



Department for
Business, Energy
& Industrial Strategy

Evaluation of the Contracts for Difference Scheme

[Phase 1: Allocation Rounds 1 and 2]

Executive Summary

June 2019

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Introduction

This report provides the findings of an impact and process evaluation of the Contracts for Difference (CfD) scheme Allocation Rounds 1 and 2. The Department for Business, Energy and Industrial Strategy (BEIS) commissioned Technopolis Group Ltd, in partnership with LCP Ltd and Dr Gregor Semieniuk, SOAS University of London to undertake this evaluation.

Policy Background

The Energy Act (2013) implemented regulations to enable the CfD scheme to meet a range of Electricity Market Reform (EMR) programme objectives. The strategic objectives for the EMR include:

- Ensure a secure electricity supply by providing a diverse range of energy sources, including renewables, nuclear, CCS equipped plant, unabated gas and demand side approaches; and ensuring we have sufficient reliable capacity to minimise the risk of supply shortages
- Ensure sufficient investment in sustainable low-carbon technologies to put us on a path consistent with our EU 2020 renewables targets and our longer-term target to reduce carbon emissions by at least 80% of 1990 levels by 2050
- Maximise benefits and minimising costs to the economy as a whole and to taxpayers and consumers - maintaining affordable electricity bills while delivering the investment needed. EMR minimises costs compared to the current policies because it seeks to use the power of the markets and competition and reduce Ministerial intervention and support over time.

The CfD scheme supports delivery of the latter two objectives above in particular. CfDs aim to give developers a higher level of confidence and certainty to invest in low carbon electricity generation, by agreeing to a fixed price for the sale of electricity. Generators are awarded a 15-year CfD and a set of obligations to deliver the contracted capacity within a specified timeframe. The CfD scheme aims to reduce developers' risks by providing more certainty in revenue and to support investment in a wide range of renewable technologies with different levels of maturity.

Three Allocation Rounds have taken place so far, with CfD auctions for renewable electricity projects. The first took place between October 2015 and February 2016, with 27 projects awarded contracts. The second between April and September 2017, with 11 projects awarded contracts. This phase of the evaluation was carried out before the third Allocation Round (AR3) was opened in May 2019.

In the first Allocation Round (AR1), technologies were divided into two pots¹:

- Pot 1 'Established' technologies: Onshore Wind (>5 MW), Solar Photovoltaic (PV) (>5 MW), Energy from Waste with Combined Heat and Power (CHP), Hydro (>5 MW and <50 MW), and Landfill Gas and Sewage Gas, and Biomass Conversion.
- Pot 2 'Less established' technologies: Offshore Wind, Wave, Tidal Stream, Advanced Conversion Technologies, Anaerobic Digestion (>5 MW), Dedicated Biomass with Combined Heat and Power (CHP) and Geothermal.

The second Allocation Round (AR2) was opened for Pot 2 technologies only. Similarly, AR3 was only opened to Pot 2 technologies, plus onshore wind projects on remote islands.

Prior to this, CfDs were awarded for nuclear generation plus eight other renewable electricity projects through bilateral negotiation in the Final Investment Decision Enabling for Renewables (FIDER) process. The FIDER CfDs process has been evaluated separately², and these projects were therefore outside the scope of this evaluation.

Evaluation Aims and Methods

The evaluation aims to assess the extent to which the CfD scheme is meeting its intended objectives, and to explore how and why any intended or unintended outcomes are being realised for developers of different technologies. This report provides findings from Phase 1 of the evaluation, which assesses outcomes from Allocation Rounds 1 and 2 of the CfD scheme. A planned Phase 2 of the evaluation will assess the experiences of participants in Allocation Round 3.

A third and final Phase of the evaluation will provide an overall synthesis of evidence on impacts of the scheme across all three Allocations Rounds, later in 2020. Findings from the Phase 1 of the evaluation (which focussed on AR1 and AR2) were used to inform the five-year Post Implementation Review of the Electricity Market Reform (EMR) Programme. The evaluation sets out to answer five high-level questions:

¹ When the CfD scheme was announced in 2014, Biomass Conversion technologies were initially listed under a separate "Pot 3". However, Biomass Conversion technologies were then merged with Pot 1.

² Independent evaluation of FID enabling investment for renewables. Grant Thornton on behalf of DECC. 2015

1. To what extent, how and why is the CfD scheme contributing to its intended objectives, and do its outcomes, both intended and unintended, differ for different groups (project developers, investors, technology types)?
2. Are the design parameters of the CfD scheme and auction allocations appropriate for achieving the intended objectives?
3. Is the CfD scheme being delivered as intended?
4. Does the CfD scheme represent good value for money?
5. What are the implications of the findings for the future contribution of renewable technology to the Electricity Market?

