

Preserving the environmental integrity of the EU ETS (through a CO₂ minimum price)

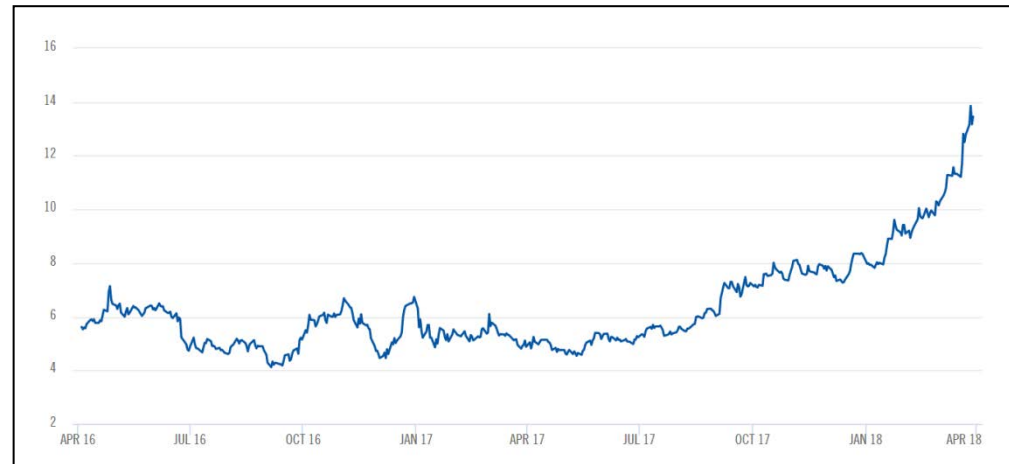
M. Pahle, D. Burtraw, C. Flachsland, O. Tietjen & O. Edenhofer

Strommarkttreffen „CO₂ Mindestpreis“

6. April 2018

