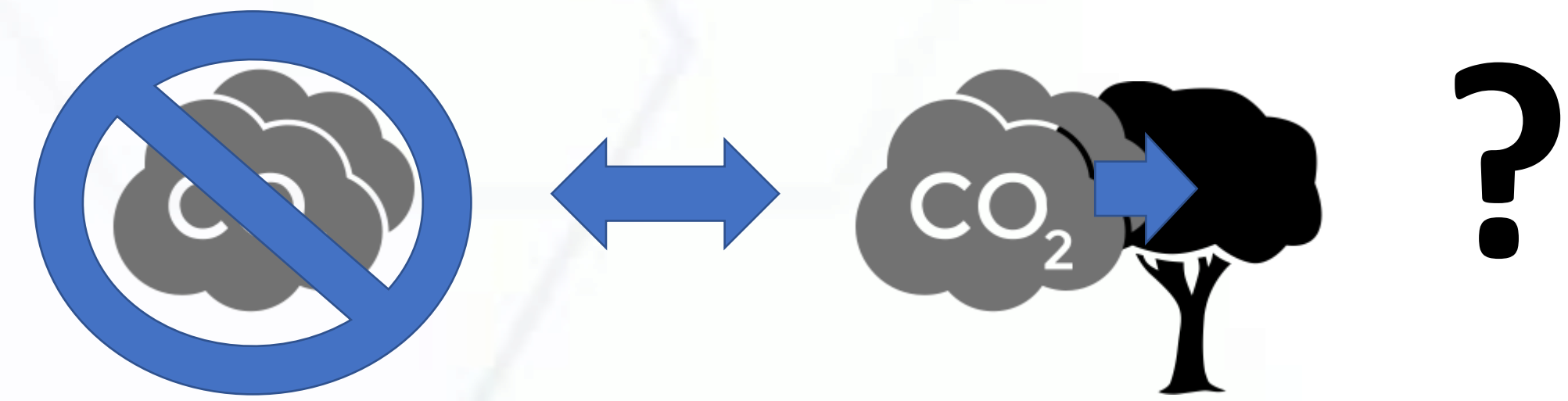


Preliminary economic observations

CDR is a **positive externality** and a **public good**. Governmental intervention is needed to **internalize the benefits** of CDR. For example, through tax exemptions, carbon markets, or subsidies.

