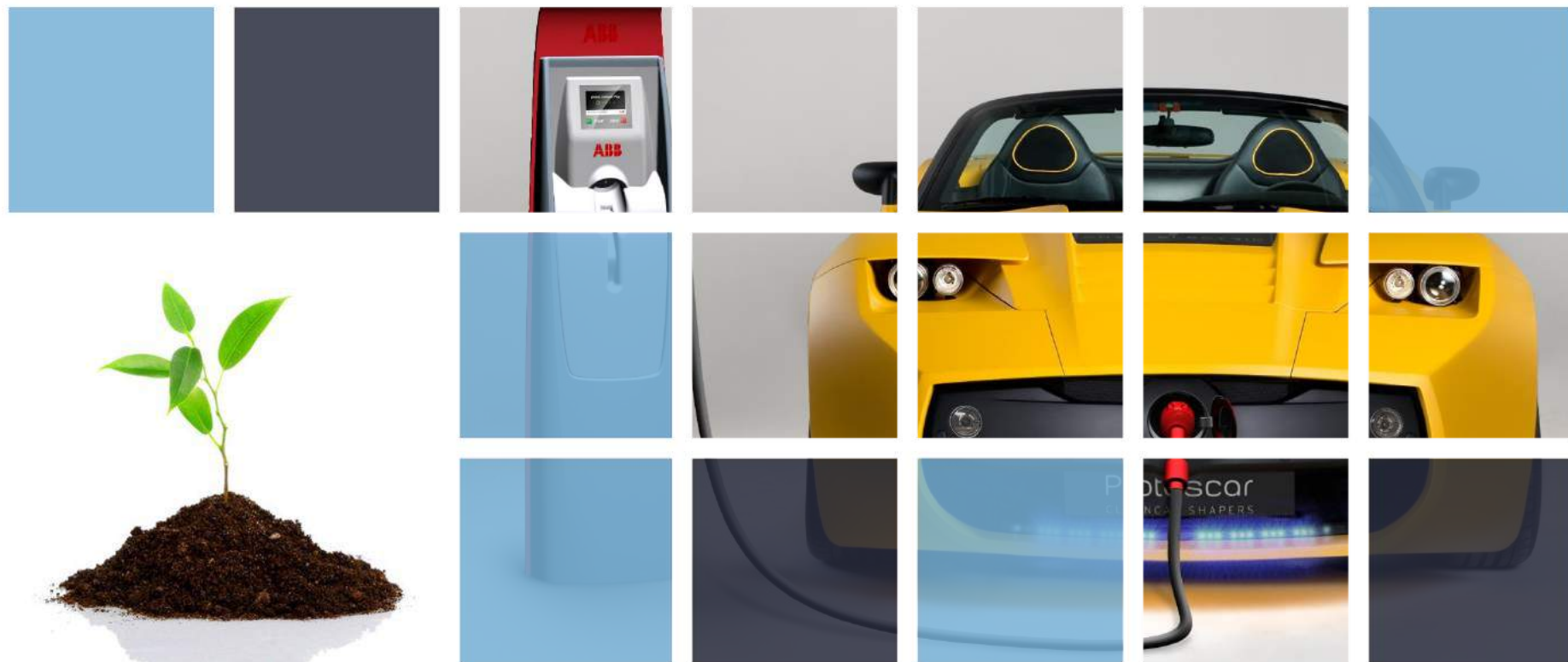


Fenntartható fenntarthatóság

Dr. Hanula Barna



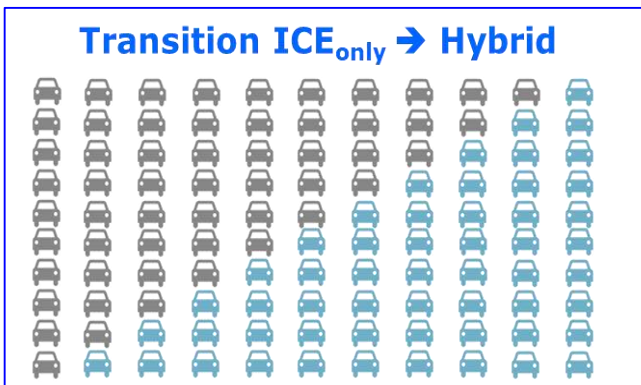
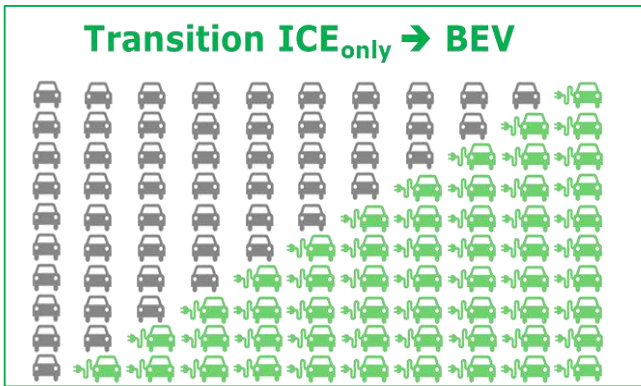
2019.11.18.



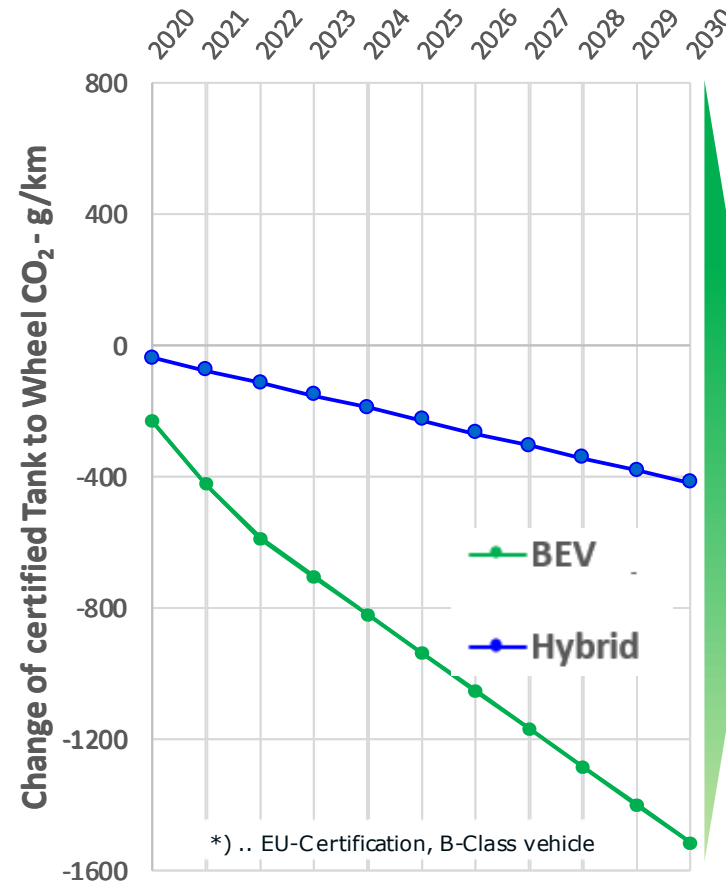
CO₂ IMPACT OF ICE_{ONLY} REPLACEMENT (SCHEMATIC)

Replacement of ICE_{only}

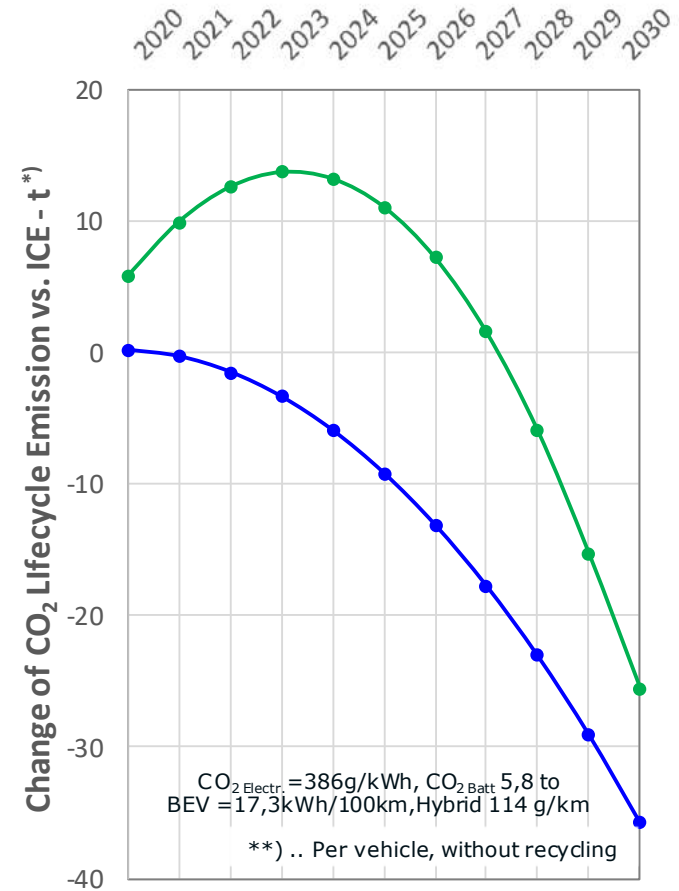
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030



Impact on Certified CO₂ *)

