

# Ukraine cross-border electricity trade:

From short-term security of supply imperatives to flow-based market coupling

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## Ukraine needs Market Coupling

### ...for efficient flows

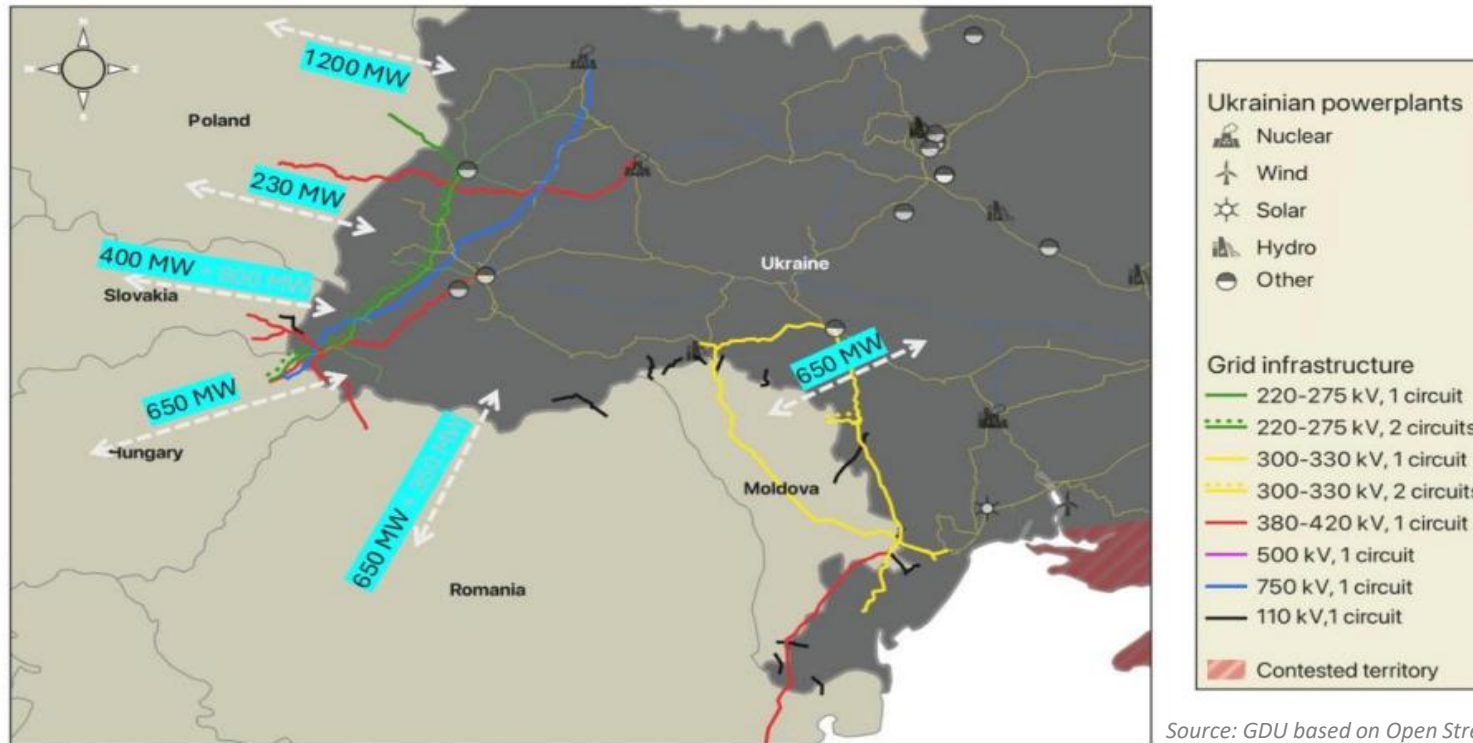
- Currently, much of the electricity flows against the price direction
  - A large share of capacity remains unused or misallocated
- **Result:** these inefficient schedules ultimately lead to higher cost, fuel use and emissions, and load shedding at critical hours.

### ...for EU Accession & Policy Alignment

- Candidate countries must transpose and implement the EU electricity market acquis;
- Market Coupling demonstrates readiness to join the single European energy market;
- Anchors Ukrenergo within ENTSO-E and positions Ukraine as a credible, rule-based partner.