Minimum price: An obsolete reform option?

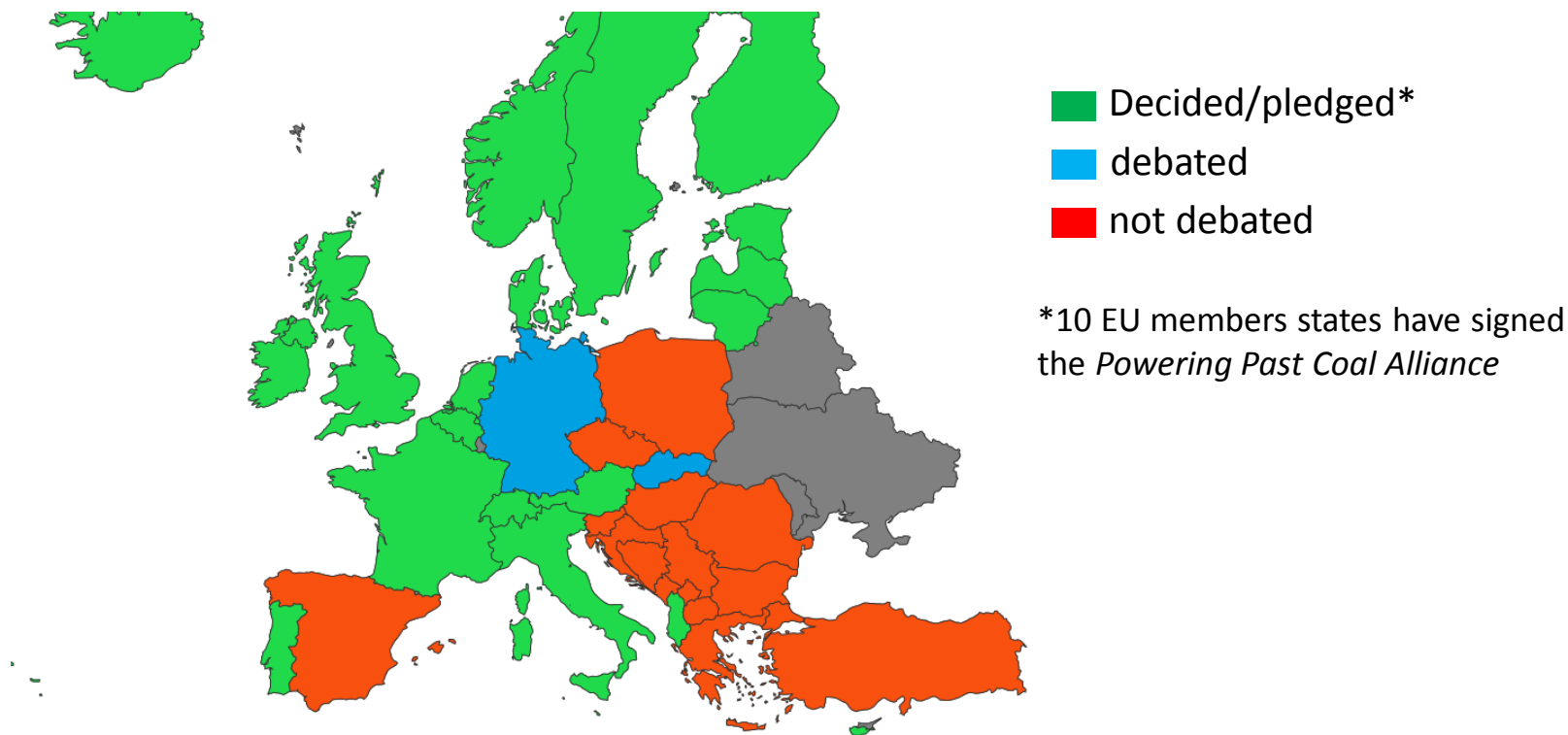
- Minimum price often understood as an option to fix the “ETS problem of too low prices”
- **Prices increases** in last months (ETS reform?) → not needed anymore?



