

The role of financing on investments in innovative low carbon technologies

Carbon contracts and up-front public co-funding

Jörn Richstein

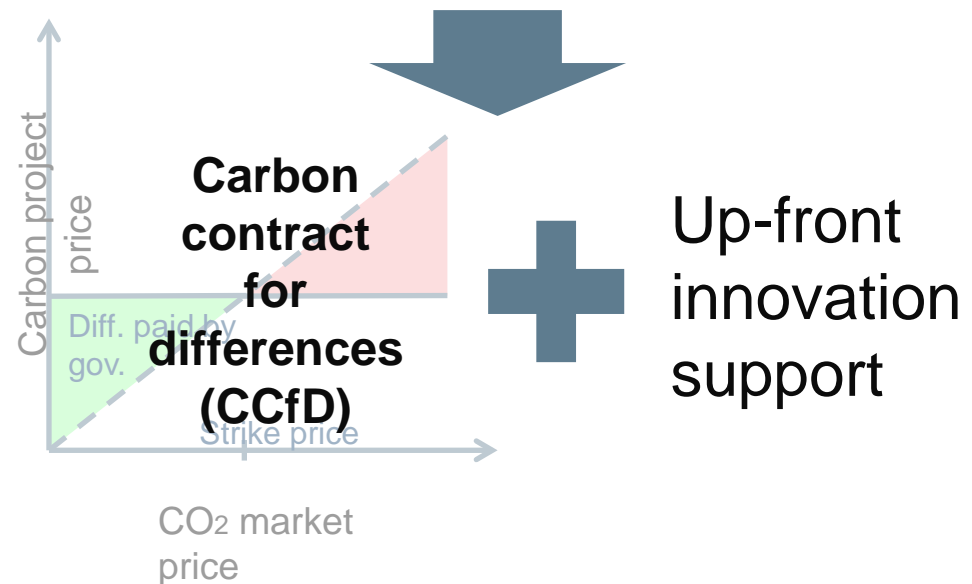
Workshop on “Policies to stimulate climate friendly innovation in the materials sector”, Berlin 20th October

Why?

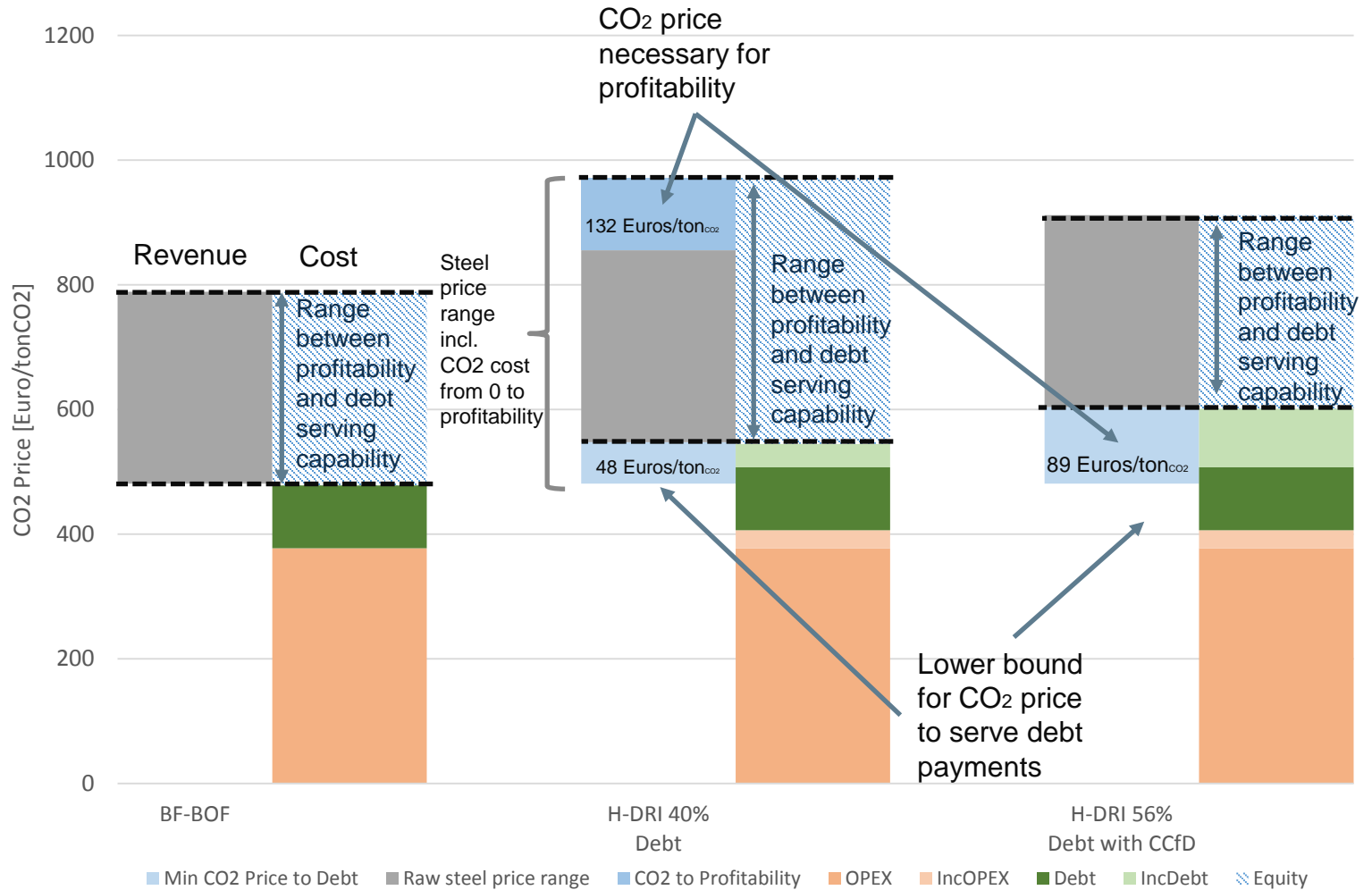
- Projects face “valley of death” once they successfully leave the pilot project phase (Zipperer et. al., 2016)
- Innovation funds are often limited in size when leaving the pilot phase and entering the demonstration phase
- Financing of increasing scale pilot projects, and commercial climate friendly projects is challenging