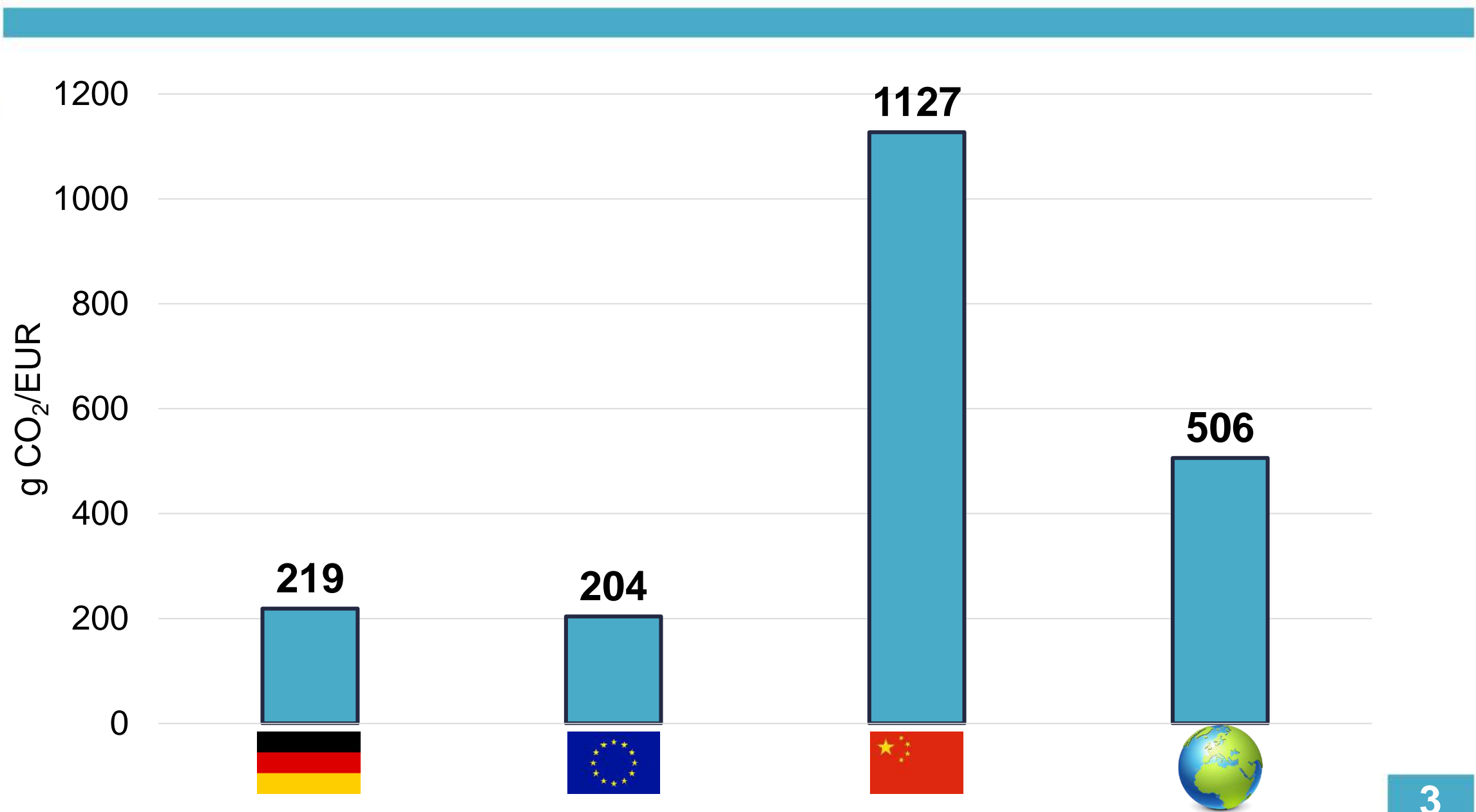


Impact on Lifecycle CO₂ **)



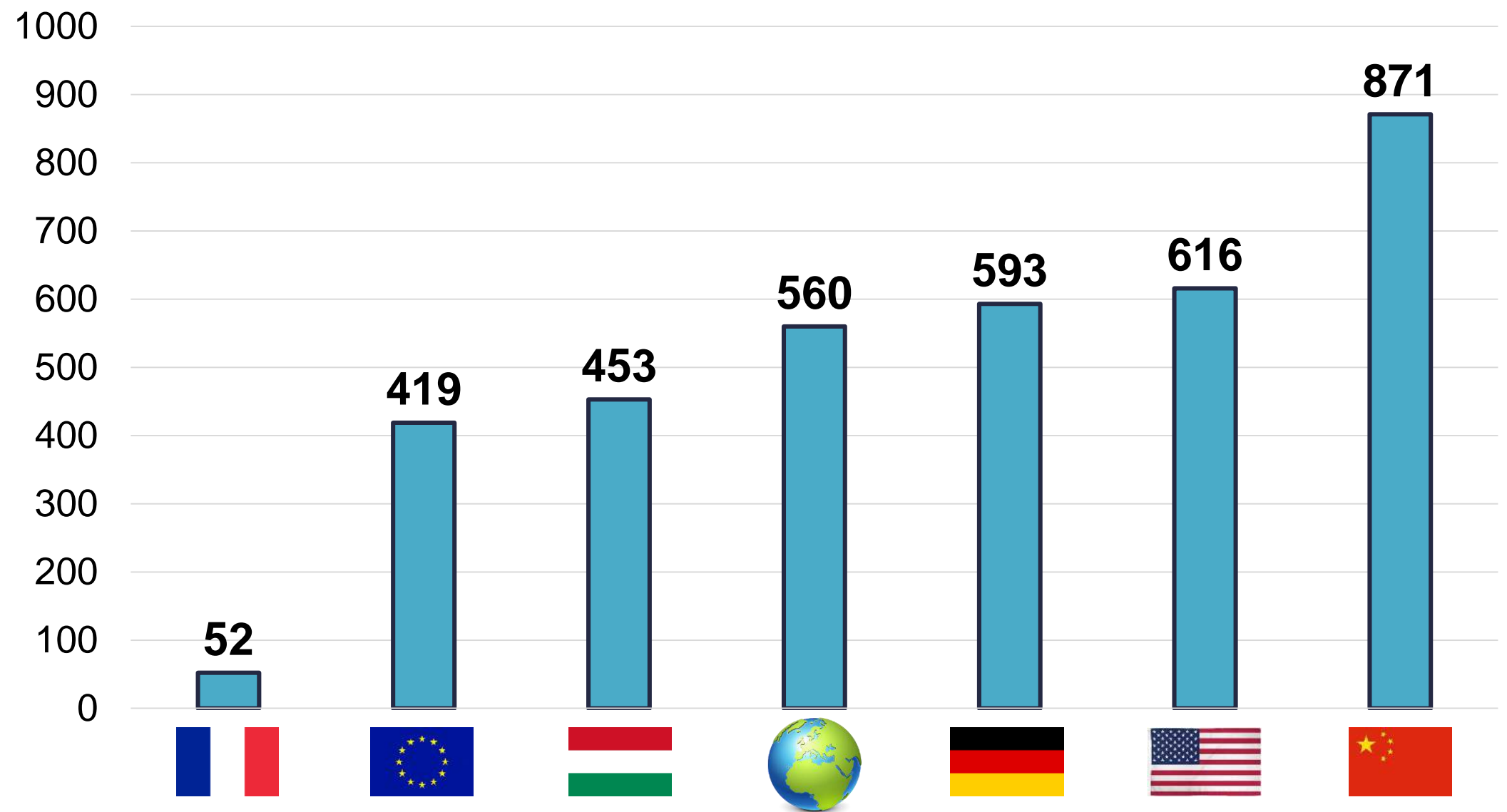
Current European Tank to Wheel Legislation is just focused on BEV introduction

A PÉNZ SZÉN-DIOXID TARTALMA [g/EUR] (és a kamatoké is?)



Forrás: imf.org, data.worldbank.org, edgar.jrc.ec.europa.eu

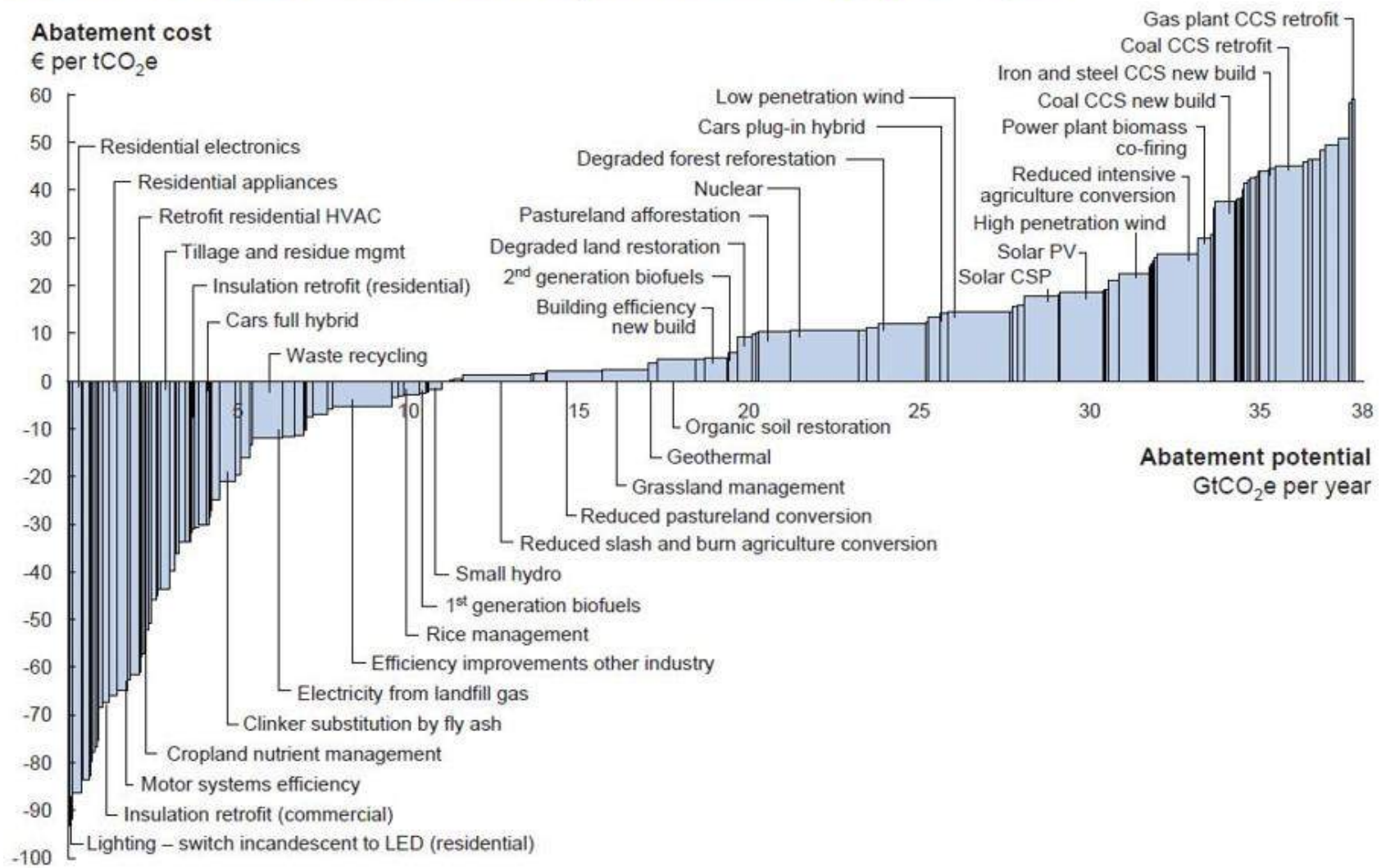
AZ ÁRAMTERMELÉS SZÉN-DIOXID TARTALMA [ekv. g/kWh]



