

Study on 2030 overall targets (energy efficiency, renewable energies, GHG emissions reduction) for the Energy Community

Gustav Resch, Lukas Liebmann, Albert Hiesl,
Andreas Türk*, László Szabó**, András Mezősi**

TU Wien, Energy Economics Group

Email: liebmann@eeg.tuwien.ac.at

Web: <http://eeg.tuwien.ac.at>

* Joanneum Research, Austria

** Regional Centre for Energy Policy Research (REKK), Hungary

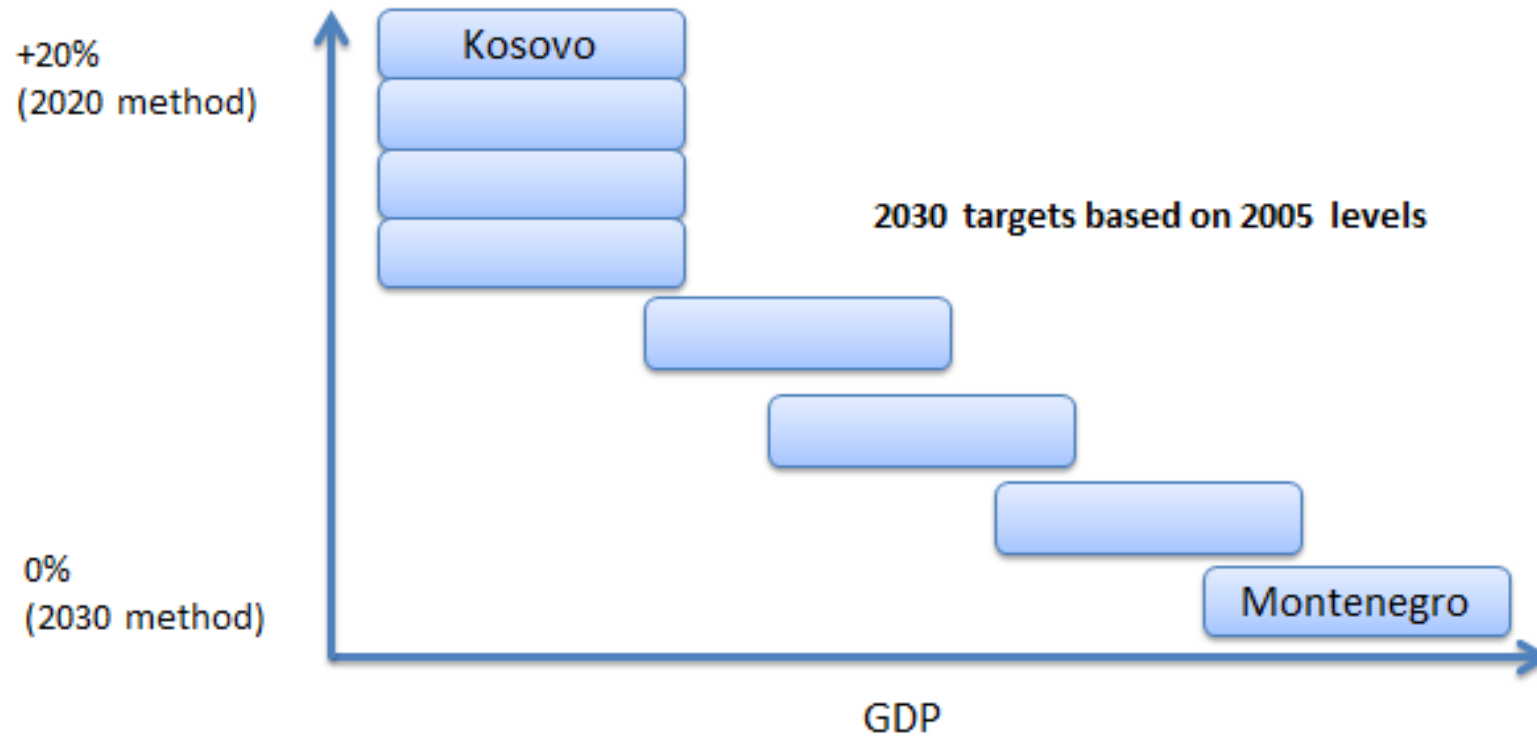
- Selection of the base year, consideration of GDP
- The possible split between the ETS and non-ETS sectors (methodology, feasibility, in particular regarding the absence of an ETS)
- Potential national pathways to be followed, flexibilities
- The list of potential gases (e.g. regarding data availability)
- Consistency between RE, EE, and GHG targets
- Convergence to EU carbon intensities
- Consistency with other ENC legislation in particular the Large combustion plant directive

- Completely analogous method to EU not applicable
 - no ETS in the CPs
 - high ambition level
 - effort sharing of an overall target part of a common economic area
- Current target setting (e.g. INDCs) often disconnected from the EU approach
- **Which elements of EU target setting can we apply?**

Ideally split EU-ETS and non ETS sectors

- For the non-ETS sectors application of our method (GDP related target)
- For the ETS sectors
 - national projections
 - Modelling results from Green-X and EEMM
 - Consider reduction of Carbon intensity
- ✓ Montenegro's INDC a good practice example: It explicitly took convergence with EU-ETS benchmarks into account

GPD- related non-ETS targets



- GHG projections for industry missing in most CPs
 - Reduction of carbon intensity important feature to make them ETS ready -> convergence to ETS benchmarks
- A few CPs have a large land-use GHG reduction potential, but data and projections have to many uncertainties
- Cost effective renewable energy potentials, particularly PV often underestimated, but movement in some CPs

Albania tenders 50 MW of solar

Through the auction, the authorities in Tirana aim to build a solar park in the Akërnj salt flats, near Vlorë.

AUGUST 6, 2018 **EMILIANO BELLINI**

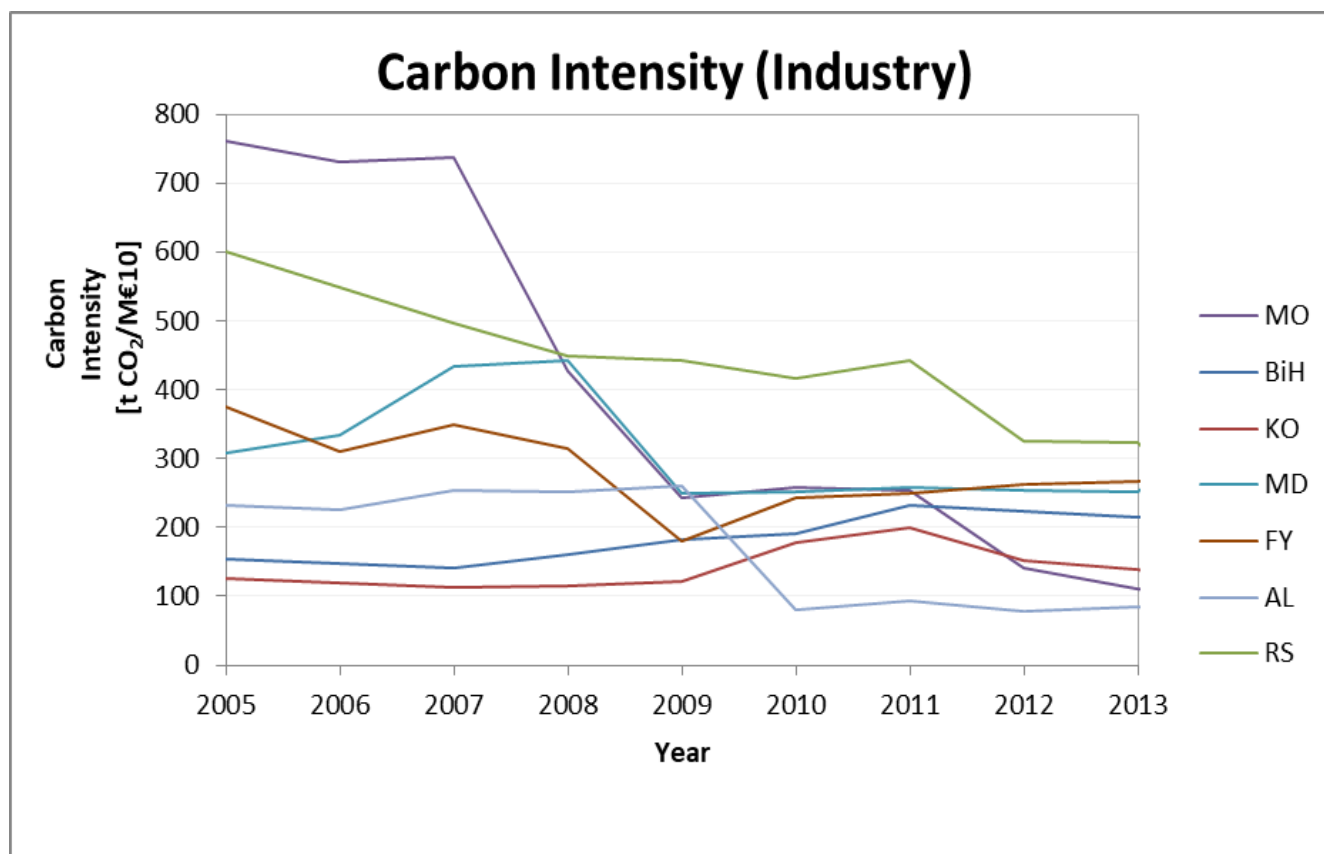
Montenegro announces 200 MW solar tender

As a first step towards executing a 200 MW solar tender, the Montenegrin government has planned a public invitation to lease land owned by the state at the Briska Gora – Ulcinj Municipality, where the array is planned.

May 11, 2018 Emiliano Bellini



No downward trend in Carbon intensity in industry



- A few CPs saw a gas-to-coal switch in industry (e.g. Serbia, Ukraine, BiH)
- EU Carbon price are rising

Draft targets for the CPs

	2030 emissions target [Mt CO ₂ eq]	Total % compared to 2005	Total % compared to 2014 (2013)	INDC
Montenegro	3,4	-21	4,9 (2013)	3.49
Serbia	61,07	-2	13,7	75.07
FYROM	14,10	12.98	14,7	18.34
BIH	18,85	14.50	-27	40.17
Albania	7,880	11.4	-	n.a.
Kosovo*	11,4	20.00	19	n.a.
Moldova	15,39	20.00	16	15.63
Georgia	14,53	20.00	14,3	23.21
Ukraine	518	20.00	38	557.94

- WB6 aggregated target of 116 Mt on 2030 means a stabilisation of GHG emission at 2005 levels
- New lignite fired power plant Stanari in Bosnia and Herzegovina officially started commercial operations in September 2016

Reduction achieved by meeting the RES and EE targets

- RES and EE targets will achieve GHG reductions in electricity heating, transport, energy consumption in industry
 - For WB6 2030 RES and EE are rather consistent with GHG targets
 - For Moldova and Ukraine RES and EE targets would lead to more stringent GHG targets
- Final assessment after agreement on RES and EE targets

- National GHG projections include maintenance of coal/lignite based energy systems (**despite strong planned RES increase in Serbia**)
- In BIH national GHG projections widely differ depending on the extension of TPPs
- Fulfillment of Large Combustion Plant Directive and IED need to be considered in scenarios



Impact GHG profiles in 2030

- LCPD became obligatory from 31 March 2018.
 - Opt-out plant to be closed in 2023
- Any option is to be considered by taking into consideration that plants should comply with (more stringent) IED directive from 2028
- Meeting the emission standards by retrofitting may increase GHG emissions
- By increasing investment costs of construction of new fossil fuel fired thermal power plants or retrofitting old ones, emission standards put a price tag on coal, oil and gas.