## Status Quo: Resilient grids, with expansion needs

Cross-border power lines between Ukraine and neighbouring EU states



Source: GDU based on Open Street Map, Powerplantmatching, LiveUAmapping.com

- **Grid** has proven extraordinary resilience since full-scale invasion, and excellent performance within RGCE with ENTSO-E
- **Expansion** is needed, also interconnectors (Kapuszany, Isaccea) and technology; decentralisation
- **Challenge for Moldova**, allocation of 15% of overall 2.1 /1.7 GW limit with ENTSO-E

## Status Quo: Inefficiencies in EU-Ukraine cross-border trade

### Frequent flows against price direction (share of all traded volume in 2024)

**Efficient:** electricity is sent to where consumers pay more for it

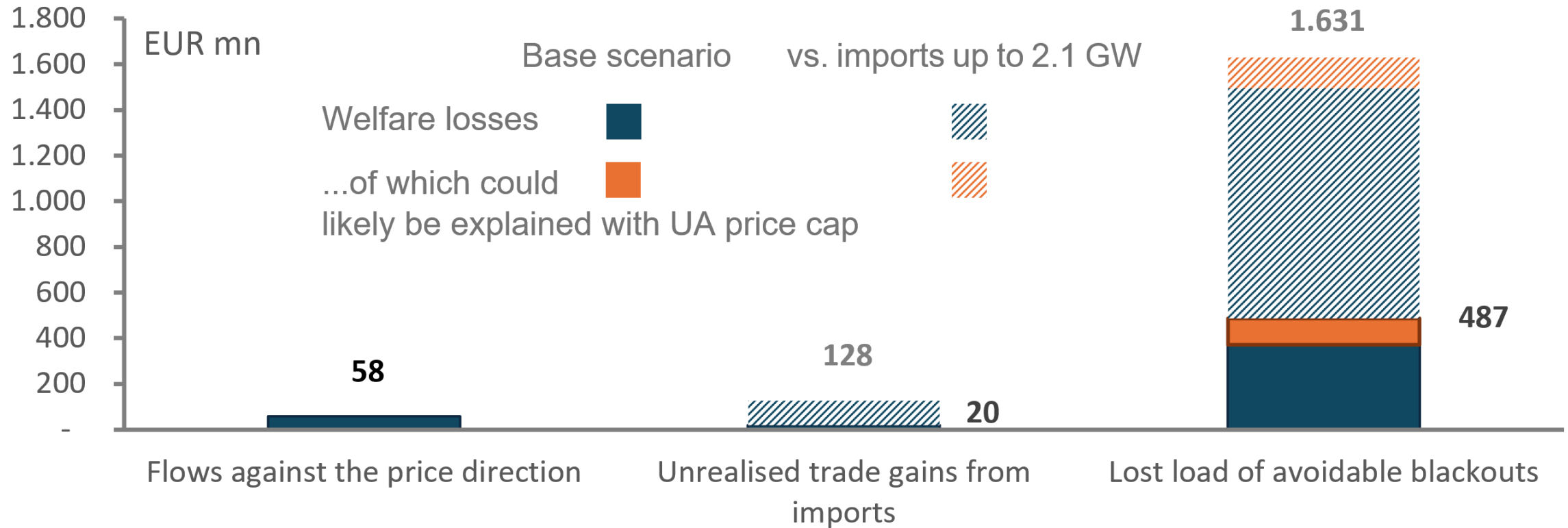
**Inefficient:** electricity is sent to where consumers pay less for it

	Imports into UA	Exports from UA
Prices EU > UA	22%	5%
Prices UA > EU	71%	1%

- **Flows against the price direction** (from country with higher prices to country with lower prices) are observed **in over 40% of all hours**
- Close to **one fourth of electricity** in volume-weighted terms was traded against the price direction
- Not all flows against the price direction might be inefficient per se
  - **Price caps and other market interventions** limit price signals for scarcity in UA, imports could reflect this scarcity in some hours
  - However, the **lack of a reliable price signal** generally increases the inefficiency of electricity trade

*Source: GDU based on JAO, Ukrenergo, ENTSO-E; Note: Data for the interconnectors UA-PL, UA-SK, UA-HU, UA-RO*