Forrás: GaBi, IPCC AR5, incl. biogenic carbon, GWP100)

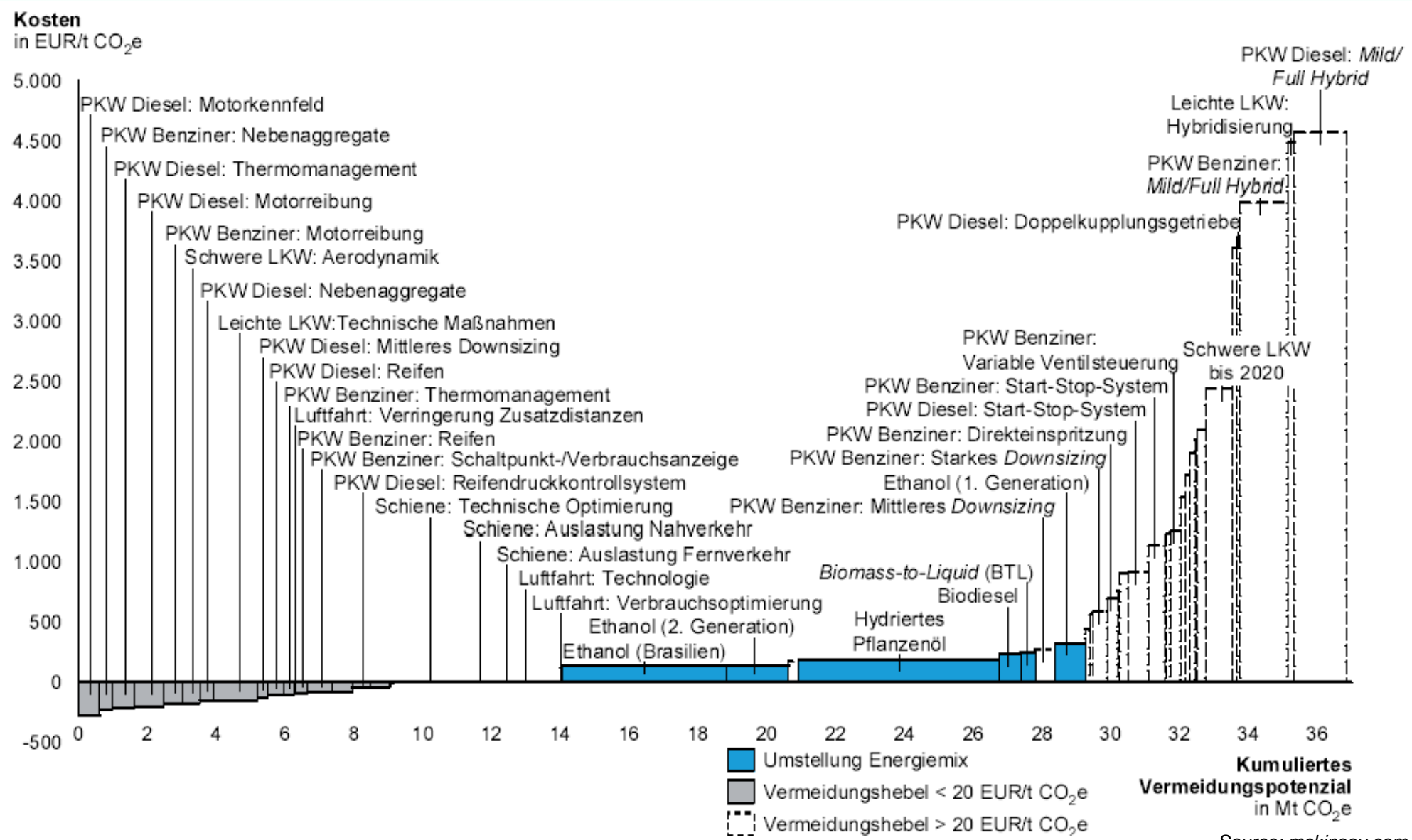
POSSIBILITIES OF CO₂ ABATEMENT

Global GHG abatement cost curve beyond business-as-usual – 2030



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60 per tCO₂e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.
 Source: Global GHG Abatement Cost Curve v2.0