- Third National Communication 2016: Significant coal phase-out by 2030

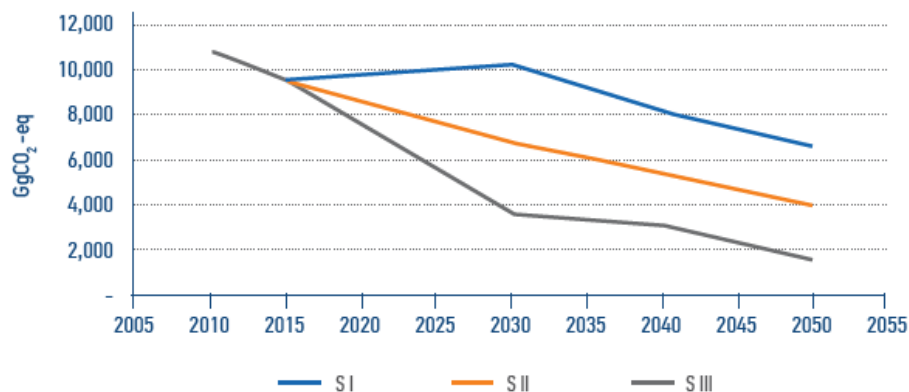


Chart 42: CO₂ emissions from the power sector in BiH according to the scenarios

- IPRP 2019-2028: 1300 MW net new fossil capacity by 2030
- Achievement of 2030 RES and EE target as additional criterium to determine needed fossil capacity extensions - supports the lower emission scenarios

Impact assessment (1): GHG

Electricity	AL	BiH	KO	MD	ME	MK	RS	GE	UA	Total
Biomass	4	15	17	2	0	75	295	4	66	478 ± 10%
Hydro large-scale	937	7,426	0	0	541	2,521	0	977	7,172	19,575 ± 17%
Hydro small-scale	851	444	72	0	130	319	0	505	736	3,057 ± 17%
Photovoltaics	522	33	805	9	47	705	2,085	782	7,865	12,853 ± 22%
Solar thermal electricity	0	0	0	0	0	0	0	0	0	0 ± 48%
Wind onshore	279	244	534	66	57	746	7,430	802	9,419	19,577 ± 15%
Total	2,592	8,163	1,428	77	775	4,366	9,810	3,070	25,259	55,539 ± 17%
Heat	AL	BiH	KO	MD	ME	MK	RS	GE	UA	Total
Solid biomass (grid)	5	12	9	360	4	23	69	14	112	608 ± 11%
Solid biomass (non-grid)	1,363	7,207	1,289	1,763	919	1,483	4,834	1,524	16,574	36,955 ± 11%
Solar thermal heating and hot water	1,126	262	446	51	45	168	682	1,255	10,995	15,031 ± 48%
Total	2,494	7,481	1,744	2,175	968	1,674	5,585	2,793	27,680	52,595 ± 22%
Biofuels	AL	BiH	KO	MD	ME	MK	RS	GE	UA	Total
Total	360	348	228	269	153	353	1,391	938	12,100	16,140 ± 49%
Grand total	5,447	15,991	3,400	2,521	1,896	6,393	16,786	6,801	65,039	124,273 ± 23%

- ❖ But: 16% of jobs created due to renewable energy expansion were lost in the fossil energy sector in AT, BE, CZ, FR, GER, IT NL, ES* (In countries with a high share of coal-powered generation these numbers could be higher.)
- ❖ However, increasing renewables and decentralized renewables energy solutions may create jobs beyond the installation and maintenance of new technologies. This includes for example new jobs in
 - the IT sector for, e.g., managing PV variability and volatility, new communication technologies
 - In consultancies or financing institutions
 - New market actors that are emerging e.g. aggregators

* State of Renewable Energies in Europe (2017)

Country	SEERMAP (2050) Decarbonisation Scenario
	RES-E
AL	2.6%
BIH	3.9%
KO*	2.0%
ME	6.6%
MK	2.0%
RS	0.7%

Table 1: GDP effects 2050

We based our results on the SEERMAP project. The same electricity market model EEMM is applied in both the SEERMAP and the EnC Target setting assessment-

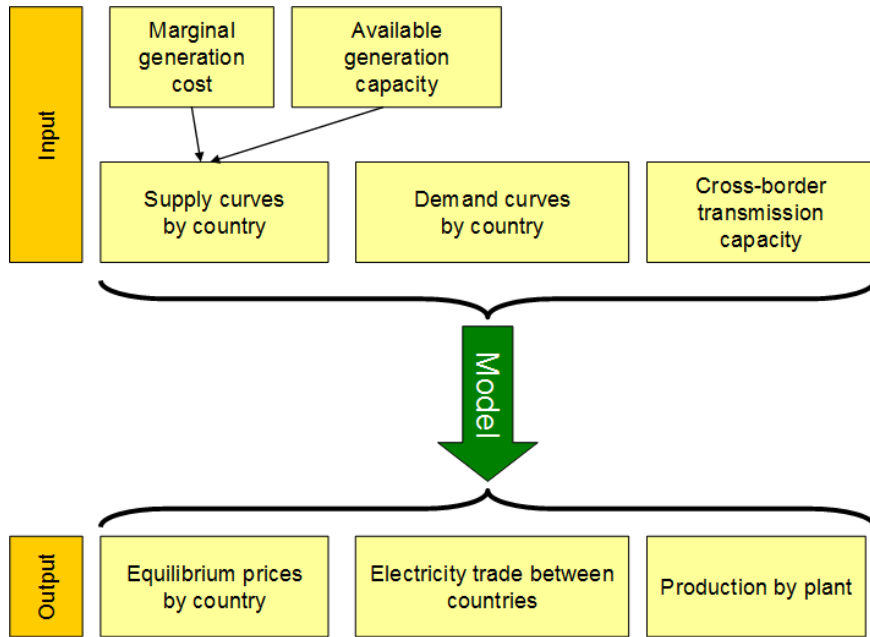
- We aim to precisely split ETS and non-ETS but CPs have to assist with data
- Ukraine: electricity projections
- Industry: Reduction of carbon intensity important feature to make them ETS ready-> do CPs have suitable projections?
 - Otherwise we could propose trends

- What is in the focus of the assessment?
- What model is used in the assessment?
- Results by country

- If the RES and Energy efficiency targets are fulfilled in the EnC countries, what level of effort is needed to achieve the GHG targets?
- And what are the impacts on the electricity sector?
- Boundaries:
 - Focus only on electricity sector – serious assumptions on the targets (e.g. similar level of GHG reduction as in the overall energy sector – which needs refinement in the future)

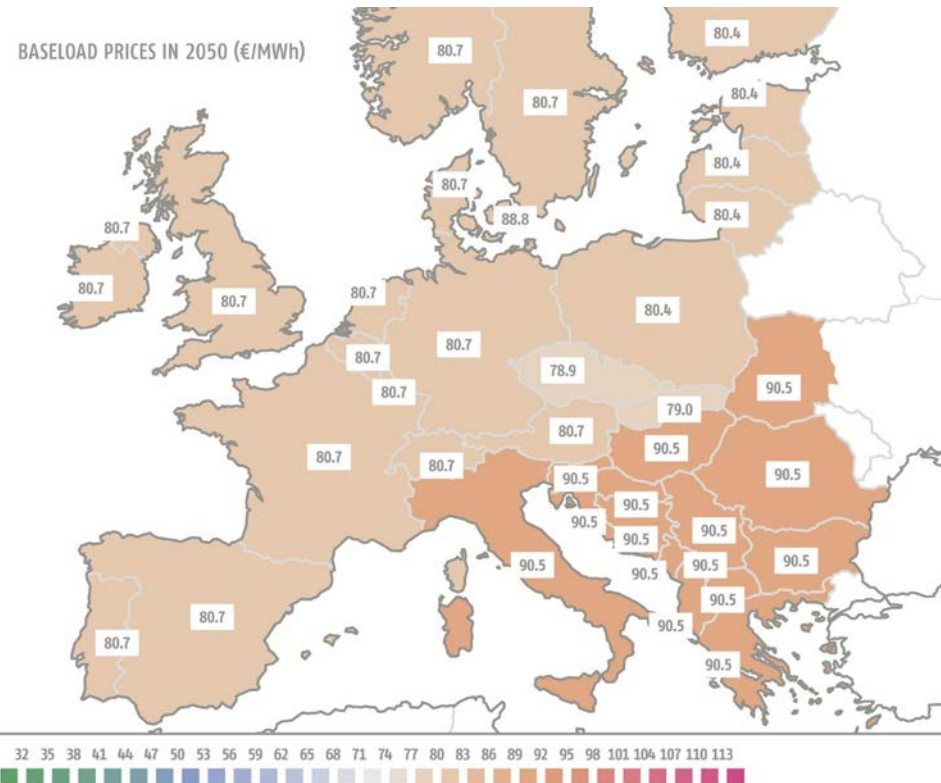
Data sources, assumptions:

- Latest EnC country strategies, other planning documents
- Demand assumptions based on National documents, SEERMAP (2017) and PEGI III (2018) assessments
- No carbon pricing regime in the reference in the EnC countries till 2030
- Follow the three scenarios as in case of the RES modelling (Reference, national, cooperation)



- ▶ 40 countries (ENTSO-E + neighbours)
- ▶ Around 3400 power plant blocks
- ▶ 104 interconnectors between countries

- ▶ Partial equilibrium model in which homogeneous product is traded across neighboring markets
- ▶ Competitive behaviour in production and trade
- ▶ Constrained capacity limits on cross border networks, power flows on an interconnector are limited by NTC.