Source:
ICE

- No! **Actual case** for min. price is to remedy (a) **regulatory uncertainty** and (b) **waterbed effect** (Edenhofer et al. 2017)
- Addressing (b) implies **preserving integrity**

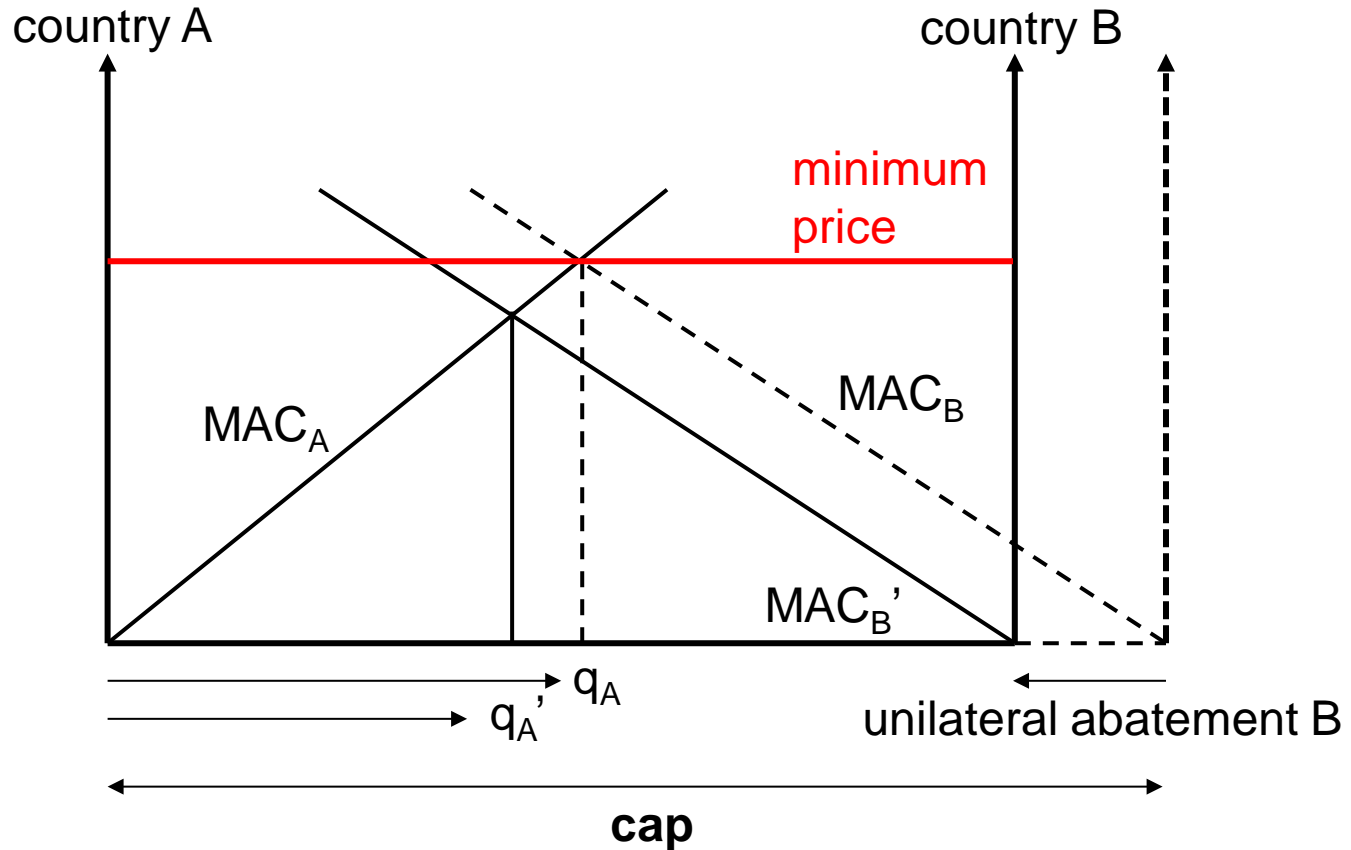
Coal phase-out plans in EU member states



Source: <https://beyond-coal.eu/>

- Additional mitigation from national measures would **blow up waterbed** in Eastern EU (net 2023 MSR cancellations)

Minimum price preserves integrity

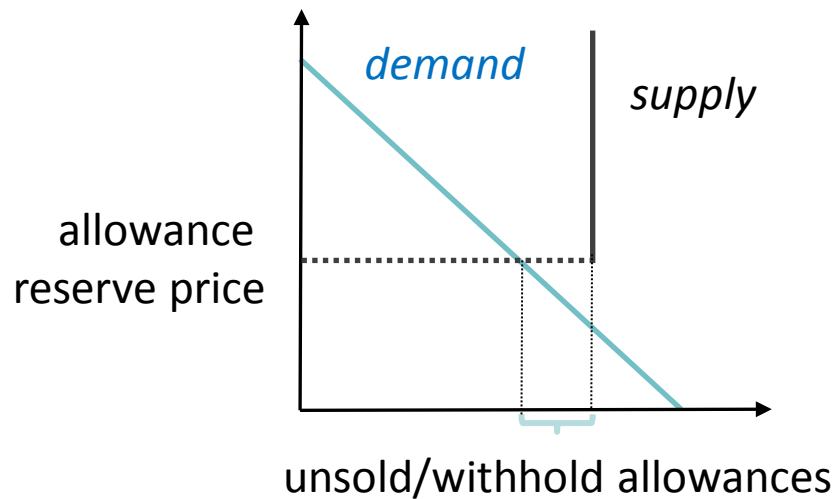


(binding) min. price **absorbs** potential reduction from q_A to q_A' !