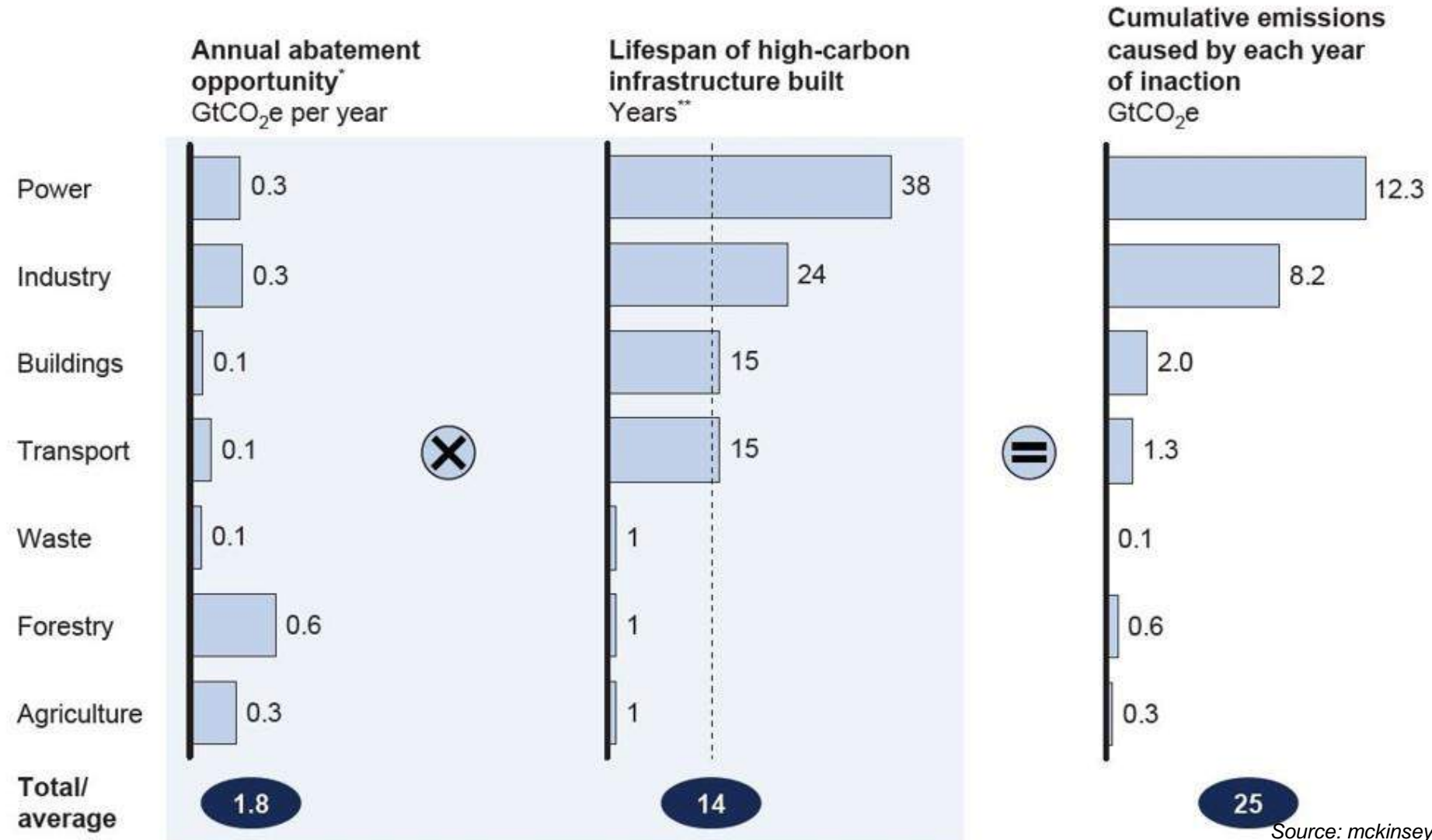
TRANSPORT SECTOR: ABATEMENT COST CURVE GERMANY 2020



Source: mckinsey.com

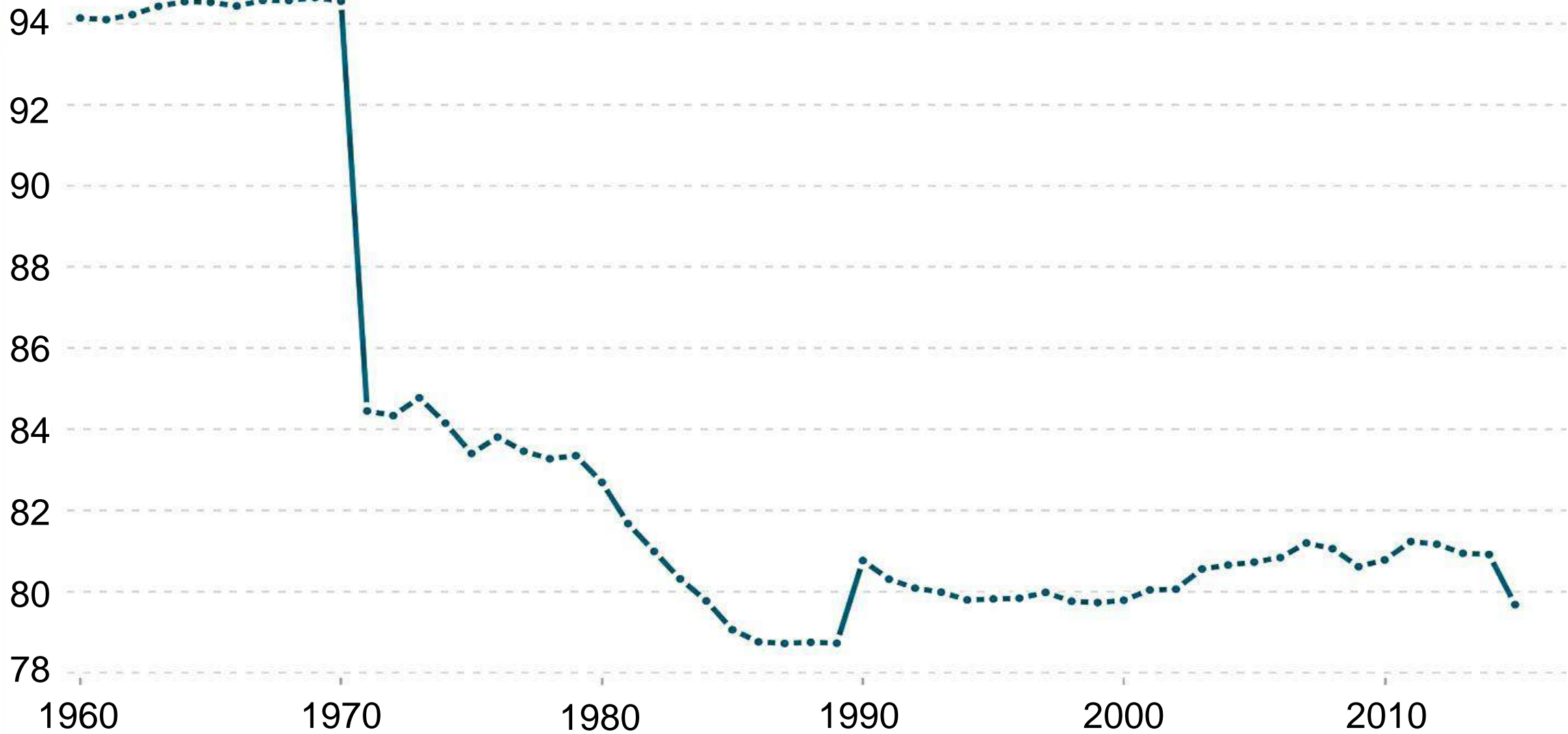
POSSIBILITIES OF CO₂ ABATEMENT

Lock-in into high-carbon infrastructure

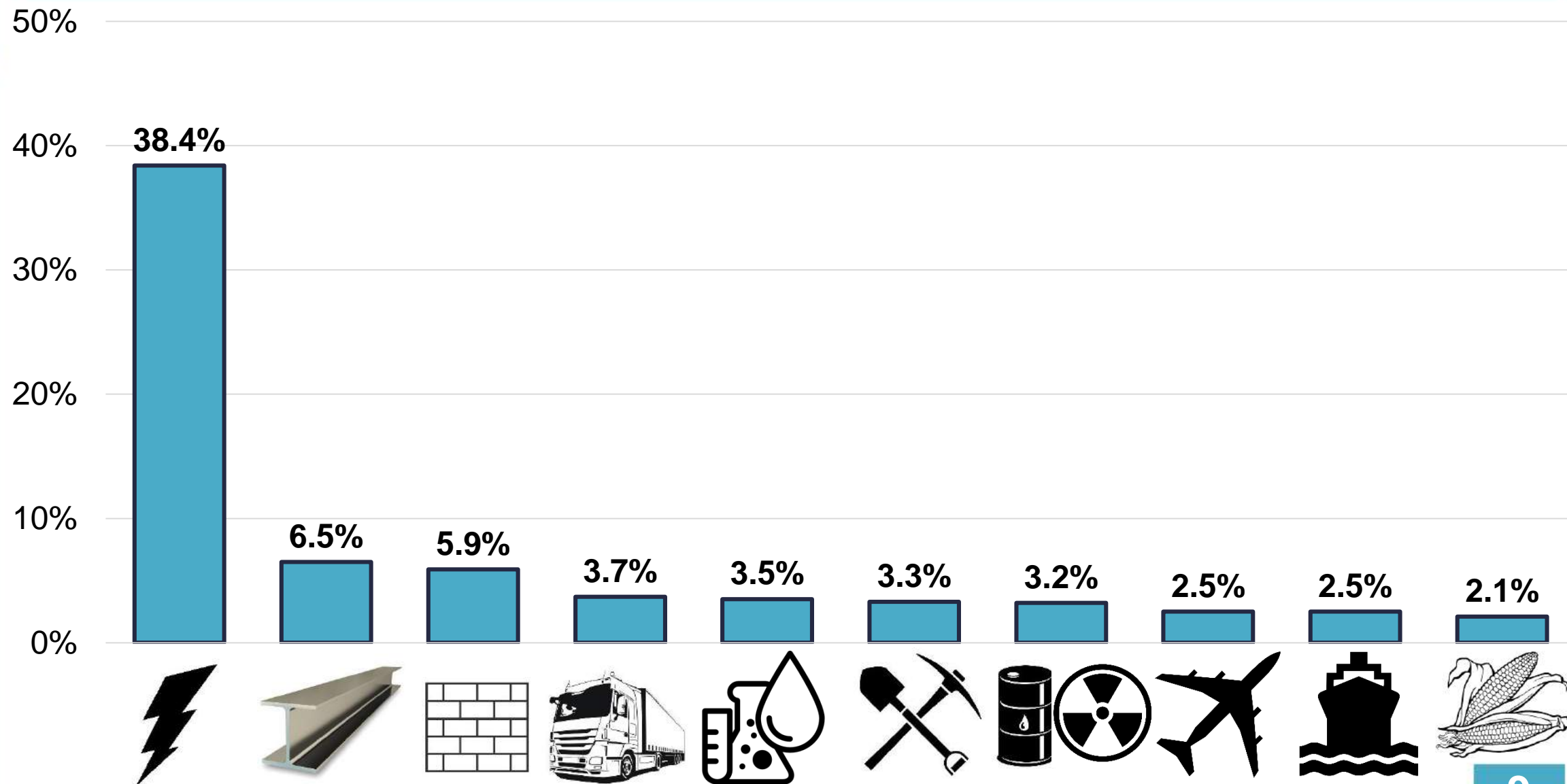


Source: mckinsey.com

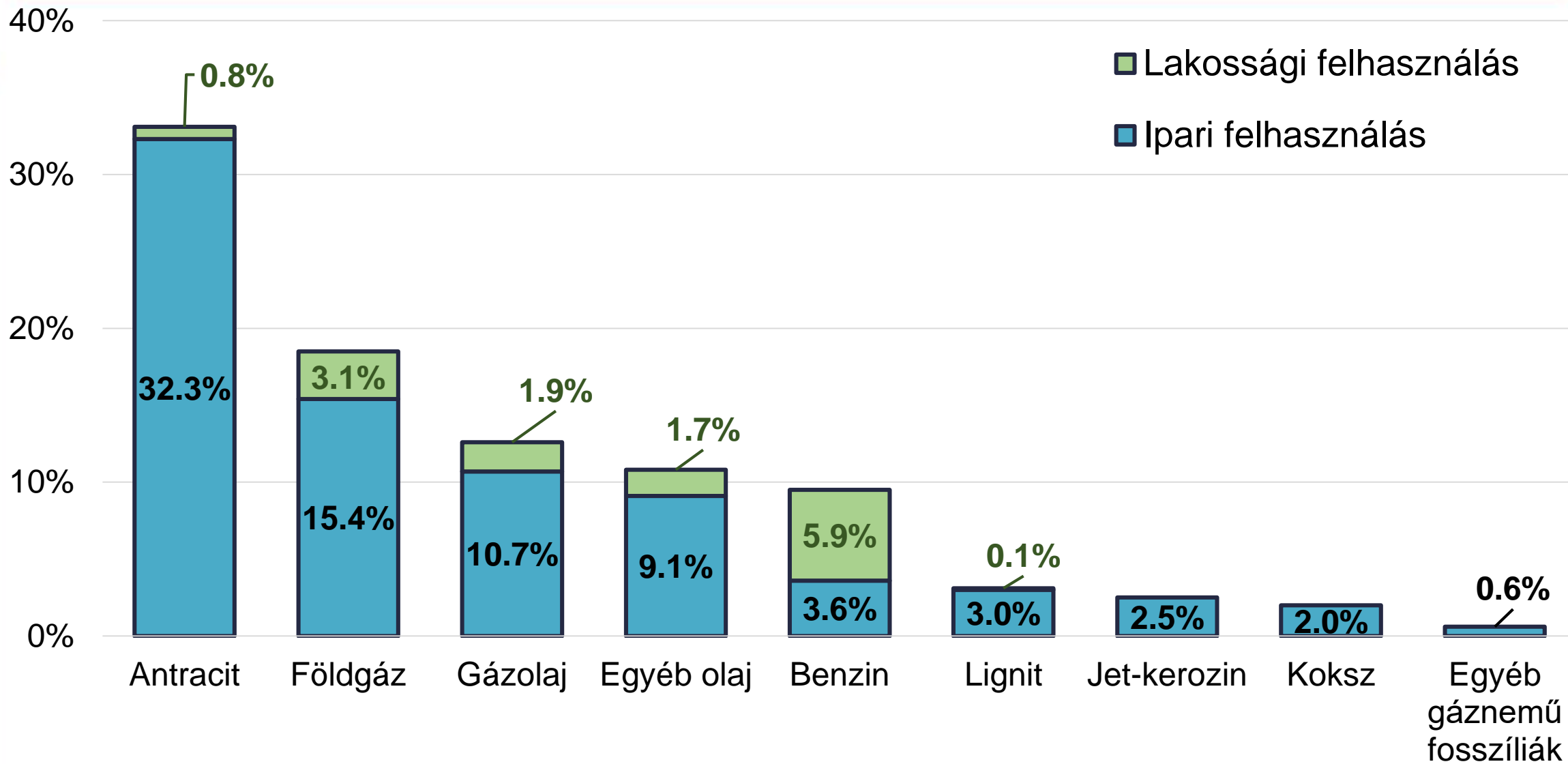
FOSSZILIS ENERGIAHORDOZÓK ARÁNYA A VILÁG ENERGIAFOGYASZTÁSÁBAN [%]



