

EU ETS Reform:

« Partial » carbon price floor(s) and the market stability reserve

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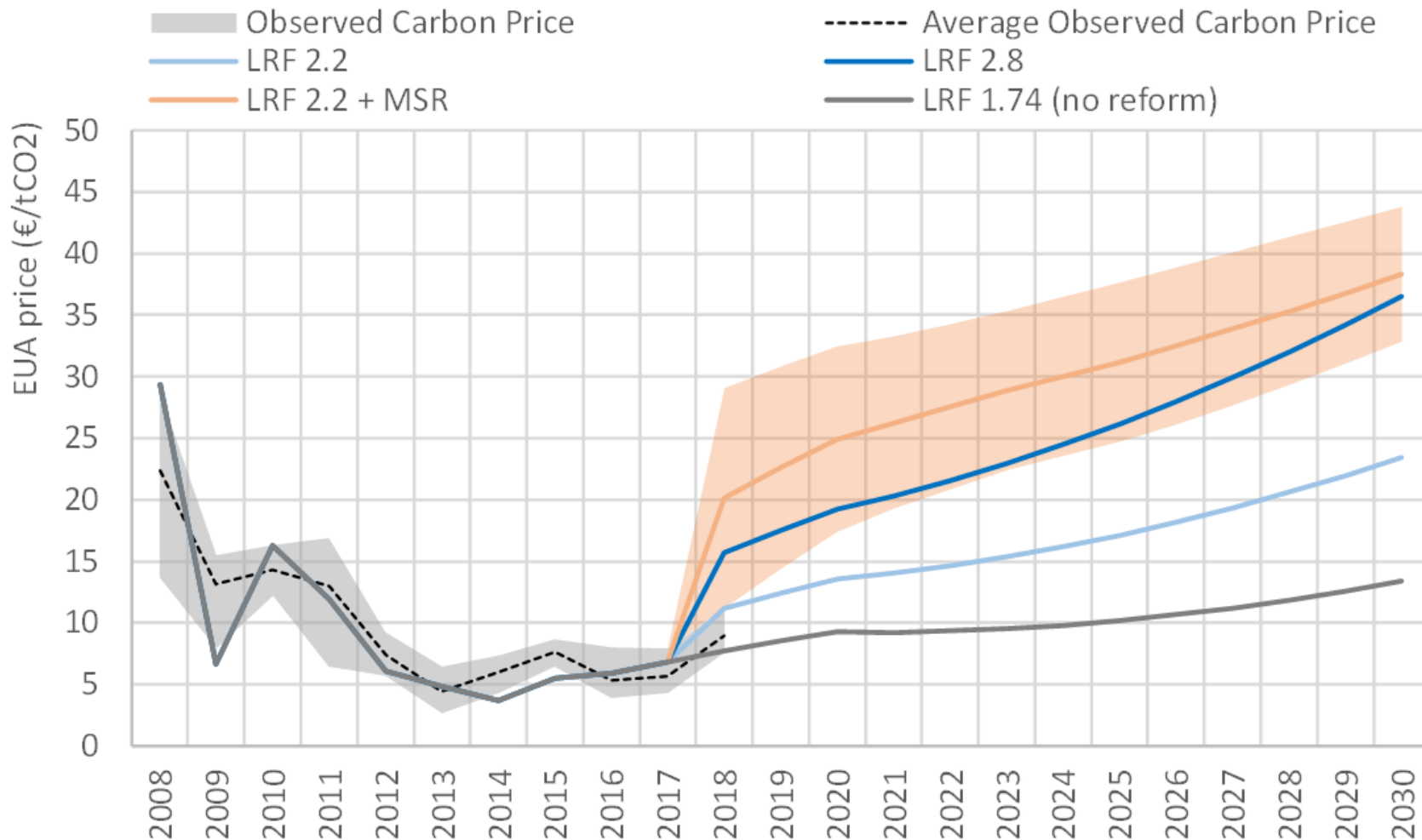
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Based on work with Anouk Faure, Boris Solier and Christian de Perthuis

