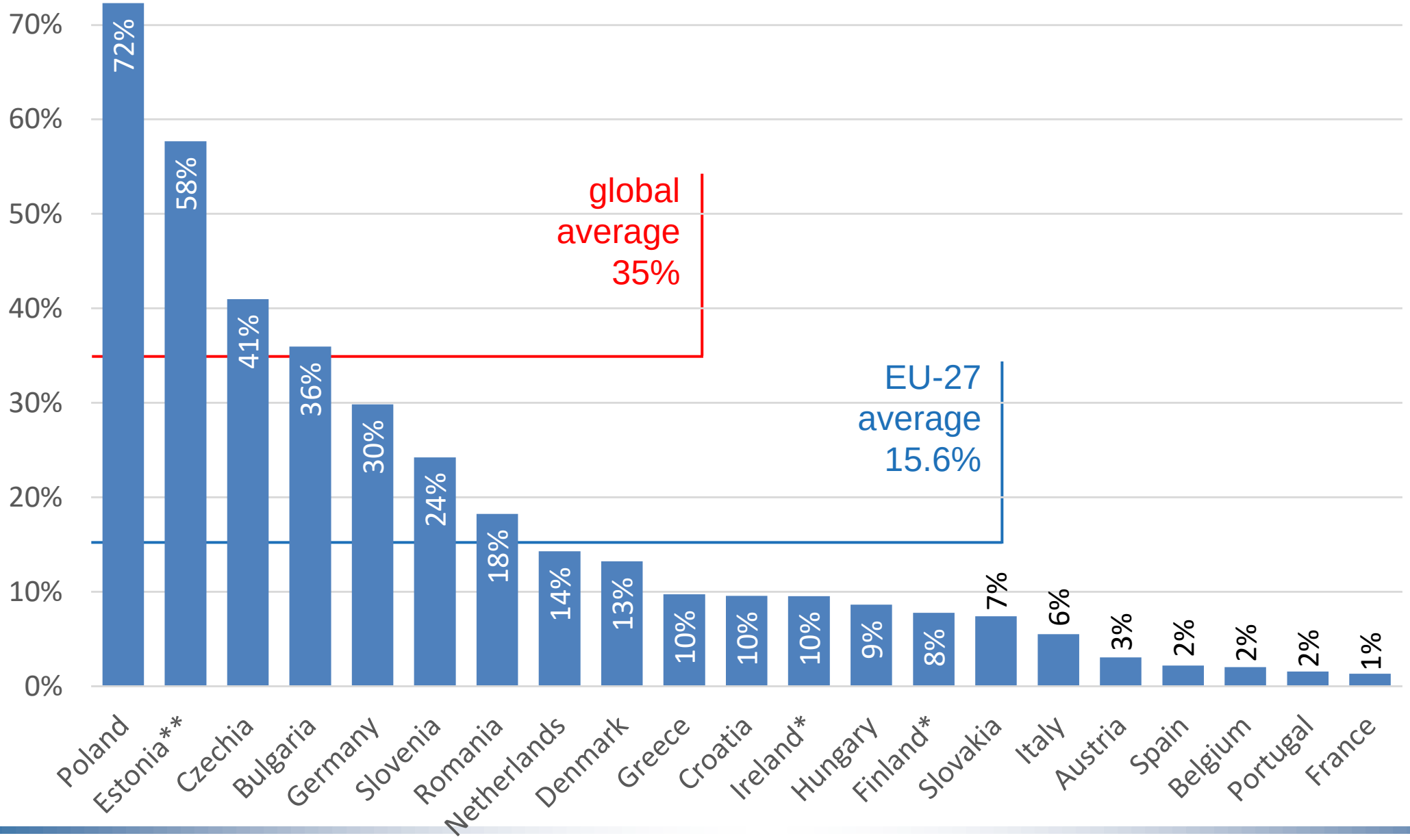


Russian exports, Jan 2020-Dec 2022



source: McCloskey by OPIS, a Dow Jones company

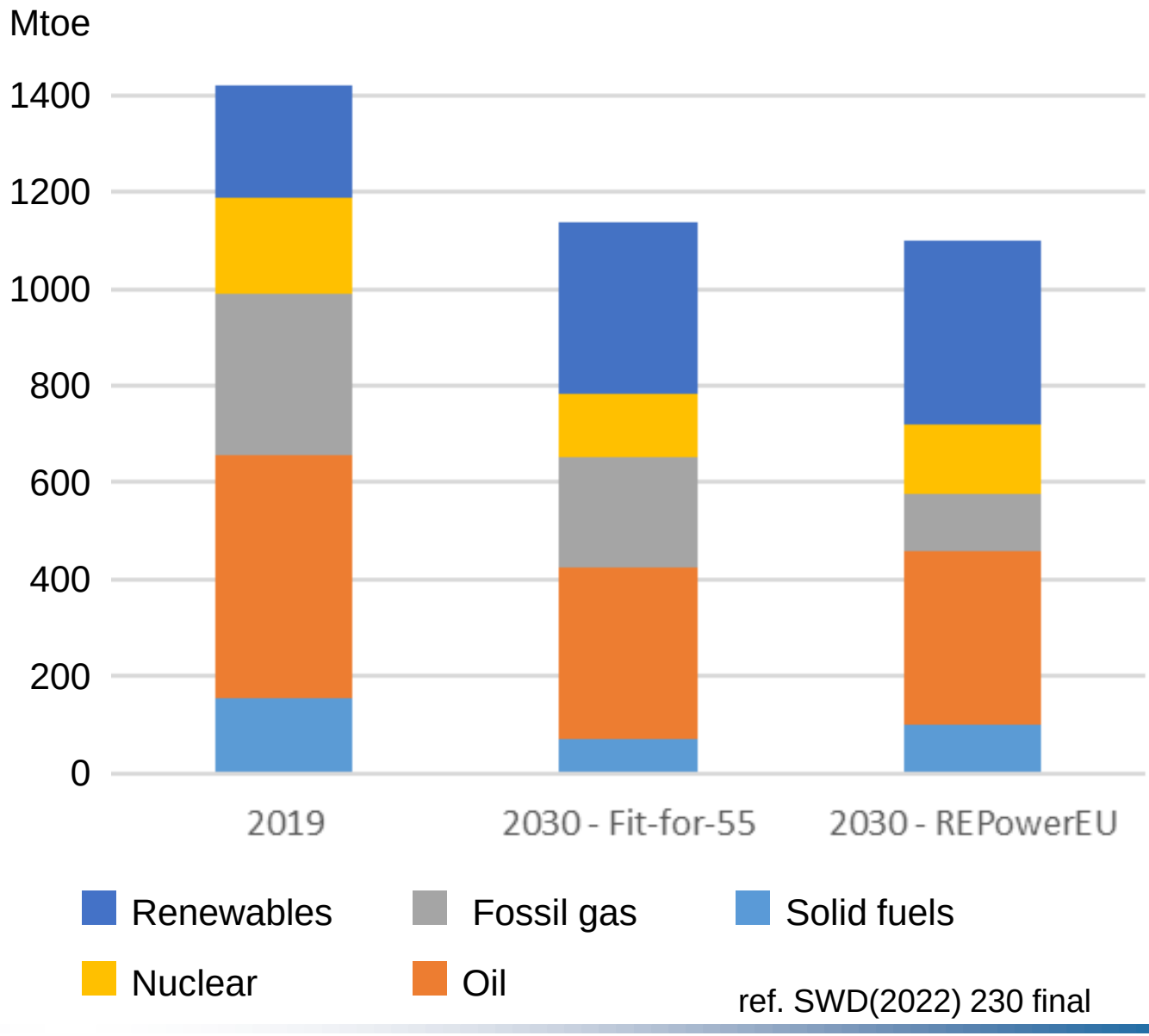
Coal and lignite in EU electricity generation, 2021