Criteria

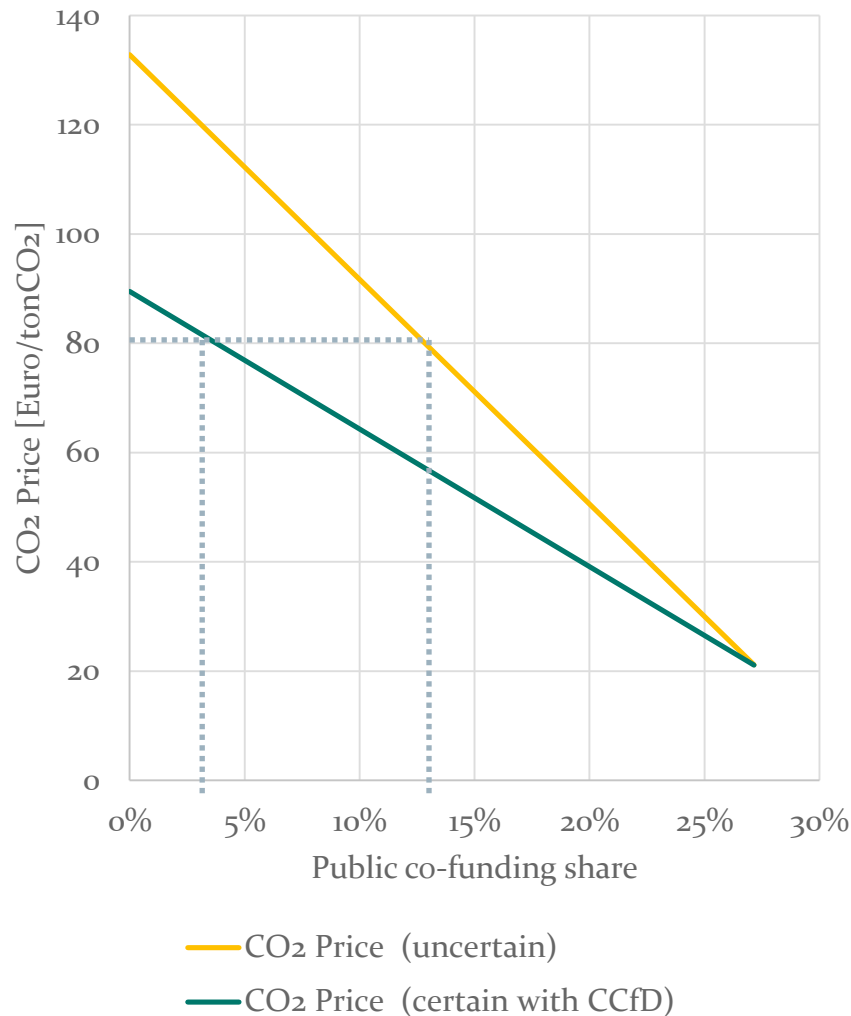
- Lower capital costs
- Incentivize success ($\text{CO}_2 \searrow$)
- While not disentivizing the necessary technological risk to create innovation



CCfD only – Higher debt share lowers financing cost, but needs more secure cash flows



Combination of up-front co-funding and carbon contracts



- Comparing different levels of public co-funding and carbon prices
 - Debt and co-funding jointly cover incremental investment cost
- Lowering risk via CCfDs can substantially lower financing costs and the amount for public co-funding

Vielen Dank für Ihre Aufmerksamkeit.