Addressing these questions required a mix of impact, process and economic evaluation. The evaluation is theory-based, adopting principles of realist approaches to address questions around how differences in context influence how developers respond to the scheme. It combines qualitative interviews with scheme participants and non-participants, with quantitative data collection and analysis, including economic cost benefit analysis to address questions around whether the scheme presents good value for money, in comparison to a modelled counterfactual scenario in which the Renewables Obligation (RO) scheme continued.

Delivery of CfD objectives

CfD capacity delivery

As shown in Table 1 below, the majority of projects awarded a CfD contract are currently on-track to be delivered. In terms of overall capacity, the latest CfD register³ of contracted projects have an estimated combined generation capacity of 5.26 GW. This means that **96% of the 5.48 GW of capacity** that was originally awarded in Allocation Rounds 1 and 2 is either on track to be delivered or is already operational. By 2019, 21 projects are expected to be operational, with an estimated combined generating capacity of just under 1 GW.

³LCCC. CfD Register January 2019. Available at: <https://www.lowcarboncontracts.uk/download-current-and-historical-cfd-register-data>

	AR 1	AR 2	AR 1 and 2 combined
Total Projects / (Capacity awarded)	27 (2,139 MW) ⁴	11 (3,346 MW) ⁵	38 (5,485 MW)
Projects / (Capacity not proceeding)	3 (45 MW)	4 (108 MW)	7 (153 MW)
Projects on track (Share of originally awarded projects)	24 (89%)	7 (64%)	31 (82%)
Capacity Reductions	69 MW	0	69 MW
Capacity (MW) on track (Share of originally awarded capacity)	2,025 (95%)	3,238 (97%)	5,263 (96%)

Table 1 Overview of CfD project and capacity status

Out of the 38 projects awarded a CfD in the first two allocation rounds, seven have discontinued, either because of not accepting the contract at clearing price offered, or because they failed to meet Milestone Delivery Dates. These projects were all in the Solar-PV and Bioenergy sectors. The seven projects which have discontinued were relatively small in terms of proposed generating capacity (all but one below 50 MW).

CfD and the 2020 renewables target

The capacity being developed as a result of the first two Allocation Rounds is estimated to provide around 6% of the UK's total electricity generation needs by 2025⁶. This means the CfD units will account for around 13% of total energy generation from renewable sources by 2025. The UK is currently on track to meet the government's aim of generating 30% of electricity from renewable sources by 2020. This aim is a UK set sub-target of the legally binding EU 2009 Renewable Energy directive to deliver 15% of final energy consumption—across electricity, heat and transport—from renewable sources by 2020.

CfD projects are expected to contribute 1.3% to all electricity generation by 2020 (given the majority of capacity will come online after 2020).

⁴ There were 29 individual CfD generation units in AR1 since East Anglia One is a phased project with 3 separate CfD units but one contracted 'project'.

⁵ Hornsea Project 2, Triton Knoll, and Moray Offshore had 3 phased individual generation units each. Overall the second allocation round had 17 CfD units awarded.

⁶ Source: LCP analysis based on the LCCC CfD Register, January 2019 and BEIS Energy Consumption in the UK statistics

Impact on reducing risks for investors

The evidence gathered supports the evaluation's theory of change that the offer of a 15-year price stabilisation contract reduces risks for investors and leads to lower the cost of capital for developers. Interviews with developers suggested that this has had the effect of reducing project costs in comparison to similar projects under the RO.

In terms of the profile of developers and investors that the scheme has attracted, the CfD has seen a shift towards a higher proportion of investment from multi-national utility backed developer companies in UK renewables development, compared to the RO. This is primarily driven by the profile of Offshore wind developers.

As discussed in Chapter 3, the evidence from interviews and investment trends analysis suggests that not running Pot 1 "Established Technologies" in AR2 has contributed to a relative fall in investment for these technologies, such as Onshore wind and Solar-PV.

Developers' views on trends towards subsidy-free⁷ development

Evidence from interviews with developers, plus economic modelling, suggests that the introduction of the CfD scheme has supported cost reduction in renewables deployment and helped bring down the level of subsidies. A number of CfD scheme design features have played a role, including:

- the certainty provided by the price stabilisation contract, which reduces risks for investors and costs of capital for developers
- competitive pressure at auctions, which encourage bids for lower strike prices
- the response from wider supply chains to the reduced levels of subsidy on offer, which encourages innovation and further cost reductions.

The question of whether this points to a future for renewables where projects can deploy without payments from government schemes offering long term price support is not feasible to answer in this phase of the evaluation, partly because the very existence of such payments can influence the cost of renewables. However, evidence from the interviews with developer companies suggests that although most commercialised technologies are on a trajectory towards reducing support payments, the potential for support-free new build development is currently viewed as a niche market. Development of projects without support payments was considered as being unlikely to expand at sufficient scale on time to meet the requirements of future clean electricity demand, or Carbon Budget targets, based on market forces alone. The second phase of this evaluation and the final synthesis phase will assess this question further.