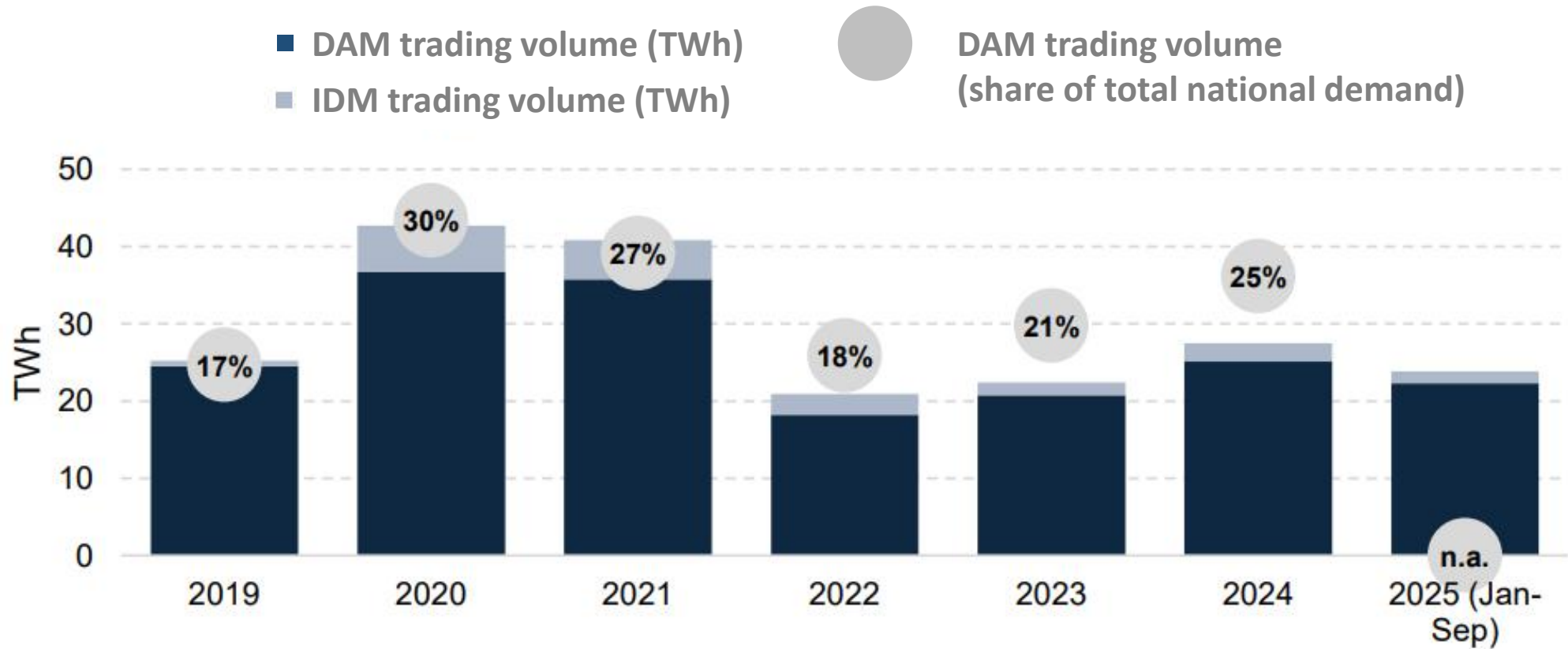
## Status Quo: Welfare losses from inefficient EU-UA X-border trade



Source: GDU based on ENTSO-E, JAO, Ukrenergo

Note: Data for 2024 for the interconnectors UA-PL, UA-SK, UA-HU, UA-RO. Base scenario for imports up to offered capacity, shaded area and grey numbers for scenario with imports up to maximum allowed capacity from ENTSO-E. Unrealised trade gains from exports not considered.

## Status Quo: Limited spot market liquidity



Source: GDU based on Market Operator, Ukrenergo, GDU estimates

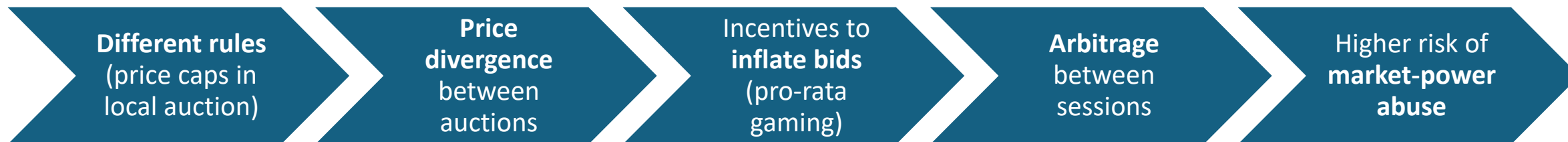
## Bottlenecks for Market Coupling

- **Non-market interventions**
- **Transposition of Electricity Integration Package (EIP)** for legal basis (expected)
- **Designation of Ukraine's "Nominated Electricity Market Operator"** and resubmission of **Market Coupling Operator Integration Plan** to ACER pending
  - needed for formal integration request (*triggering 18-month preparation period*)
  - pushes go-live to earliest Q1 2028 (*unless 18-month period can be shortened*)
- **EU's Carbon Border Adjustment Mechanism**

