German Economic Team

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POLICY BRIEFING
NORTH MACEDONIA

Impact of CBAM on electricity exports from North Macedonia to the EU

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Executive summary

» Between 2020 and 2024, the main countries North Macedonia (MKD) exported electricity to were Bulgaria, Greece, Kosovo, and Serbia

- From 2020 to 2024, total electricity exports increased from 0.6 TWh to 1.4 TWh
- During the same period, total revenues from electricity exports to the European Union (EU) rose from EUR 32 m to EUR 95 m (0.3% and 1% of GDP, respectively)

» According to our estimates, MKD's electricity exports could face annual CBAM costs ranging from **EUR 36–68 m by 2026**

- Importers may **shift a share of this burden onto producers in MKD** (the extent of this depending on the price elasticities), **or reduce their imports altogether**

» MKD can obtain a **temporary exemption from CBAM until 2030** if it fulfils a number of conditions, including market coupling with the EU and preparing the introduction of a domestic carbon price that converges to the EU ETS carbon price parity by 2030

- **Securing a CBAM exemption may be delayed** until all exemption criteria are met
- At the same time, **market coupling is unlikely** to be viable **without a CBAM exemption**
- Without an exemption, MKD's electricity exports would be subject to CBAM, increasing the financial burden for EU importers which then would potentially cause shifts in regional electricity trade flows

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1. Introduction

Background

- In October 2023, the EU's Carbon Border Adjustment Mechanism (CBAM) entered into application in its transitional phase to address carbon leakage and ensure a level playing field between EU and non-EU producers of energy intensive products
  - Starting on 1 January 2026, importers of electricity into the EU must purchase CBAM certificates corresponding to the embedded emissions of their imports, priced based on the weekly EU-ETS allowance price*
    - Unless the exporting third country has received the electricity exemption from CBAM by meeting the required criteria
  - Electricity imports will be subject to full CBAM payment obligations with no transitional phase-in. The payment obligations in other CBAM sectors are gradually phased-in until reaching 100% by 2034, mirroring the phase-out of free allocations in the EU-ETS

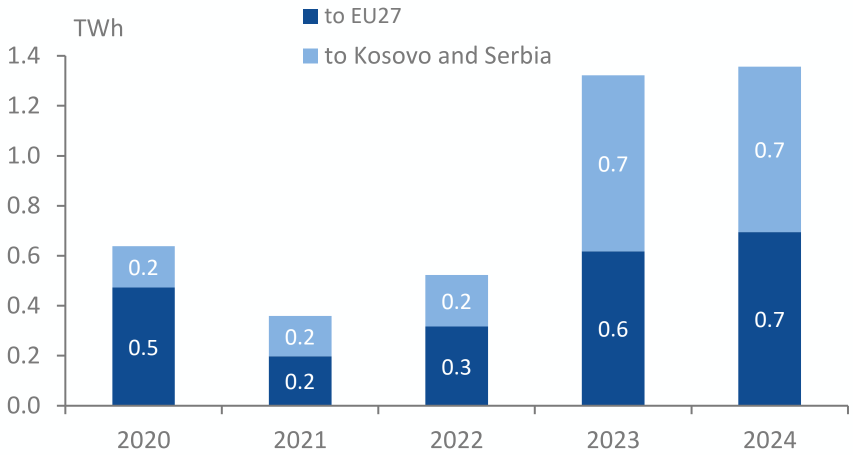
Purpose of this Policy Briefing

- This policy briefing provides analysis on the following dimensions:
  - Assess the impact of CBAM on the North Macedonian electricity sector
  - Analyse criteria for the exemption of the electricity sector from CBAM

* *The start of the CBAM payment obligations for 2026 emissions might be postponed to 2027 by the European Commission.*