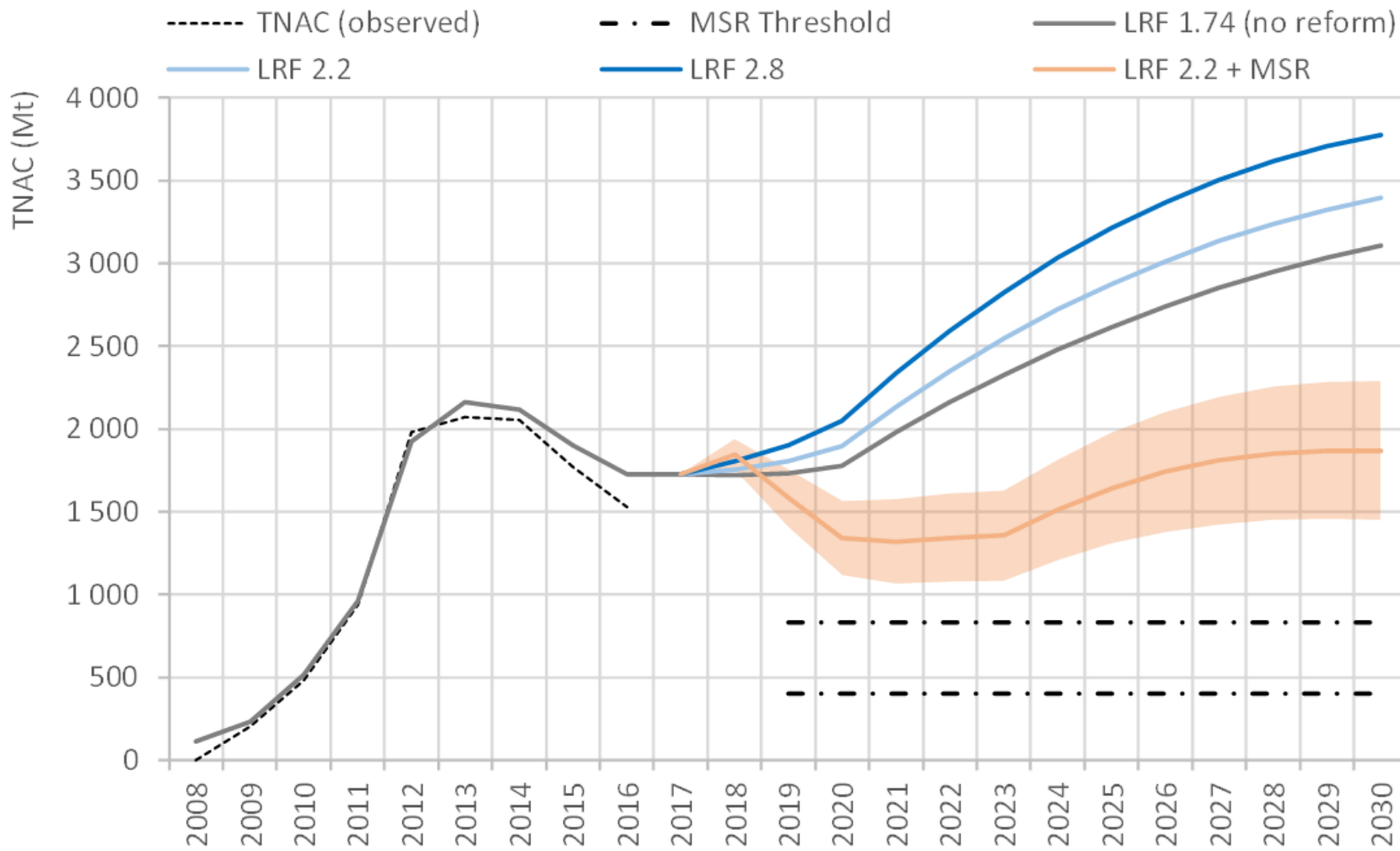
- **Adopted policy package contains 3 provisions to raise ambition**
 - Increase in LRF & MSR implementation & invalidation of some EUAs in MSR
- **ZEPHYR: Stylized modelling of the EU-ETS with inter-temporal cost minimization in discrete time for a representative agent**
- **Determination of EUA price, emission and banking paths**
 - Comparison of relative impacts of alternative market design features