### **Cross-border capacity allocation:**

- Only a portion of available interconnector capacity offered to markets

## UA legislation on market coupling: Risk of two DAM auctions



### Market fragmentation / reduced liquidity:

Two auctions → less volume per session → noisier prices and less competition

### High market concentration amplifies risk:

- Dominant actors in generation (Energoatom, DTEK group) and on buyer side (DTEK group)
- Dominant actors can shape (and game between) both sessions

- Preserving a local DAM auction with price caps after SDAC integration **reduces liquidity, distorts incentives, encourages inflated bidding and enables strategic behaviour** of dominant players

### Recommendations:

- Aim for a **single coupled auction, strengthen Regulator's independence & capacity**
- *If two-session model kept: harmonise price limits across sessions* (transparent revision procedure)

## CBAM & Market Coupling: Relationship

- **CBAM (Carbon Border Adjustment Mechanism):** From Jan 2026, electricity imports from Ukraine face a levy, unless exempt.
- **Exemption clause (Art. 2(7)):** Countries can be exempted if their electricity markets are day-ahead coupled with the EU.

### No market coupling without CBAM exemption:

- CBAM cannot be applied to imports via anonymous (coupled) power markets as importers liable for payment cannot be identified

→ CBAM exemption needs to be secured before go-live of SDAC integration

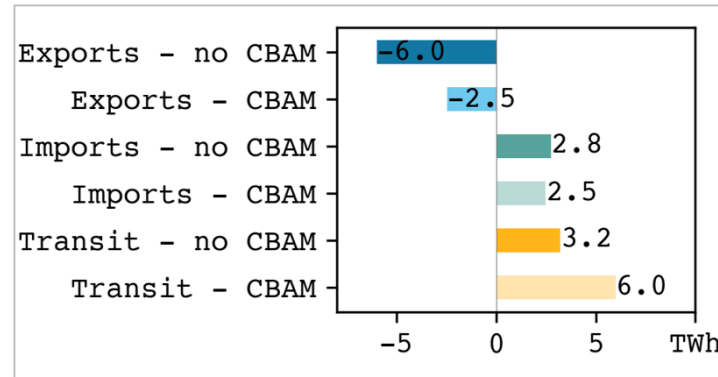
### Timing problem:

- CBAM for electricity applies from 2026
- Market coupling of Ukraine only foreseen 2027-2028.

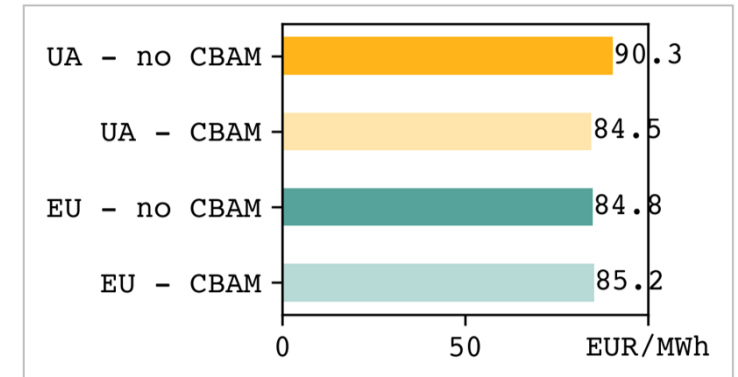
# CBAM threatens EU-Ukraine power market integration, for little climate gain

- We model the European integrated electricity system **with and without CBAM** in 2026
- **CBAM adjustment** is charged to imports into the EU (ca. **75 €/MWh** for UA)
- **60% reduction in exports** from Ukraine (sharp export drop to EU)
- **Increase in transit flows** from EU via Ukraine to other EU countries
- **Lower UA power prices** hurt RES market value (wind -5%, solar -8%)
- **Hourly price spreads increase** between UA and neighbours
- **Ukraine becomes less integrated with EU energy markets**
- **Meanwhile, overall emissions fall by only 0.4% (2 Mt) with CBAM in 2026** (-9 Mt in EnC, +7 Mt in EU)