Source: Eurostat database nrg_bal_peh, last update 28.04.2023 (*n.b.* coal includes peat* and oil shale**)

Coal and lignite in the REPowerEU Plan of 18 May 2022

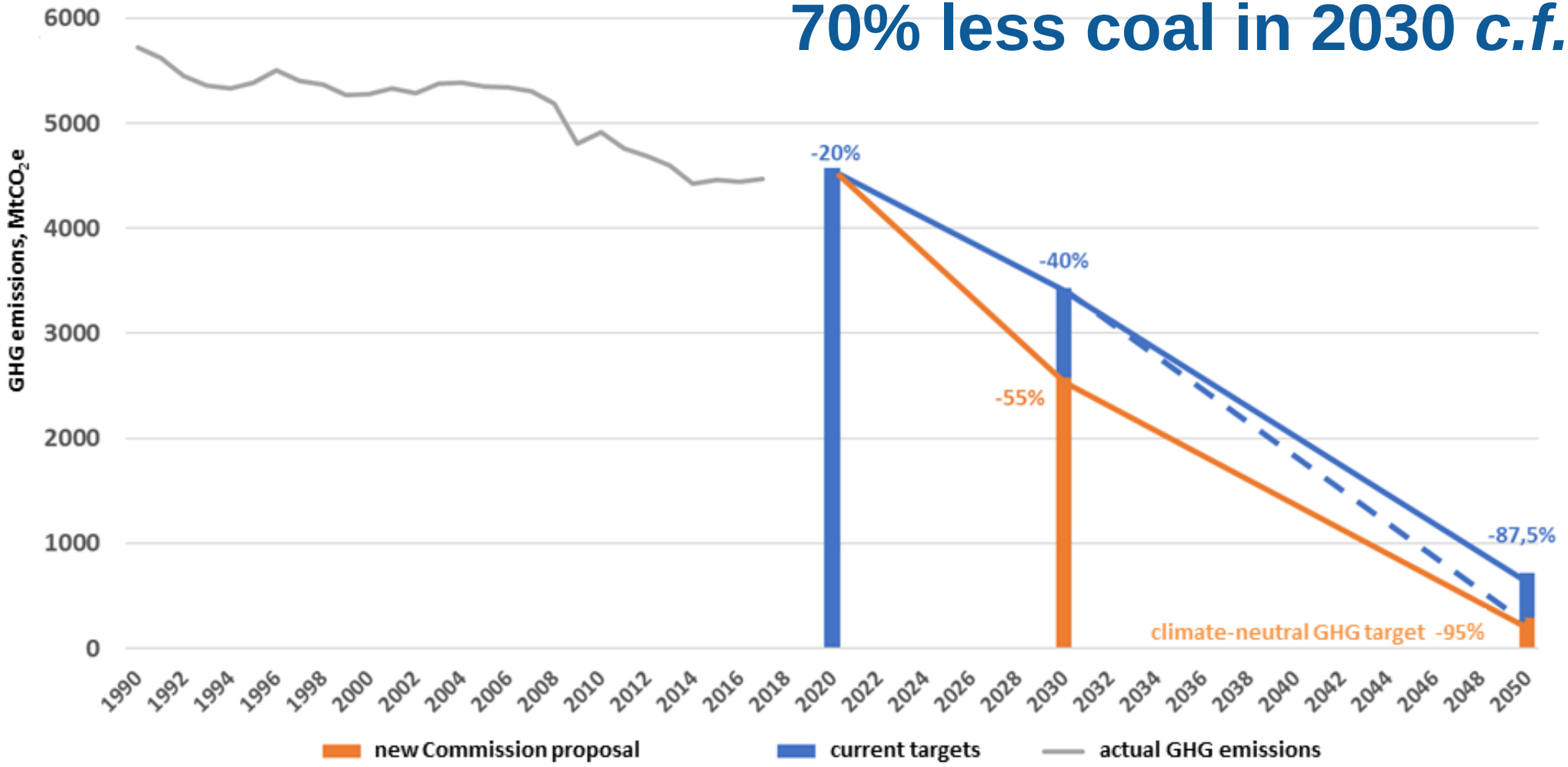
- "Existing coal capacities might be used longer than expected"
- More coal power in 2030: +105 TWh (+41% *c.f.* Fit-for-55)
- 36% decrease in coal and lignite demand from 2020 to 2030
- GHG reduction target for 2030 reached with more RES and investment in energy efficiency
- Projected fossil gas saving:
  - 24 bcm in 2030 (*c.f.* IEA's 22 bcm) for a €2 billion CAPEX investment



ref. SWD(2022) 230 final

Fit-for-55 climate targets 2030 and 2050:

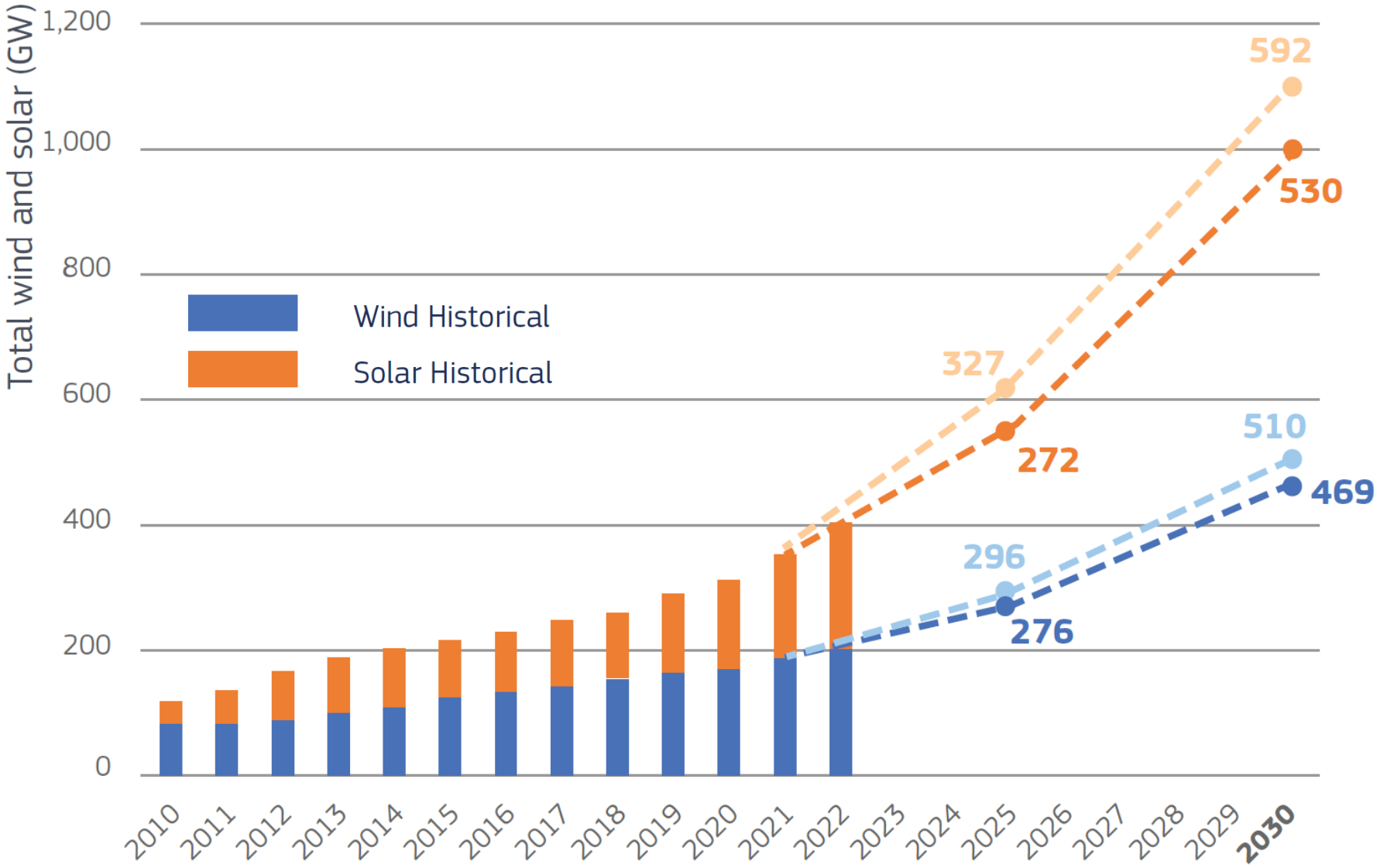
70% less coal in 2030 *c.f.* 2015



GHG emission reduction over the 10 years from now to 2030 has to be much faster (*c.*3×) than the reduction over the 30 years 1990-2020.

sources: European Commission and EEA

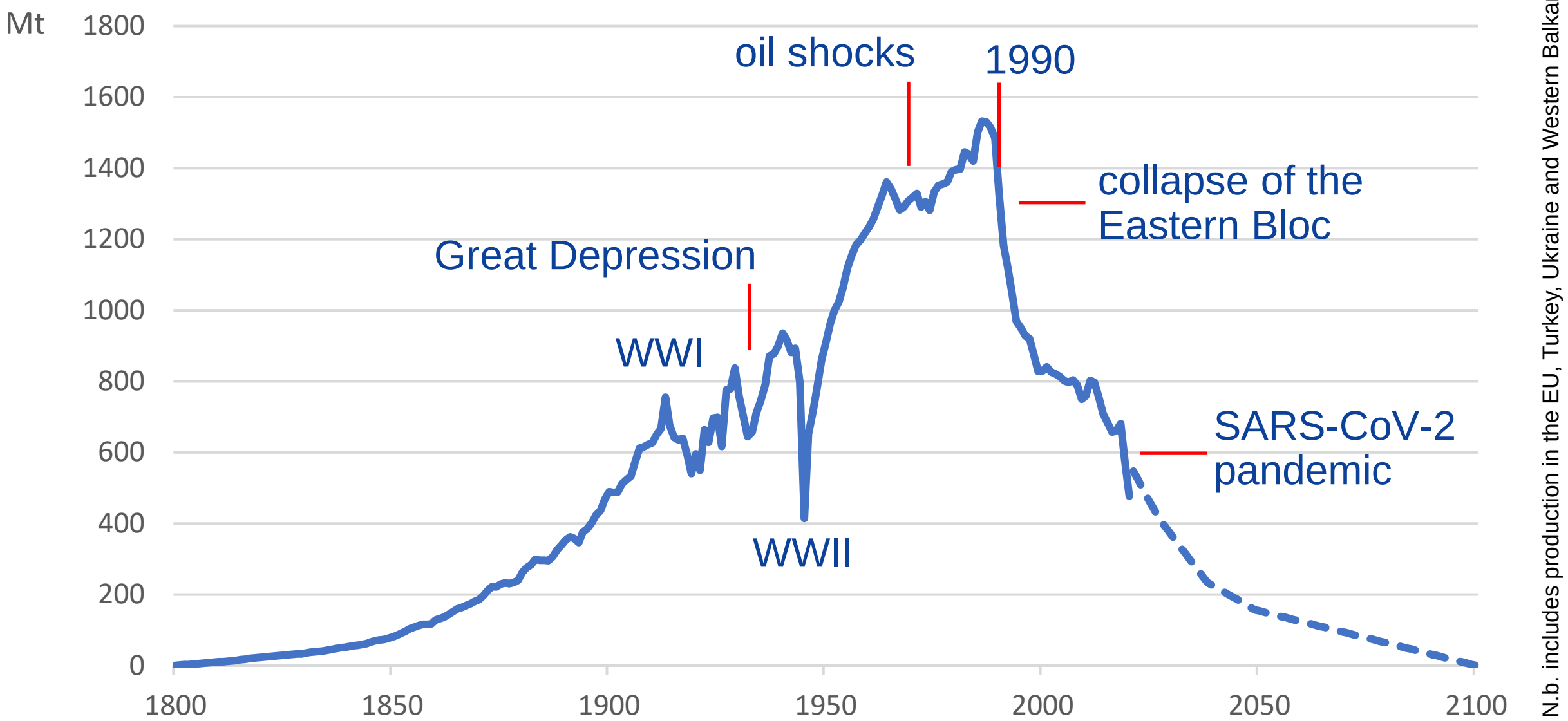
Fit-for-55 & REPowerEU – wind and solar PV forecast to grow



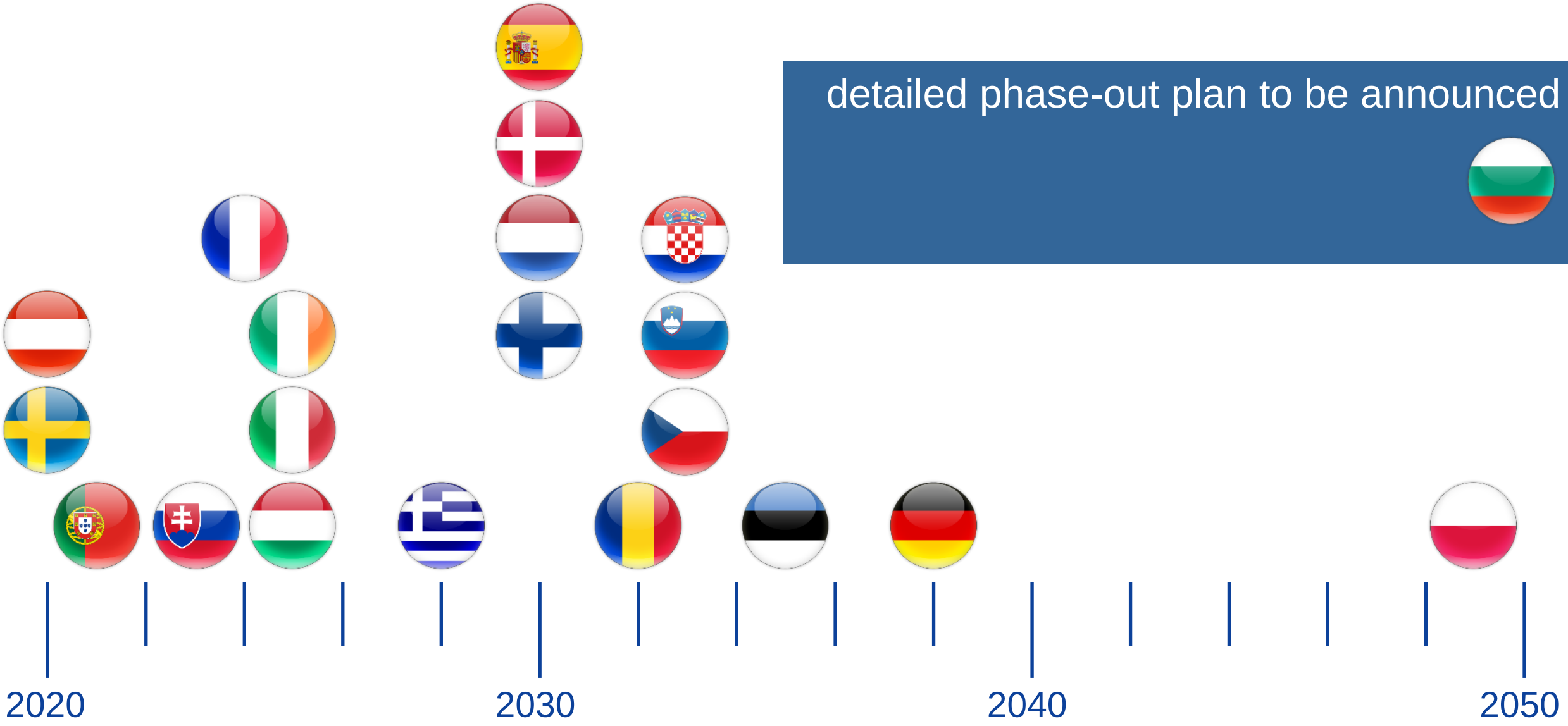
n.b. in 2020, the total installed capacity of all generation types in the EU was *c.*1 000 GW