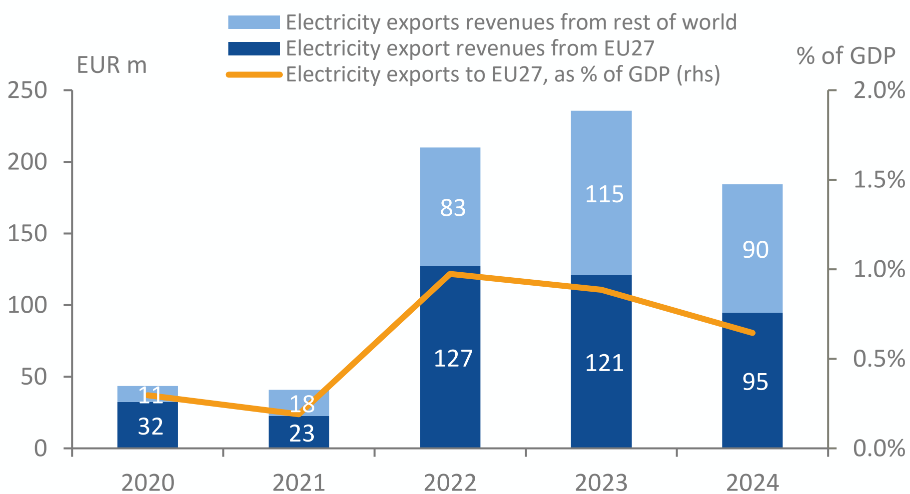
2. MKD electricity exports

Total electricity exports, 2020 - 2024



Source: MEPSO, own estimations based on State Statistical Office of the Republic of Macedonia and Eurostat.

Electricity exports as a share of GDP and total exports, 2020 - 2024



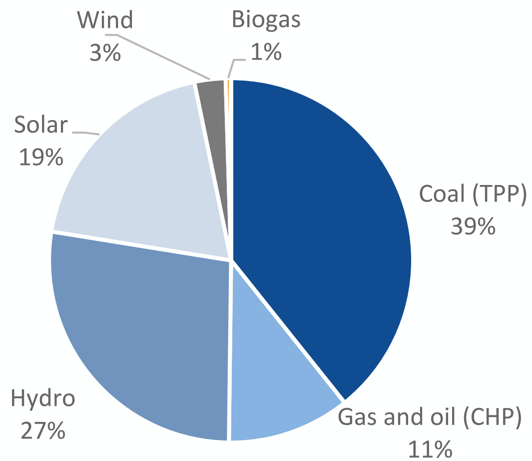
Source: Own estimations based on data from State Statistical Office of the Republic of Macedonia, Eurostat, and IMF (2024).

- EU has been a key destination of electricity from MKD, accounting for almost half of the exports since 2021
  - The total exports have been nearly evenly divided between the EU (Bulgaria and Greece) and a combined share of Kosovo and Serbia*
- In 2024, the country exported 1.4 TWh electricity in total, the highest amount exported since 2020
- The total electricity export revenues reached EUR 185 m in 2024, with around EUR 95 m coming from EU
- Revenues from electricity exports to the EU represented ~0.3-1.0% of annual GDP since 2020; substantial size

** The State Statistical Office of the Republic of Macedonia does not publish a detailed country-level breakdown of electricity exports. Therefore, the shares for the 2020–2022 period have been estimated by the authors based on export volumes and revenues reported by Eurostat. Export volumes for 2023 and 2024 are based on data provided by The North Macedonian Electricity Transmission System Operator (MEPSO). It is important to note that declared exports to non-EU countries may not necessarily reflect the final destination of the electricity, as transits through or re-exports to EU member states—and vice versa—can occur.*

