

Carbon contract for difference: What is in the name?

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Extended Abstract

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Abstract Summary

The EU Emissions Trading System (EU ETS) has long incentivised industrial decarbonisation while preserving competitiveness through free allowance allocation. With free allowances scheduled to be fully phased out by 2034 for energy intensive sectors and replaced by the Carbon Border Adjustment Mechanism (CBAM), carbon price uncertainty faced by industry has intensified, amplified by volatile ETS prices and political decision making. In this context, Carbon Contracts for Difference (CCfDs) have gained prominence as a complementary policy instrument capable of providing the long term revenue stability needed for breakthrough low carbon investments by guaranteeing a fixed carbon price and reallocating part of the carbon market risk to the public entity.

CCfDs are now used in four EU Member States, Belgium, France, Germany and the Netherlands, and several billion euros of funding have already been committed with State Aid approval. The momentum is likely to increase, supported by the European Commission's Clean Industrial Deal and the proposed EUR 100 billion Industrial Decarbonisation Bank fund. However, despite this growing interest, CCfD designs differ substantially across countries, with limited clarity regarding the implications of varying design choices. Heterogeneous approaches to contract designs lead to divergent outcomes in terms of efficiency, effectiveness and risk allocation. This highlights the need for clearer guidance to ensure that CCfDs fulfil their intended role.

This paper offers two main contributions. First, it examines CCfD theory and practice to identify what risks are covered, to what extent they are covered and how design choices impact them. Second, it provides key observations and policy implications to support both countries already implementing CCfDs and those considering future adoption. By taking stock of current knowledge and remaining gaps, the study provides a foundation for more coherent and effective CCfD deployment across the EU.

Presenting Author Biography

Binli Xiao is a PhD researcher in the Department of Electrical Engineering (ESAT), Electrical Energy Systems and Applications (ELECTA), Faculty of Engineering Science, KU Leuven. She holds a B.Eng in electrical engineering and a dual M.Sc. in energy engineering from KTH Royal Institute of Technology and KU Leuven. She has worked on corporate decarbonization strategy and PPAs since 2023 in Brussels. She has returned to KU Leuven since 2025, where she is currently doing a PhD focusing on electricity market design, industrial competitiveness and decarbonisation with the supervision of Professor Leonardo Meeus.