

Carbon Contracts for Difference – Too many open questions for implementation?

This paper explores the open questions which require answering before carbon contracts for difference (CCfDs) are widely adopted as tool in the larger climate policy framework. Given the variety of potential negative implications and different design options of this subsidy, EEX considers that a dedicated impact assessment is justified before adoption.

We question whether CCfDs are the right subsidy instrument, yet not whether or to what extent certain industries require subsidies such as investment support, tax relief or any other form of direct payment in order to be able to considerably reduce their CO₂ emissions.

In the below, we highlight a number of open questions on the potentially harmful interaction between CCfDs and the EU ETS, and, CCfDs and the broader climate policy framework. Important, we ask for an impact assessment and provide a first indication of how CCfDs may be designed with an eye to keep any negative interference to a minimum.

1. Introduction: Understanding CCfDs

Carbon contracts for difference are advocated for as an instrument to further incentivise and commercialise the decarbonisation of high-emitting industrial sectors. However, at the same time, their design and impact are often not well understood or are disregarded in policy discussions.

The price level of European Emission Allowances (EUAs) is deemed not sufficiently high or sufficiently stable for low-carbon technologies with higher to be competitive compared to similar more carbon-intensive technologies with lower costs. The investment and operating costs for reducing emissions are higher than the value of the current CO₂ price. A CCfD offers assurance about the future trajectory of the carbon price in the form of a fixed price per ton of emissions avoided compared to an industrial benchmark.

With a CCfD, the difference between the actual EUA price and the perceived competitive price level (or “strike price”) is compensated by public funding. The ideal strike price differs between and within industrial sectors. It needs to be determined on an individual basis for each project, considering e.g. fixed costs and production costs.¹ A price of €80/tCO₂ was recently allocated to a large-scale CCS project in the Netherlands, prices for green hydrogen are noted between €55-90/tCO₂.² In comparison, the current EU ETS price lays around €60. This would mean, for example, that if calculated at this moment, the Dutch CCS project would be paid €20 per ton of CO₂ abated. If the EUA price is equal or higher than the strike price, no difference is paid out that year or a cashback is required by the recipients to public budgets.³

The EU ETS is the leading instrument for Europe’s climate protection and ensures that the carbon reduction targets are reached in the most cost-efficient manner. The price of EUAs is freely determined by the market while initial supply declines in a linear trajectory. Thereby, the EU ETS price signal is seen as the leading investment signal for low carbon technologies. As decarbonisation

¹ Page 26, https://irees.de/wp-content/uploads/2021/04/Konzeptstudie-Klimaschutzvertraege-fuer-die-Industrie_IREEES_ISI_OeKO.pdf

² Port of Rotterdam [\[link\]](#), European Commission Hydrogen Strategy [\[link\]](#), Energia [\[link\]](#)

³ 15 September 2021

needs to take place across all economic sectors, the single carbon price signal is also pivotal for the required sector integration.

Introducing CCfDs as public funding linked to the EUA price raises the questions how that will impact the EU ETS and whether their interaction could have negative implications on the functioning of the EUA markets. CCfDs are broadly discussed within different legislative initiatives on European and national levels.⁴ However, an impact assessment on the interaction of CCfDs with the EU ETS or the larger impact of CCfDs on climate policy and climate financing is missing so far.

2. CCfDs and the EU ETS: Negative interference

2.1 Reducing the efficiency and liquidity of the EU ETS markets

High-emitting industrial sectors require a strong carbon price for green innovative technologies to become cost-competitive compared to more polluting technologies already available at scale. However, industrial market participants benefiting from CCfDs would have a reduced need for acting/hedging on the secondary carbon market, leading to reduced liquidity and thus less efficient price-formation.

This is especially relevant when considering that the carbon intensive industrial sectors will increasingly become the drivers for EUA prices as was the case for the power sector in the previous decade. The decarbonisation of the industrial sectors will be increasingly targeted by the EU ETS meaning that the secondary markets will cater to increased industrial hedging.⁵

By guaranteeing a future carbon price, entities benefitting from CCfDs are virtually taken out of the EU ETS hedging markets, weakening the EUA price signal while the same price signal is needed as underlying for the industry's or entity's CCfD.

The EU ETS market depends on an ecosystem of actors with diverging hedging and trading needs. A CCfD aims to bridge the current price level and the desired strike price level. However, by taking even one industry out of the market, this moment could be artificially delayed or could less efficiently represent the true market situation thereby unnecessarily prolonging the use of public budgets.

2.2 Undermining cost-efficient emission reductions

Downward pressure on EUA market volumes might lead to the need for adjustments of ETS parameters such as the overall cap and/or linear reduction factor. While emissions may decrease at project level, the overall cap will not. This will rather lead to freeing up EUAs, which will then be bought and used by other emitters in Europe. More money than necessary is spent, and EU-wide emissions did not decrease. Most critically, this is a fundamental contradiction with the objective of the EU ETS "to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner"⁶.

