28 October 2020

Why not ETS?

Comparative assessment of border carbon adjustment and the extension of ETS in the European power sector

Energy Community De-Carbon Day

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Extended ETS outperforms carbon border adjustment in the power sector

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Aug 18, 2020 (updated: Aug 19, 2020)

Research questions

- What would be the impact of a BCA on the power sector of the EU and the exporting countries?
  - CO2 emission
  - Electricity mix: fossil power plants
  - Wholesale price
  - Revenue
- How would these compare to the extension of the EU ETS?

The modelling framework

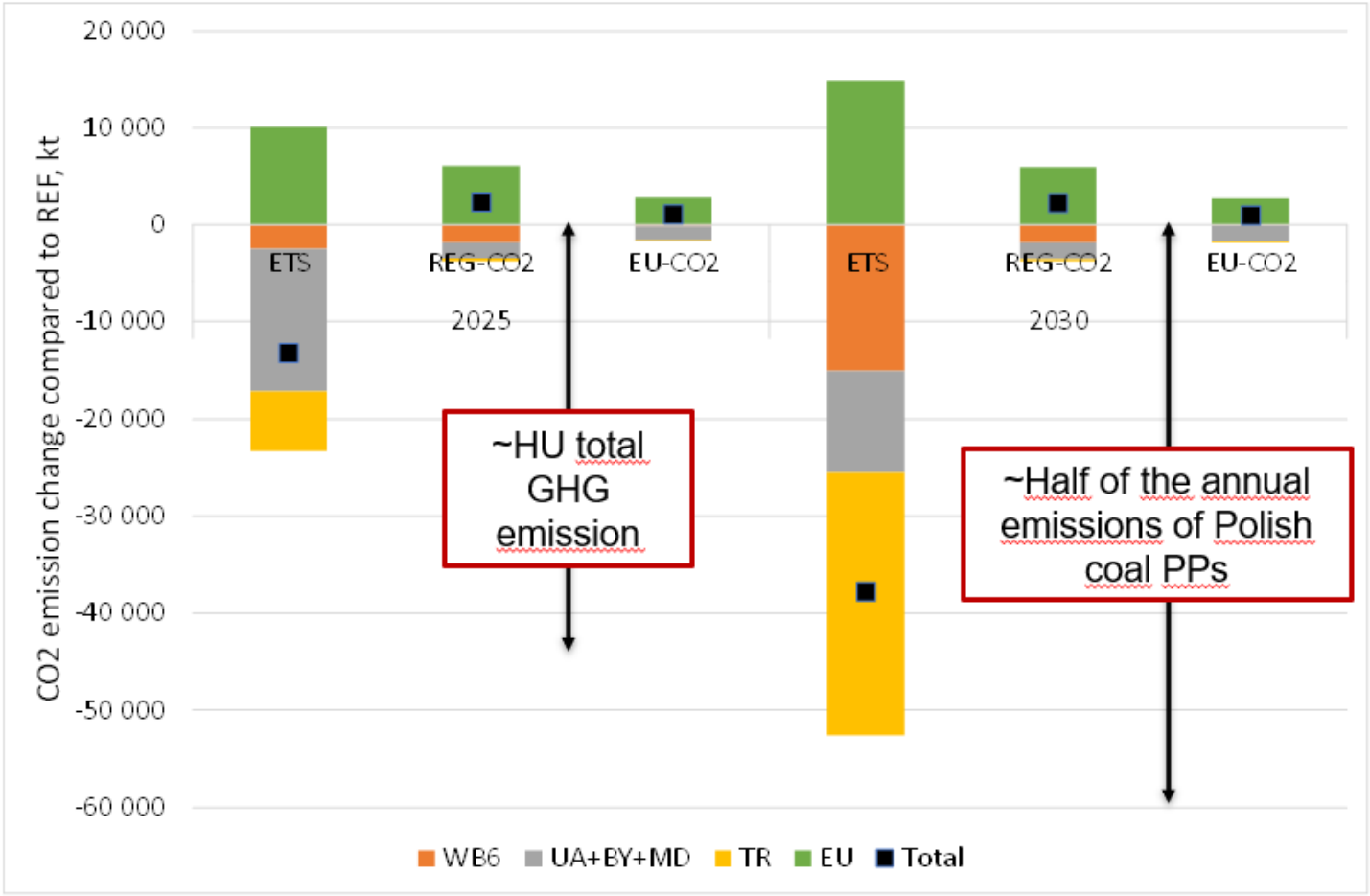
- Model used: European Electricity Market Model (EEMM)
- Spain-Morocco and Baltics-Russia trade is not included
- Regions:
  - Non-EU countries - 3 regions (REG)
    - WB6
    - East-Europe (BY, UA_W, UA_E, MD)
    - Turkey
  - EU+ countries: EU27+CH, NO, UK
- CO2 price based on EUCO32325: 2025: 25.1; 2030: 30.6€/t
- Exogenous generation capacities