IPARI ÁGAZATOK CO₂ KIBOCSÁTÁSA



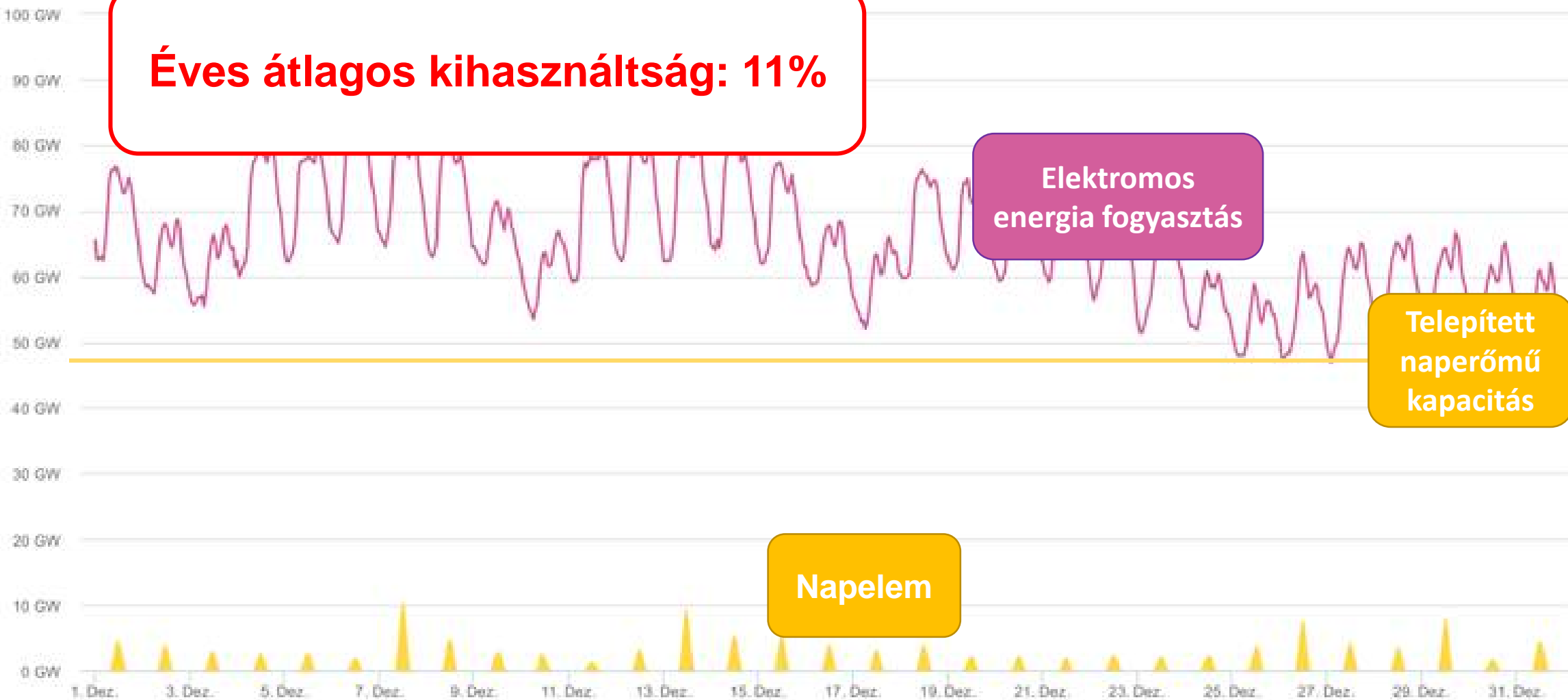
ENERGIAHORDOZÓK CO₂ KIBOCSÁTÁSA



NÉMETORSZÁG ÁRAMTERMELÉSE 2017. SZEPTEMBER



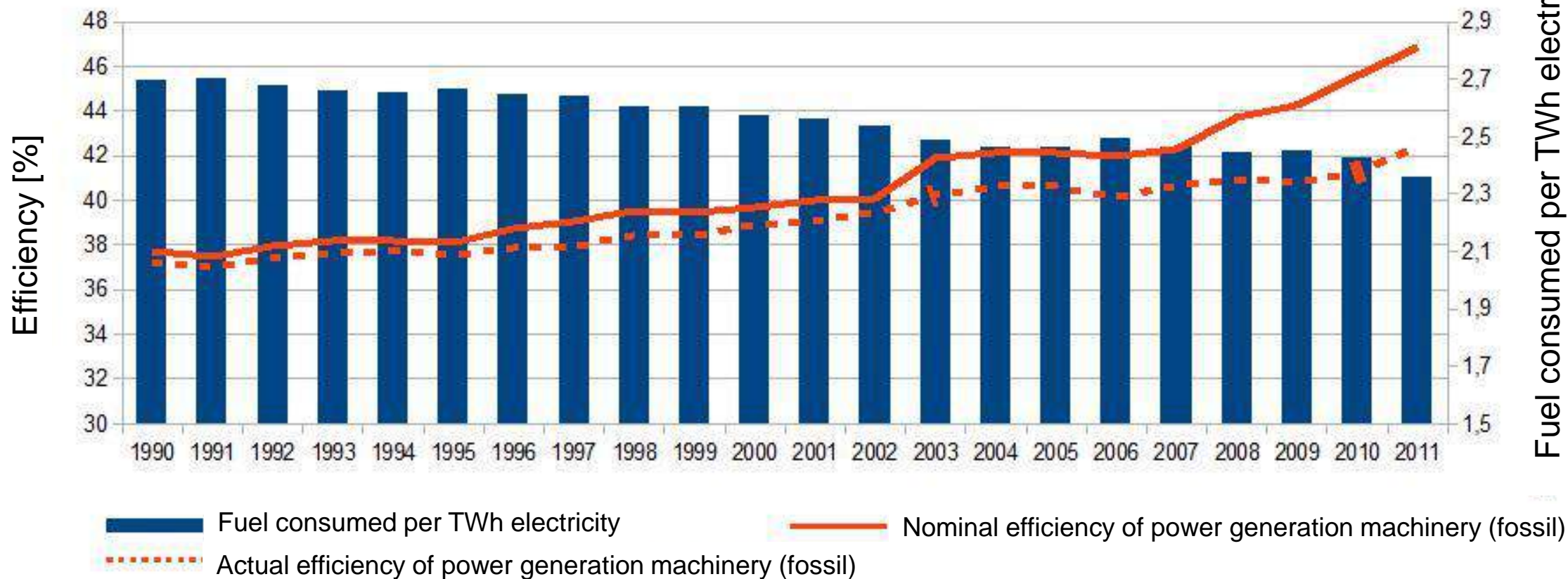
NÉMETORSZÁG ÁRAMTERMELÉSE 2017. DECEMBER