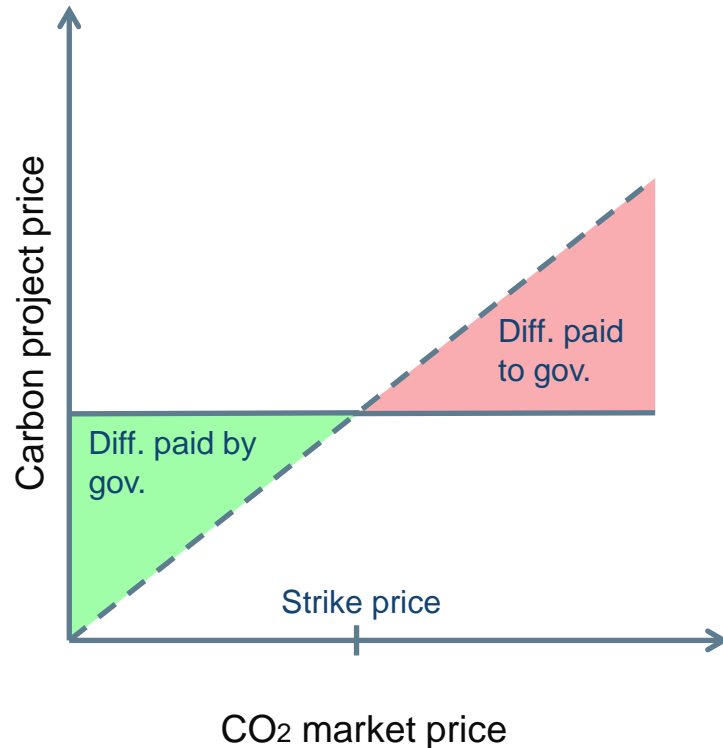
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Backup



Backup

Implementation option: Project based carbon contract for differences (CCfD)