⁴ The EU ETS review proposal mentions CCfDs as potential tool to expand the Innovation Fund. [\[link\]](#) The Netherlands supports large-scale CCS project with CCfD. [\[link\]](#) The German federal Ministry of Environment announced a pilot scheme for CCfDs in 2021 for industrial-scale production facilities. Germany noted that such a scheme will first require EU state aid approval. [\[link\]](#)

⁵ ERCST, EU ETS: fit for 55 presentation [\[link\]](#)

⁶ Article 1 Directive 2008/87/EC (ETS Directive)

Second, the question of the relationship with the other EU ETS parameters arises. Such as the Market Stability Reserve (MSR) or free allowances and the benchmark methodology. If free allocation applies in addition to CCfDs, the situation occurs that projects can sell the allowances they have been granted for free, again, potentially leading to a waterbed effect.⁷

Finally, the European Commission puts CCfDs forward as a potential new tool under the Innovation Fund. However, we believe the Innovation Fund would be an especially impractical source of budget for the allocation of CCfDs. When prices of EUAs go down, the resources of the Innovation Fund decrease accordingly while the necessary pay-out for CCfDs makes the exact opposite movement.

2.3 Weakening of the EU ETS price as trusted investment signal

The EU ETS has developed over the last one and a half decade to a robust and mature instruments for climate action and the global standard for well-functioning emissions trading systems. One should be careful about intervening in the efficient market functioning of the EU ETS as this could undermine the credibility of the system as such.

Even more so, for beneficiaries of CCfDs, the lower the carbon price, the more public funding they will receive – completely nullifying the use function of the EU ETS price signal as economic and financial decisions driver. The opposite reasoning can be thought of for the regulators. CCfDs could lead to positive government revenue in periods with high carbon prices.⁸ Both incentives raise questions about the possible biased interests of different actors to reach certain price levels.

3. CCfDs and climate policy: Transfer of risks

3.1 Undue transfer of risks to public authorities

Publicly backed CCfDs unnecessarily and fully transfer risks to the government entity behind, whereas the EUA derivatives markets exist exactly for this purpose. As financial backer, governments would bear the risks of ETS price variability and a potential cost increase from a lack of external pressure to be most cost-efficient.⁹

In addition to this, it may be extremely difficult for public bodies to identify a single methodology that allows to calculate both emission and cost reductions in a fair way across technologies and sectors. Some industrial sectors can be much more economically decarbonised than others and it may prove difficult to prove which low-carbon products can be substitutes for more carbon intensive existing technologies.¹⁰ Existing examples show the complexity and time-consuming nature of this process.¹¹

For example, competitive bidding processes which run across multiple industries may magnify the risk of underbidding but will enhance overall efficiency. However, some industries may be likely to achieve higher decarbonisation than others because of technologies with lower costs to achieve CO₂

⁷ Policy brief, Climate Friendly Materials Platform [\[link\]](#)

⁸ The Project CFM TRACTION report shows how CCfDs can limit government exposure and even lead to positive government revenue in periods with high carbon prices. [\[link\]](#) The EEAG revision support study explains how ultimately, governments may have financial incentives to raise ETS prices to avoid the financial risk of even turn the CCfD into a revenue generating entity. [\[link\]](#)

⁹ EEAG revision support study explains the risks government take upon themselves rather than the markets [\[link\]](#)

¹⁰ EEAG revision support study [\[link\]](#)

¹¹ For example, the Hinkley Point project. After years of negotiations, discussions still go on whether the strike price is too high/low

reductions than others.¹² This way, the decision on which allocation method to opt for will be a trade-off between cost-efficiency and a cross-sectoral level-playing field. On the other hand, both these aspects are already inherently achieved via the EU ETS.

A third risk for public schemes is the fact that they are allocated to projects to cover costs across the next years to even decades. Given the rapidly changing price of EUAs and difficulty to predict the exact future price level, it proves complex and nearly impossible to anticipate and reserve the exact number of public budgets, hence, making the overall budgeting process less efficient.

Finally, also the interaction with existing policies should be considered. Doubly subsidisation and sub-optimal use of public funds should be avoided. For example, hydrogen projects where an industrial plant receives both CCfDs and subsidized green hydrogen as a fuel.¹³ The same counts for a potential future Carbon Border Adjustment Mechanism.

3.2 An unequal level playing field

CCfDs could imply an unequal playing field between industrial companies or sectors. Companies benefiting from CCfDs would not be subject to the EU ETS price signal in the same manner as companies not benefiting from CCfDs. This could lead to a situation where non-beneficiaries of CCfDs have dual disadvantage by not benefiting from the CCfDs and, additionally, are financing the state funding of CCfDs via the EU ETS. For example, compliance companies buying EUAs in the primary auction of which auction revenues are dedicated to public budgets.

Second, differentiating approaches across member states or generally different reference prices could generate unfair advantages to industries located in certain member states. For EU member states who decided to introduce an additional tax on top of EU ETS prices e.g. Netherlands, it is unclear what the reference price would be; the artificial national carbon price or the EUA price.

4. Call for a least harmful support scheme

4.1 Alternatives for CCfDs

Foremost, we want to highlight that several alternatives are already available. For example, investment grants situated outside of the carbon market can be used to promote investments in new technologies without interfering with the functioning of the EU ETS. As investment aid lowers the risk of market distortions compared to operating aid and is easier to phase out, support schemes should ideally be designed as a form of direct payment or tax relief.