sources: European Commission and IEA

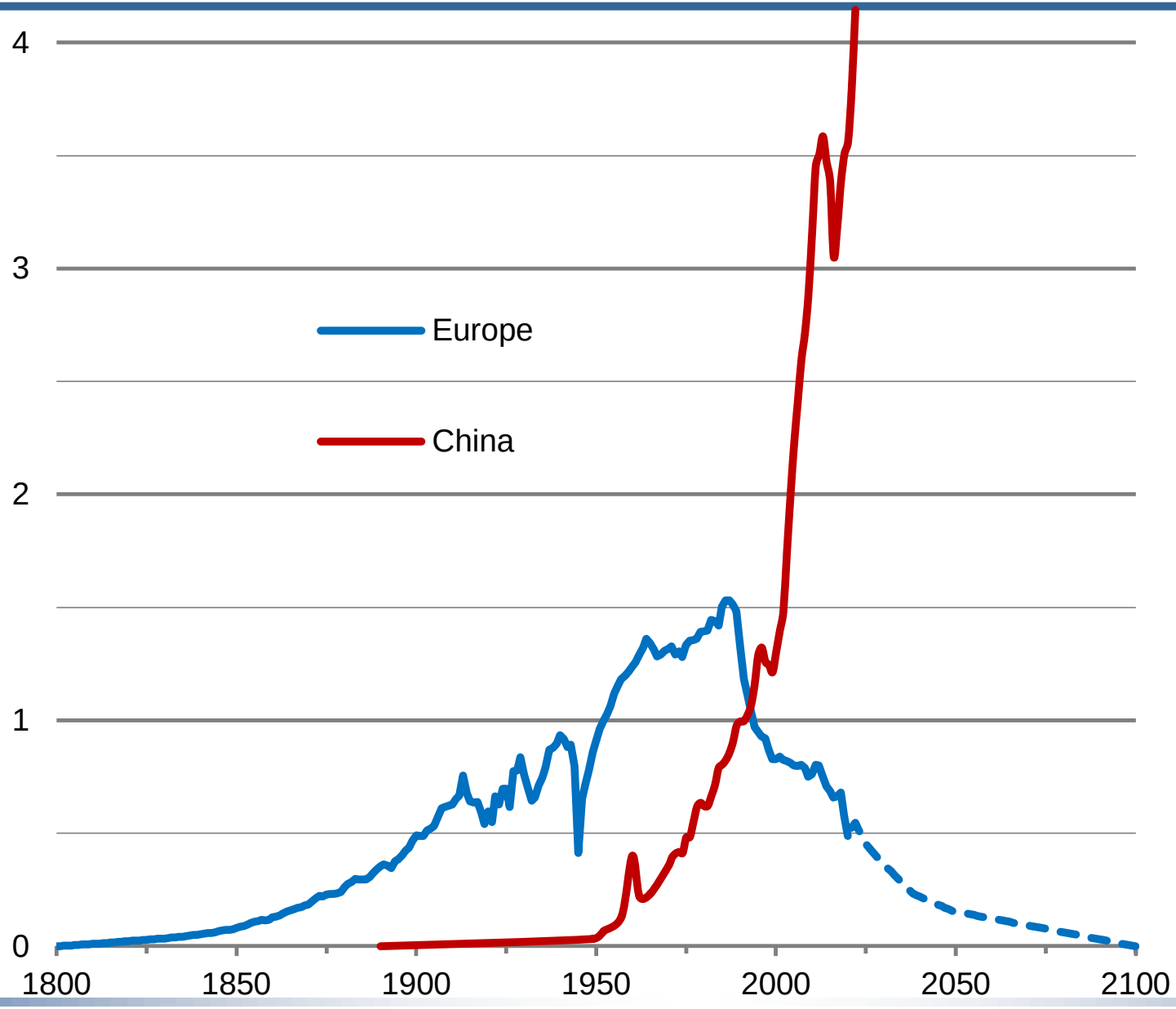
European coal and lignite production 1800-2021 and forecast



Coal, peat & oil shale phase-out plans in EU Member States



China coal production 1900-2022 (and European production)



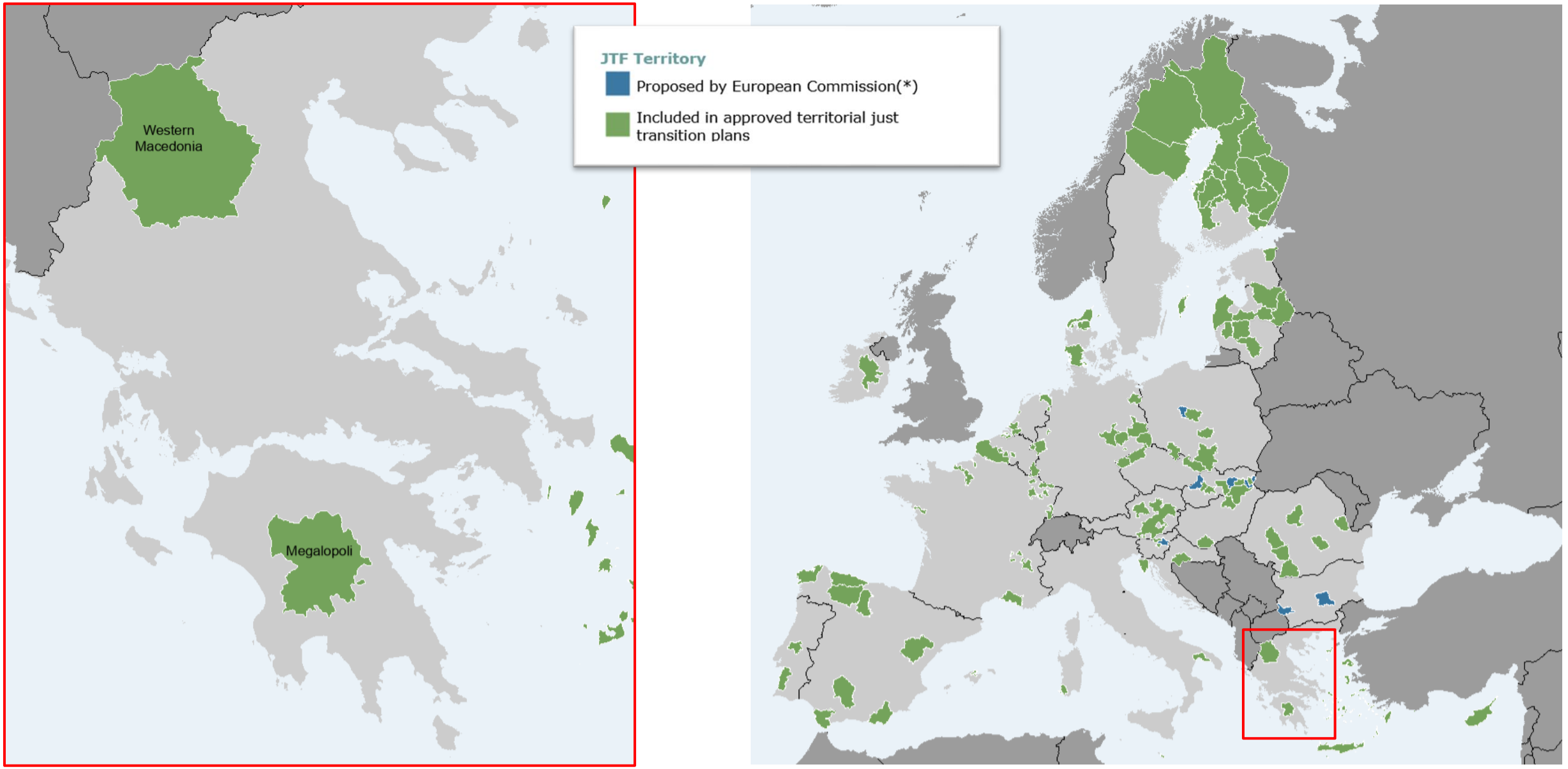
sources: "Estimating long-term world coal production with logit and probit transforms", *International Journal of Coal Geology*, Dave Rutledge, November 2010; *Cleaner Coal in China*, International Energy Agency, Paris, 2009; and IEA databases