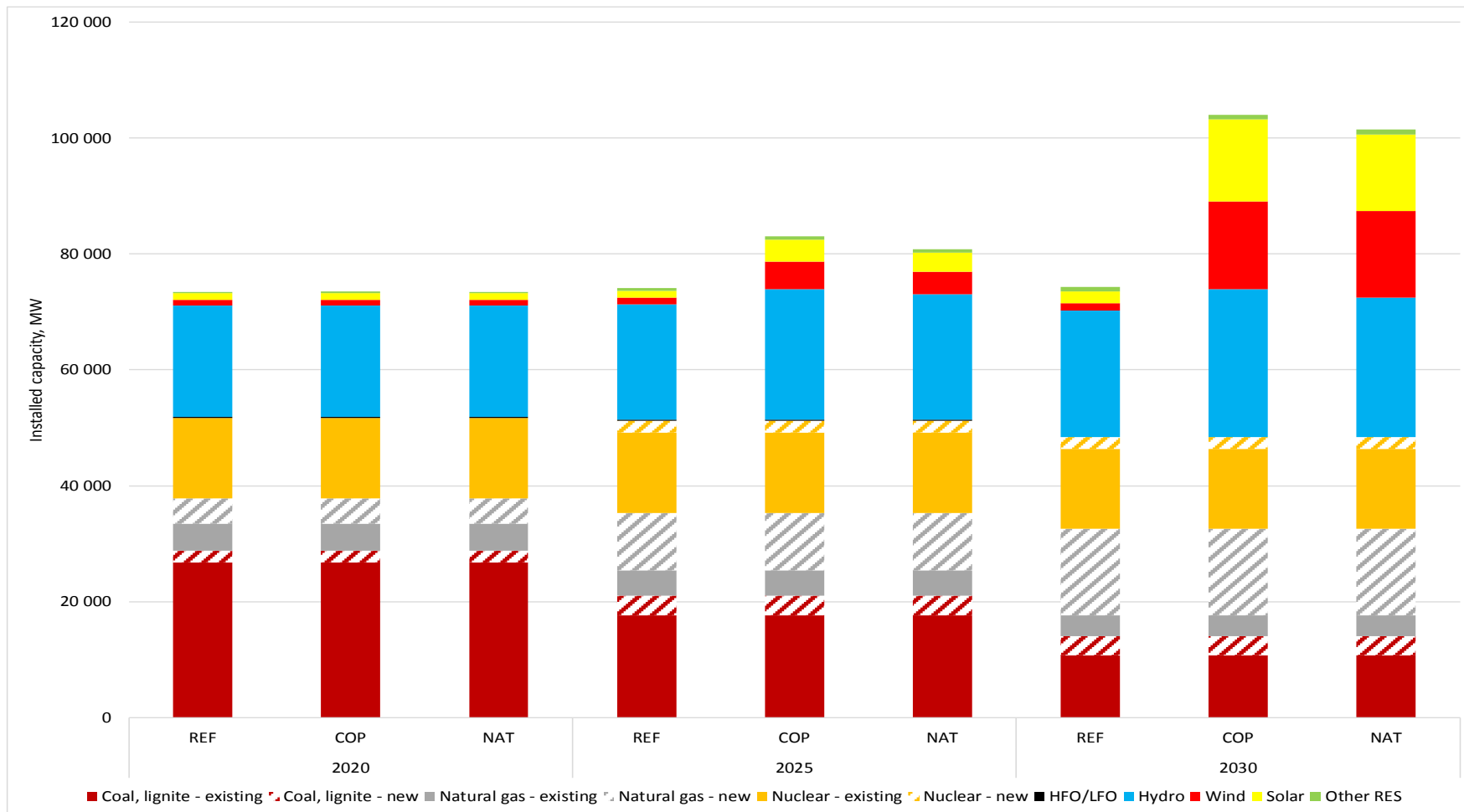
New fossil plants in the region

Study on 2030
overall targets

Country	Unit name	Installed capacity [MW]	(Expected) year of commissioning		Expected year of decommissioning	Fuel type
AL	New gas-fired power plant	200	2023		2078	natural gas
BA	Tuzla 7	450	2019		2074	lignite
BA	Kakanj 8	300	2023		2078	lignite
BA	Banovići	350	2020		2075	lignite
BA	Stanari	300	2016		2070	lignite
BA	Ugljevik 3	600	2018		2073	lignite
KO*	Kosova e Re Power	500	2023		2063	lignite
ME	TPP Plevlja 2	225	2023		2075	lignite
RS	CHP Pancevo	140	2016		2051	natural gas
RS	CHP Pancevo	338	2021		2051	natural gas
RS	Kolubara B	350	2025		2076	lignite