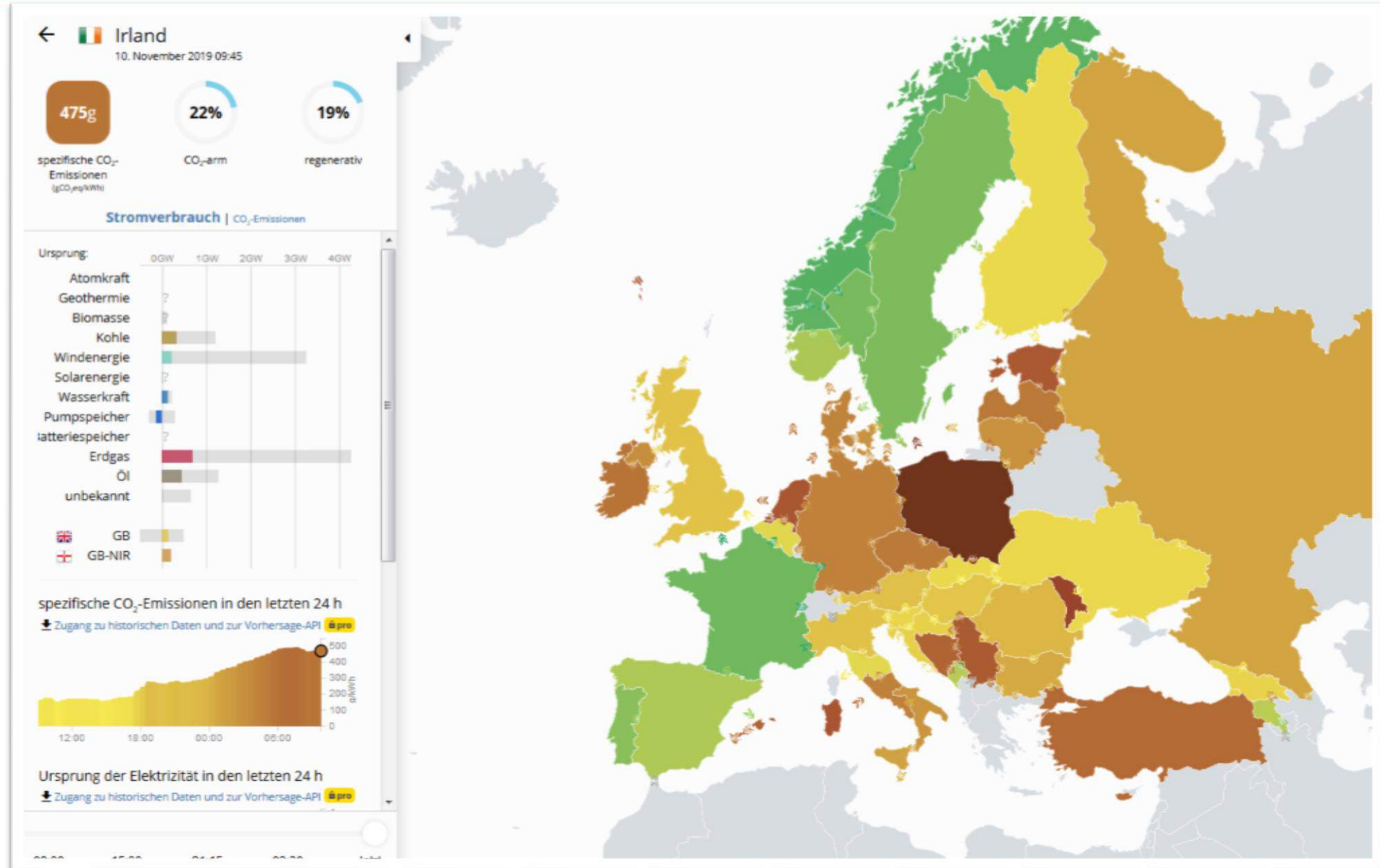
NÉMETORSZÁGI HŐERŐMŰVEK HATÁSFOK JAVULÁSA

Entwicklung beim Wirkungsgrad fossiler Kraftwerke

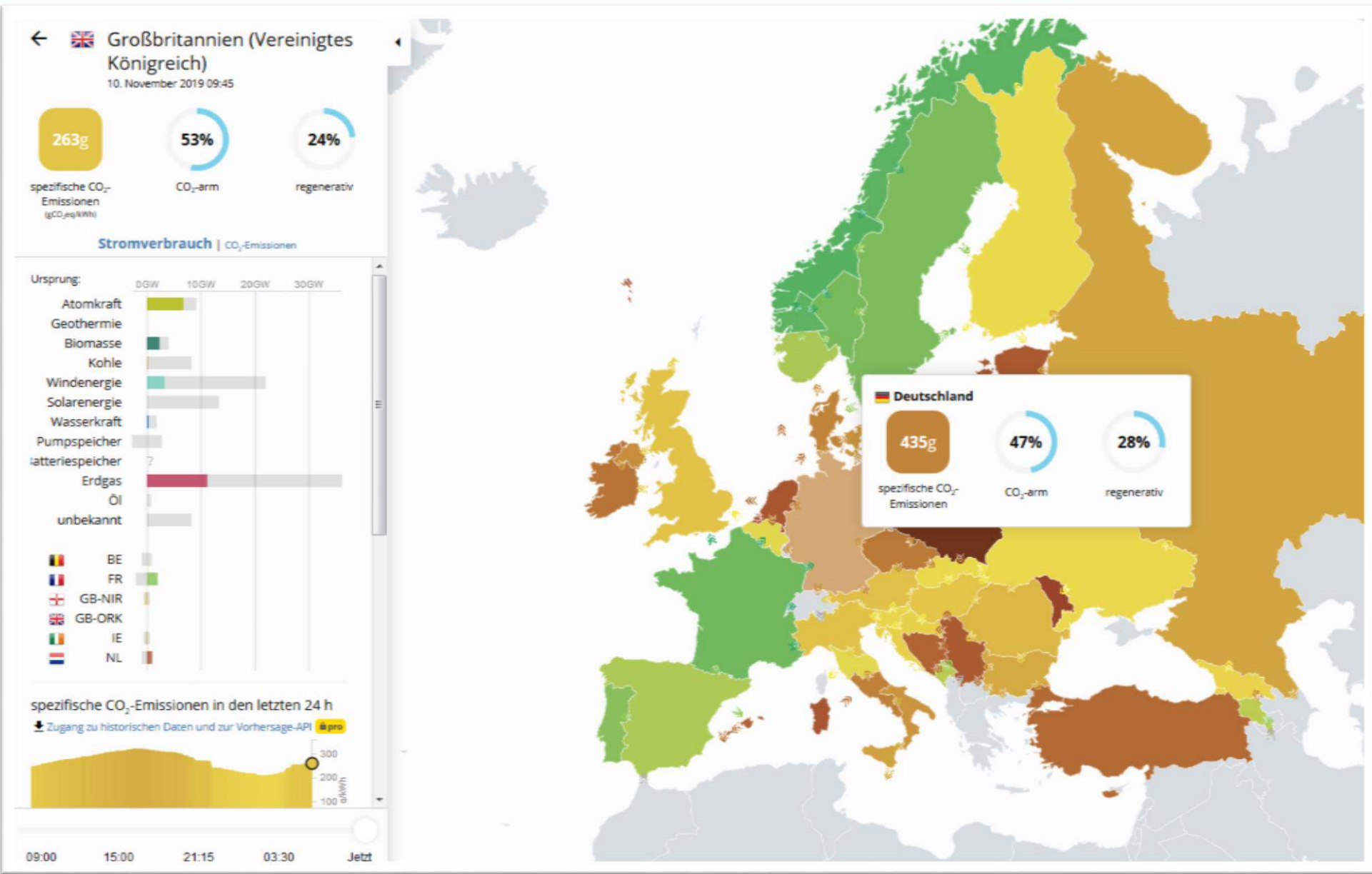
Quelle: BMWi Report 2012

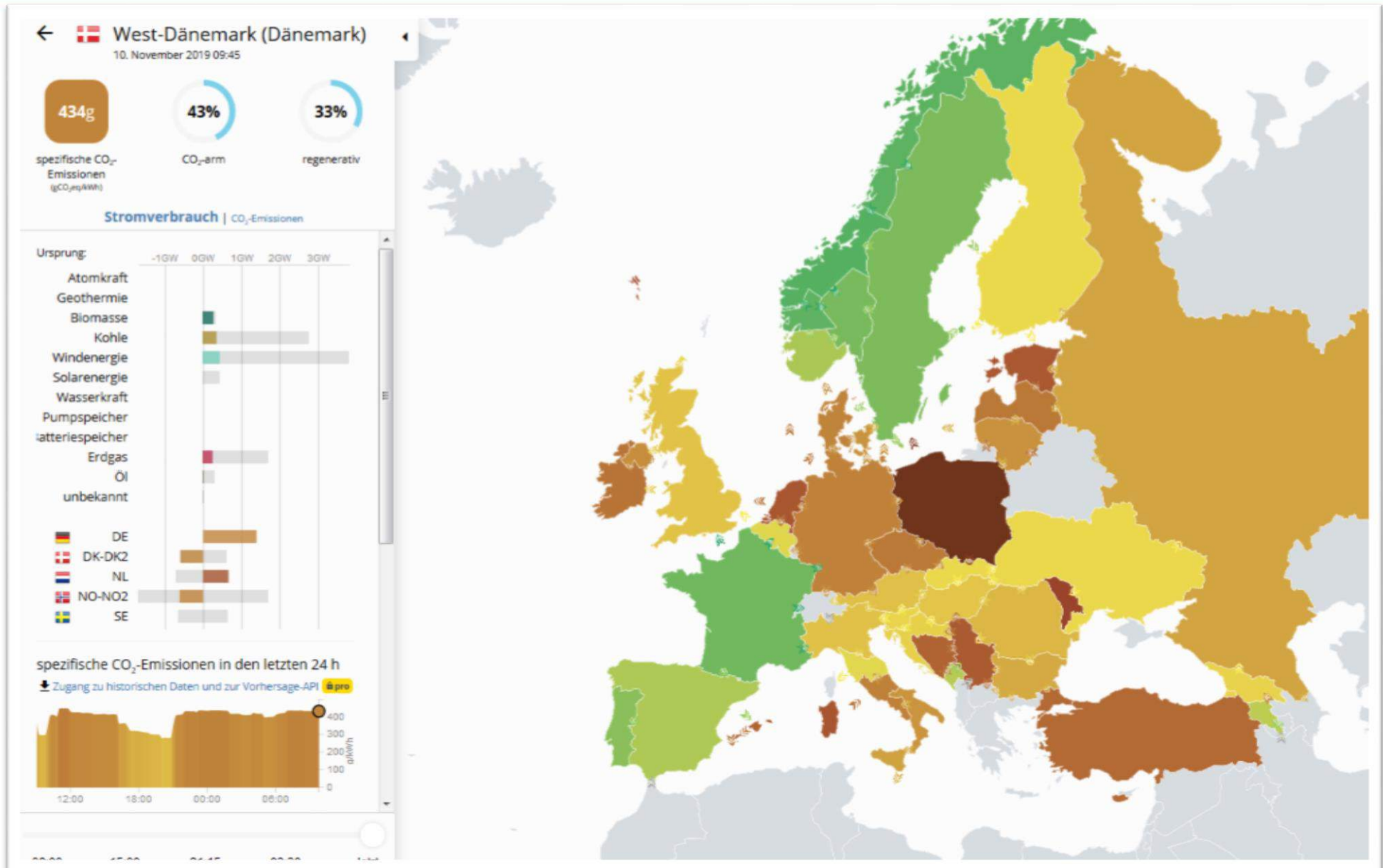


ÍRORSZÁG ÁRAMTERMELÉSE 2019.11.10.

