# Addressing recent misreporting of findings from 'Better estimates of LCOE from audited accounts: a new methodology with examples from United Kingdom offshore wind and CCGT.'

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Research note

# Addressing recent misreporting of findings from "Better estimates of LCOE from audited accounts – A new methodology with examples from United Kingdom offshore wind and CCGT"

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Abstract

Recent interest in the Levelised Cost of Energy (LCOE) for offshore wind has led to considerable media coverage of this topic. The paper to which this article refers provides some useful insights, but the authors are concerned that their findings are being misreported and misinterpreted. Specifically, some of the media coverage appears to misunderstand or disregard the acknowledged limitations of the paper, citing it to support contentions regarding the likely trajectory of costs for offshore wind farms. This research note addresses some of these issues and urges caution in use of the original paper's findings. This new research note recapitulates the main themes of the original paper and directly addresses the areas where its findings have apparently been misunderstood. It concludes with a restated and reinforced warning that the analysis and projection of historic costs in offshore wind, or indeed in any fast-developing technology sector, should be undertaken with extreme caution when used to consider future cost trends.

Key words: LCOE; offshore wind; accounts

## 1. Introduction

The recent announcement by the Prime Minister that the UK will power every home with offshore wind by 2040 has reignited the discussion of wind farm costs. Some sceptical of offshore wind (such as, for example, Matt Ridley's recent article "Ten reasons why Boris's green agenda is just plain wrong" [1]) suggest that wind farm costs are not falling, but rising, and have quoted findings from our recent paper in this journal [2] to support their case.

The paper by Aldersey-Williams et al. [2] found that the apparent Levelised Cost of Energy (LCOE) derived from the accounts of "special purpose vehicle" companies responsible for the construction of offshore wind farms in the UK was higher than recent strike price bids under the Contracts for Difference (CfD) mechanism.

There are three key areas in which a misunderstanding of the paper's findings apparently supports the sceptics' contention that offshore wind costs are rising rather than falling, and the authors are keen to take this opportunity to explain why such an assertion is incorrect.

## 2. The findings – historic vs forecast

The results presented in Figure 2 of the paper (see Figure 1) found that there was no clear trend in offshore wind costs over the past 10 years or so. It does not support an assertion that costs are rising, nor particularly that they are falling; rather, costs appear to be variable and are presumably strongly driven by individual project characteristics. The analysis shows no clear trend for wind farm LCOE over the past decade or so. It is important to note that

the data only covers wind farms which had been commissioned by 2018; cost data was not available for more recent wind farms (due to the natural delays in filing accounts and in Companies House making them available).

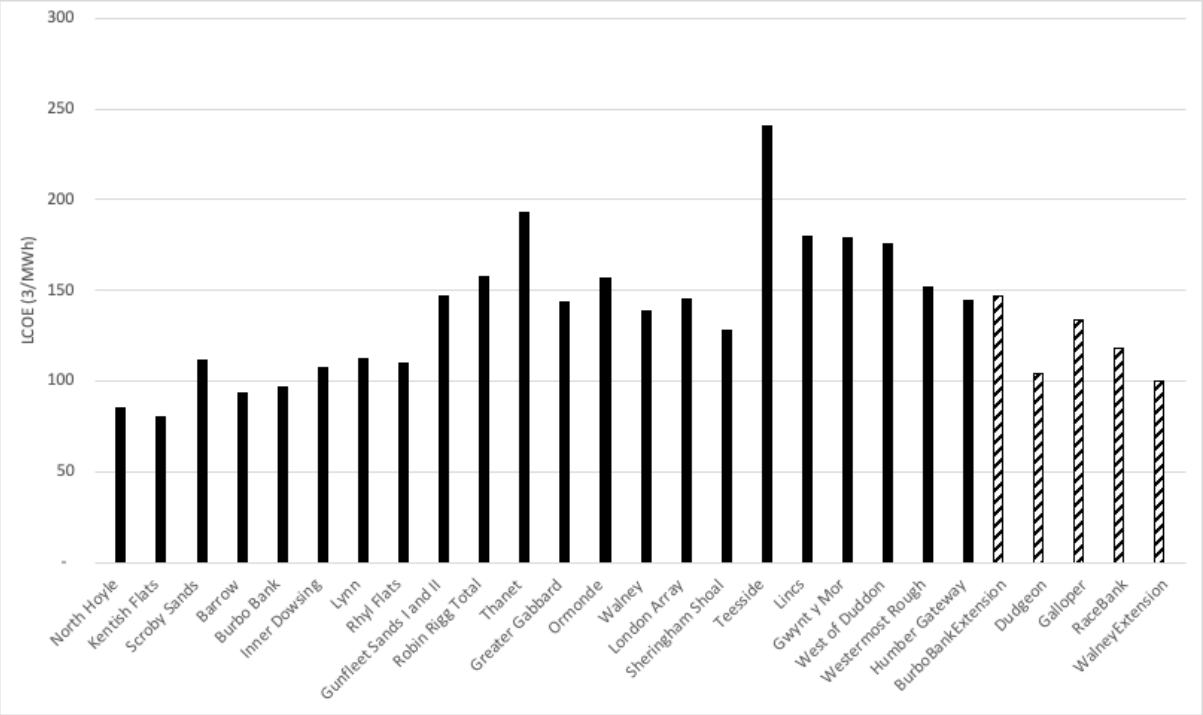


*Figure 1: LCOE for UK wind farms, from Figure 2 of Better estimates of LCOE from audited accounts – A new methodology with examples from United Kingdom offshore wind and CCGT", note data point for West of Duddon corrected*