MSR-induced impact on EUA price



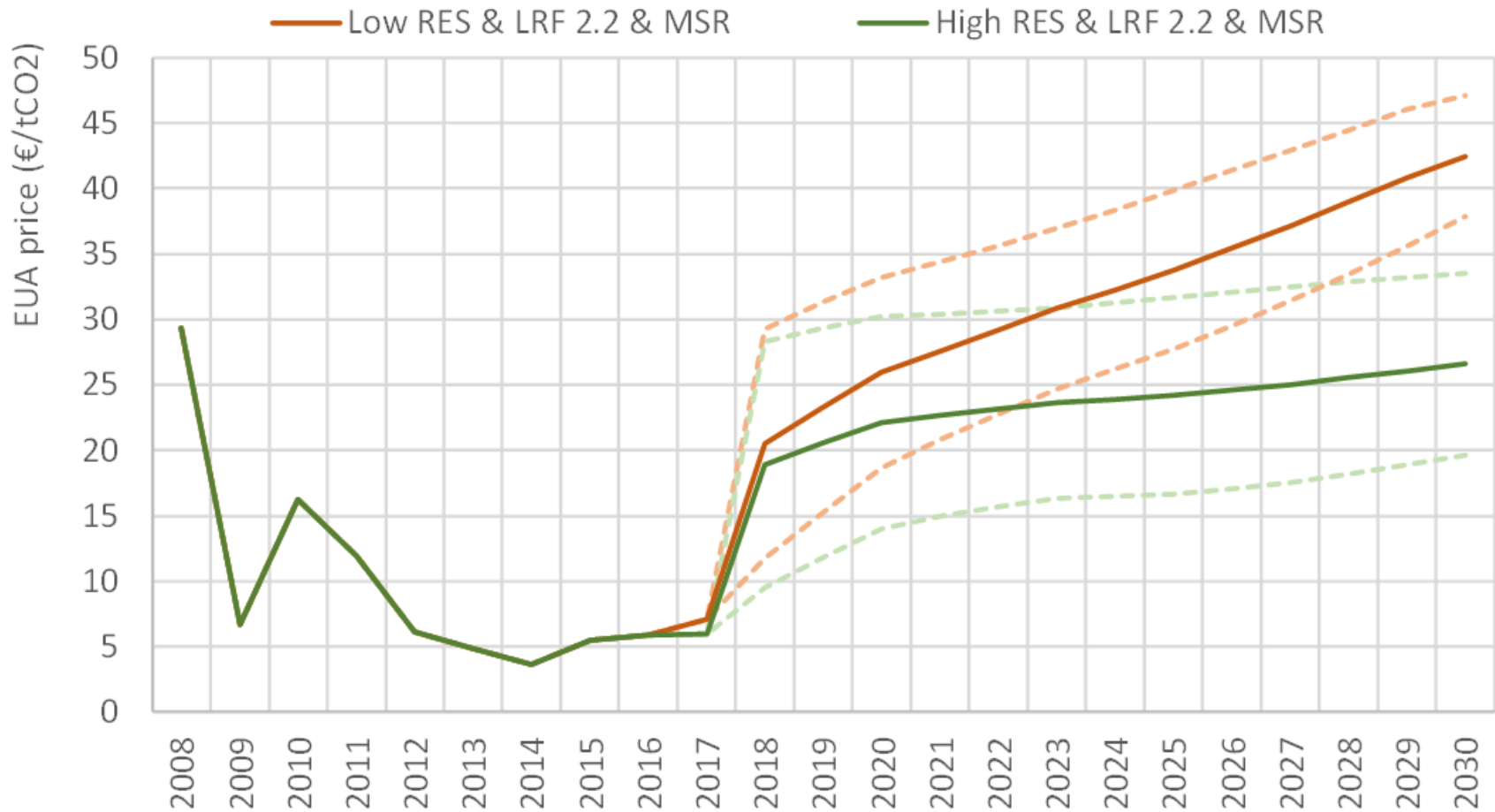
- The MSR withholds EUAs which reduces supply and increases EUA prices

