Offshore wind investments and information asymmetry

How can we improve the UK CfD auction scheme?

Marijke Welisch (TU Wien), Rahmat Poudineh (OEIS)

Abstract

The bids achieved for offshore wind technology in the UK contract for difference (CfD) auctions are very optimistic; yet at the same time the CfD scheme has failed to attract many participants. These empirical observations seem counterintuitive at first. If one looks at the scheme more closely however, it can be seen that the UK CfD scheme is quite complex and furthermore does not tackle information asymmetry in a very efficient manner.

To interpret the outcomes of the CfD auction scheme, we first account for the investment decision, i.e. the decision to participate and to which extent. For this, we use a simplified RO approach and also analyse the empirical auction outcomes qualitatively, making use of an extensive literature review. The scope of a project submitted as a bid in the auction (including phasing into several partitions) and the bid price are two important determinants that come after the initial decision to participate in the auction. Looking into the empirical outcomes, we can see, that the scheme did not attract many participants. In none of the delivery years, the complete budget was used up and some delivery years exhibited no participation at all. This could be due to alternative support schemes but it might also be attributable to the complexity of the auctions and the high uncertainties that bidders face due to the auction design.

From constructing a simplified RO example, taking into account observed behaviour in the auctions and theoretical background literature, we demonstrate that the way the CfD auctions are set up, gives participants a lot of freedom and might well lead the participation to be a 'real option' rather than a commitment to construct a power plant. Agent-based modelling then provides insights into the impacts that the auction design has on its outcomes. We

furthermore aim to show if the level of bid prices observed empirically was rational (i.e. the amount needed by project developers to cover their costs). We can see that the modelled bid prices diverge from the empirically observed ones. This could be due to overly optimistic expectations towards technology cost development by actual bidders, where the fact that the CfD auction has no stringent penalty for non-delivery, might have had an important impact.

Two variations of the scheme are then modelled to show how changes in the auction design might improve overall participation rates by having the auctions generate more information (with the help of a regular schedule) and achieving more planning security at the same time. Information asymmetry could be tackled by holding annual auctions and bidders could learn from previous rounds and have better technology cost estimates to submit. The same holds for having a stringent penalty in place. Bidders facing a penalty are more likely to reveal their true costs and make an effort to calculate their actual support needs. This design element might increase participation in the auctions as well and deliver more certainty in terms of the capacity actually constructed.

The bids achieved in the UK CfD auctions are very optimistic and at the same time, the CfD scheme failed to attract many participants. Summarising the findings of this article however shows that these empirical observations are not counterintuitive: if one looks at the auction design more closely, the UK CfD scheme is quite complex and furthermore does not tackle information asymmetry in a very efficient manner.

As shown in the paper, there are however ways to improve the schemes design: implementing a stringent penalty to induce truth telling and generating more information by holding regularly scheduled (i.e. annual) auctions. With these measures, the auction scheme's goals of achieving more secure renewable energy sources in the UK and supporting less mature technologies until they reach market maturity could be reached – at the same time keeping the UK's offshore wind market competitive, strengthening its value chain and providing an attractive investment climate.