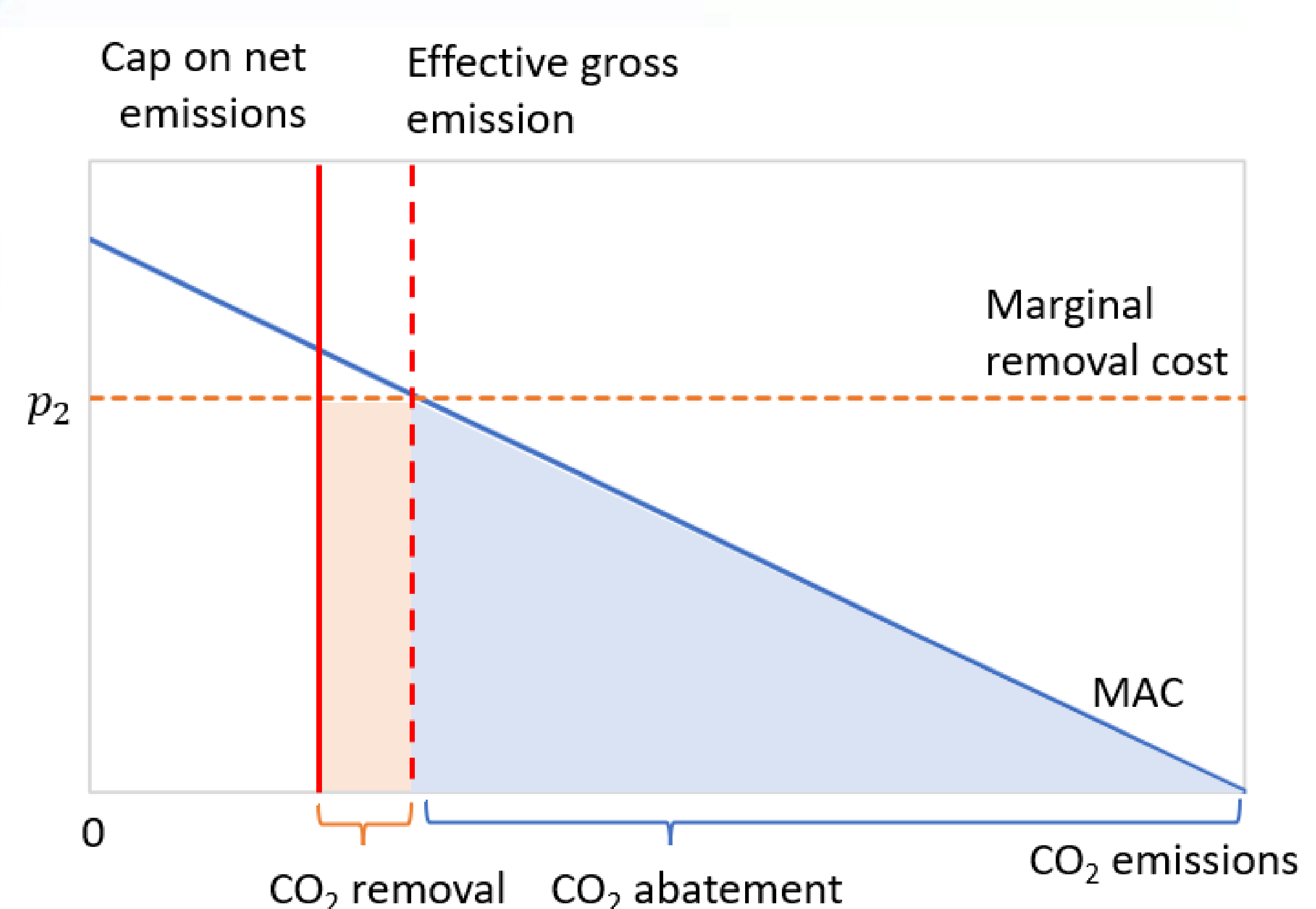
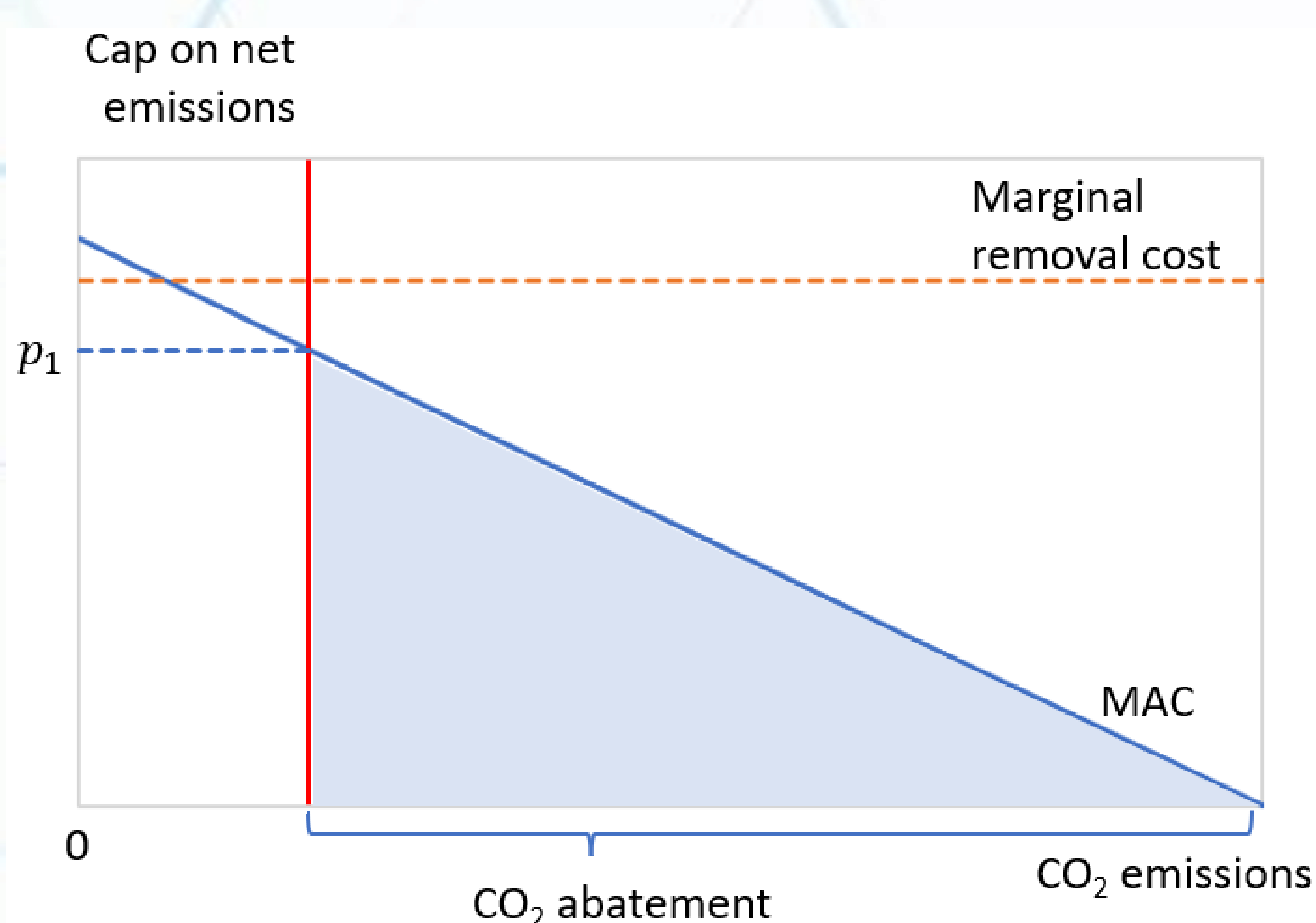
Equivalence: a central assumption