The wider point is that the analysis in the paper considers Round 1 and 2 offshore wind farms which had completed construction and (in almost all cases) begun production before the paper was published. Using these historic data as indicative of future trends for the much larger (and larger turbined) Round 3 and 4 projects is not valid.

The prospects for the "very significant cost reductions" required by the Aldersey-Williams et al. paper are highly promising: turbine sizes are increasing rapidly (for example, there has been a recent announcement of single wind turbine generators with 13 MW capacity [4], an increase from the typical sizes of 3-6 MW in the projects in this analysis), and the skills and supporting assets (crane barges, manufacture and installation techniques) are becoming more developed and cost-effective. Additionally, financing structures reflecting the reduced risk in these projects allow for much lower discount rates (and hence lower LCOEs). As the development costs (pre-Final Investment Decision) for large offshore wind farms can run into the tens or hundreds of millions of pounds, it seems likely that their developers have a clear view on how these projects will be economic in the context of likely prices.

In short, the analysis in the paper specifically relates to currently operational wind farms. In an industry context with rapidly reducing cost, upscaling technology and decreasing risk (and therefore decreasing discount rates), it is potentially misleading to use these historic figures to project future costs.

3. Strike price vs. LCOE

Under the UK CfD arrangements, the strike price for generated power is increased by an inflation factor each year. In contrast, the LCOE only represents the required price to

generate the return implied by the discount rate (see Aldersey-Williams and Rubert [4]) in an inflation-free world. Additionally, the CfD arrangement only operates for the first 15 years of wind farm life; after this period, the wind farm will receive merchant prices.

As a result, where the CfD strike price is below the LCOE, this does not necessarily mean that the wind farm is uneconomic. As CfD strike prices are expressed in 2012 terms, the increase in strike prices from inflation effects is already worth some 14% (based on CPI inflation from mid 2012 to August 2020).

As a result of these factors, using the LCOE as a proxy for the electricity price required by the project to generate a return is not reliable.

4. Impact of discount rate

The paper used a discount rate of 8.9% in line with that used by the Department for Business, Energy and Industrial Strategy. In practice, the low risk profile of these projects (driven by contracting structures, high reliability based on established technologies and the very low revenue risk associated with the CfD structure) should allow for much cheaper finance, and lower return expectations.

Other peer-reviewed studies provide empirical support for this suggestion. Kempa et al. [5] found that as technology and markets mature, the cost of debt applicable in that sector falls, and Duffy et al. [6] found that weighted average costs of capital had fallen between 2008-10 and 2014-16 across their sample of European countries and the US.

The paper (section 4.10) found that a reduction in discount rate from 8.9% to 7.8% generated a reduction in LCOE by 6%. In section 5.5, it noted that a more realistic discount rate (WACC) could be less than 7%.

Recent reports on wind energy finance [7,8] show that debt rates on wind farm projects have fallen to less than 200 points over LIBOR and that the debt typically comprises 80% of the finance. General base rates also appear to be on a declining trend, especially post COVID, and could even go negative [9]. Assuming a base rate of 1% gives a total debt rate of 3%, and an equity return expectation of 10% (representing a plausible utility return) gives a WACC of 4.4%; we find that applying this discount rate typically reduces LCOE by 20-30% relative to that calculated at a discount rate of 8.9% (the precise figure is dependent on the spend profile and other factors).

It is clear that use of more appropriate discount rates would significantly reduce LCOE for existing projects, providing a more reasonable indication of potential future costs.

5. Conclusions

The authors are concerned that their findings are being misunderstood and incorrectly used to inform projections for the costs of future wind farms. The paper aimed to set out a new method for assessing LCOE based on audited accounts data and provided examples based on those UK wind farms which had available data. However, the rapidly changing nature of the cost base and risk profile, and the accelerating growth of this industry make these

figures an inappropriate and unreliable basis from which to speculate about the costs of future offshore wind farms.

With hindsight, the authors now recognise that we should have been more explicit on the limitations of the analysis, specifically noting that the retrospective nature of its analysis should not be used as a basis from which to infer likely future costs. We emphasise that continuing changes in cost and contracting structures, revenue support arrangements and their impact on revenue risk, and the radical and rapid technological development of the sector make cost projections from historic analysis at best uncertain and at worst misleading. Accordingly, the authors urge readers to exercise due caution when considering speculative and extrapolative interpretations of this work, and indeed in any attempt to extrapolate the future from past costs in this fast-moving sector.

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