→ **preserves integrity** (implicit definition)

Implementation through auction reserve price

- In a quantity-based system, price **control is indirect**
- By setting an **auction reserve price** (cp. CA cap-and-trade), regulators can withhold allowances until min. price is reached

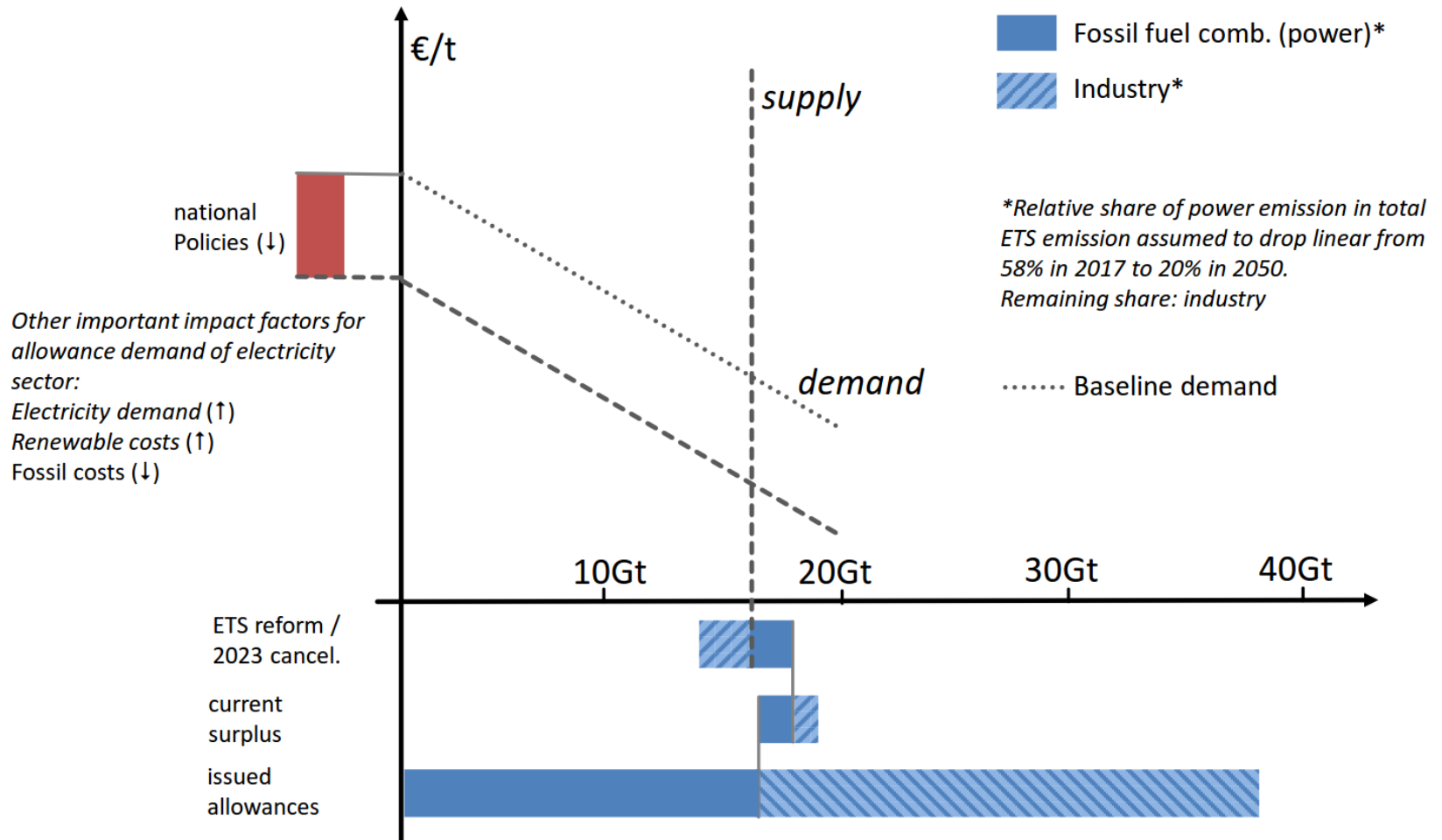


- Important questions:
 - 1) How **many allowances** need to be withheld to reach min. price?
 - 2) **Who** (EU, member states?) withholds and **pays for it**?

