



Permian Global Research Ltd.

3 Cavendish Square
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November 3, 2023

Subject: A letter response to West, et al. (2023)

Dear Dr. Jesse Smith,

Please find enclosed a Letter responding to the West et al. (2023) article “*Action needed to make carbon offsets from forest conservation work for climate change mitigation*” for consideration for publication in Science as a *printed Letter*.

The adoption of econometric methods to evaluate the efficacy of voluntary carbon projects is an important development in the field (Balmford et al. 2023). However, there is a need to more carefully consider the adoption of the synthetic control (SC) method, as used by West et al. (2023). Critically, the drivers of deforestation are complex and highly variable across space and time. We believe that the covariate structure required to accurately reflect such drivers is not appropriately captured in West et al. (2023). As a consequence, many of the conclusions drawn by West et al. (2023) may not be supported. We believe that there is a need to more carefully consider the connections between spatial and econometric statistical techniques, in the context of remote sensing, to maximise the utility of these methods. We hope this letter will stimulate further discussion on this topic and encourage the development and adoption of improved causal inference methods in voluntary carbon projects.

As part of our letter, we have reproduced the project-level SC analysis presented by West et al. (2023) in order to better understand the efficacy of the approach. In the letter we present the results for the Colombian project 856 because this was the only project for which fully reproducible code was made available. The project is located in Colombian Pacific-montane-forest on the Panamanian border; no weighted donors were in the same political jurisdiction or ecoregion as the project and the highest weighted donor (0.46) was 900 km away in the lowland forests of the Amazon. The socio-economic and political drivers of deforestation in these two regions are substantially different and the fire risks are incomparable (Amador-Jiménez et al. 2020).

We have also extended this analysis to all other projects, considered in the study, and believe that this is a general issue with the methodological design, not limited to project-856. Interactive maps of the SC locations can be found here: <https://permian-global-research.github.io/science-letter-west-et-al/>

We also have significant concerns with the way Global Forest Change data (Hansen, Stehman, and Potapov 2010) was used to assess deforestation rates, particularly with regard to comparing such rates against those reported by projects, that will have been generated using entirely different methods.

Furthermore, West et al. (2023) did not demonstrate that SC counterfactuals are more accurate than existing project methods, undermining their conclusions regarding differences between the SC and project-reported deforestation rates.

Interest in this topic/discussion is broad and extends to groups campaigning both for and against the role of biodiverse forests in mitigating climate change. The conclusions of West et al. (2023), if proven defensible, will have significant implications for climate policy and accounting, with wide reaching implications for carbon markets. We are excited to present this short letter and hope that it may generate a constructive

discourse regarding the necessary developments in this research area.

Yours Faithfully,

Hugh A. Graham, Andrew M. Cunliffe,
Edward T.A. Mitchard, Javier Ruiz
Ramos, Leonardo Sáenz, David F.R.P.
Burslem, Christopher Philipson

References cited in this letter:

- Amador-Jiménez, Mónica, Naomi Millner, Charles Palmer, R. Toby Pennington, and Lorenzo Sileci. 2020. “The Unintended Impact of Colombia’s Covid-19 Lockdown on Forest Fires.” *Environmental and Resource Economics* 76 (4): 1081–1105. <https://doi.org/10.1007/s10640-020-00501-5>.
- Balmford, Andrew, Srinivasan Keshav, Frank Venmans, David Coomes, Ben Groom, Anil Madhavapeddy, and Tom Swinfield. 2023. “Realizing the Social Value of Impermanent Carbon Credits.” *Nature Climate Change*, October, 1–7. <https://doi.org/10.1038/s41558-023-01815-0>.
- Hansen, Matthew C., Stephen V. Stehman, and Peter V. Potapov. 2010. “Quantification of Global Gross Forest Cover Loss.” *Proceedings of the National Academy of Sciences* 107 (19): 8650–55. <https://doi.org/10.1073/pnas.0912668107>.
- West, Thales A. P., Sven Wunder, Erin O. Sills, Jan Börner, Sami W. Rifai, Alexandra N. Neidermeier, Gabriel P. Frey, and Andreas Kontoleon. 2023. “Action Needed to Make Carbon Offsets from Forest Conservation Work for Climate Change Mitigation.” *Science* 381 (6660): 873–77. <https://doi.org/10.1126/science.ade3535>.