Results – installed capacities in the Enc region*

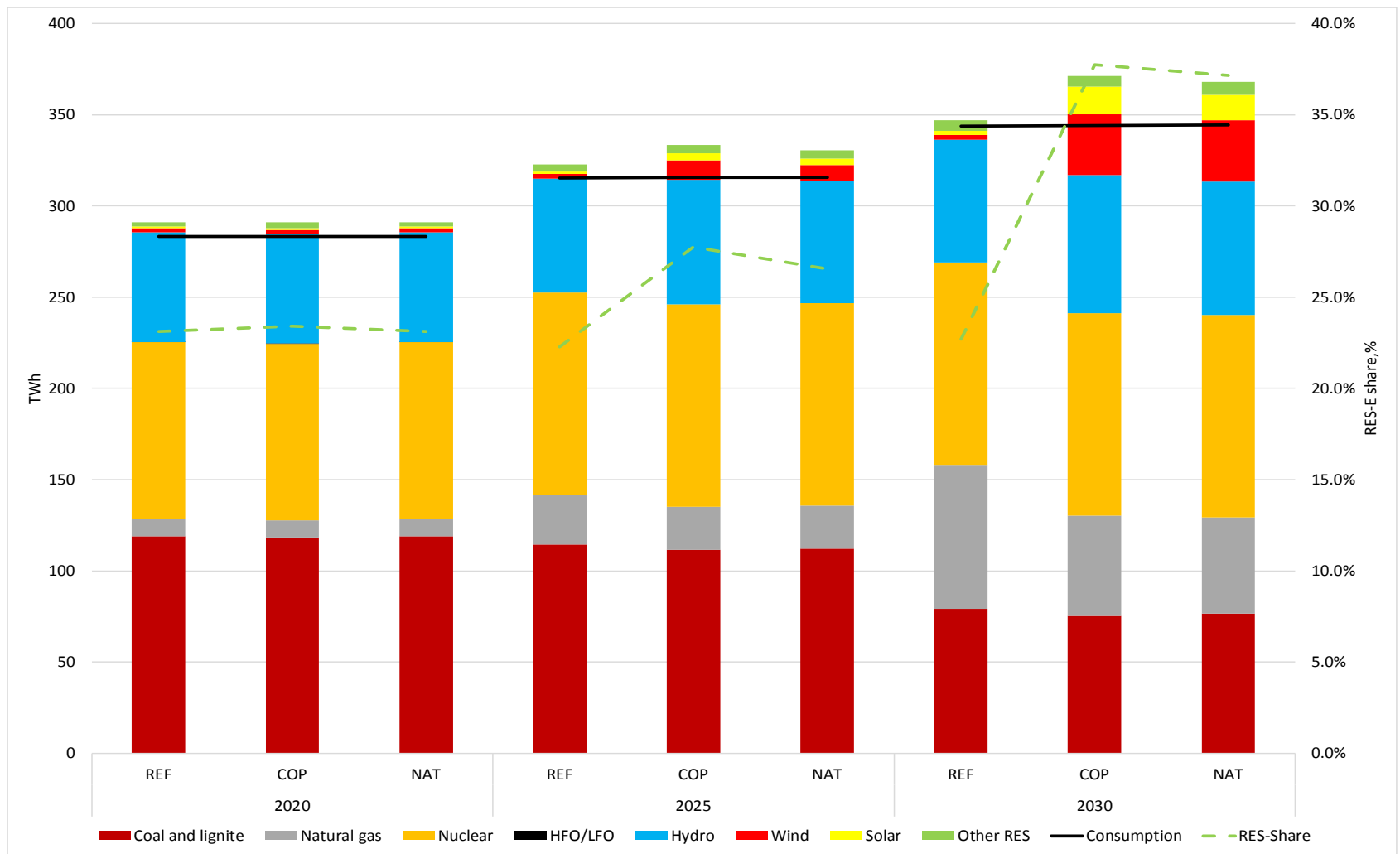
Study on 2030 overall targets



*excluding Ukraine

Results – electricity mix and RE shares*

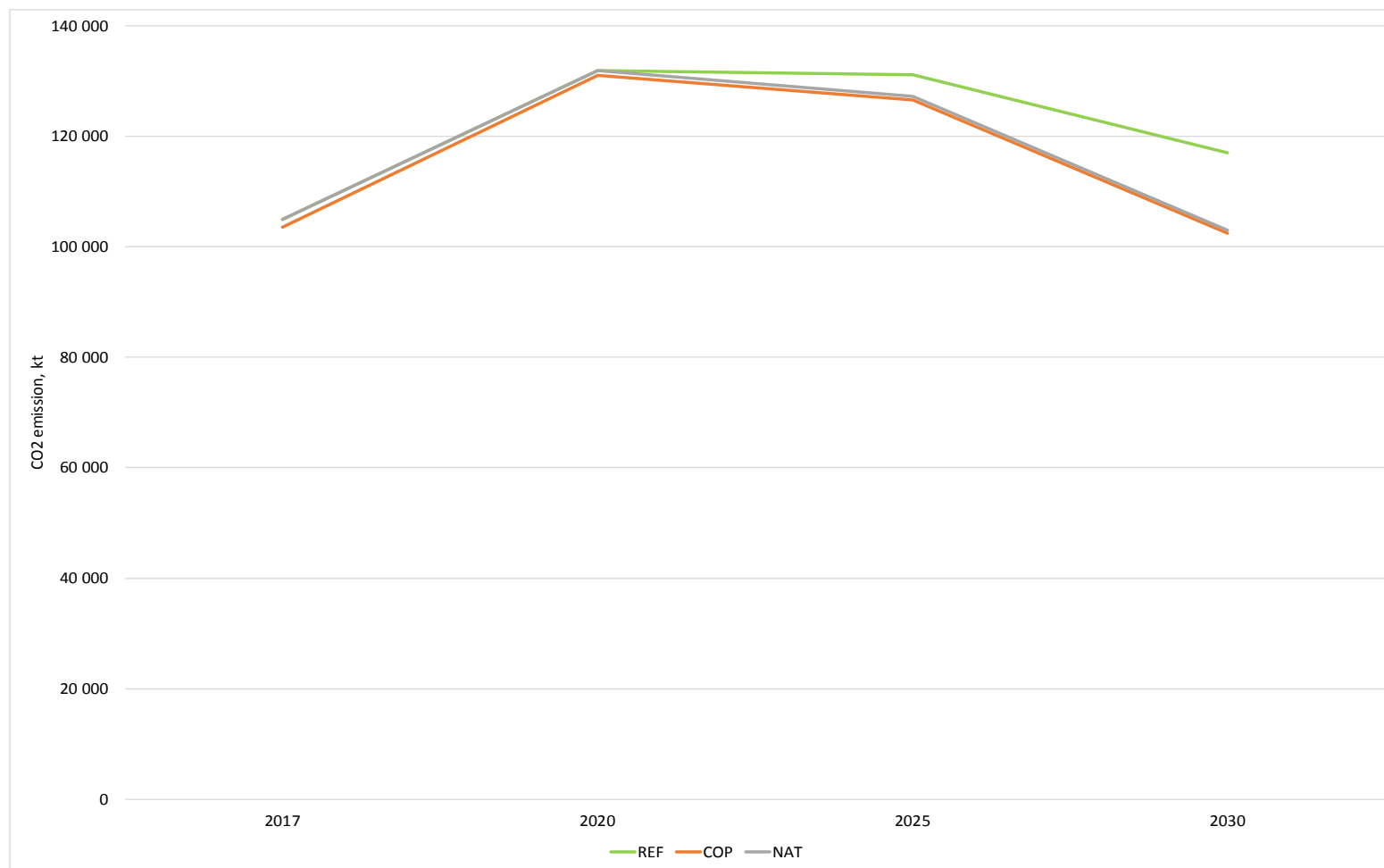
Study on 2030 overall targets



*excluding Ukraine

Results – aggregated CO₂ emissions from power sector*

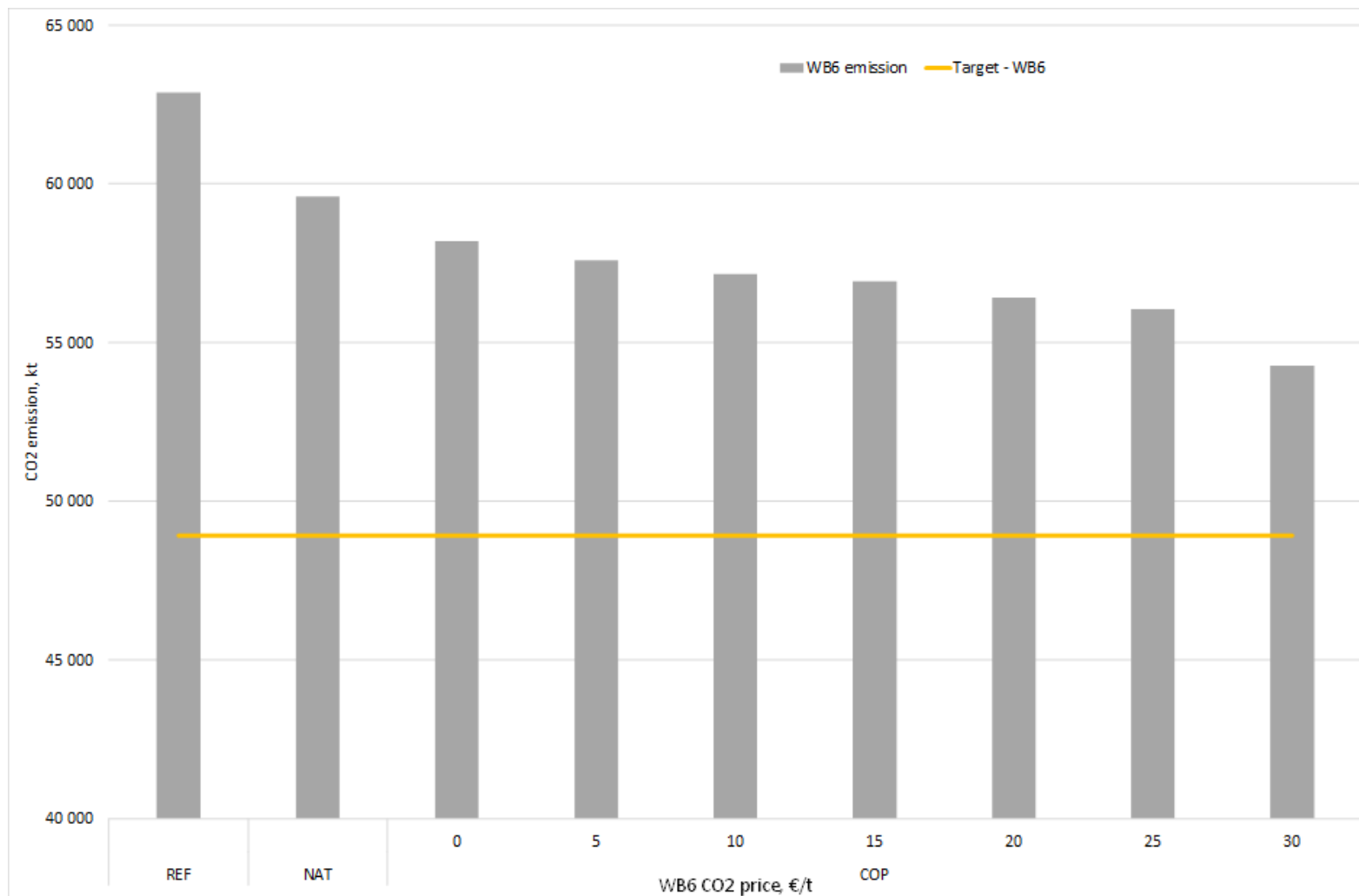
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*excluding Ukraine

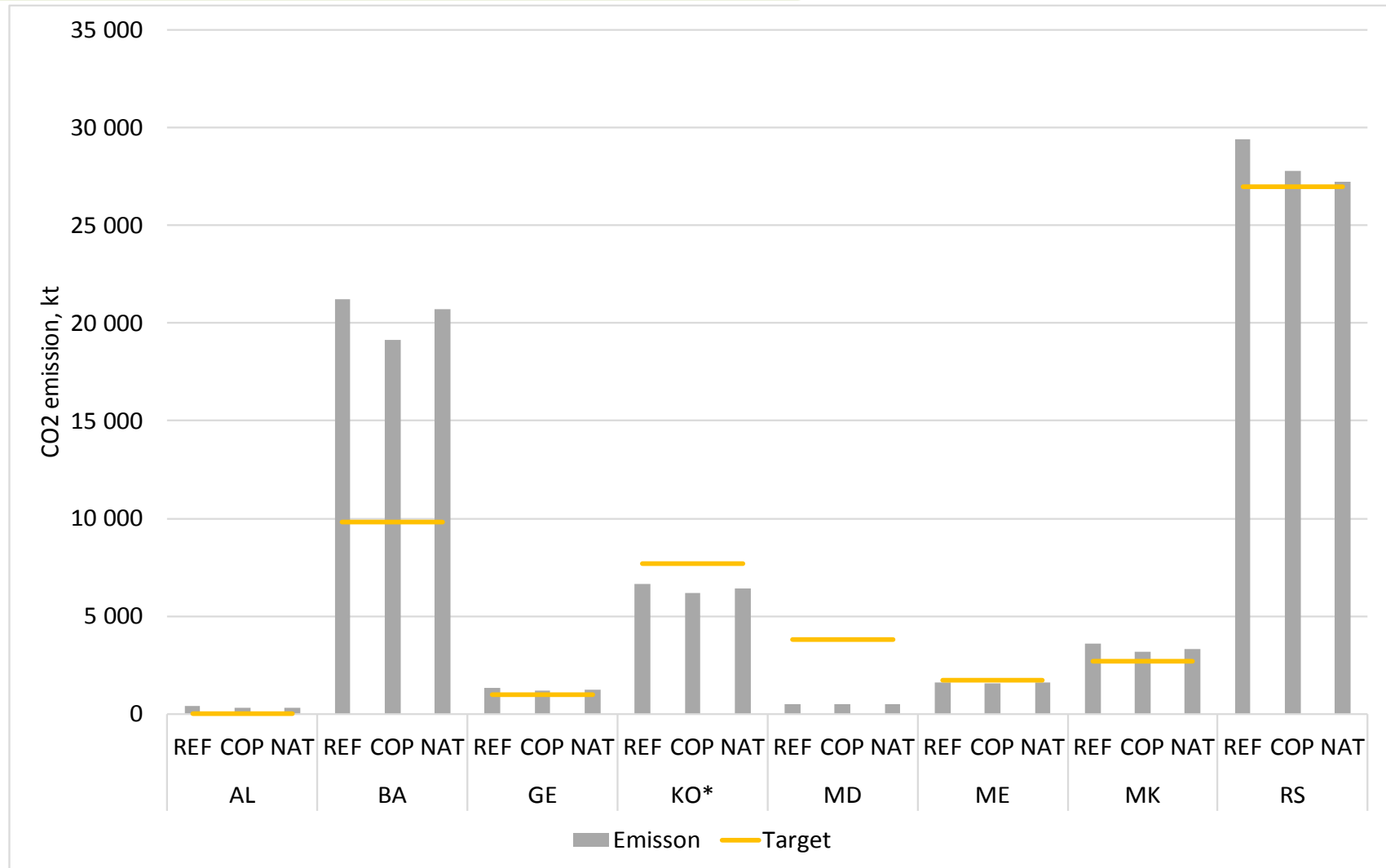
Results – CO₂ emissions and targets in the WB6 (2030)

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Results – CO2 emissions (electricity sectors) and assumptions made for targets by country*

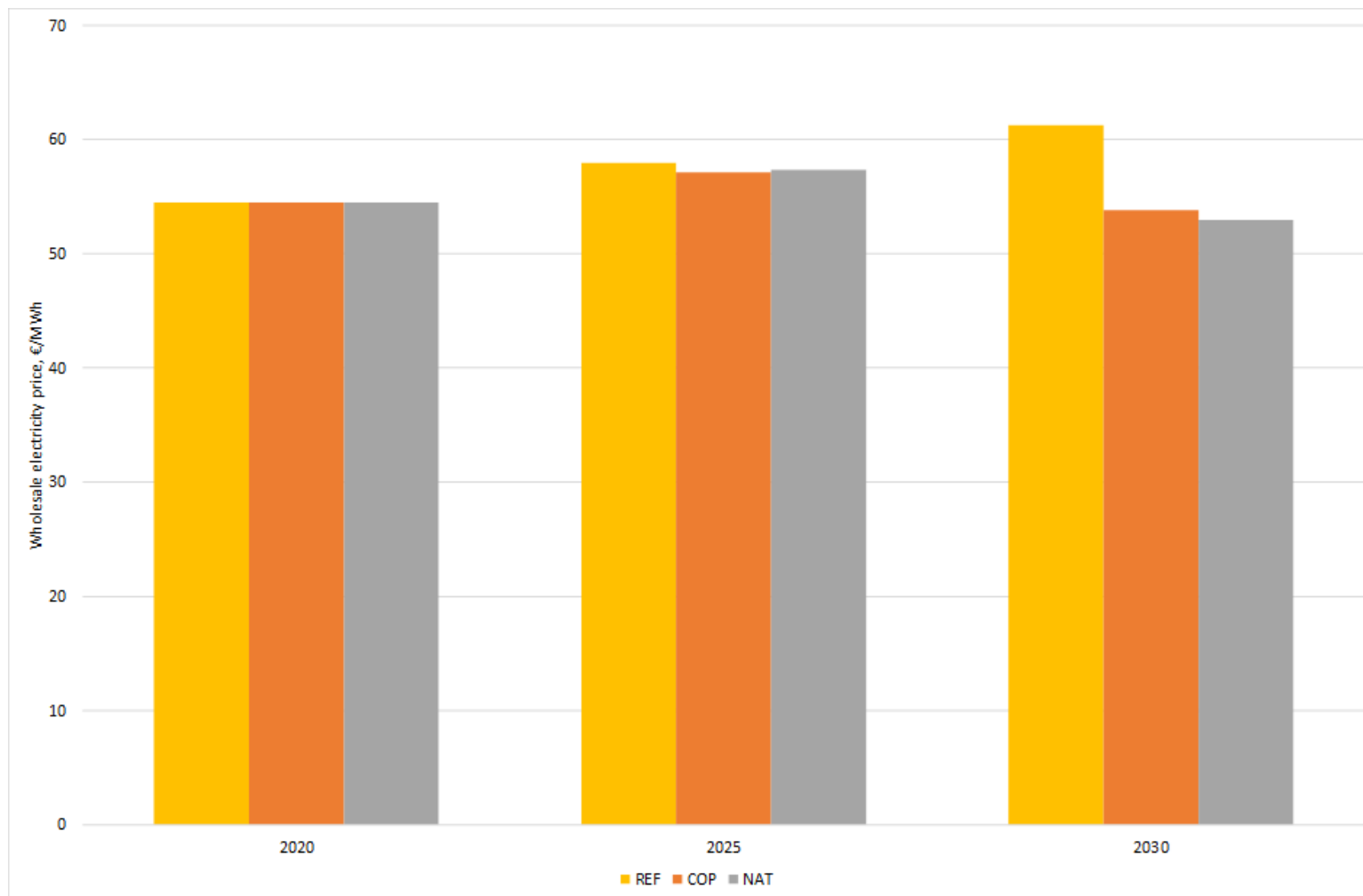
Study on 2030
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*excluding Ukraine