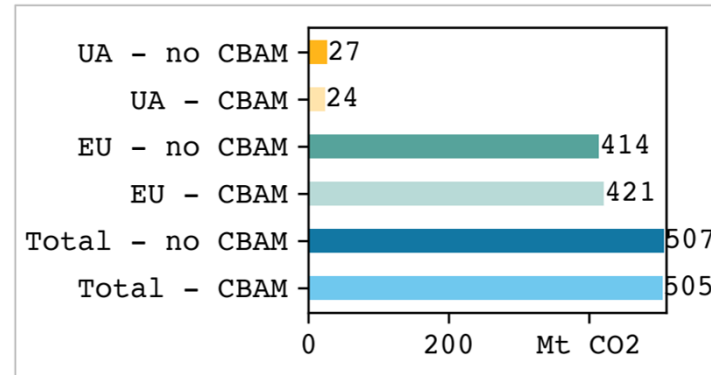
**UA cross-border trade**  
with/without CBAM



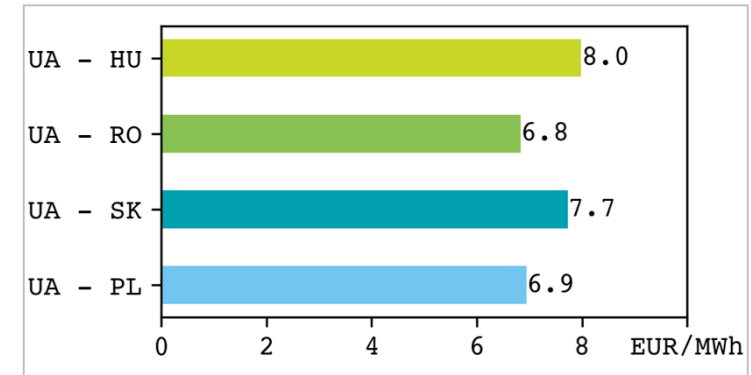
**Average wholesale prices**  
with/without CBAM








**Power sector emissions**  
with/without CBAM



**Increase in average hourly price spread**  
due to CBAM (diff. between scenarios)



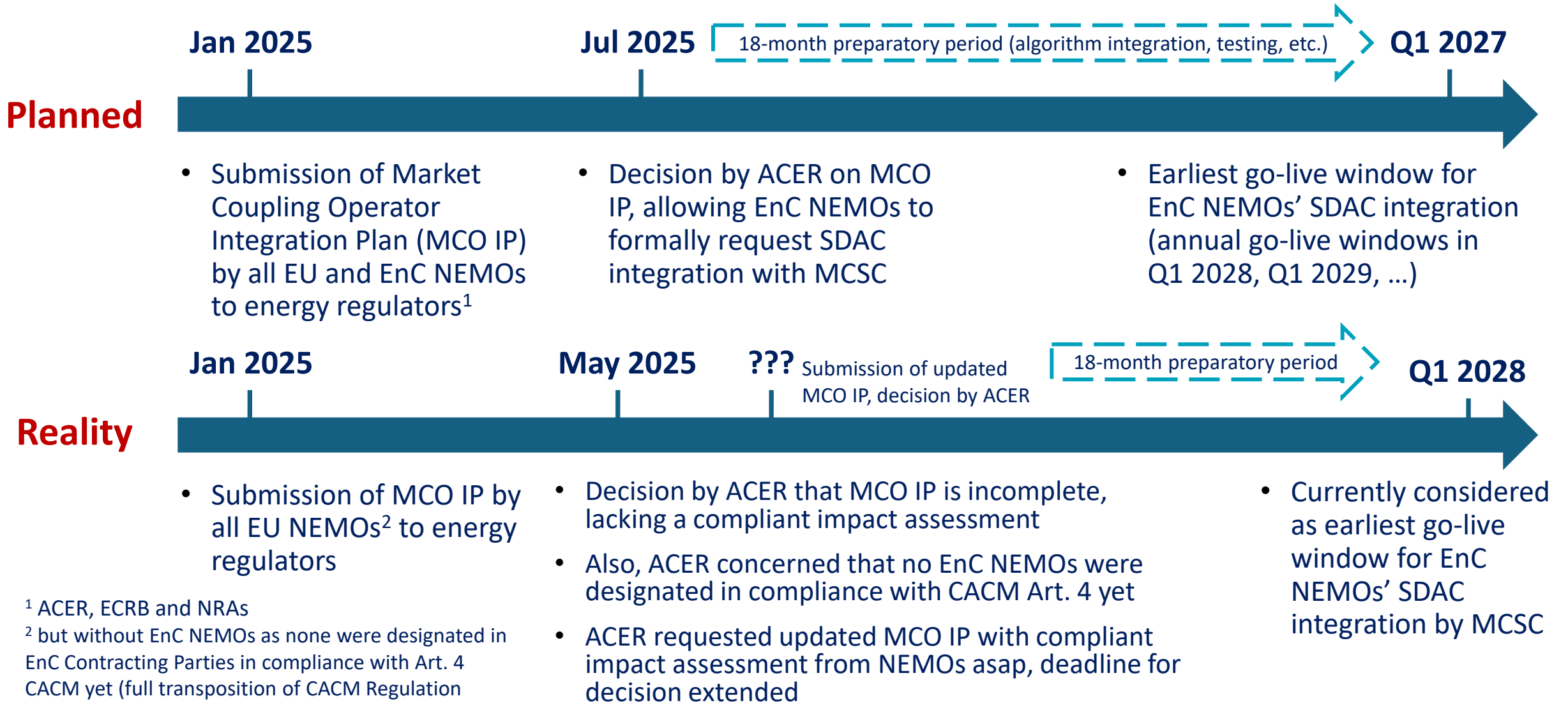
## Recommendations (Overview)

