

# Reflection note on Carbon Contracts for Difference (CCfD)

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## Table of Contents

<b>1. State of Play and preliminary remarks .....</b>	<b>3</b>
<b>2. Main differences between CCfDs and CfDs .....</b>	<b>4</b>
<b>3. The rationale behind CCfDs.....</b>	<b>5</b>
<b>4. Design elements.....</b>	<b>5</b>
<b>5. Financing .....</b>	<b>6</b>
<b>6. Lessons learnt across Europe .....</b>	<b>7</b>
a) SED ++ in the Netherlands .....	7
b) German Klimaschutzverträge .....	7
c) The UK.....	8

## Acknowledgements:

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We would like to thank the colleagues and network partners that volunteered time and effort contributing to enhance the quality and variety of perspectives of this publication.

## Reflection note on Carbon Contracts for Difference (CCfD)

### 1. State of Play and preliminary remarks

Carbon Contracts for difference (CCfDs) have been discussed as one of the most promising alternatives for the decarbonization of certain parts of the EU Industry. However, key questions regarding the suitability and implementation of this instrument remain unanswered. Among these questions, a relevant one is whether CCfDs should be designed as a targeted instrument, to be applied as a tool to foster the uptake of innovative sector specific technologies or if otherwise should be designed as a broader tool, to encourage the transformation of entire sectors or industries.

As part of the Fit for 55 package the European Commission proposed specific amendments to the Innovation Fund. Concretely, in the revision of the EU-ETS Directive<sup>1</sup> presented on July 14<sup>th</sup> the Commission proposed to extend the scope of the Innovation Fund allowing it to provide support through competitive tendering mechanisms such as CCfDs, whereby up to 100% of the relevant costs of the projects may be supported.

There is a broad consensus in the EU to speed up decarbonization and reinforce the system through which carbon pricing delivers the biggest chunk of emission reductions. Certain low-carbon technologies require a high carbon price and currently EU ETS prices are not yet high enough to trigger this switch in hard-to-abate sectors. This can be partially explained by the fact that the ETS price signal first gives an incentive to deploy solutions that are already close to the market or undergo certain fuel-switching. The EU ETS is designed to stimulate the lowest-cost emission reductions first, and its price signal therefore is less likely to directly support pre-commercial demonstration of promising technologies.<sup>2</sup>

Even though carbon prices are not high enough, this should not necessarily translate in public coffers shouldering an undefined financial burden for an indetermined period. This risks to translate into an increase of Member States intervention in markets and even more worryingly into a transfer of risk from industry to Member States. Apart from that, the impact that such an instrument may have on the EU-ETS is not clear and analyzed sufficiently enough, which should serve as a caveat against a rushed implementation.<sup>3</sup>

ERCST is also of two minds on this instrument. It recognizes the realities and the direction of travel that is currently in place with respect to decarbonization and the need for support for industry, if we want to decarbonize and not deindustrialize. Many stakeholders see CCfDs as

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<sup>1</sup> European Commission 2021, Proposal for the Revision of the EU-ETS Directive. Proposed amendment Art. 10a

<sup>2</sup> Jos Delbeke and Peter Vis 2015, EU Climate Policy Explained.

<sup>3</sup> EEX 2021, Carbon Contracts for Difference – Too many open questions for implementation?

a good way to incentivize industrial decarbonization after the significant amount of resources that the power sector was provided to decarbonize.

On the other hand, it seems that we have put in place a market in the EU ETS whose aim is high prices. Logically we should hope not for high prices but for funding ways to achieve low prices. Markets are supposed to provide the most efficient way to meet a scarcity and aiming for increasing prices does not seem to fit the bill.

This is a contradiction that needs to be highlighted and reflected upon. It will need to be addressed at a minimum in the design of CCfDs, including its scope and its timing.

This reflection note which draws upon input received during previous roundtable on this topic will address the following discussion issues:

- Main differences between CfDs and CCfDs.
- The rationale behind CCfDs: where is the EU heading with this instrument? CCfDs should be assessed within the framework of the EU green deal and the sustainable finance agenda.
- The different design options for CCfDs, should CCfDs be seen as a targeted instrument to foster the uptake of innovative sector specific technologies or should CCfDs be seen instead as a transformational tool for entire industries?
- The financing of CCfDs.
- Some European examples The Netherlands, Germany and the UK.

## 2. Main differences between CCfDs and CfDs

CfDs have been frequently portrayed as a relevant inspiration source for CCfDs. Albeit this may be true, it is important at this point to note, not only some key differences between CfDs and CCfDs but also the different nature of the respective sectors to which these two instruments apply.

First, CCfDs are being discussed within the framework of industrial decarbonization, while CfDs have been mainly employed in the context of power decarbonization. While this may seem obvious, it needs to be highlighted that profound differences exist between the power and industrial sectors such as steel, cement or chemicals, not just when it comes to revenue streams but also when it comes to technologies or end-products. As an example, while renewable business cases are characterized by lower operational expenditures and higher capital investments, the level of operational expenditures in other industrial sectors is much higher.