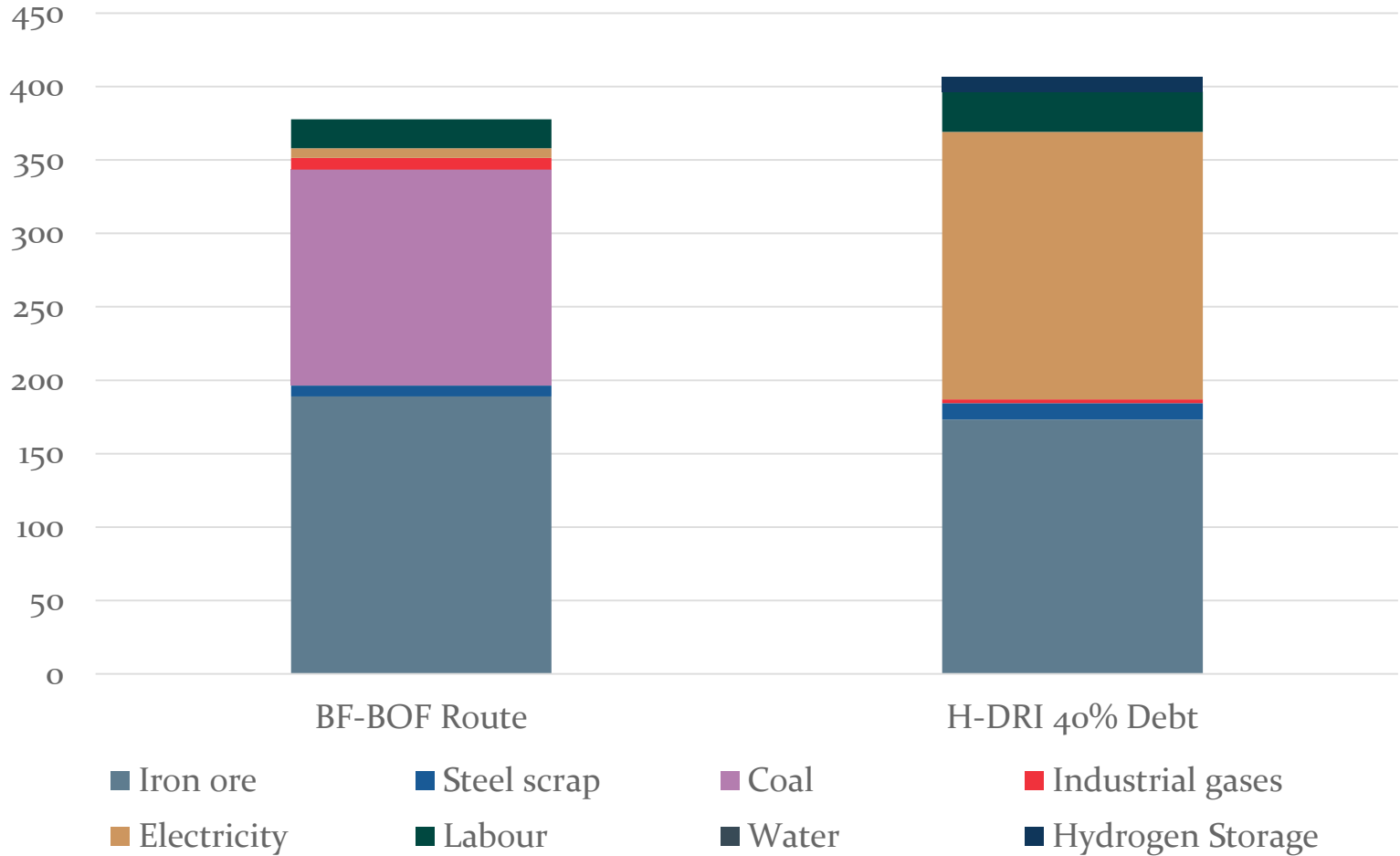


- Adv.:
- As carbon price increases CfD gets in the money for government
- Reduces finance costs for companies
- Design considerations
- Allocation to project would need to be fully dynamic (otherwise failure would be incentivized)
- CfDs would need to be tied to identifiable EUAs allocated to the project (otherwise could be sold independent from project success)
- Counter parties are national governments that are interested in keeping sustainable industries
- Selection on
 - strike price (and on volume and/ duration?)
 - Co-funding level