Three scenarios

- ETS+: ETS extended from 2025
- REG-CO2: BCA based on carbon intensity of the import source non-ETS region
- EU-CO2: BCA based on the EU+ average carbon intensity

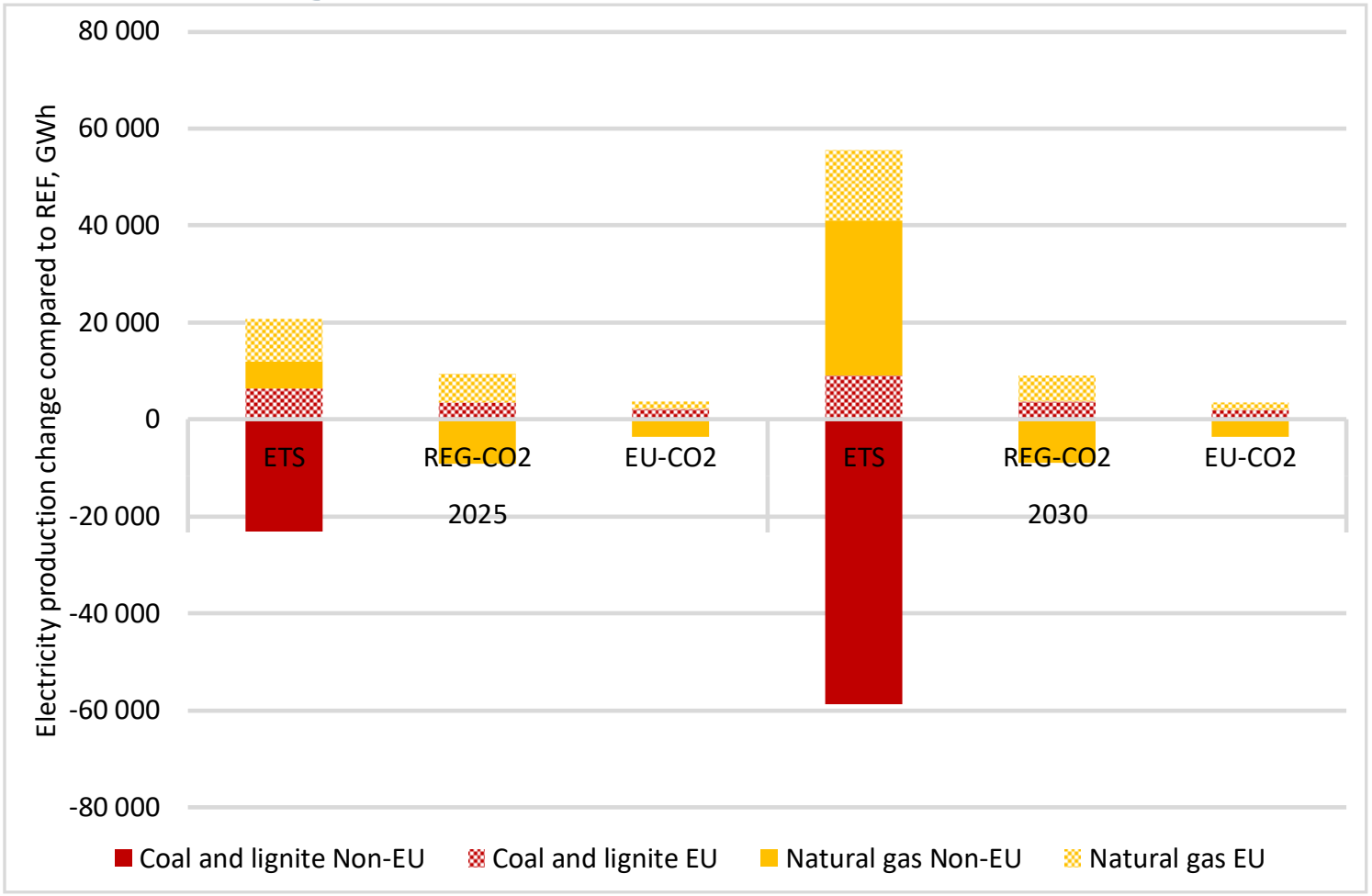
	CO2 intensity in REF scenario, t/MWh		CO2 tax level, €/MWh	
	2025	2030	2025	2030
EU+	0.22	0.16	5.42	5.01
WB6	0.72	0.64	18.00	19.73
UA+BY+MD	0.29	0.21	7.28	6.42
TR	0.40	0.33	9.95	10.17