Results – impact on wholesale electricity prices*

Study on 2030
overall targets



*Example of Serbia

Thanks for your attention!

László Szabó

Contact details:

laszlo.szabo@rekk.hu

András Mezősi

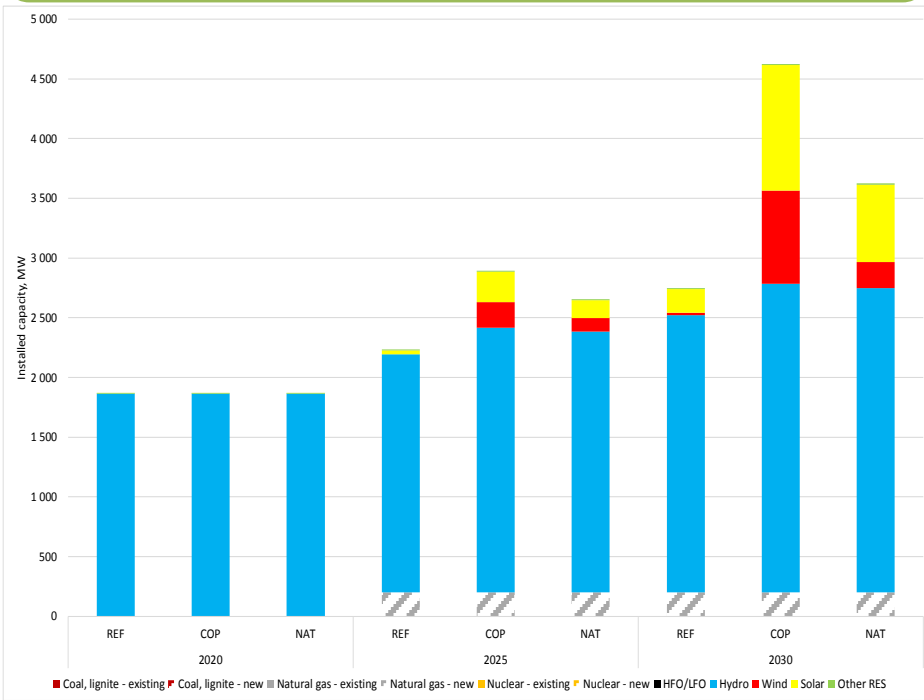
Contact details:

andras.mezosi@rekk.hu

Climate targets for the power sector:

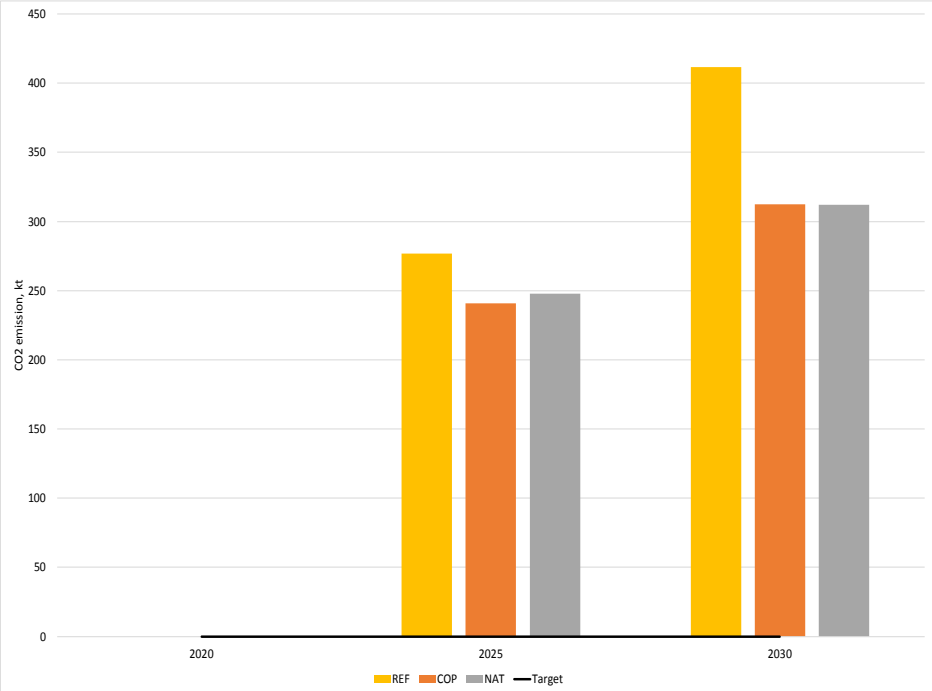
- Kosovo* and Moldova is projected to be well under their targets,
- Montenegro is very close, slightly under its calculated target
- The rest of the EnC countries need to make significant effort to reduce their emissions
- Bosnia and Herzegovina presents the highest distance from its target, but there is high uncertainty on its lignite plants.
- One single investment in a lignite plant in a country can have significant impact on the target which brings high uncertainty to the estimates.
- Note – that RES and EE efforts are already included in the scenario, so even a country which is at the GHG target has to make significant effort through RES and EE policies!