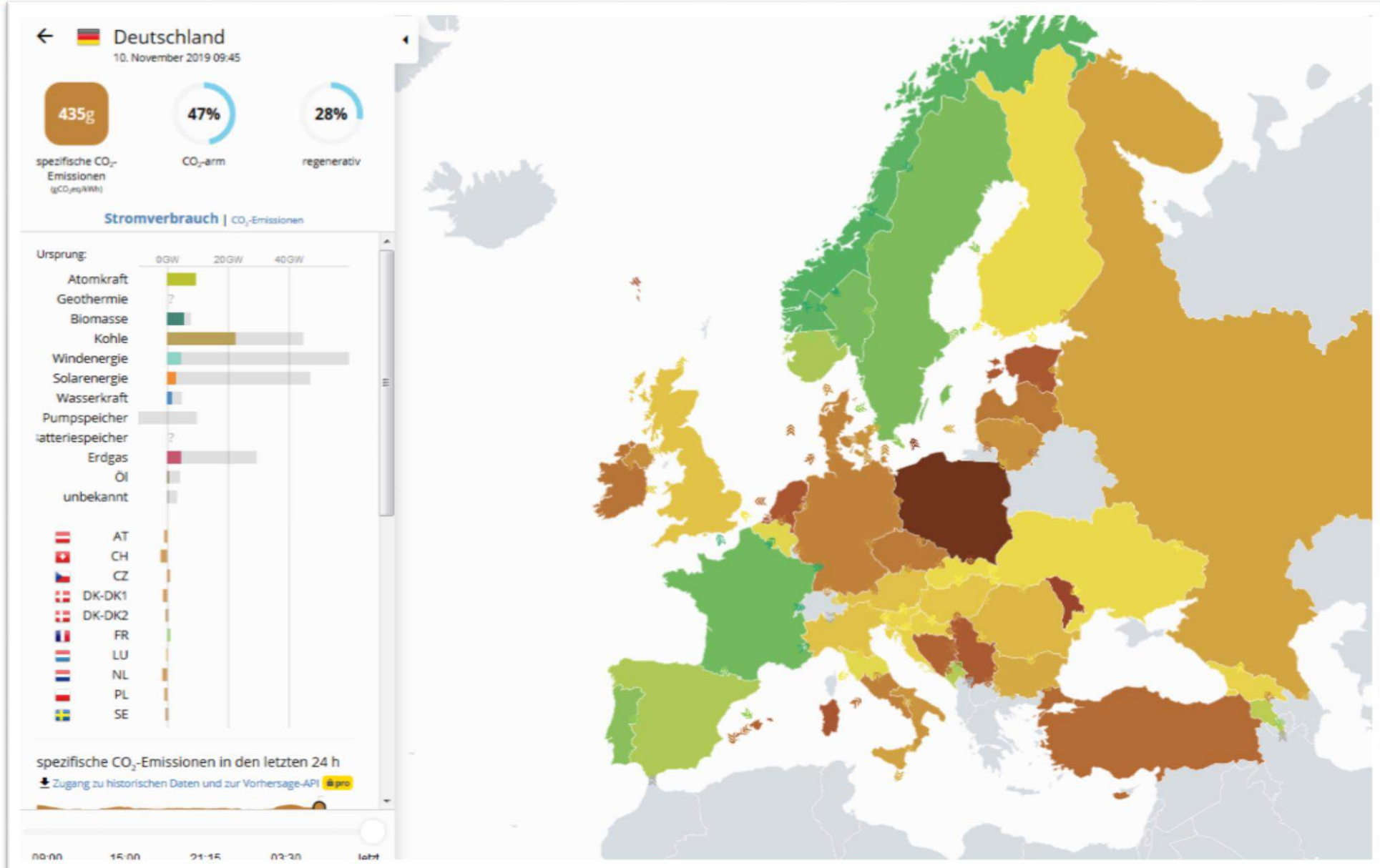


NAGY-BRITANNIA ÁRAMTERMELÉSE 2019.11.10.