Employees in the lignite regions deserve a Just Transition

- The Just Transition Fund is part of the cohesion policy family
- €25 billion to soften the impacts of the energy transition
- 93 territories, covering coal regions and carbon-intensive regions
- A variety of investment themes are supported:
  - half of JTF investments help people find new skills & reinvent the local economy
  - getting ready for the future: clean energy, circular economy and innovation
  - cleaning the environment
  - in specific cases, the JTF supports large enterprises and ETS installations
- The European Commission helps JTF regions to implement their plans

Industry value chains will continue to contribute to the socio-economic development of the lignite regions, so include companies in plans.

Just Transition Fund (JTF) – approved territorial plans



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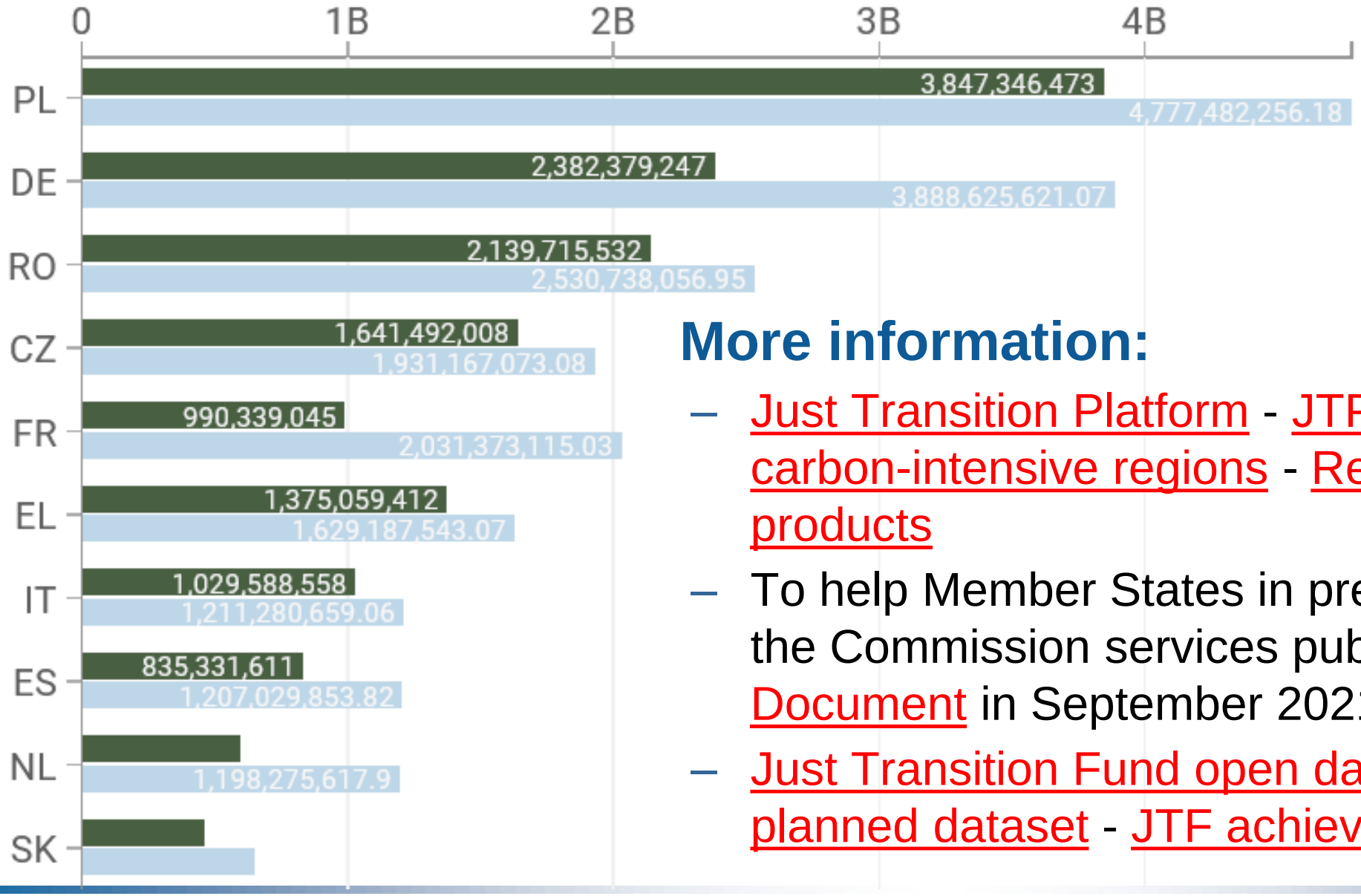
€25.4 billion JTF to be allocated over 2021-2027 budget period



More information:

- Just Transition Platform - JTP Working Groups on carbon-intensive regions - Repository of knowledge products
- To help Member States in preparing their TJTPs, the Commission services published a Staff Working Document in September 2021.
- Just Transition Fund open data page - JTF finances planned dataset - JTF achievement dataset

Industrial Emissions Directive (IED)

The European Commission proposal to revise the IED would:

- Set limits for all plants at the strictest ends of BAT-AEL ranges, despite these having been achieved at perhaps only one plant under ideal conditions!
- End the certainty of national emission limit values set for all plants, destroying the level playing field and requiring individual plant limits
  - **reliance on exemptions as a rule!**
- Accelerate the revision of permits and new Environmental Management Systems (EMS) for every plant.
- Grant additional rights to NGOs, including a reversal of the “burden-of-proof” legal principle.

