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Project-based carbon contracts

A research plan

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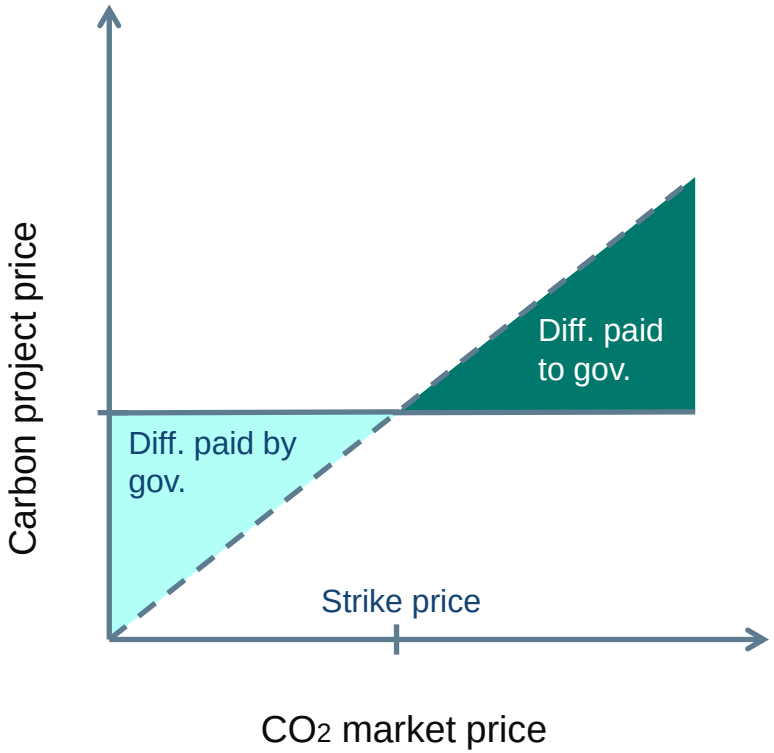
Why carbon contracts for innovative projects?

- Carbon friendly material projects typically require higher investment and potentially higher operational cost.
- Large uncertainty about the trajectory of the CO_2 price
  - (i) can put at risk the operation of technologies with incremental operational costs and
  - (ii) diminish the contribution of such savings to the refinancing of investment cost.
- EU ETS risk not purely market, but also policy risk (Helm and Hepburn, 2005)
- =>Financing of increasing scale pilot projects, and commercial climate friendly projects is challenging
- Reducing financing costs reduces also required innovation support

Contract for differences based on EU ETS price

- As carbon price increases CfD gets in the money for government
- Reduces finance costs for companies
- Allocation would need to be fully dynamic (otherwise perverse incentives).