MSR-induced impact on TNAC



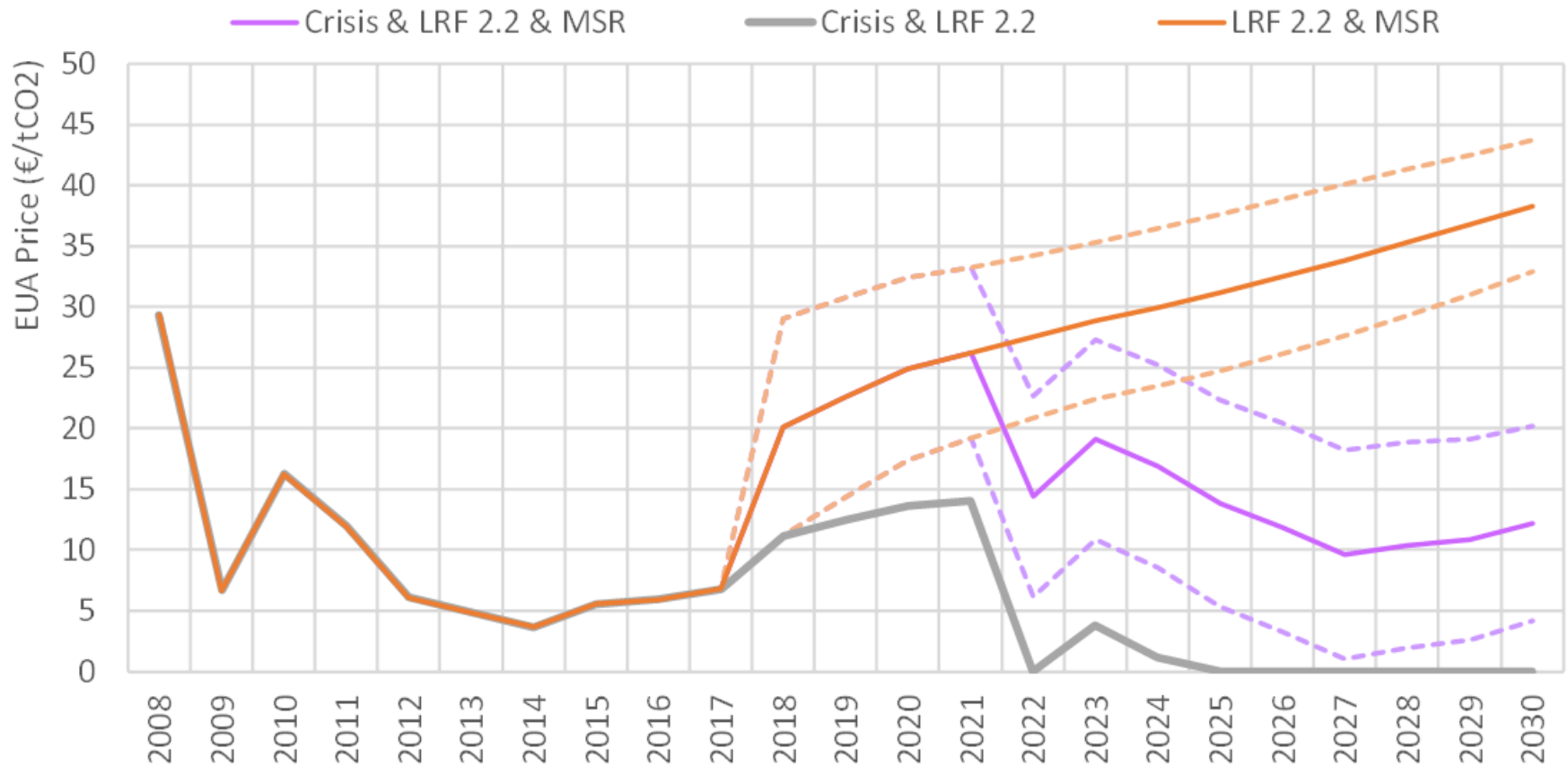
- The MSR withholds EUAs which reduces the banking volume