Regarding the main difference between CCfDs and CfDs, the latter offers a wider coverage of the investment revenue streams, while CCfDs only address the carbon revenue stream, which does not mean in any case that industry is free from paying the carbon price.<sup>4</sup>

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<sup>4</sup> Carbon Contracts for Differences (2020), their role in European industrial decarbonization. [\(See more\)](#)

## 3. The rationale behind CCfDs

The EU-ETS is the most important pillar of the EU environmental policy mix, effectively addressing the externality on pollution. However, current EUA prices are not triggering the switch to less carbon intensive technologies. To allow for low and zero carbon technologies to compete with cheaper “high carbon” alternatives policies which complement and reinforce the role of carbon pricing are needed.

Another important element when assessing the rationale behind CCfDs is the carbon lock-in, that is the risk for specific carbon-intensive technological solutions to persist over time. This is especially relevant considering that a considerable share of cement, steel and steam cracker plants in the EU-27 will require major investments by 2030.<sup>5</sup>

Some non-exclusive solutions have already been proposed such as: the EU taxonomy, CBAM, the revision of the state aid guidelines for energy and climate, tax incentives, increase and reallocation of ETS revenues etc. Despite all these efforts, even when considering all these instruments and measures combined, further financial efforts will have to be made in some industries, especially during the transition.

## 4. Design elements

CCfDs could be seen as a customizable instrument, that could be adapted to the circumstances of different Member States, sectors or even technologies.

Below, a brief and non-exhaustive overview of different building components of a CCfDs scheme, its alternatives and combining possibilities whose interaction may carry different consequences in terms of for instance, compliance with state aid rules.

Breaking down the different elements for CCfDs							
Design	Parties	Object of Aid, Strike Price	ETS Price	Time Frame	Allocation Process	Alternatives to CCfDs	Combining possibilities
Project specific	- <b>Public side:</b> Government	- Investment costs		-5	-Competitive bidding process	- Carbon Price Floor	- CBAM
Sector Specific		- Operating costs		-10 -15 -20		- CBAM + Export Rebates	- Other hedging Instruments
Product specific	- <b>Private side:</b>				- Direct award		
Technology specific	Companies, Consortia, SPV (Project Finance)	- Capital Expenditure			- Grants	- Consumption based Charges	- Other EU / National funding instruments
Preserving national vs. international competitiveness		- Free allocation				- Public Procurement	
						- CfDs	

<sup>5</sup> Agora Energiewende 2020, A clean industry package for the EU. [\(See more\)](#)

Financing is one of the most debated issues in the context of assessing the adequacy of this instrument, not just from a State Aid perspective, but also from the perspective of public resources expenditure vs. companies' resources expenditure. Concerning the latter, and depending on EUA price levels, CCfDs may represent a burden on public resources or a levy on companies or consumers. As an example, if EUA prices raise beyond a defined strike price, companies and not Member States will have to pay the delta.

Another relevant issue is the uncertainty this instrument creates when it comes to financial and budgetary planning for both companies and Member States. As it is extremely difficult to assess where EUA prices will exactly be in the future, it is also very complex to allocate a determined budget for a CCfDs scheme, thus increasing budgetary uncertainty on both companies and public institutions.

On the positive side, CCfDs represent an instrument that will increase bankability and financing of projects. On bankability, CCfDs would hedge against fluctuations on EUA prices, reducing the risk attached to the carbon revenue stream and increasing financing capabilities. Overall financing conditions may also be improved by increasing certainty of cash flows, which in turn allows the project to increase the debt relative to equity in a project finance structure. However, it should be recalled that EUA derivatives already exist hedging against carbon price volatility and avoiding at the same time a transfer of risk to Member States.

The question of affordability is also relevant, namely how much CCfDs will cost for Member States. According to calculations<sup>6</sup> a large EU Member State representing 20% of the total EU market for primary crude steel and Portland cement would need up to EUR 1.32 billion per year for primary steel, and up to EUR 500 million per year for cement to convert 50% of its national production capacity to innovative low-carbon alternatives.

Another study performed by Bruegel, which uses a wider approach, concludes that an EU - wide CCfDs fund focusing only on industrial sectors, may distribute between EUR 3 and EUR 6 billion per year<sup>7</sup>. These figures are on the one side, rather modest when compared for example with the yearly budgetary expenditure for common agricultural policy (CAP) payments or the renewable electricity support in the EU, but significant on the other hand in light of the amounts disbursed by the innovation fund in 2021.

Finally, another hotly debated issue is whether CCfDs should be awarded at a Member State level or through an EU-level mechanism, with each option having different implications.