-  1. Ensure Data availability, data quality and transparency (in the framework of martial law)
-  2. Develop a holistic view on non-market interventions & needed structural reforms
-  3. Allocate much more interconnector capacity for the market, interconnectors should be used efficiently
-  4. Push for and establish a functioning legislative basis for market coupling in Ukraine (EIP transposition, NEMO designation, MCO IP, no two sequential auctions)
-  5. Prepare a robust Market Coupling Roadmap 2028, meet deadlines
-  6. Make sure resources are available at ENTSO-E and ACER level for the market coupling of Ukraine
-  7. Provide flexibility on MCO IP and preparation period, poss. shorten 18-month prep. period (EU task)
-  8. Address the conflicts between CBAM and electricity market coupling
-  9. Use Early Accession and adoption to drive market coupling
-  10. Go for a more integrated approach on Ukraine-Moldova Electricity System

## Recommendations (in detail)

	ACTION	WHEN	WHO
<b>1</b>	Develop a Framework for Data Availability, Data Quality, and Transparency and ensure implementation	2025	Ukraine (NEURC)
<b>2</b>	Develop a holistic view on non-market intervention and the needed structural reforms	2025	Ukraine (NEURC)
<b>3</b>	Allocate much more interconnector capacity for the market, ensure faster speed on more interconnector capacity built, use innovative grid technologies, and ensure efficient use of interconnectors	2025-28	Ukraine (NEURC, MinEnergo, Ukrenergo)  EU (DG ENER, Energy Community)
<b>4</b>	Push for and establish a functioning legislative basis for market coupling in Ukraine	2025	Ukraine (Rada, MinEnergo, NEURC)

## 5. Develop a robust Market Coupling roadmap



<sup>1</sup> ACER, ECRB and NRAs

<sup>2</sup> but without EnC NEMOs as none were designated in EnC Contracting Parties in compliance with Art. 4 CACM yet (full transposition of CACM Regulation missing in many CPs)

## Recommendations (continued)

	ACTION	WHEN	WHO
<b>6</b>	Make sure resources are available at the ENTSO-E and ACER levels for the market coupling of Ukraine	2025-2028	EU (ENTSO-E, ACER)
<b>7</b>	Provide flexibility on the Market Coupling Operator (MCO) Implementation Plan and preparation period, possibly shorten the foreseen 18-month period	2025-28	EU (DG ENER, DG ENEST, ACER, MCSC)
<b>8</b>	Address the conflicts between CBAM and electricity market coupling/trade	2025	EU (DG CLIMA, DG ENEST, DG TAXUD)
<b>9</b>	Use early adoption and early accession tools to progress on market coupling	2025-28	Ukraine and EU (several players)
<b>10</b>	Use an integrated approach on the Moldova-Ukraine market coupling.	2025-28	Ukraine, Moldova, EU (Ministries of Energy, Regulators, DG ENEST)