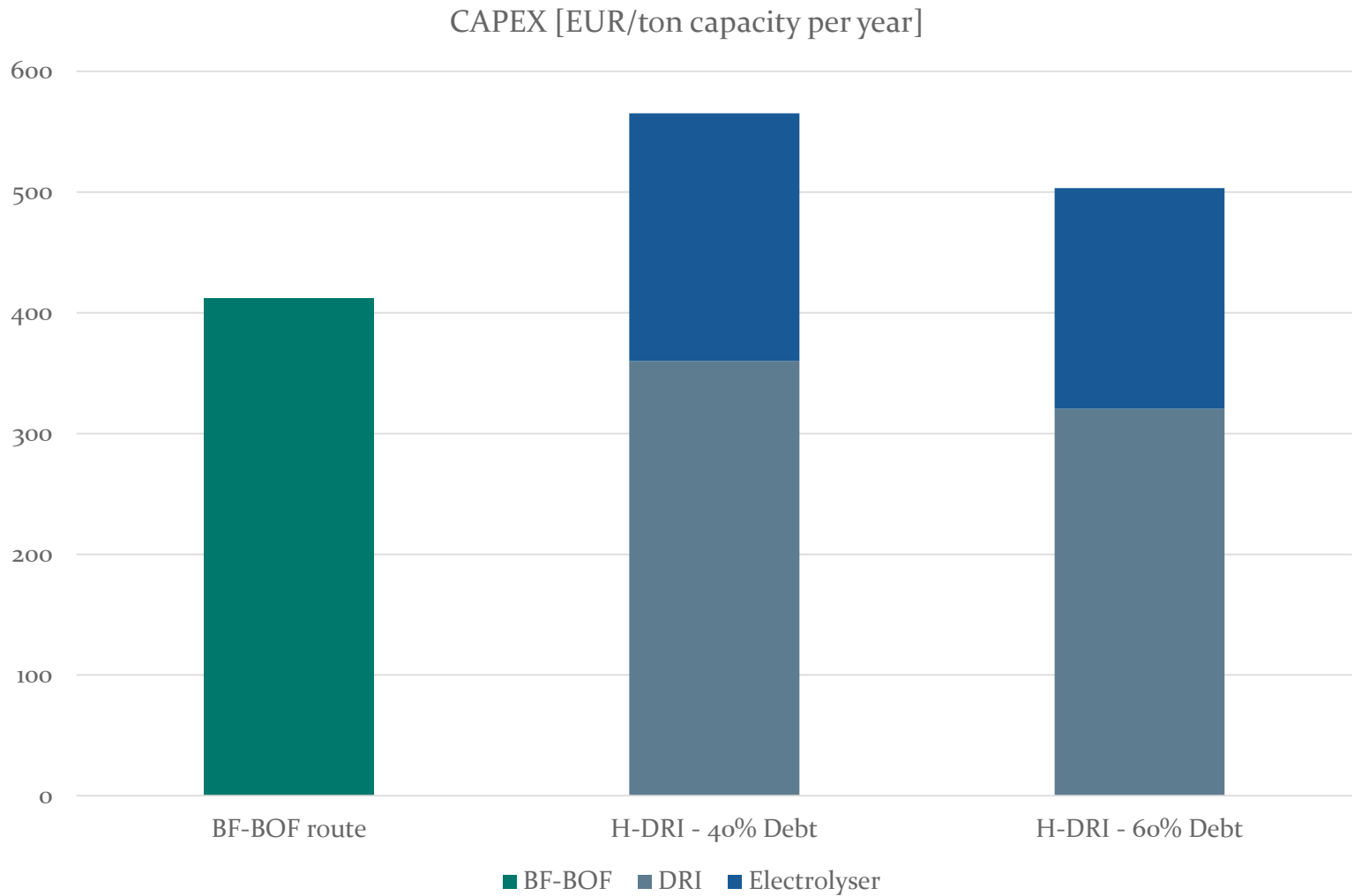
OPEX assumptions

Euro/ton Steel

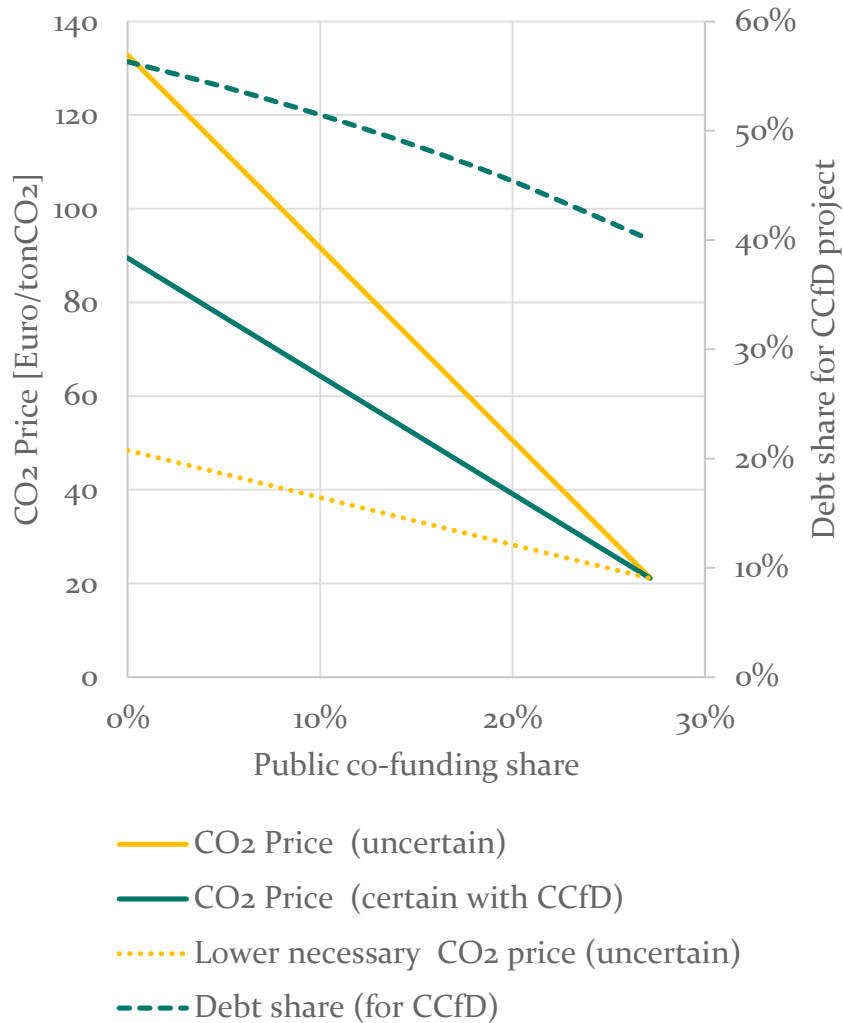
OPEX



CAPEX assumptions (with cost reductions for electrolyzers in coming 10 years)



Combination of up-front co-funding and carbon contracts



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