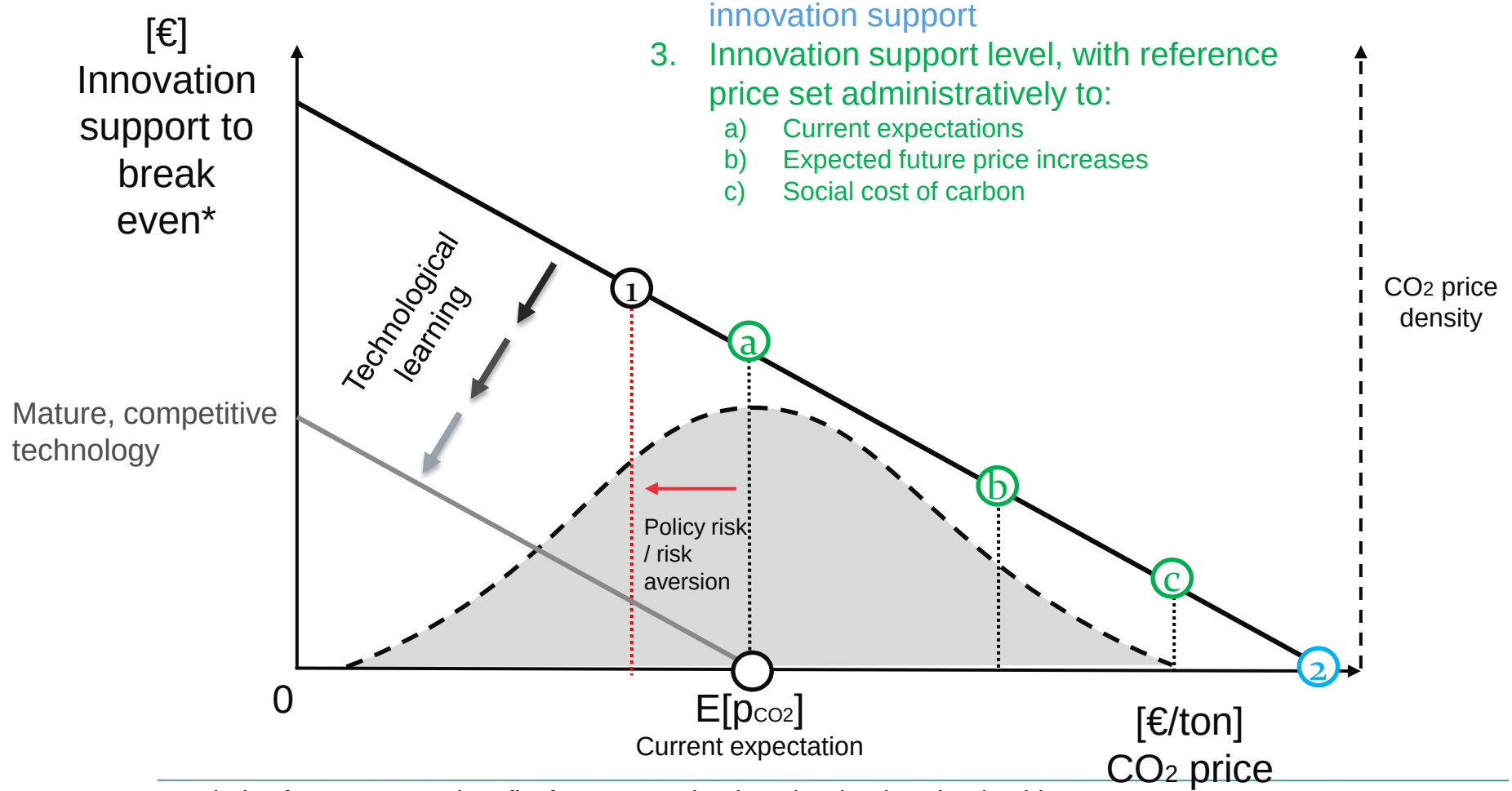


Design considerations

- Qualification for recipients of CCfDs, an ex-ante assessment needs to confirm a sufficiently deep emission reduction.
- Counter parties are national governments that are interested in keeping sustainable industries
- Selection based on competitive bidding on
  - Reference price (and volume and/ duration?)
  - Innovation support level, with reference price set administratively to:
    - Current expectations
    - Expected future price increases
    - Social cost of carbon
    - Include a mark-up for innovative

Design considerations: not your standard CfD

1. Innovation support level with no carbon contract
2. Bidding on reference price only, no innovation support
3. Innovation support level, with reference price set administratively to:
   a) Current expectations
   b) Expected future price increases
   c) Social cost of carbon



* Includes future expected profits from est. technology / technology leadership

Design considerations: open questions

- How is technological risk shared between the market parties (NER300 inhibited projects by demanding innovation support back in case of failure)
- CfD for a fixed emission reduction volume difficult: over-underachievement of target the probable norm. How flexible does the contract need to be?
- What is the benchmark baseline for the carbon contract? Do special provisions need to exist for changing benchmarks in the lifetime of the contract?
- Is the concept extendible to innovations on the demand side?

Areas of research and next steps

- Small analytical model
- Regulatory analysis
- Numerical evaluation (Cash-flow)

Thank you for your attention.

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Editor

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