The offer of a CfD was viewed as still being essential for supporting large scale deployment of renewables for now; to provide investors with protection against future price

⁷ There is no widely accepted definition of "subsidy-free" renewables generation, however, in the context of this study it was taken to mean development of renewable electricity projects without support payments from government regulated schemes such as the CfD, RO or FITs.

fluctuations. However, for some more mature technologies, it was expected that strike prices would continue to fall towards the wholesale market rate, meaning that in practice very low, or no, levels of top-up payment should be required in future.

Is the scheme being delivered as intended?

Participants were asked about their experiences of working through the journey from initially applying to the scheme, to signing contracts, meeting Milestone Delivery Dates before reaching eventual operational phase.

Overall, the majority of applicants (both successful and unsuccessful) felt the **information and guidance** provided in advance of application was clear and provided them with sufficient information to understand the requirements of participation. In the application phase, some difficulties were reported around requirements to demonstrate certain eligibility criteria. In cases where the developer had applied in both AR1 and AR2, these requirements were reported being more straightforward the second time as they knew what to expect, and this was considered a learning curve.

The Low Carbon Contracts Company (LCCC) carry out various **contract management activities to guide projects through various milestone checks** before they become operational and receive CfD payments. These include the Milestone Delivery Date (MDD) requirement to demonstrate commitment to the project either by spending 10% of pre-commissioning project costs or evidencing key commitments such as signing key contracts within 12 months.

Developers were asked for views on any ways in which the post-contract award delivery phase may have been improved. Issues raised around areas for improvement include:

- The 12-month window being considered too short to complete sufficient development work to demonstrate 10% spend. This was reported to have led to procurement practices that were not cost-effective, for example, paying sub-contractors for the costs of construction work in advance. This was the most common issue raised.
- Smaller firms, which cannot pay for costs of initial development work until they reach Financial Close (FC), can struggle to meet required spending target.
- For larger firms (e.g. Offshore wind developers), challenges were more around the large scale of construction works required in the 12-month period and the administrative challenge of collating financial information to demonstrate 10% had been spent.

CfD scheme design

The main design features of the CfD scheme that were explored in interviews include: Pot structure, the frequency of Allocation Rounds, and any implications from the “pay-as-clear” bidding process. The design of Pot 1 and Pot 2, which were categorised to allocate

support to more or less mature technologies respectively, was generally regarded as having supported development and future cost reduction of certain Pot 2 technologies (particularly Offshore wind). The list of eligible Pot 2 technologies differed in their level of maturity and therefore the design has arguably crowded out investment in other emerging technologies that were less developed.

The response from developers concerning the Pot structure differed according to a range of contextual factors, including:

- The type of technology they primarily develop, particularly whether they also developed Pot 1 technologies. Here respondents were more likely to emphasise that whilst the scheme has been successful in supporting growth of the Offshore wind sector, the lack of further Allocation Rounds for Pot 1 since AR1 has led to a decline in investment for these technologies.
- Whether they had previously been unsuccessful in bidding for CfDs in a Pot 2 auction. For example, where developers of less mature but higher cost technologies (such as Tidal Stream generators) emphasised that the pathway to commercialisation of these technologies is now less clear, given they were previously supported under the RO.

It was felt that there was a gap in subsidy provision to support innovation and commercialisation of new emerging technologies. Various suggestions were raised around either creating a new “Innovation Pot” or using the policy tools that already exist within the CfD regulations more directly to support a wider range of technologies to address this. For example, setting minimum and maximum budget limits for certain technologies was suggested as a possible solution where there is a strategic case to support future cost reduction.

The value for money of the CfD scheme

The reduction in costs to the consumer due to the CfD projects auctioned in AR1 and AR2 are estimated at around **£3bn** up to 2050 (in present value terms), compared with the RO policy that preceded it. The scenarios tested produced upper and lower bound estimates of **£1bn** and **£4bn**⁸.

The lower support costs under the CfD regime are primarily driven by lower hurdle rates assumed compared to the RO. With projected future CfD included, the consumer cost savings of the scheme through to 2050 are estimated **at £9bn** compared to the RO scheme, with a range of £4bn to £14bn in the scenarios tested. To conclude, this suggests

⁸ In Phase 2 of the CfD Evaluation this analysis was repeated to include AR3 projects based on updated 2019 assumptions of potential future wholesale electricity prices under a scenario which is consistent with the Government’s commitments to Net Zero. Phase 2 analysis found a saving of around £3bn for AR1, AR2 and AR3 projects with a range of £2bn to £5bn in scenarios tested. See the CfD Phase 2 evaluation report for the full analysis:
<https://www.gov.uk/government/publications/evaluation-of-the-contracts-for-difference-scheme>

the scheme has **met its intended objectives on delivering better value for money for consumers.**



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