¹² EEAG revision support study [\[link\]](#) However, this study does not assess in detail how subsidy design should take into account the impact on competition stressing that there is no literature yet that deals with this topic.

¹³ For example, in Germany it is currently discussed to introduce a CfD to cover the gap between the import price for hydrogen and the actual sell price (H2global project). The reason for that is that in the beginning the production costs for H2 will be higher than hydrogen consumers are willing to pay as this would cause a competitive disadvantage for them. In consequence that would mean that companies receiving a CCfDs for changing their mode of production would also receive subsidized hydrogen. The question would be whether that is justifiable. Compared to companies not receiving a CCfD they might have the competitive advantage to make cheaper bids for buying hydrogen.

In addition, the European Commission's "Fit for 55" Package presents a first concrete step to strengthen the EU ETS and its price signal while also aligning the European energy taxation framework to the climate goals. Agreement amongst the European Institutions on the increased 2030 emissions target again strengthened price forecasts of various analysts. There seems to be a strong consensus that the price will continue to trend upward.¹⁴ The question arises whether the discussion around a persistent low carbon price has now become a debate of the past.

4.2 The design of CCfDs in a least market-intrusive manner

Following the above considerations, it is likely that both the policy process leading to the potential introduction of CCfDs as well as the eventual design of the instruments will contain considerable ambiguities. At the very least, we consider that the below design elements should be taken into account when CCfDs are to be introduced:

- **A pre-determined budget:** The public budget required to be set aside for the implementation of CCfDs is by definition uncertain. To maximise efficiency in the budgeting process and ensure no large sums are left unallocated, a pre-determined overall limit should be a first prerequisite. This counts both for the overall subsidy scheme as for the individually allocated contracts. Any payment of the price difference should cease once the total budget has been allocated. This approach encourages most cost-efficient bids from industrial entities who would have a reduced incentive to ask for unduly high support where the market could be utilised instead. A strictly pre-defined overall budget will also ensure any negative effects on the EU ETS markets are restricted and predictability is at its maximum. Critically, this approach also limits the transfer of risks to the government behind which is inherent to this type of subsidy scheme.
- **A pre-determined scope:** In terms of scope, a CCfD scheme should have a trial phase with limited sectoral participation and a pre-determined and clear expiry date.
- **A European framework:** There should be clear rules on European level which set the framework for CCfDs. This avoids diverging national implementation leading to an uneven playing field for industry. For example, the use of competitive tenders would provide the most standardised and transparent allocation method and has a proven track-record. Ideally, these would occur at European level. Clear standards and verification methods must also be set at European level.
- **Carefully considered reference price:** The reference price for CCfDs should be carefully considered and in best case be market-neutral in their impact. An impact assessment should be provided by the Commission or relevant implementing authority on the decision between for example auction prices compared to long term derivative prices.
- **Consider the carbon price development:** Higher CO₂-prices might make CCfDs redundant. The European Commission's own impact assessment on the EU ETS review proposal refers to two outdated studies which mention a carbon price of "at least 50-60 EUR" in order for a

¹⁴ 2021 State of the EU ETS Report, ERCST [link]

number of low-carbon materials to be competitive and thus for CCfDs to become obsolete.¹⁵ This shows again clearly that as a first step, the current and projected EU ETS price trajectory should be seriously taken into account in a new impact assessment. Finally, CCfD pilot projects should monitor the impact it has on the EU ETS and carbon markets, carbon prices and trading behaviour.

5. Conclusion

Taking into account the above open concerns and available alternatives, an impact assessment on interactions between CCfDs, the EU ETS markets and public budgeting risks should ideally precede its implementation at scale.

After close examination, if CCfDs are considered to be a valuable tool for decarbonisation, we argue for a least market-intrusive design including a pre-defined and strict budget within a European framework.

About EEX

The European Energy Exchange (EEX) is the leading energy exchange which builds secure, successful and sustainable commodity markets worldwide. As part of EEX Group, a group of companies serving international commodity markets, it offers contracts on Power, Natural Gas and Emission Allowances as well as Freight and Agricultural Products. EEX is involved in the EU ETS through its appointment as the Common Auction Platform for 25 EU Member States, as well as the Opt-out Platform for Germany and conducting auctions for Poland, and as a secondary trading platform for emission allowances. Beyond Europe, EEX actively supports emissions market developments in China and New Zealand in collaboration with local partners in addition to EEX Group's Nodal Exchange wide offering of products for the North American environmental markets.

Contact

Daniel Wragge
Director Political & Regulatory Affairs
daniel.wragge@eex.com

Ellen De Vocht
Political & Regulatory Affairs Officer
ellen.devocht@eex.com

¹⁵ Footnote 46 and 47 of the Impact Assessment accompanying the EU ETS review proposal refer to the 2019 impact assessment accompanying the Delegated Regulation on the Innovation Fund [link] and the 2019 IDDRI study on decarbonizing basic materials in Europe [link]. Both refer to carbon prices of around 60 EUR/ton for the studied clean technologies to be competitive.