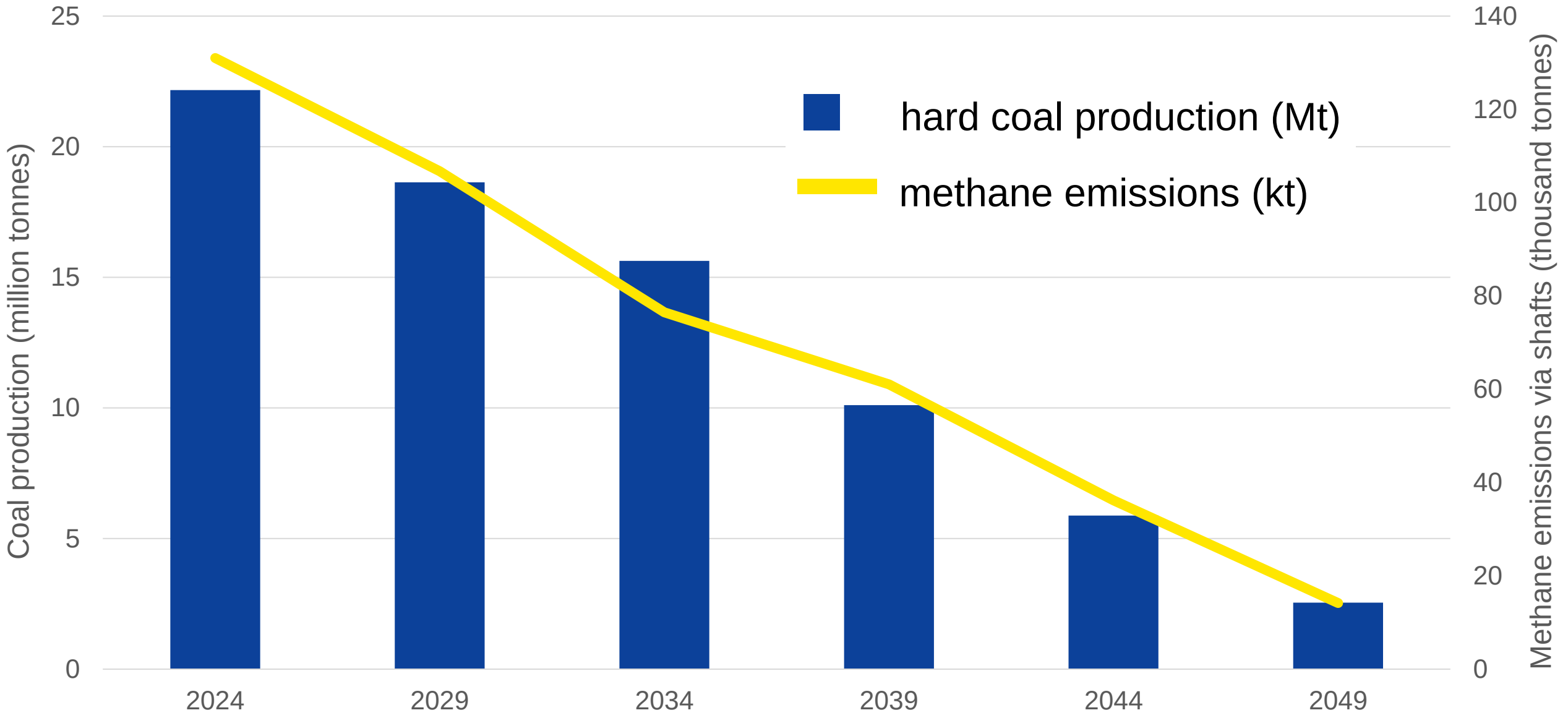
Another blow to industry in times of crisis, but coal mining stays out.

EU Methane Regulation

- The European Commission proposal would mean:
  - a ban on venting and flaring of methane with no exemptions for mine safety
  - the premature **closure of Polish and Slovenian underground coal mines**
  - costly obligations for all hard coal mines that have closed since 1972
  - costly obligations to monitor and verify emissions from operating lignite mines – with no option to curb emissions
- To reduce methane emissions, secure energy supply and allow a Just Transition, EURACOAL called for amendments:
  - allow limited methane venting and flaring for operational and safety reasons
  - encourage Member States to incentivise **more methane capture and use**
  - lignite mine operators should be allowed to use deposit-specific, average national emissions factors – as in UNFCCC reporting

Methane emissions from lignite mines are reported to be low and marginal, at the limits of detection.

Projected PGG coal production and CH_4 emissions to 2049



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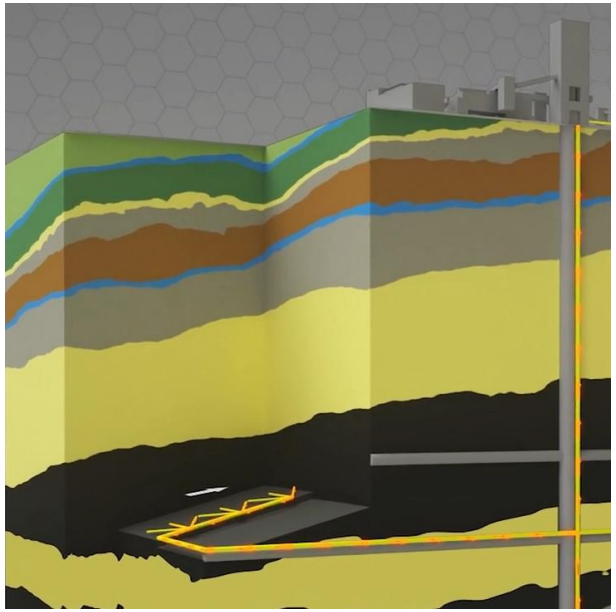
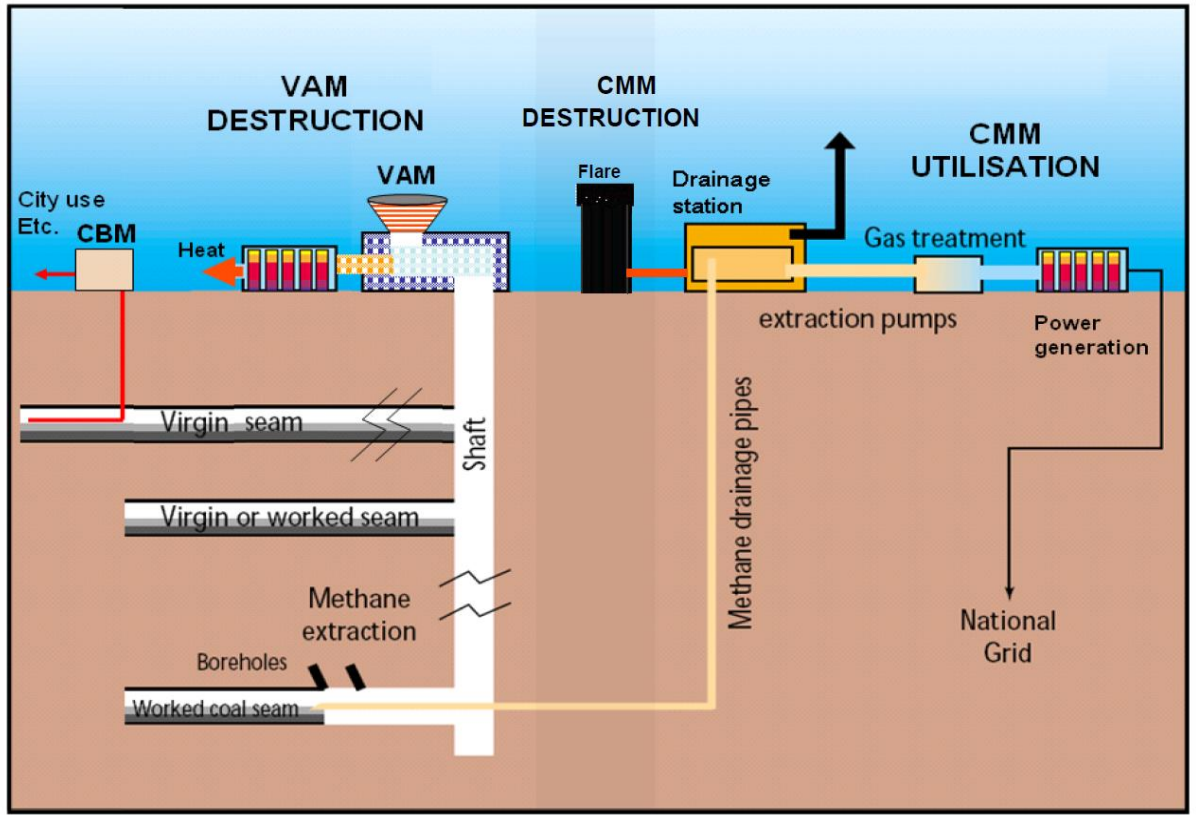
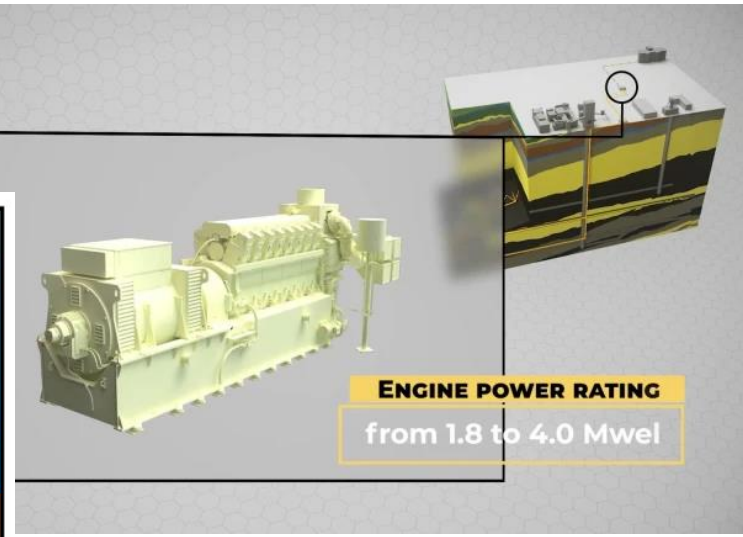
Coal mine methane (CMM) and ventilation air methane (VAM)