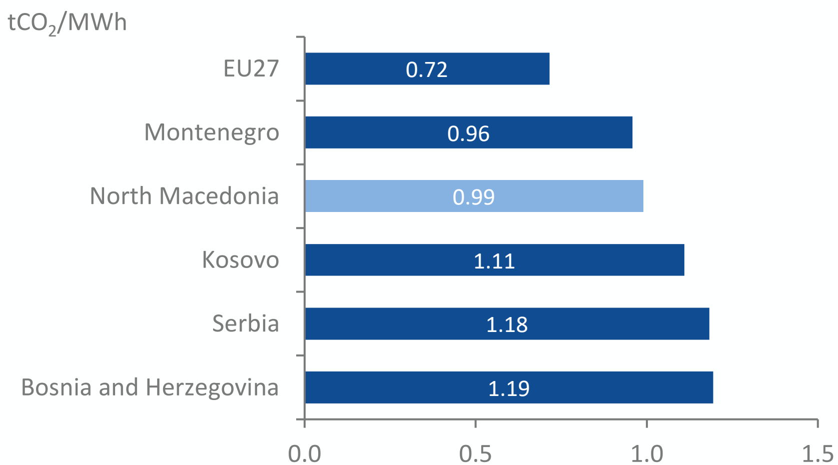
3. MKD electricity generation overview

Electricity generation installed capacities, 2023



Source: ERC Annual Report (2023).

Average emissions intensity of fossil-based generation, 2022

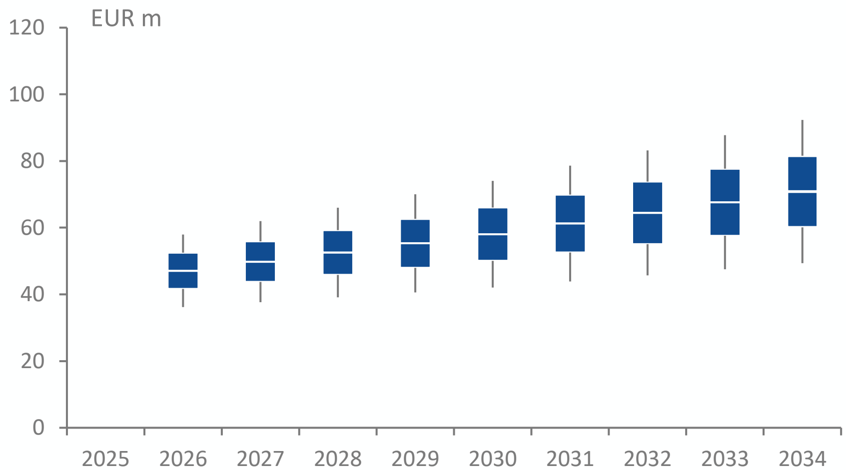


Source: GET (2024), IEA Data Services. Own calculations.

- » MKD's total installed capacity of power plants in 2023 was 2.6 GW, relying largely on coal-fired TPPs (39%) and gas-fired CHPs (11%)
  - – In 2023, 67% of total electricity produced was from TPPs (3,032 GWh) and CHPs (1,348 GWh)
- » MKD's fossil-fired electricity generation has an average emissions intensity of 0.99 tCO_2/MWh, higher than the EU average of 0.72 tCO_2/MWh
  - – This will make electricity exports to the EU increasingly uncompetitive due to higher carbon costs
  - – MKD has formally announced to phase out coal-fired TPPs by 2030, but this could be delayed to 2050 according to announcements by the government

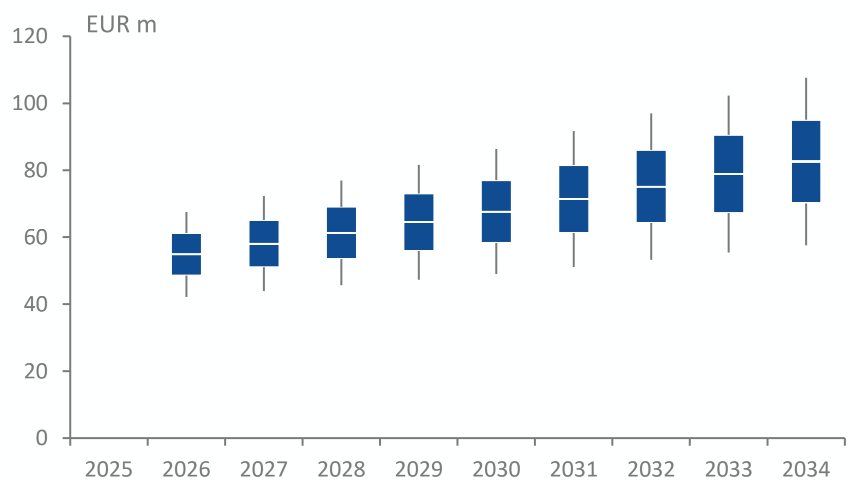
4. CBAM cost estimates for electricity exports