CO_2 emissions



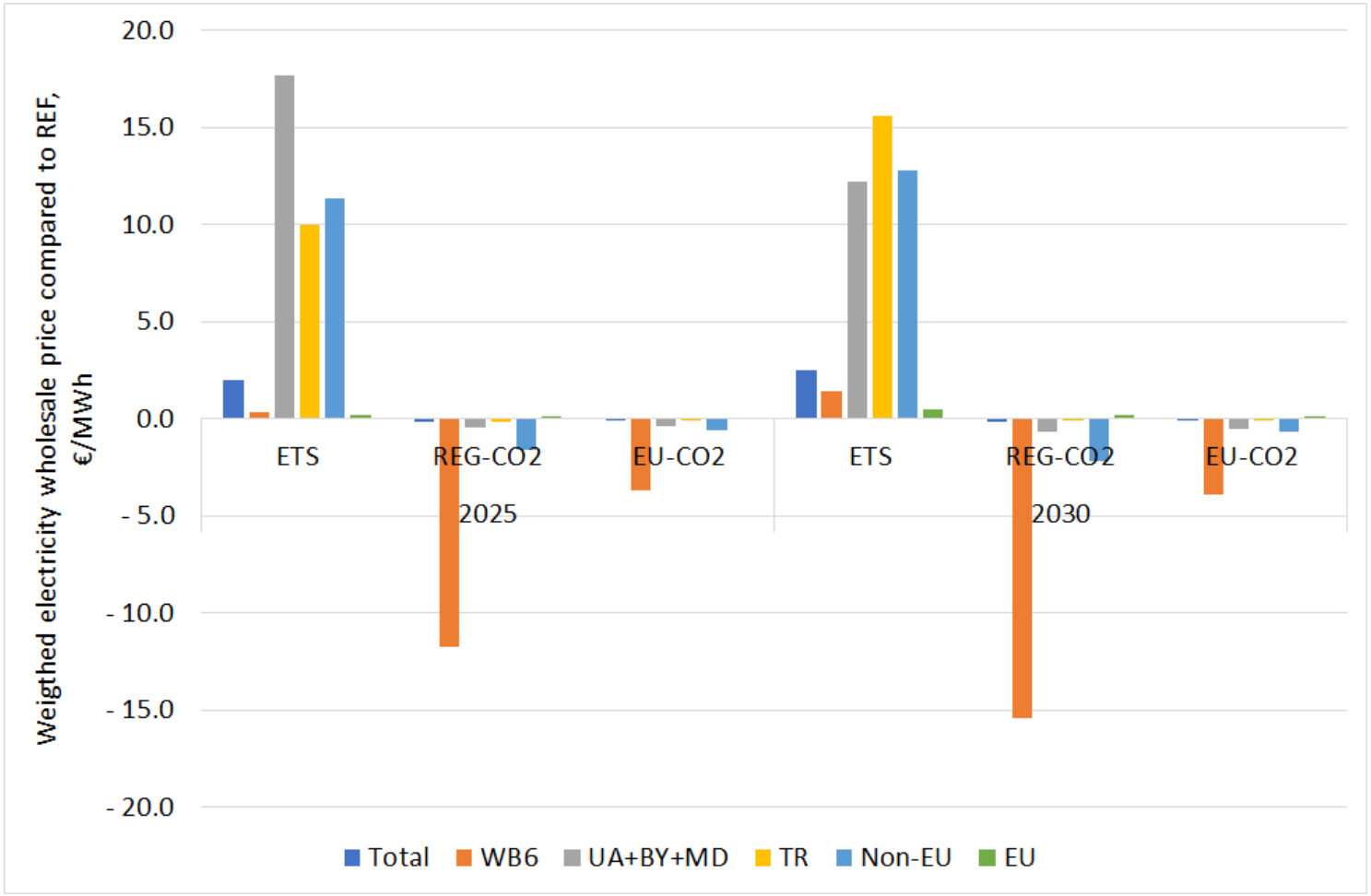
Source: EEMM

Electricity mix



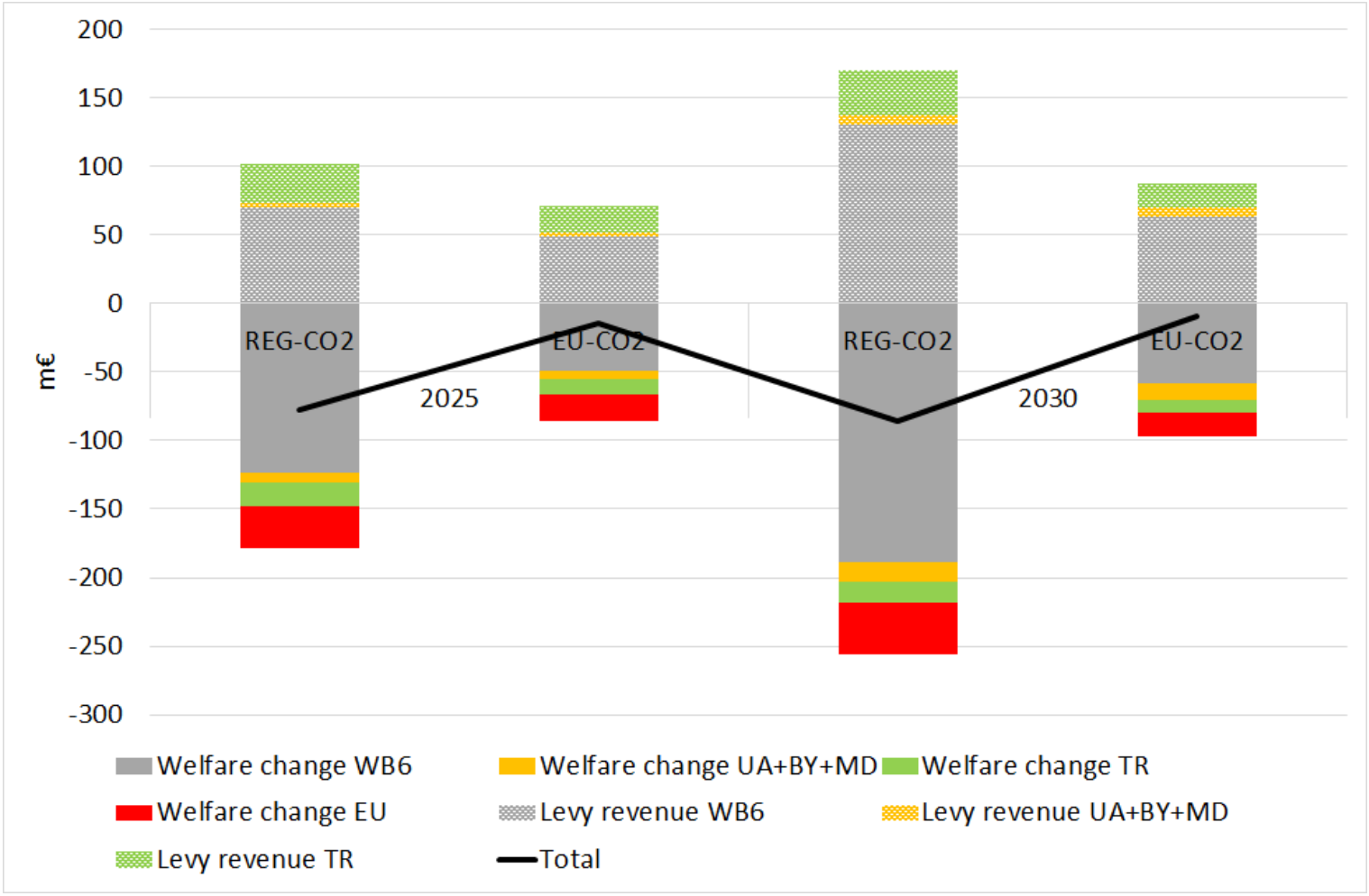
Source: EEMM

Wholesale price



Source: EEMM

Revenue and welfare



Source: EEMM

Results

	ETS+	BCA
CO2 emissions total	Reduce	Increase
CO2 emissions EU+	Increase	Increase
Power mix	Non-EU coal is crowded out by gas and EU coal	No impact on coal-based generation but hits on non-EU gas
Wholesale price	No impact in EU+ 10 EUR increase in non-EU	No impact in EU+ No impact in non-EU (except WB6)
Welfare and revenue	On order of magnitude higher than BCA	Approx. symmetric for each non-EU trading region

Messages

- BCA will **not**:
  - reduce CO2 aggregate emissions
  - create a European level playing field
  - generate much revenues

- ETS+ ~ national or regional ETS or carbon tax:
  - decarbonises
  - enhances market integration
  - creates substantial revenues

About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

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About REKK

REKK was founded in 2004 by former regulators, university teachers and research fellows. Apart from scientific and methodological experience, REKK possesses considerable regulatory and public administration expertise. Besides research and education REKK also carries out consultancy work on networked energy markets.

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Assumed generation capacities in GWs

	2025					2030				
	Coal +lignite	Natural gas+Oil	Nuclear	Hydro	Other RES	Coal +lignite	Natural gas+Oil	Nuclear	Hydro	Other RES
EU+	116.3	214.6	111.8	211.7	498.0	91.9	191.8	108.8	218.7	616.0
WB6	9.6	1.3	0.0	10.6	2.3	9.6	1.1	0.0	13.0	4.5
UA+MD+BY	12.1	9.9	16.2	5.9	7.2	5.2	9.8	16.2	6.0	10.3
TR	20.0	18.0	5.8	26.4	31.8	19.7	15.8	9.3	26.4	44.5

Source: EEMM, based on EUCO 32325