In climate policy, removing CO₂ from the atmosphere is often assumed to be equivalent to not emitting CO₂ in the first place.



From an economist point of view, CDR should be priced at the same level as CO₂

For example, CDR credits could be integrated in the EU ETS¹



Problem 1: The equivalency does not always stand

Few CDR methods allow for permanent storage (BECCS, DACCS, EW). → **“Temporary” CDR credits²** for CDR methods with a shorter CO₂ storage timescale could be a solution. Besides, some of these CDR methods can rely on co-benefits.

Problem 2: “Permanent” CDR methods are not competitive yet

But it makes sense to invest early to harness economies of scale and learning effects. → **Public subsidies³** could complement the carbon market (e.g., through reverse auctions⁴). But to what extent?

Problem 3: Reaching net-negative CO₂

What will we do when gross emissions surpass negative emissions? Who will pay for CDR credits? → **A carbon debt⁵** could be allocated for each ton of CO₂ emitted. The "principal" is then only repaid when the company removes an equivalent amount of CO₂ from the atmosphere.

Coordinating the deployment of CDR

My doctoral work focuses on the need for coordination in addressing CDR challenges. For example, I worked on the integration (and possible exclusion) of BECCS in CO₂ infrastructure projects.



1. Rickels, W., Proelß, A., Geden, O., Burhenne, J. & Fridahl, M. Integrating Carbon Dioxide Removal Into European Emissions Trading. *3*, 1–10 (2021).
2. Rickels, W., Rehdanz, K. & Oschlies, A. Methods for greenhouse gas offset accounting: A case study of ocean iron fertilization. *Ecol. Econ.* **69**, 2495–2509 (2010).
3. Cox, E. & Edwards, N. R. Beyond carbon pricing: policy levers for negative emissions technologies. *Clim. Policy* **19**, 1144–1156 (2019).
4. Lundberg, L. & Fridahl, M. The missing piece in policy for carbon dioxide removal: reverse auctions as an interim solution. *Discov. Energy* **2**, 3 (2022).
5. Bednar, J. *et al.* Operationalizing the net-negative carbon economy. *Nature* **596**, 377–383 (2021).