RFCS Modernisation Package came into force August 2021

- A €1.6 billion "trust fund"
- Revised legal basis COM(2020) 319
- Technical guidelines COM(2020) 320
- Financial guidelines COM(2020) 321
- Annual call €40 million (was €60 million)
- New "Big Ticket" annual calls (€71 million):
  - Clean Steel Partnership call (€52 million)
  - Coal Regions in Transition call (€19 million)
- RFCS research programme managed by European Research Executive Agency since 1 April 2021

Research Fund for Coal & Steel

€ 40 M RFCS annual call

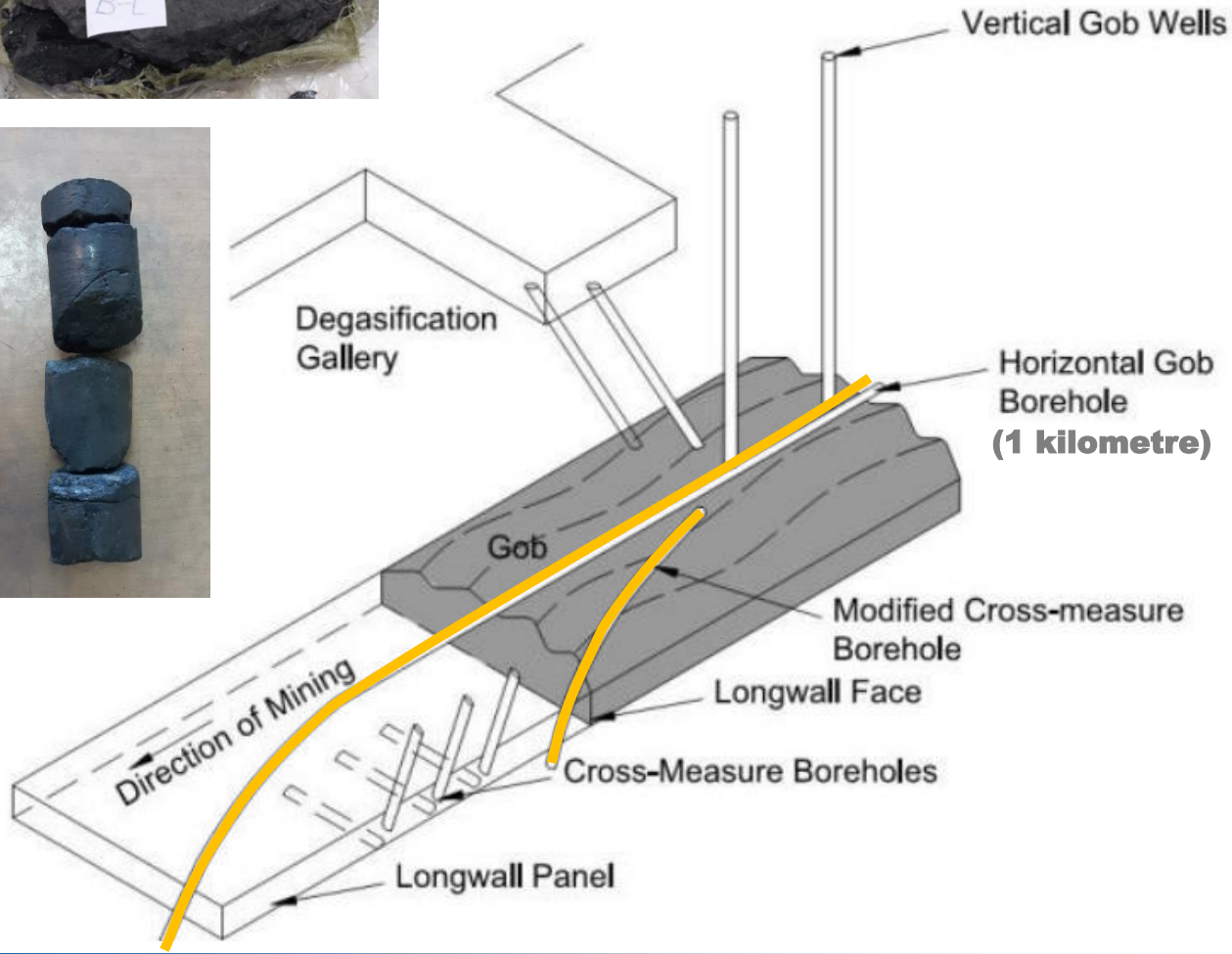
€ c.130 M 2021-2027 large coal projects Just Transition Mechanism

Revision of coal and steel research objectives

€ c.350 M 2021-2027 Breakthrough Clean Steel projects

DD-MET – directional drilling for methane drainage

RFCS grant no.847338 – DD-MET – RFCS-2018



- **Target:** an alternative, more effective and economic method of methane drainage from longwalls or methane capture from goafs.
- **Impacts:** increased mine safety, higher productivity, reduced methane emissions, and lower costs.