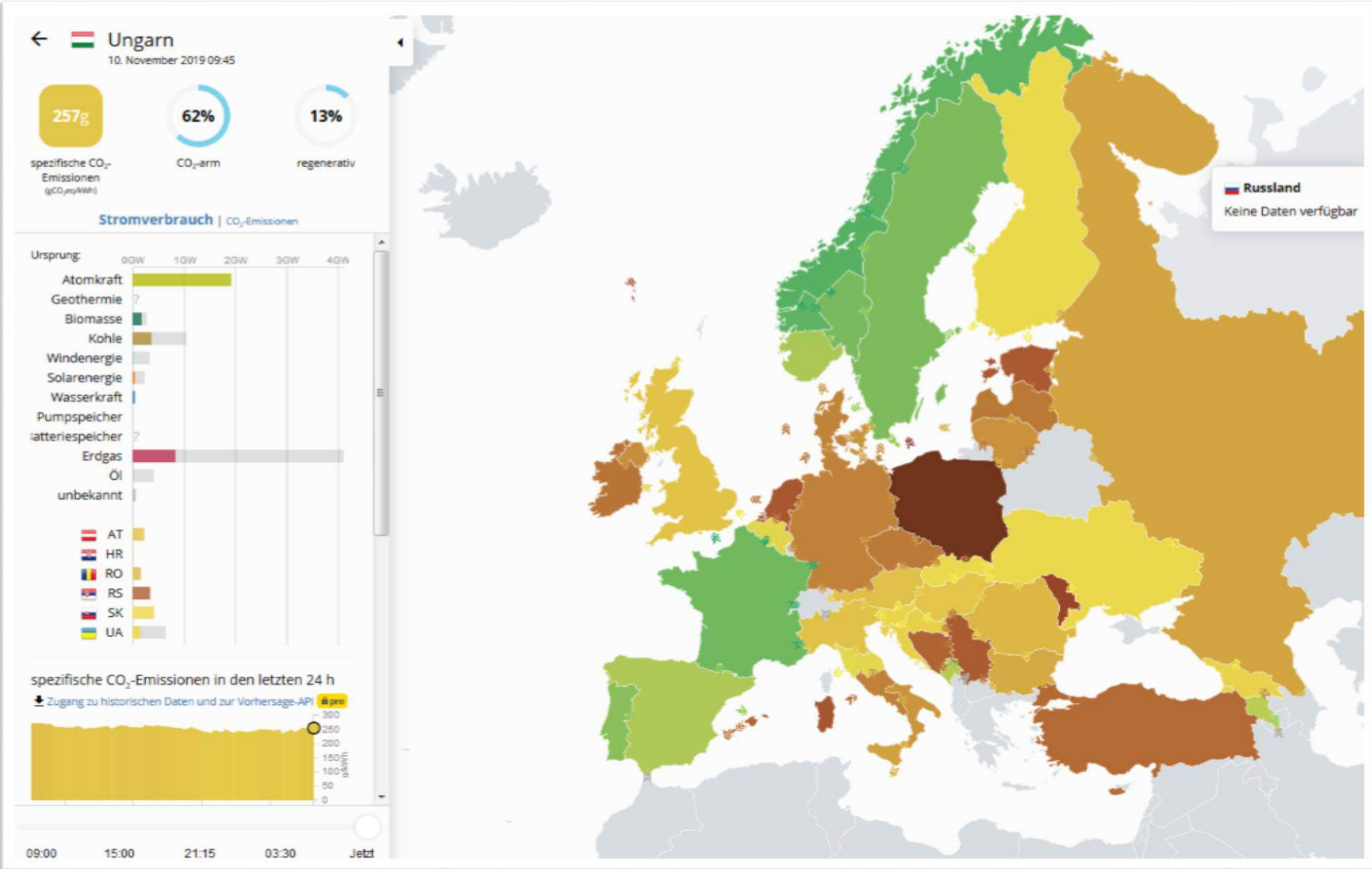




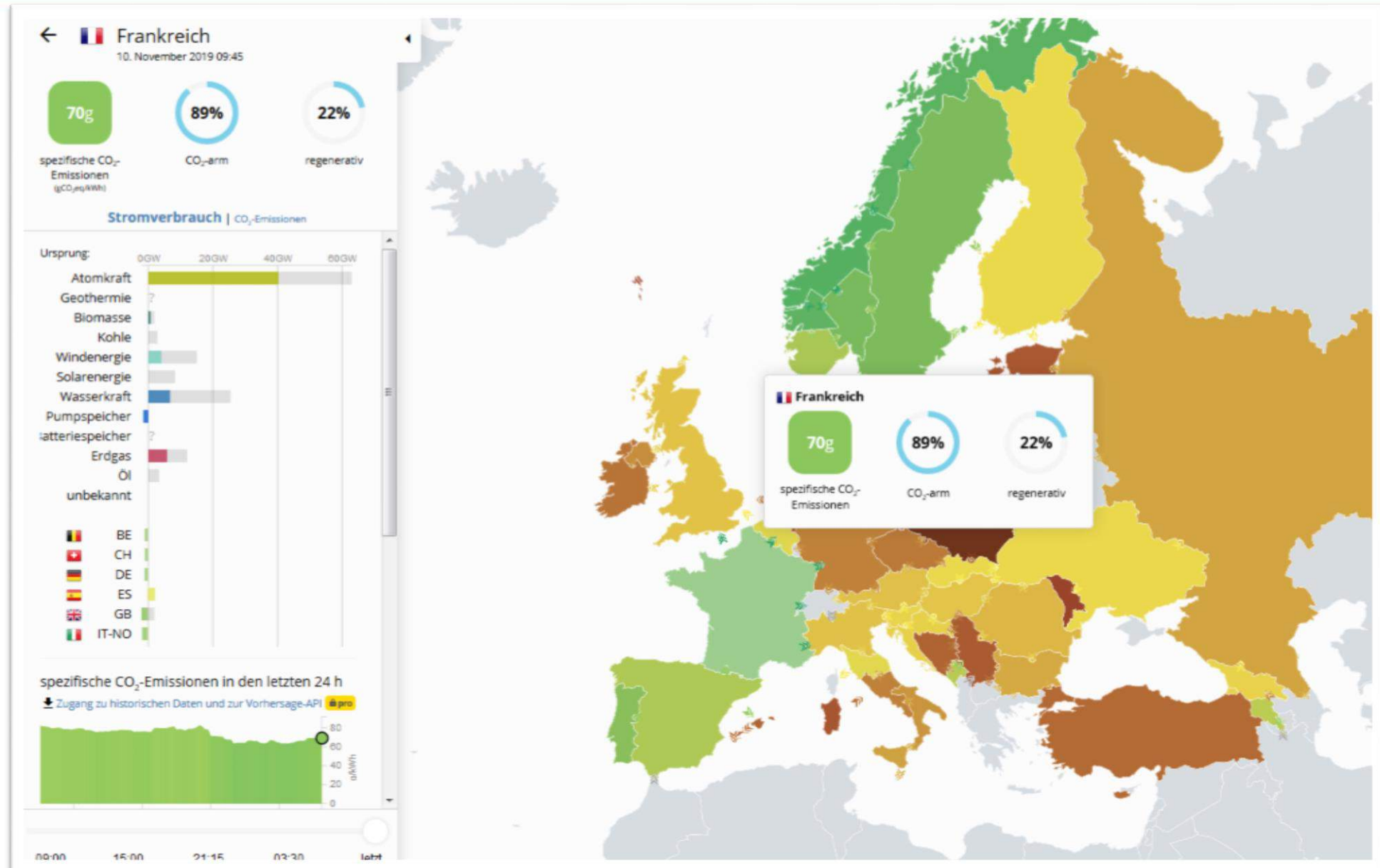
NÉMETORSZÁG ÁRAMTERMELÉSE 2019.11.10.



MAGYARORSZÁG ÁRAMTERMELÉSE 2019.11.10.



FRANCIAORSZÁG ÁRAMTERMELÉSE 2019.11.10.



ELEKTROMOS ÁRAM TÁROLÁSI KÖLTSÉGE



VW e-up!
Li-Ion battery

1,09 €/kWh

Investment cost
27 000 €



Toyota Prius
NiMH battery

2,07 €/kWh

Investment cost
10 845 €



Gyrodrive HP MK4
flywheel

0,12 €/kWh

Investment cost
58 450 €



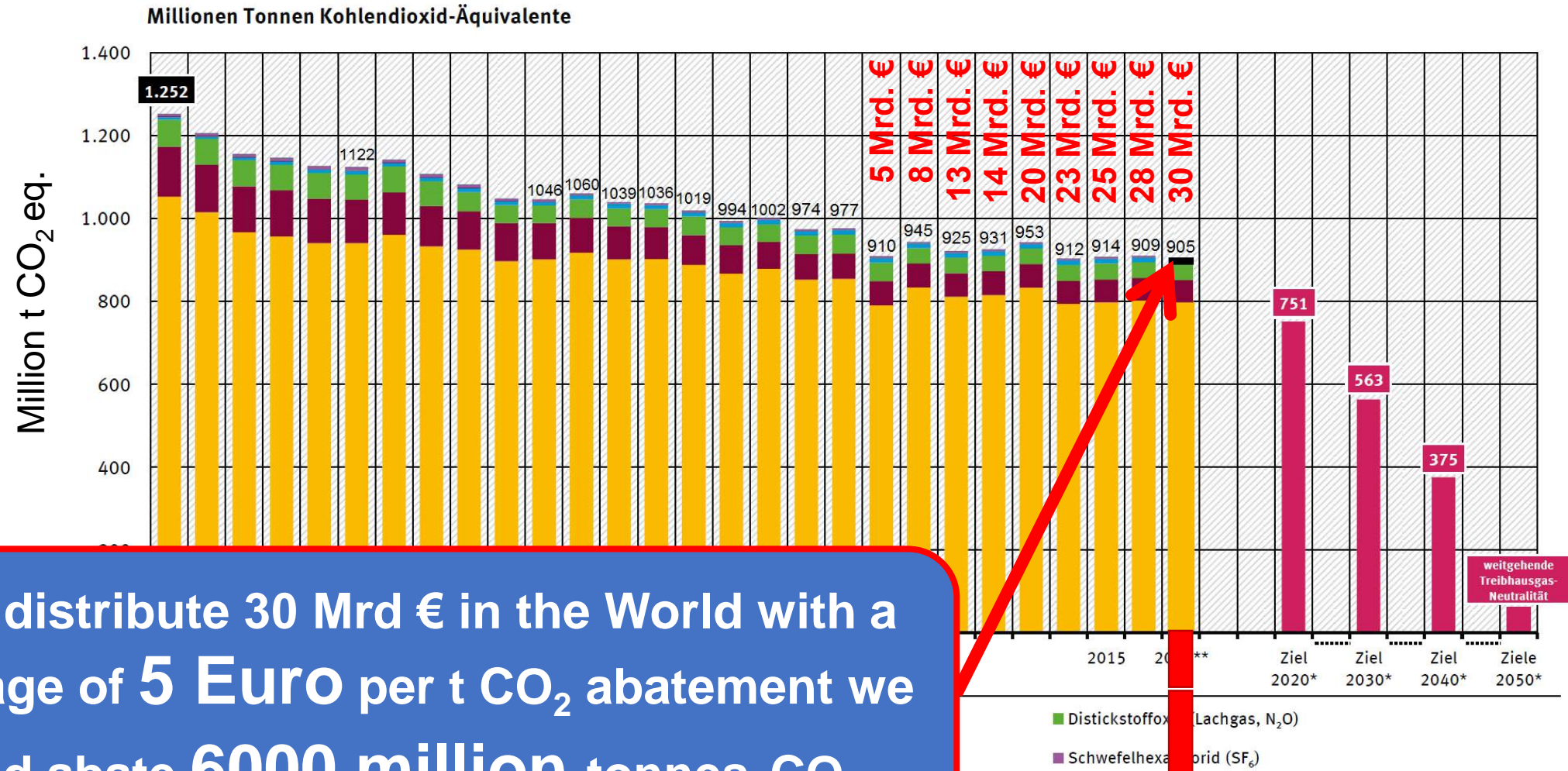
Goldisthal power plant
Pumped Hydro

0,001 €/kWh

Investment cost
623 000 000 €

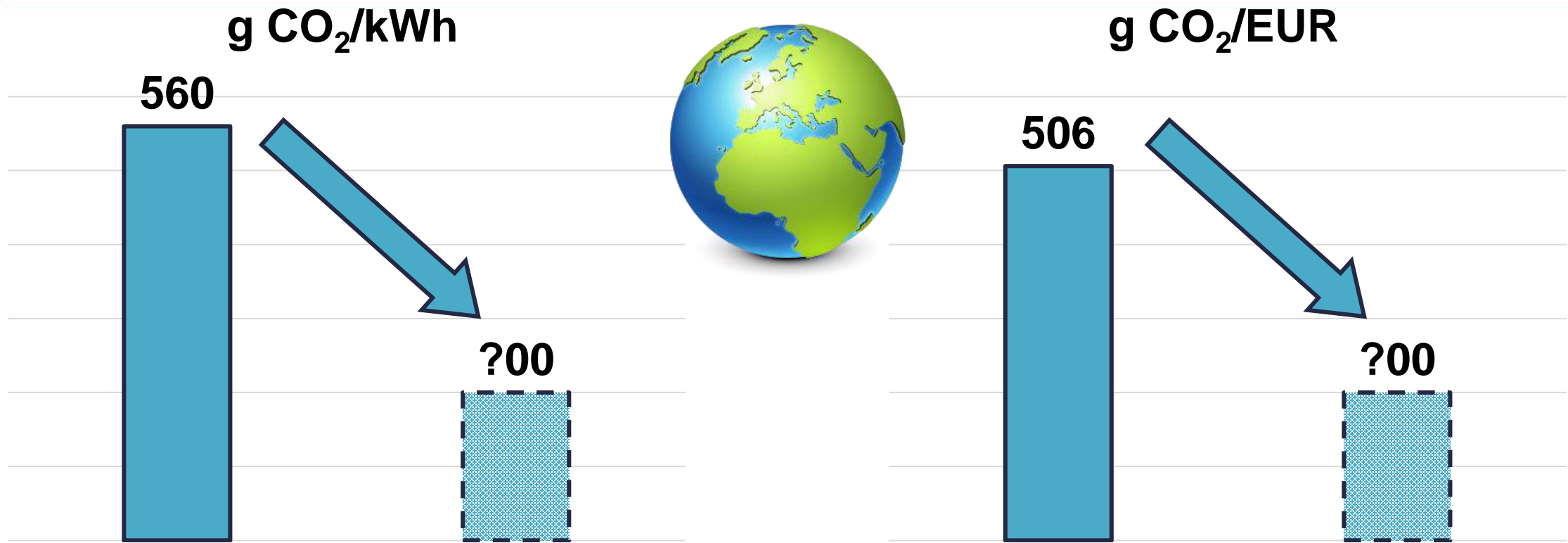
ÜVEGHÁZHATÁSÚ GÁZOK EMISSZIÓJA NÉMETORSZÁGBAN

Treibhausgas-Emissionen seit 1990 nach Gasen



If we distribute 30 Mrd € in the World with a leverage of 5 Euro per t CO₂ abatement we could abate 6000 million tonnes CO₂.

CONCLUSION



ONLY THE MOST EFFICIENT STEP IS THE RIGHT STEP!



Köszönöm a figyelmet!
