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Title:
**The North Sea energy island risks creating a
green paradox through the EU ETS**

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Denmark plans to establish an artificial energy island in the North Sea with a wind power capacity of up to 10 GW from 2033. Using a dynamic model of the EU ETS, we show that with the current EU ETS rules, the project has a limited or even positive effect on aggregate EU greenhouse gas emissions. Specifically, the estimated long-run leakage rate is between 83 and 136 percent. Thus, there is a risk that the energy island creates a green paradox. This is a consequence of the large time gap between the announcement of the project and the associated energy production. The energy island reduces the demand for ETS allowances after 2033, and thereby the incentive to save allowances. Hence the energy island reduces the allowance surplus over the coming decade, resulting in fewer allowances being transferred to and cancelled in the Market Stability Reserve. We also discuss how to improve the environmental benefits of the energy island including the potential role of Power-to-X technologies.