Scenario 1: Exports from MKD to EU, MKD emissions intensity



Source: MEPSO, State Statistical Office of the Republic of Macedonia, IMF (2024), Pahle et. al. (2025). Own calculations.

Scenario 2: Exports from MKD to EU, WB emissions intensity



Source: MEPSO, State Statistical Office of the Republic of Macedonia, IMF (2024), Pahle et. al. (2025). Own calculations.

» Electricity exports to the EU will be priced based on the weighted average emissions intensity of fossil-based electricity generation in the country or a group of third countries

– Fossil-fired generation is the marginal, or price-setting source in most hours

» **Scenario 1**: Exports priced on MKD's fossil-fired emissions intensity (0.99 tCO_2/MWh)

» **Scenario 2**: Exports priced on Western Balkans average (1.16 tCO_2/MWh)

» **By 2026**, the annual financial burden on MKD's electricity exports to the EU could range from **EUR 36-58 m** (Scenario 1) to **EUR 42-68 m** (Scenario 2)

– The ranges reflect EU ETS carbon price uncertainty

– It may also vary with future developments in electricity export volumes to the EU and changes in fossil-fired generation emissions intensity *(past averages used in analyses)*

4.1. Criteria for specific emissions intensity

Under CBAM, if MKD wants the CBAM fees on electricity exports to be based on **specific emissions intensity** (zero emission factor for RES), the following conditions must be met:

- A direct power purchase agreement (PPA) between the EU importer and a power producer in MKD for the full volume of exported electricity
- Proof that no physical network congestion occurred anywhere between the producer's installation in MKD and the EU grid at the time of export
- Nomination of allocated cross-border capacity for the entire volume (i.e. the transmission capacity was secured and used for that specific electricity)

» **These conditions are difficult to fulfil** and must be verified by an accredited verifier

» At present, MKD does not satisfy these conditions:

- Electricity is traded through regional markets and bilateral contracts, not via dedicated long-term PPAs linked to specific EU buyers
- MKD's interconnectors (e.g. with Greece and Bulgaria) are often congested at peak export times due to limited cross-border capacity (allocated via auctions)
- No known instance of fully tying a nominated capacity to a PPA for CBAM

4.2. CBAM exemption with market coupling

- Coupled electricity markets are possibly incompatible with CBAM unless specific technical conditions are met:
  - Electricity is primarily traded on power exchanges through anonymous auctions
  - In a coupled electricity market (a single cross-border market), exporters cannot be individually identified
  - This makes it difficult to trace indirect emissions from electricity imports into the EU and assign CBAM payment obligations
- MKD’s National Electricity Market Operator (MEMO) aims to achieve market coupling with the EU by the end of 2027 and is making progress towards it, but it is not yet meeting all the necessary pre-conditions:
  - \+ Domestic day-ahead market was launched in May 2023
  - – No operational intraday market is in place as of March 2025
  - – Transposing the latest Electricity Integration Package is ongoing
- Market coupling takes approximately 18 months to implement after the preconditions are met, so it is unlikely that MKD will complete the process in 2025 to secure an electricity sector exemption from CBAM by 1 January 2026 [1]

[1] Energy Community (2024).