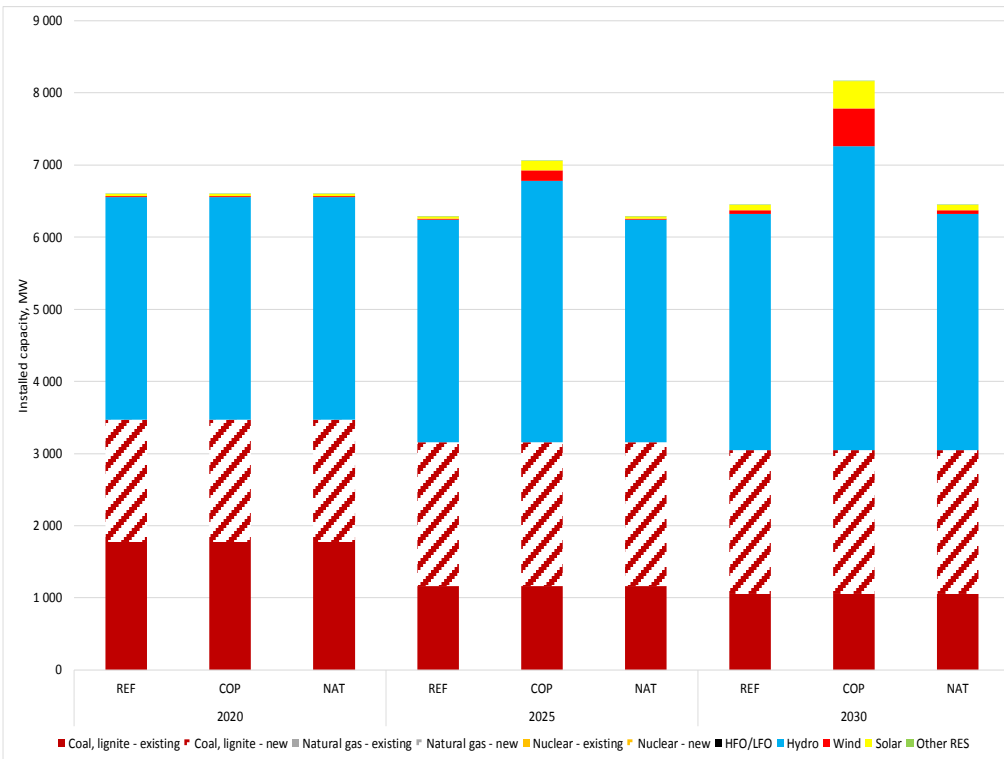
ANNEX



Capacity development

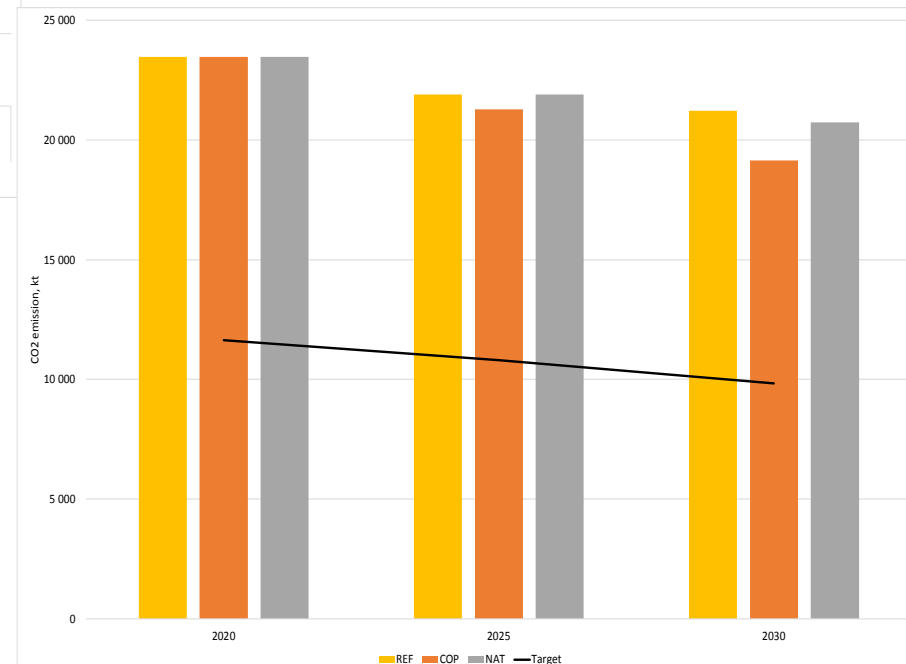
CO2 emissions and targets



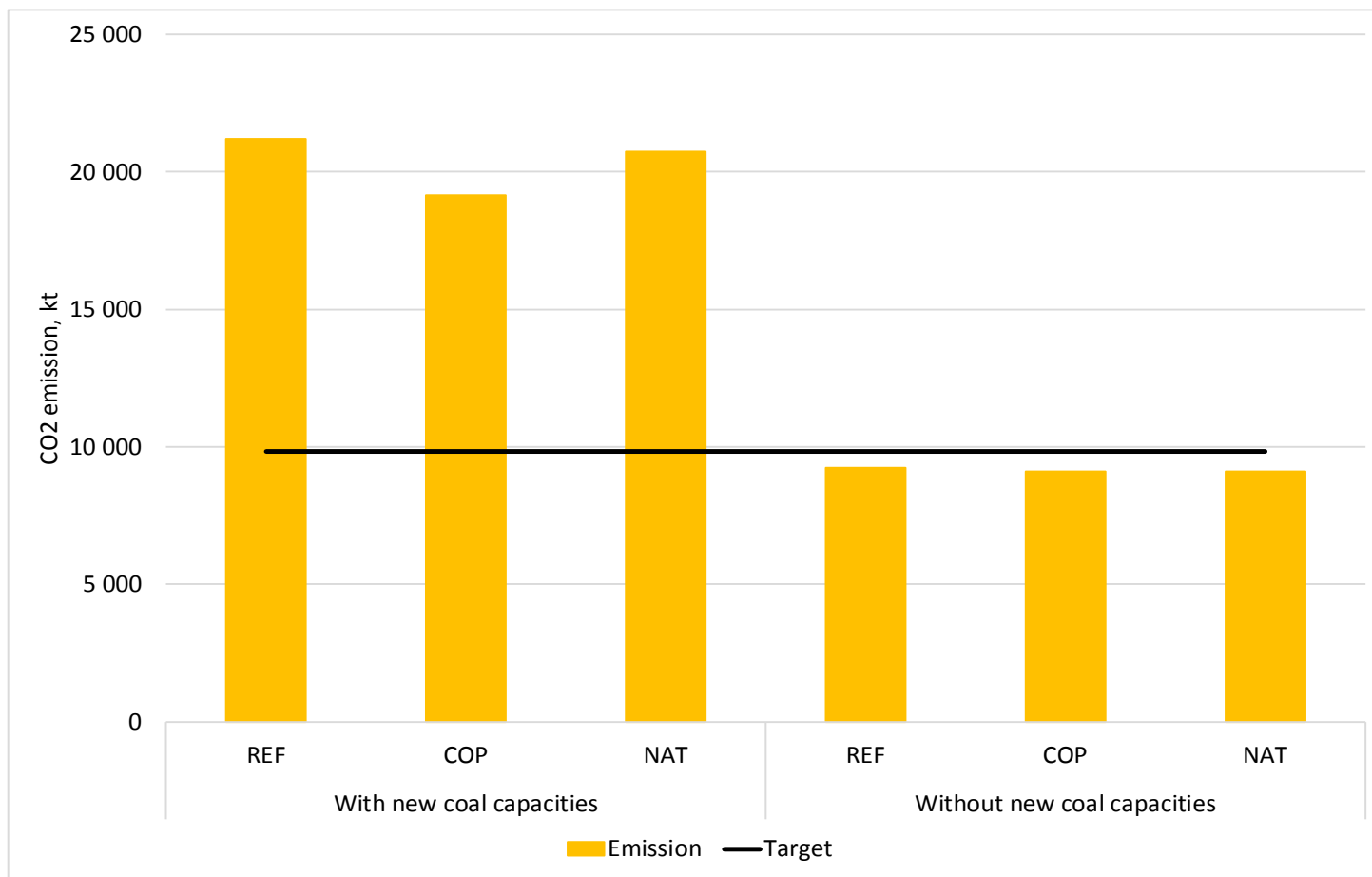


Capacity development

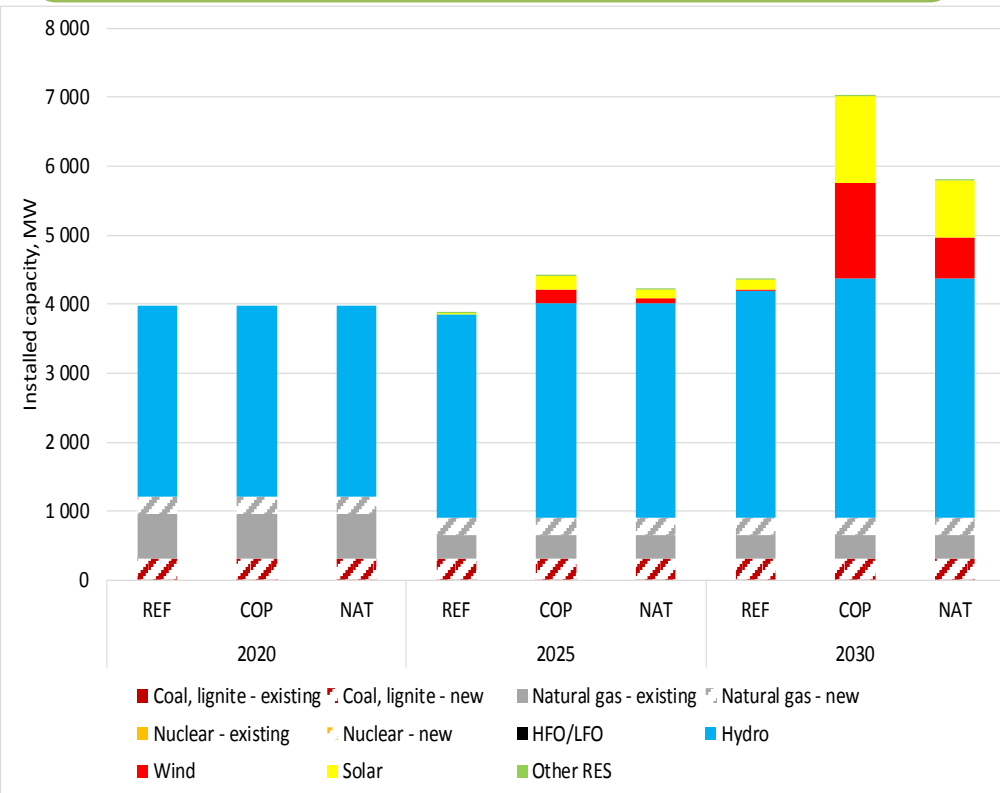
CO2 emissions and targets



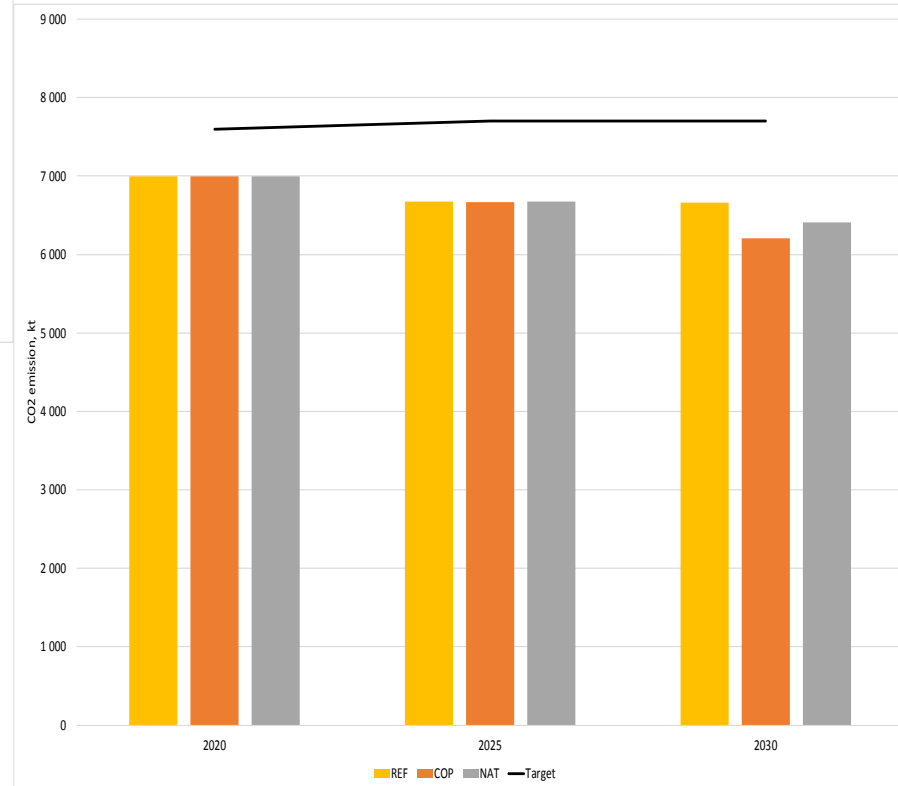
CO2 emissions and targets, at lower lignite development path*



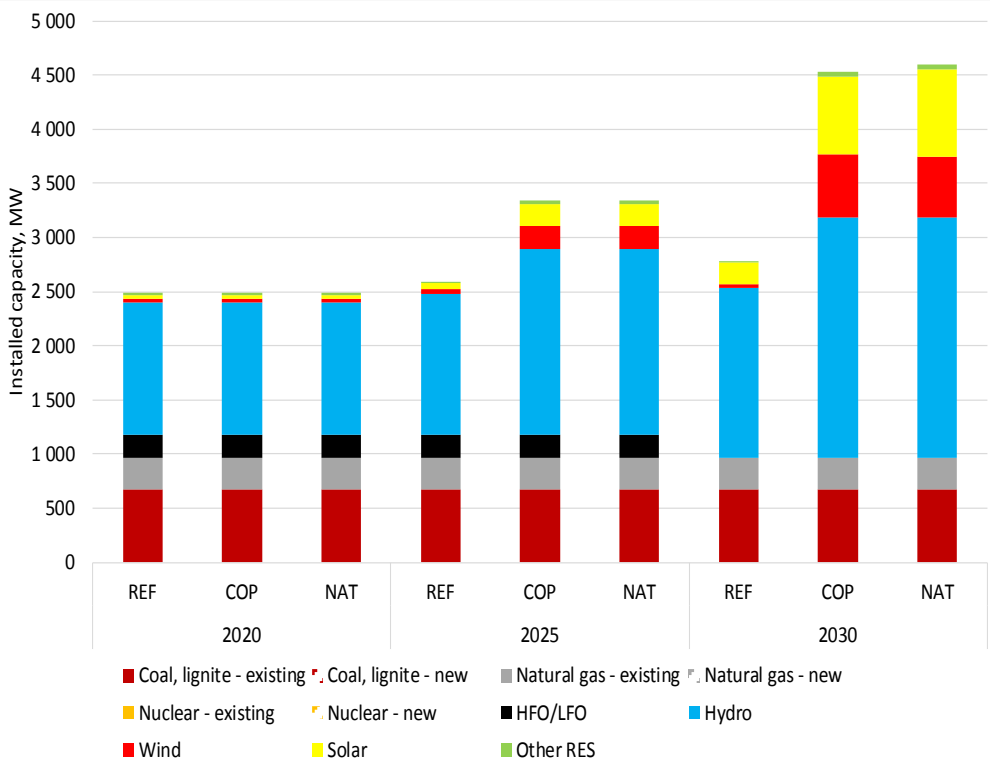
*Banovići, Kakanj 8, Tuzla 7 and Ugljevik 3 are not built.