Some stakeholders expressed a preference for national solutions, arguing that an EU-wide mechanism would probably require long negotiation periods which are incompatible with the

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<sup>6</sup> Agora Energiewende 2021, A clean industry Package for the EU ([See more](#))

<sup>7</sup> Bruegel, Commercialization contracts, European support for low-carbon technology deployment ([See more](#))

urgency of putting such a mechanism in place. However other voices highlighted the advantages of an EU-level mechanism, such as less exposure to state aid constraints, an increased solidarity between member states or an increased competition among different players or even technologies in European auctions. It is also worth mentioning that if not correctly designed, different approaches across member states may lead to different reference prices and in turn, generate unfair advantages to industries located in specific member states.

## 6. Lessons learnt across Europe

### a) SED ++ in the Netherlands

SED ++ is a subsidy scheme adopted by the Netherlands as a follow up of the Stimulation of Sustainable Energy Production scheme (SED +). SED ++ has been conceived as operating subsidy and will operate from 2020 until 2025, granting support not only to renewable energy production but also to other low-carbon technologies such as low-carbon H<sub>2</sub> and CCS.

The SED ++ defines a very similar support scheme to CCfD for low-carbon technologies where the subsidy is calculated by multiplying the maximum annual tonnes of CO<sub>2</sub> avoidance by the difference between the maximum application amount and the ETS price.

An example of real-life applicability of the Dutch version of CCfDs is the Porthos project<sup>8</sup> in the Netherlands, which includes capture units connected to a 20 km offshore pipeline to a platform in the North Sea for CO<sub>2</sub> storage in offshore empty gas fields.

### b) German Klimaschutzverträge

Germany announced, as part of its National Hydrogen Strategy, the launch of a new pilot project (Klimaschutzverträge) targeted mostly for the steel and chemical industries through which the Federal Government would guarantee funding amounting to the difference between the actual cost of avoiding emissions and ETS prices.

The BMU (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit) unveiled more details about the German scheme (brief summary below). Further progress on the German scheme is expected once the new coalition government is operational.

- Subjects entitled to aid: Steel, cement, lime and ammonia.
- Object of the application:
  - Innovative projects that contribute to a considerable reduction of emissions (>50%) and to the long-term climate neutrality in Germany.
  - Bridge technologies such the use of natural gas or green h<sub>2</sub> in DR or Ammonia.
- Technology neutrality: Green hydrogen is the priority but the scheme will also cover bridge technologies in a limited manner. Blue, Turquoise, red hydrogen and CCS are not included.
- Timeframe: Awarding of 10 years-contract for the pilot phase.

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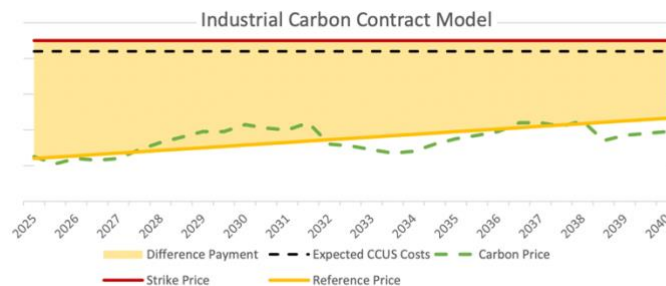
<sup>8</sup> Porthos CO<sub>2</sub> Capture Utilization and Storage. [\(See more\)](#)

- Aid object: Operating costs, at least during the pilot phase the CCfD programme is intended to exclusively finance the difference in operating costs. A combination with other capital investment incentives is encouraged.

## c) The UK

Following the 2019 consultation on Business Models for Carbon Capture Usage and Storage and the response to that consultation, the UK published an update on the proposed incentives framework for Industrial Carbon Capture (ICC) business model<sup>9</sup>. In the outlined business model, the UK presented its conceptual design for a CCfDs scheme, where the reference price will follow a fixed trajectory based on the projected carbon market price under the UK ETS for the contract lifetime.

According to the UK ICC business model, the subsidy is calculated as the difference between the reference price and a strike price, which will reflect the expected costs of carbon capture for the project expecting bidders to submit strike prices based upon the mentioned reference price, their costs of capture, avoided carbon costs and expected return for an investment of this risk profile. The outlined scheme also foresees the industrial facility to give up some portion of its current free allowances under the ETS, reflecting the protection from carbon market risks in respect of abated emissions. In May and October 2021, the UK published further details on the ICC business model.



Within this framework it is relevant to consider that, according to the Government Low Carbon Hydrogen Business Model consultation, CCfD are not the preferred option so far, to incentivize the uptake of low-carbon hydrogen in the UK.<sup>10</sup> The consultation document stresses several drawback inherent in using the UK-ETS carbon price as the reference price, such as the concession of significant pricing freedom to the producer, with the subsidy reflecting their target market rather than actual costs of production or market value of hydrogen.

<sup>9</sup> Carbon Capture, Usage and Storage (December 2020, May 2021, and October 2021), An update on business models for Carbon Capture, Usage and Storage. ([See more](#))

<sup>10</sup> Low Carbon Hydrogen Business Model Consultation, closing date 25 October 2021. ([See more](#))