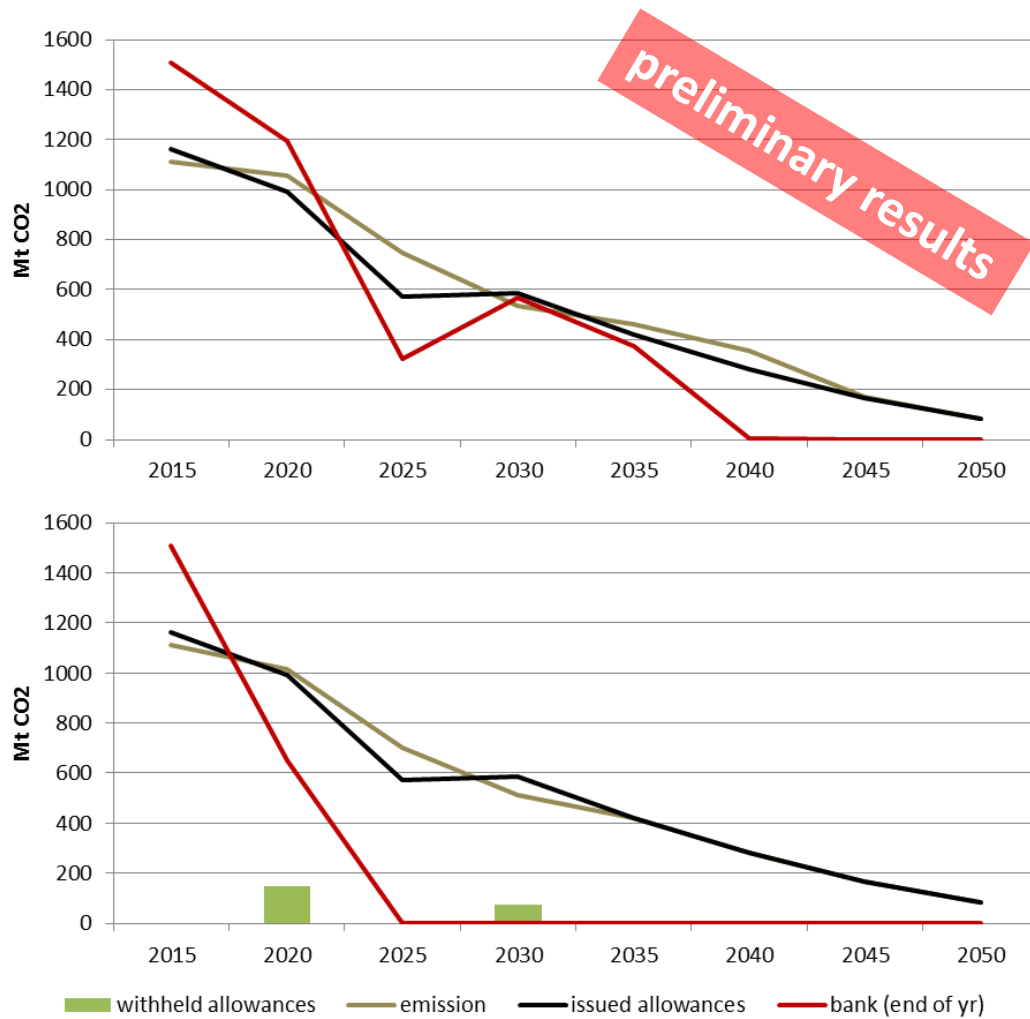
Method, scenarios & assumptions

- Method:
 - Analysis based on **power sector model LIMES-EU**; share of used allowances in **industry sector exogenous**
 - **Auction reserve price** implemented according to Fell et al. (2012)
- Scenarios:
 - **Baseline**: EU: 2030/2050 targets, member states: -80% r.t. 2010 by 2030 in *Powering Past Coal Alliance* signatories + SE & DE
 - **Policy**: min. price of 15 €/t in 2020, inc. 5%/a in subsequent years; auction reserve price implemented by PPCA signatories + SE & DE
- Main assumptions:
 - **10%** disc. rate -> prices lower in short term, higher in long term
 - **Cancellation of 2.000 Mt** from MSR in 2023 (ETS reform); actual quantity depends on national policies (Perino 2018)

Allowance supply & demand (2018-2052)



Emission & allowance trajectories



Baseline scenario:

- Kink in 2025 due to MSR cancellation
- Empty bank from 2040 on

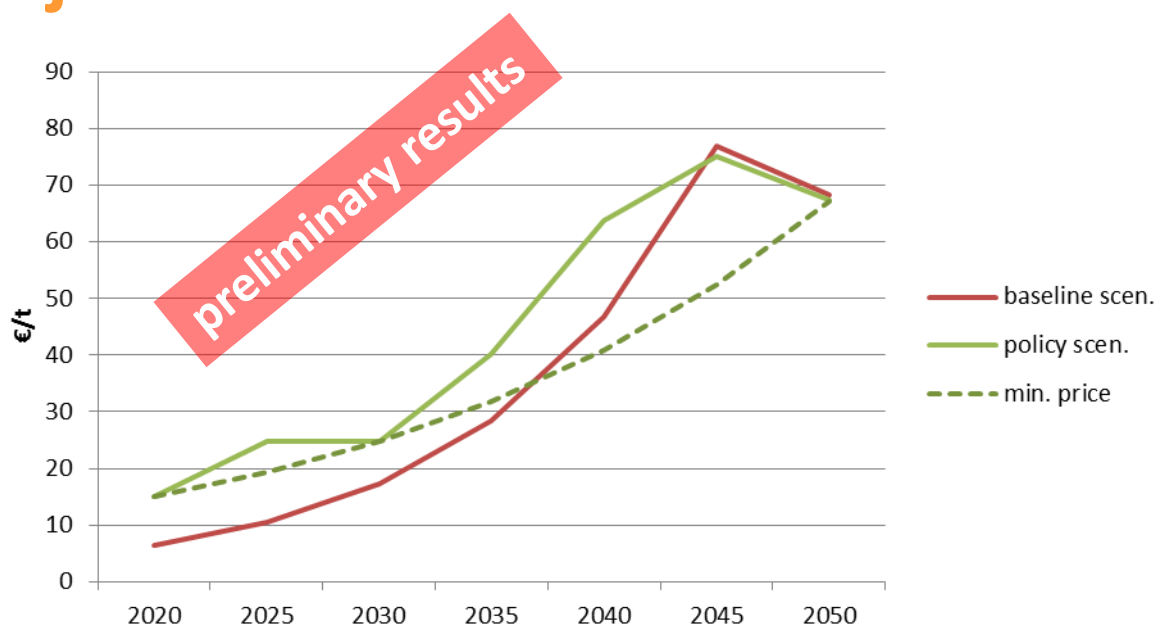
Policy scenario:

- ~750 Mt withheld allowances (2018-2022)
- Empty bank from 2025 on, MSR canc. “substitute” auction res. price
- ~375 Mt withheld allowances (2028-2032)

Comparison:

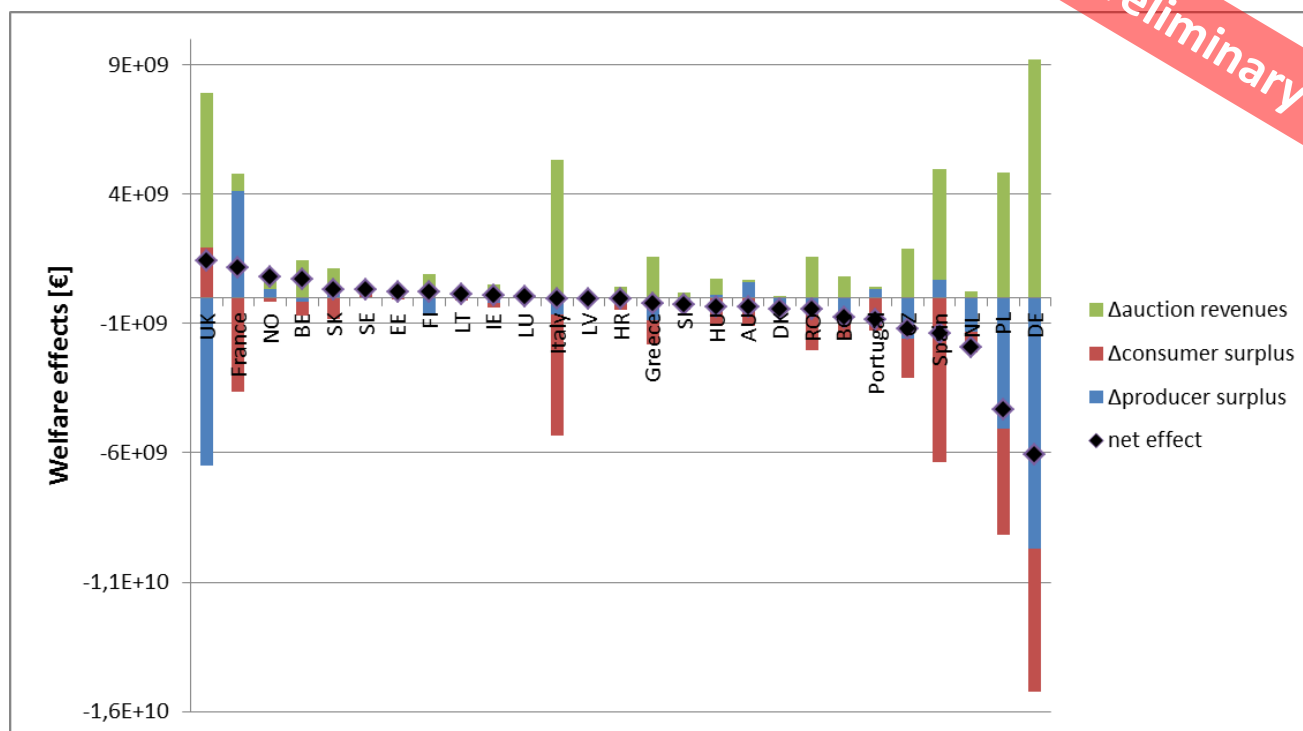
- **Difference** in emissions = withheld allow. (1.1 Gt)
- **Small differences** due to amb. baseline inc. ETS reform!

Price trajectories



- Minimum price binding in 2020 & 2030 -> **mid term measure** (if cap is not softened in the future!)
- Price in policy scenario starts on higher level, increases less steeply (in average) → higher **political feasibility?**
- **Largest difference** in prices (and emissions) in 2040

Welfare effects



preliminary results

- Net gains from auction revenues in all member states
- Producers lose in all countries except “clean countries” (FR,ES)
- Some winners, highest burden to be carried by PL and DE

Discussion & conclusion

- Minimum price can preserve the integrity by withholding “freed” allowances from unilateral action
- For analyzed price level, around 1.1 Gt are withheld in addition to MSR cancellations from 2023 onwards
 - Withheld allowances are assumed to be cancelled, but could also be injected back into market later on
- If costs of cancellation (foregone revenues) are shared between member states, everyone is a net winner in auction revenues
- Participation of Germany is crucial because of the high share of allowances apportioned for auctioning (22% of ~720 Mt)
- Additional compensation for “net losers” (Poland) might be needed to bring them on board, but magnitude is small