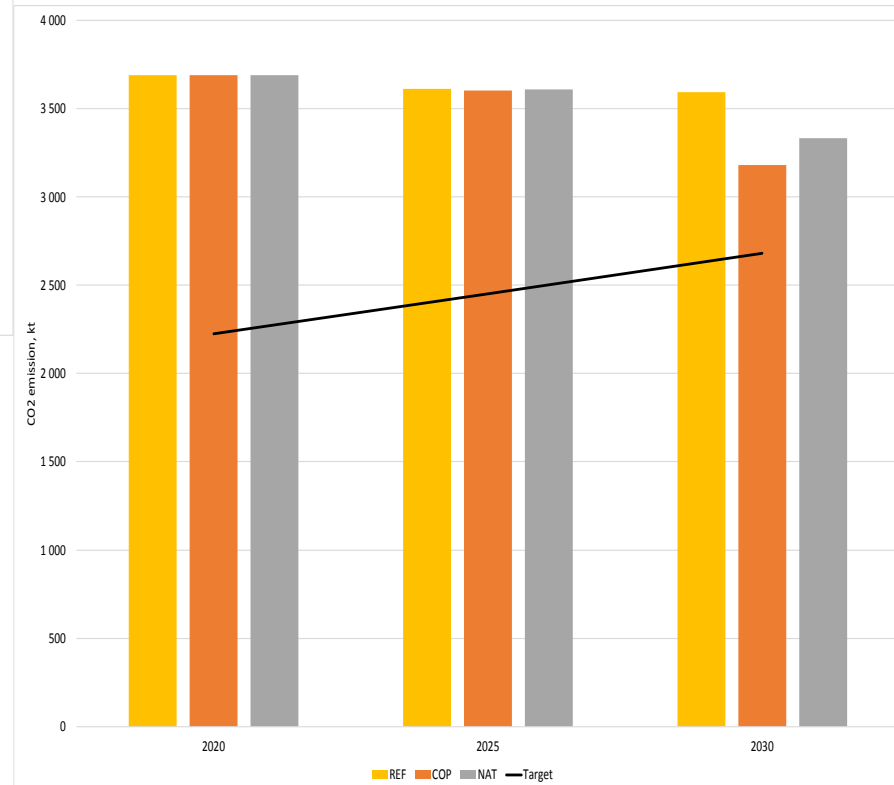
Capacity development



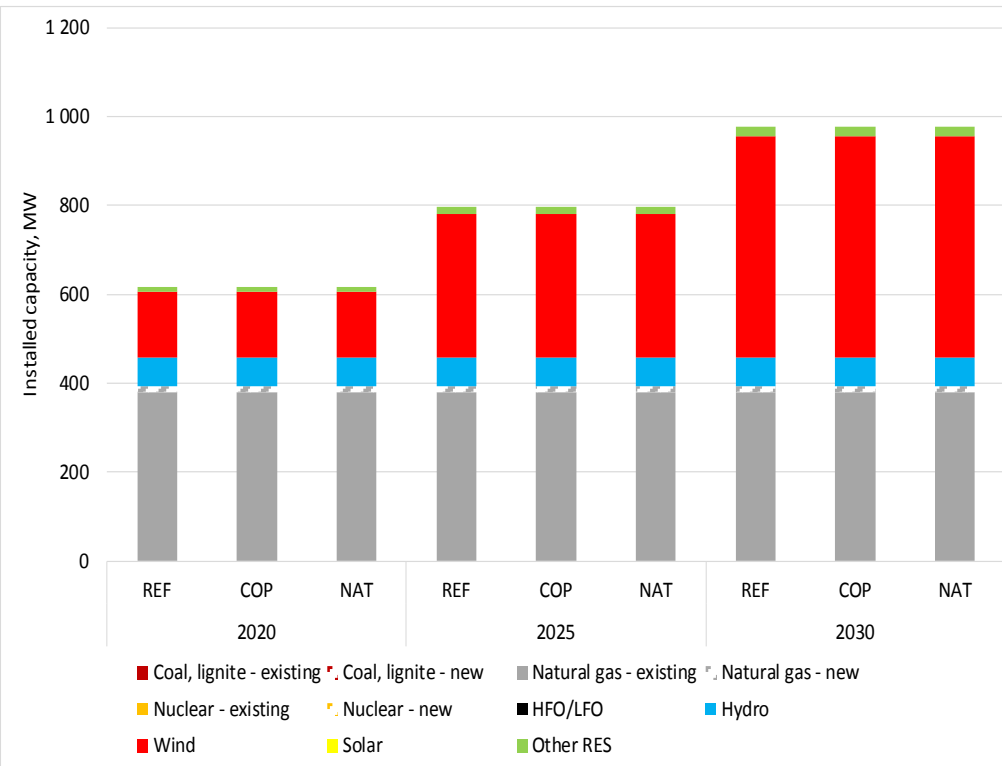
CO2 emissions and targets



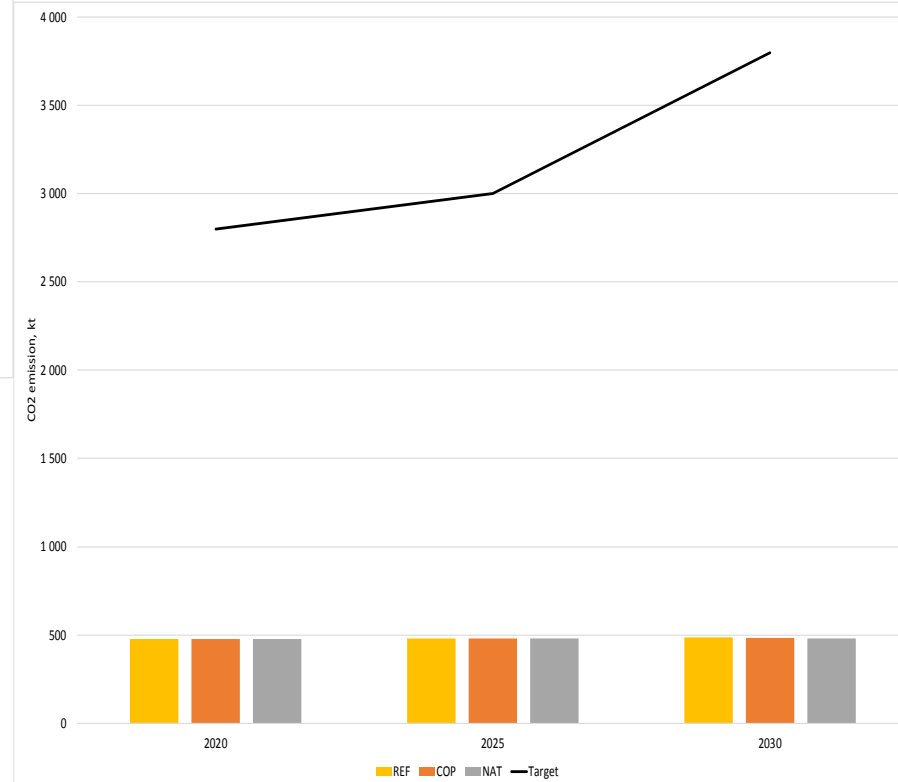
Capacity development



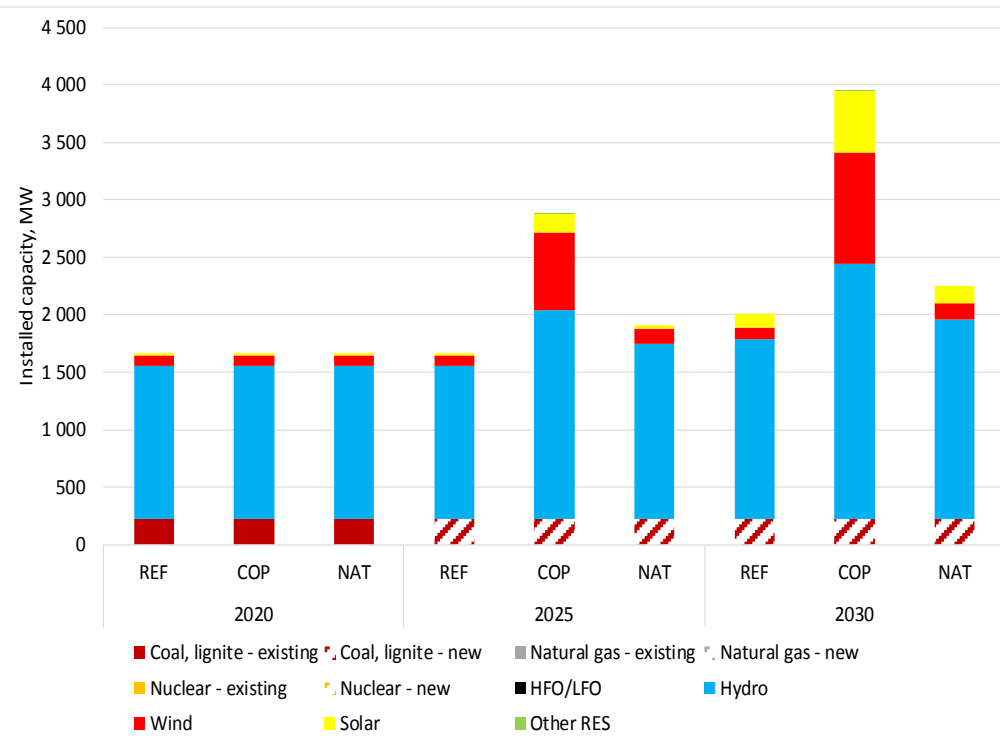
CO2 emissions and targets



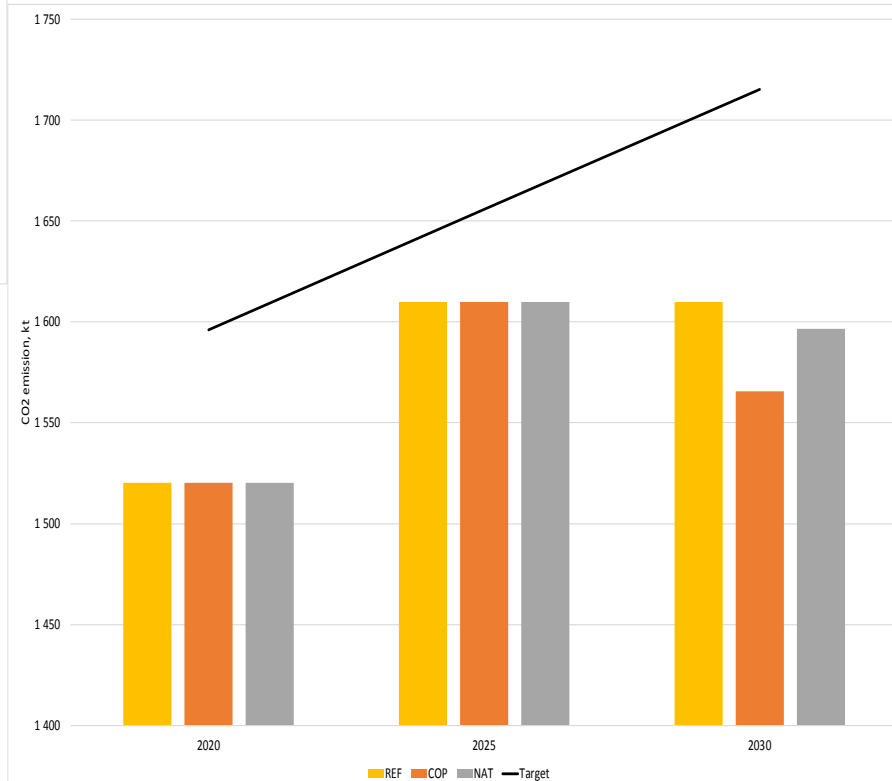
Capacity development



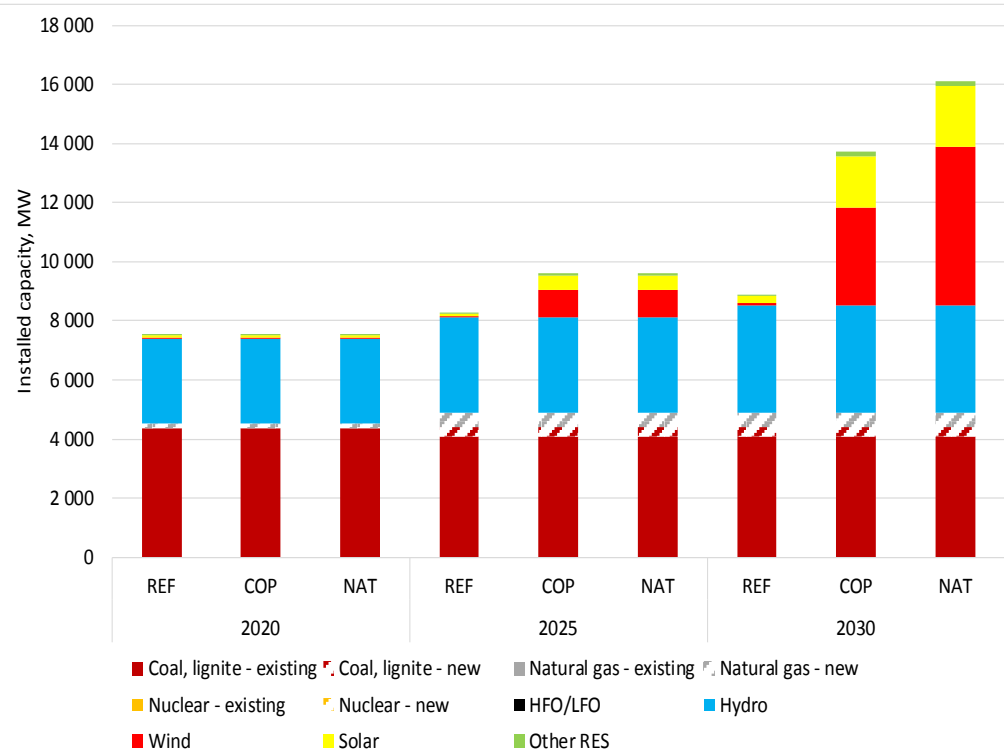
