

Response to Third referee

Major comments

“Central to the contribution of this paper is the discussion of a break-even carbon price. This is an interesting concept, one that is focused on making specific carbon free technologies economically viable. It is therefore slightly unfortunate that its limitations seem to be emphasized more than its potential value as a guide for setting the carbon price. Even if it is sensitive to uncertainties in underlying variables, it feels that more weight could be put on the discussion of its policy relevance (i.e. in which context/for which technology is it more likely to be a useful guide, if at all) and how ‘critical’ its sensitivity to the said variables is to making it a workable policy tool.”

I plan to strengthen the policy implications in section 3 and perhaps indicate earlier that while it is important to be aware of the limitations, it is still necessary to give some guidance on particularly investment choices, and by linking the concept to target-consistent carbon pricing make that rather clearer.

“The present paper closely relates to the discussion on target-consistent climate policies (of which carbon pricing is one), i.e. policies in line with politically agreed goals (Hepburn, 2017). Section 2.1, third paragraph, hints at it but I believe this link could be made more explicit, especially as the UK approach to valuing carbon emissions is now based on target-consistent valuation (DECC, 2009) and that the international community has agreed on a specific climate target through the Paris Agreement.”

See above and agree the links to target-consistent carbon pricing (e.g. in the CCC Fifth Carbon Budget) need to be brought out more clearly.

“The paper seems to take for granted the view that the UK (and European?) electricity generation sector is liberalised and will remain so. However, although I agree with the view that it is currently liberalised I am less convinced that it will remain so in the future, especially given that the imperative of tackling climate change has sparked the temptation to revert to more interventionist (and potentially detrimental) practices. It seems therefore appropriate to briefly recall the case for a liberalised electricity sector and how a change towards less liberalised market organisation might affect the policy recommendations.”

I think this takes us too far afield and to papers that I and many others have already written.

Minor comments (to be corrected in next revision, remaining comments below)

“According to some studies, e.g. Pfeiffer et al. (2016), the world has already exceeded its fossil-fuel electricity generation capital stock consistent with a 2C warming target. A short reference to such literature could make the urgency of the problem faced by the power sector clear and provide even more support for the paper.”

Agreed

References

Hepburn, C. (2017). Climate change economics: Make carbon pricing a priority. Nature Climate Change. Available at:

http://www.nature.com/articles/nclimate3302?WT.feed_name=subjects_climate-sciences

Alexander Pfeiffer, Richard Millar, Cameron Hepburn, Eric Beinhocker (2016), The '2°C capital stock' for electricity generation: Committed cumulative carbon emissions from the electricity generation sector and the transition to a green economy. Applied Energy. 179 (2016) 1395–1408

UK Department for Energy and Climate Change (2009). Carbon Valuation in UK Policy Appraisal: A Revised Approach.

Fukurozakia, S.H., A. B. Netob, J. O. A. Paschoalc, (2013). Marginal Abatement Cost Curve and Break-Even Carbon Price of Fuel Cell Technologies in Brazil, Proceedings Of Ecos 2015 - The 28th International Conference On Efficiency, Cost, Optimization, Simulation And Environmental Impact Of Energy Systems, June 30-July 3, 2015, Pau, France at https://www.researchgate.net/publication/295327310_Marginal_Abatement_Cost_Curve_and_Break-Even_Carbon_Price_of_Fuel_Cell_Technologies_in_Brazil