REM

RFCS BIG TICKETS PROJECT

Reduction of methane emissions from post mining goafs
to minimise their inflow into VAM

Ventilation air methane (VAM) installations worldwide

Thoresby mine, 1994
10,000 Nm3/h

Enlow fork mine 2007
10,000 Nm3/h

Verdeo McElroy mine 2012
250,000 Nm3/h
6 MW steam turbine

GaoHe mine, 2014
1,020,000 Nm3/h
20 MW steam turbine

Appin Colliery mine, 2001
10,000 Nm3/h

Datong mine, 2011
370,000 Nm3/h
Hot water generation

Zhengzhou mine, 2008
62,500 Nm3/h
Hot water generation

West Cliff mine, 2006
250,000 Nm3/h
6 MW steam turbine

Source.: DÜRR AG

VAM at Gaohe coal mine, Shanxi Lu'An Mining Group, China

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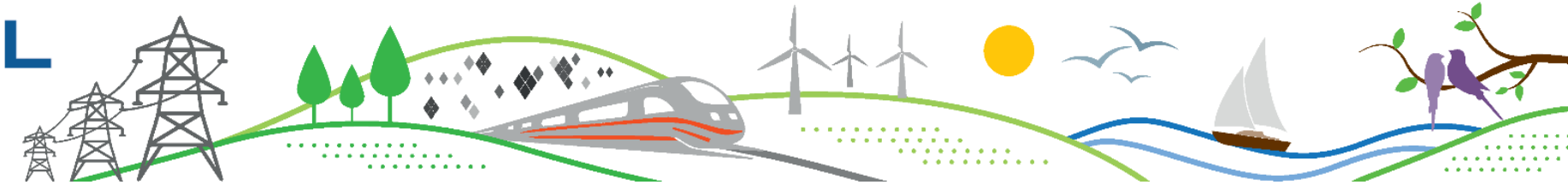

Thank you!

https://public.euracoal.eu/download/Public-Archive/Library/Position-Papers/EURACOAL_20210426_Position-Paper-Methane-Strategy_rev09.pdf

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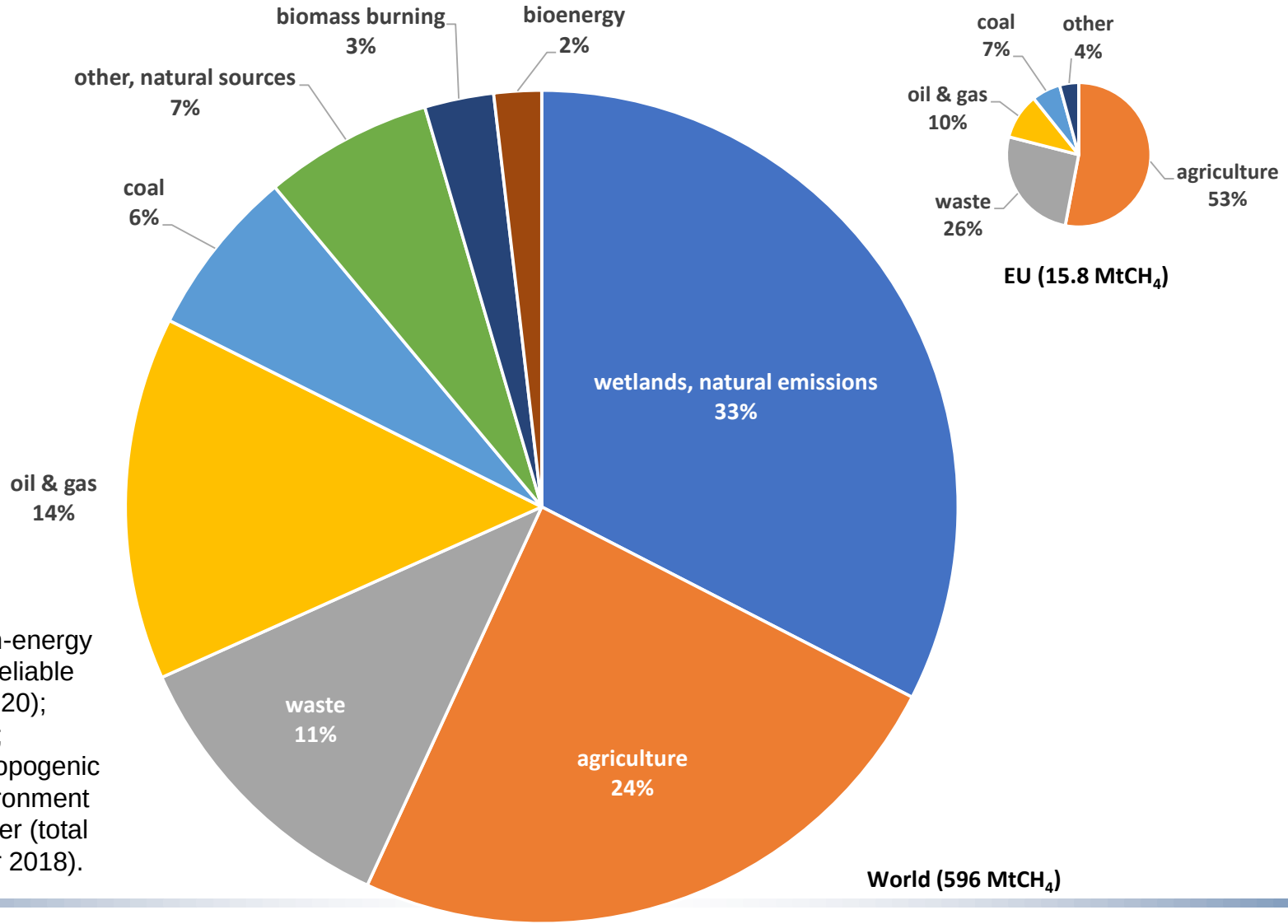
Coal mine methane – definitions

CBM	Coalbed methane is recovered from virgin (unmined) coalbeds by drilling wells from the surface, sometimes prior to underground mining
CMM	Coal mine methane is methane gas which is captured by drilling drainage boreholes underground before or during mining operations. Typically, 30% of coal mine methane can be drained and is often used for heat and power generation.*
VAM	Ventilation air methane is the methane desorbed from coal seams or released from voids during mining, not captured by drainage but diluted with fresh air for safety reasons before venting the mixed gas to atmosphere via mine roadways and exhaust shafts. Typically, 70% of mine methane leaves an underground mine in the ventilation air.*
AMM	Abandoned mine methane is the methane gas remaining (and in some instances newly generated by microbes) in closed coal mines. Methane held in voids, coal seams and other gas-bearing strata that have been disturbed or intercepted by mining operations can escape to atmosphere, but quantities vary from mine to mine. AMM emissions change with atmospheric pressure and will eventually stop when mines flood.
SMM	Surface mine methane is the methane released during opencast or open-pit mining. Emissions from surface lignite mines in Europe are reported to be low and marginal, at the limits of detection, because little or no thermal methane is present from the coalification process in these shallow, geologically young seams.

* Creedy, David P., A. Saghafi and R. Lama (1997), *Gas Control in Underground Coal Mining*, IEACR/91, prepared by Wardell Armstrong in collaboration with CSIRO, Australia on behalf of IEA Coal Research – The Clean Coal Centre, London, April 1997.

Total global methane emissions, 2012/2019 and EU anthropogenic methane emissions, 2018



Sources: IEA Methane Tracker 2020 (non-energy data for 2012 – the latest year for which reliable estimates are available, Sauonis *et al* (2020); estimated energy data for the year 2019); COM(2020) 663 (breakdown of EU anthropogenic methane emissions); and European Environment Agency (EEA) greenhouse gas data viewer (total EU anthropogenic methane emissions for 2018).