CO2 emissions and targets



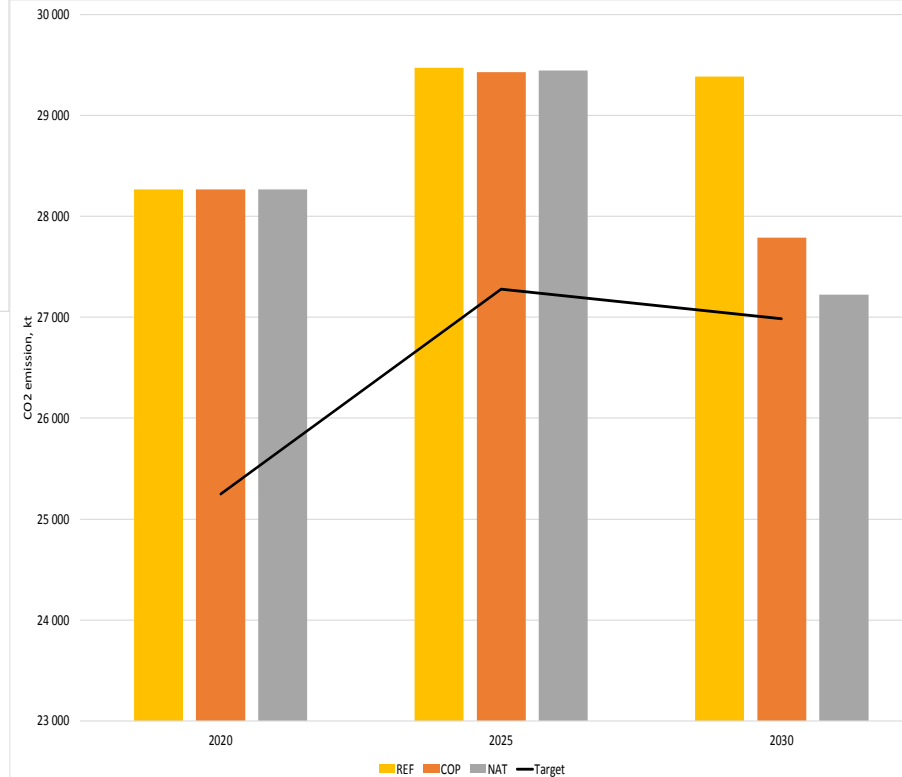
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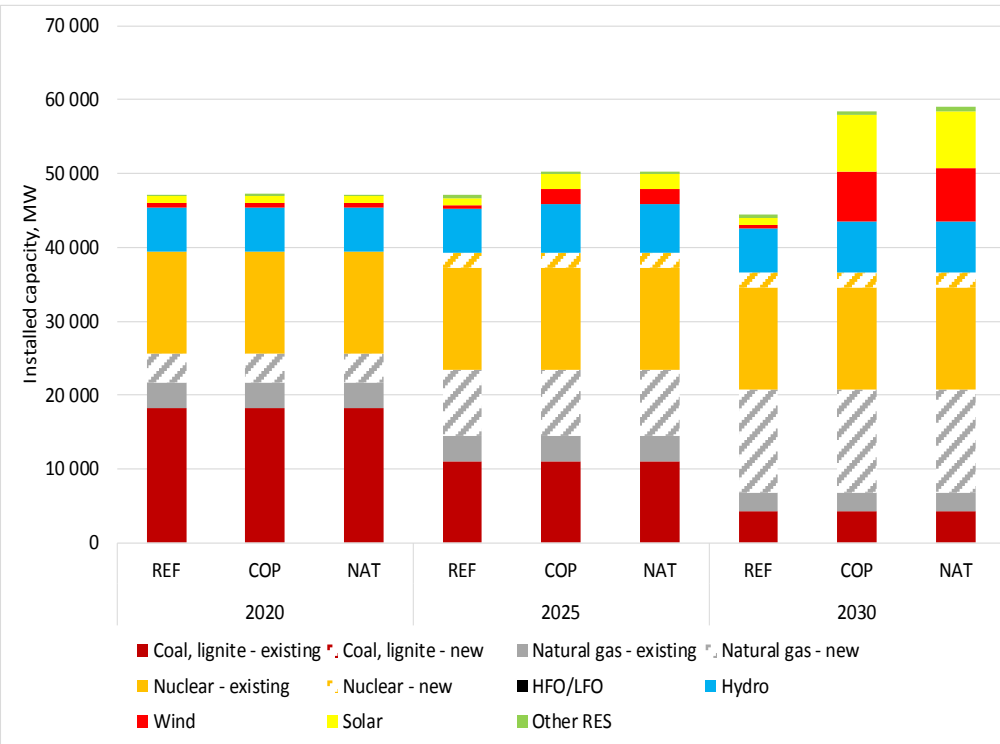
CO2 emissions and targets



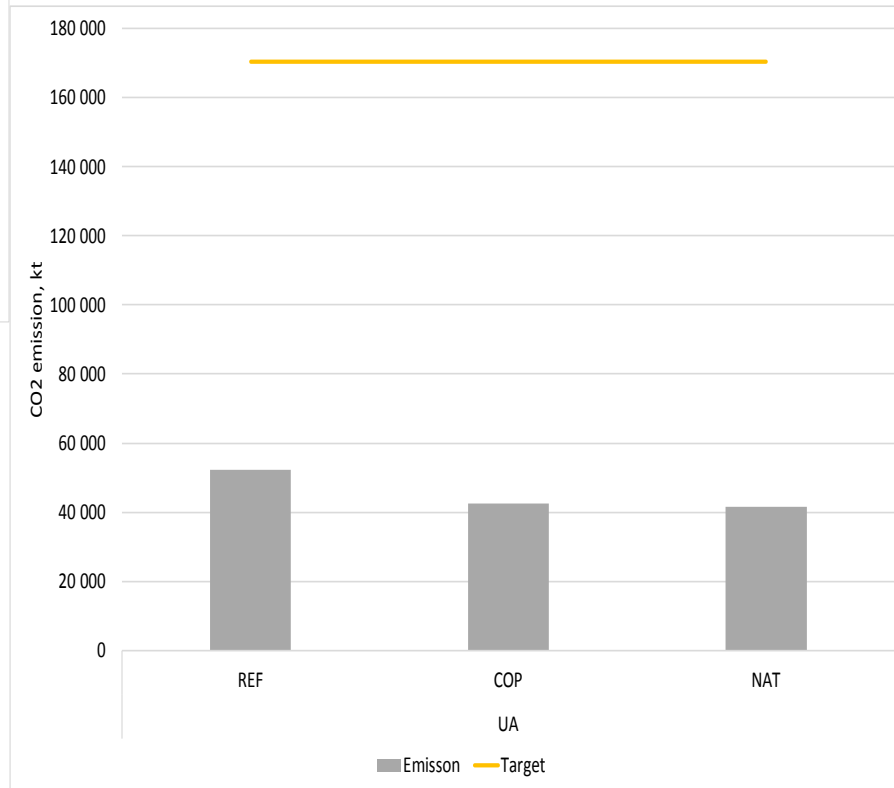
Capacity development



CO2 emissions and targets



Capacity development



CO2 emissions and targets