Testing the MSR's stabilizing capacity (1/2)



- Limited potential to control for sustained differences in EUA demand

Testing the MSR's stabilizing capacity (2/2)



- Limited responsiveness in smoothing out short-term demand shocks

Complementing the MSR with a price floor?

- **Although the MSR increases the EUA price and reduces TNAC**
 - it exhibits a limited demand shock smoothing out potential
 - and does not solve the governance issue (the amounts of EUA automatically removed from circulation are not directly linked to evaluations of policy interactions nor explicit carbon price targets)
- **Room for considering additional supply-side control tools**
 - Solution 1: EU-wide price floor (all sectors) e.g. auction reserve price
 - Solution 2: Coalition-wide price floor(s). Waterbed issue?

Analysis of a unilateral carbon price floor

- Study performed in 2015-2016 to evaluate the effect of a **30€/t unilateral carbon price floor imposed by France on domestic electricity sector emissions** (Canfin-Grandjean-Mestrallet Commission)
- Using the **Zephyr-Electricity model** (short term dispatch)
 - combination of available generating technologies enabling electricity demand to be met at least cost on an hourly basis over a given year
 - given hourly available capacities, and hourly fuel and CO₂ prices
 - Representation of interconnection capacities in the form of « border technologies » to which marginal costs are assigned.
 - Outputs are electricity mix composition, electricity prices, and CO₂ emissions.
- **Effect on the EU ETS** by introducing the lesser demand for EUAs from electricity plants in the Zephyr model market equilibrium

The case of France in 2017: results

- A €30/tCO₂ floor price raises the cost of domestic thermal power generation and leads to, at unchanged demand, a **fall in production in favour of imports**.
 - An increase of **€2.6 to €3.4 in the price per MWh** in the wholesale market as an annual average;
 - A **reduction in domestic emissions of 3.5 to 10 MtCO₂** depending on relative prices of coal and gas, and an **increase in import-related emissions of 3.7 to 6.2 MtCO₂**;
 - Limited substitution from domestic coal-fired to gas power plants due to cross-border trade.
 - The **impact of the measure on the equilibrium of the EU ETS would be small** because of the limited weight of French electricity sector emissions (around -0.5€/tCO₂)

The case of an EU wide electricity sector floor

- A European floor price of €30/tCO₂ improves the competitiveness of the French low-carbon electricity sector, which **reduces imports to the benefit of production**.
 - An **€11.6 increase in the price per MWh**
 - **Little change in domestic emissions** (with increased use of gas power plants and small decline in coal-fired plants) and a **decline in import-related emissions**;
 - The **European electricity sector reduces its emissions by 125 MtCO₂ a year**. Without adjusting the EU ETS cap, the **price of EUA drops to zero for the non-electricity sector** “waterbed effect”);
 - The **MSR is not able to prevent the price drop for the other sectors** : It only absorbs 12% of additional induced surplus each year (60 Mt removed in 2020 against 500 Mt reduced emissions over 2017-2020)

Key messages

- Emissions reductions induced by a higher carbon price on any sub-perimeter already in the ETS **can make the carbon price drop to zero for the other sectors (waterbed effect)**
- To « preserve » the market from this effect, one should **identify, quantify, and remove from the effective cap** the corresponding quantities of EUAs in a frequent, reactive, and transparent way (**major governance issue**)
- This preliminary analysis suggested that the **MSR would not be able to play this « protection » role.**
- Nevertheless, the **MSR can be used as a cancellation mechanism**, e.g. if an auction reserve price is implemented and the allowances removed from the market this way are placed in the MSR