4.3. Implications for electricity market coupling

- Regulation (EU) 2023/956 on CBAM allows electricity imports into the EU to be exempted if the exporting country's electricity market is coupled with the EU internal market and meets specific climate and energy legislation requirements (see next slide for assessment of conditions) [2]
- If MKD pursues market coupling with the EU and secures CBAM exemption for electricity exports, this will increase liquidity in the regional market, facilitate the integration of renewable energy sources, improve grid stability, and enhance transparency and competition
  - If MKD fails to achieve market coupling with EU, exemption for its electricity sector from CBAM could be delayed until price parity with the EU ETS is reached by 2030
  - At the same time, market coupling is unlikely to be viable without a CBAM exemption and the introduction of a domestic carbon price
  - If partner countries fail to meet exemption criteria, the European Commission can revoke the exemption and reverse market coupling
- When evaluating these options, the trade-off between introducing carbon pricing and the benefits of market coupling must be carefully considered

[2] *European Parliament, Council of the European Union (2023). Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism.*

4.4. Analysis of CBAM electricity exemption criteria

Conditions (Article 2.7)	Status	Description	Further Steps
a) Agreement that sets out an obligation to apply Union law	Fulfilled	Contracting partner to the Energy Community Treaty, which requires implementation of the EU acquis in electricity, renewables, and competition	-
b) Domestic legislation in line with EU acquis	Partially fulfilled	Laws and draft laws are not fully in line with EU acquis	Finalise transposition of laws to incorporate the Electricity Integration Package (process ongoing in the parliament)
c) Implementation of Roadmap on exemption criteria	Not Fulfilled	-	Submit Roadmap containing timetable for adoption of CBAM exemption measures
d) Commitment to climate neutrality by 2050 and submission of Long-Term Decarbonisation Strategy	Not fulfilled	Not underpinned in Long-term decarbonisation strategy or in domestic legislation	Finalise and adopt the Climate Action Law or equivalent legislation to formally integrate the 2050 carbon-neutrality commitment into domestic law
e) Implementation of ETS for electricity with price equivalence to EU ETS by 2030	Not Fulfilled	Carbon price not in place, mentioned in draft Climate Law and NECP	Establish domestic or regional ETS with price convergence to EU ETS price until 2030
f) Implementation of efficient system to prevent indirect import of electricity from non-compliant third countries	Not Fulfilled	No system in place	Implement regional ETS with neighbouring countries, jointly fulfilling exemption criteria, or implement own CBAM against non-compliant third countries

Source: European Parliament, Council of the European Union (2023). Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism. Own analysis.

5. Conclusion and recommendations

- CBAM will have significant impact on MKD's electricity exports to the EU:
  - By 2026, MKD's electricity exports to the EU could face annual CBAM costs ranging from EUR 36-68 m. In comparison, the country's electricity export revenues from the EU in 2024 were approximately EUR 95 m
  - Importers may shift part of this burden onto electricity producers in MKD, depending on price elasticities, or reduce their imports
- If market coupling with the EU is delayed and a domestic carbon price aligned with the EU ETS is not introduced by 2030, securing a CBAM exemption may be postponed
  - At the same time, market coupling is unlikely to be viable without a CBAM exemption and the introduction of a domestic carbon price. Without securing the CBAM exemption, market coupling could be reversed
  - Indirect effects, such as potential shifts in regional electricity trade patterns and, in turn, higher generation costs due to reduced exports, could be significant
- To mitigate these risks, MKD must accelerate its efforts to advance market coupling with the EU and continue the progress in meeting the full list of exemption criteria
  - In particular, this includes introducing a domestic carbon price aligned with carbon price parity to the EU ETS by 2030
  - In assessing these options, trade-offs between the potential burden from introducing carbon pricing and the benefits from market coupling needs to be considered

About the German Economic Team

Financed by the Federal Ministry for Economic Affairs and Climate Action, the German Economic Team (GET) advises the governments of Ukraine, Belarus*, Moldova, Kosovo, Armenia, Georgia* and Uzbekistan on economic policy matters. Berlin Economics has been commissioned with the implementation of the consultancy.
**Within the framework of project activities in Georgia, we are in contact solely with reform-oriented partners for the time being; in Belarus advisory activities are suspended*

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