

Sheep farmers could profit by shifting to forest, research shows

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British sheep farmers could profit from allowing their land to naturally regenerate into forest, according to new research from the University of Sheffield.

Experts at the University's Grantham Center for Sustainable Futures found that farmers would no longer need to rely on [government](#) subsidies if they allowed [native trees](#) to return to their land and sold credits for the [carbon dioxide](#) (CO₂) the forest absorbs.

The study, published in the journal *Environmental Research Letters*, calculated that most sheep farms in the UK make a loss without government subsidies, with only the most productive breaking even. The authors found that farmers with at least 25 hectares of land could turn a profit if they allowed it to naturally regenerate into native woodland and were paid as little as £3 per ton of CO₂. If farmers were paid £15 per ton of CO₂ by businesses and individuals looking to offset their emissions, forests of any size would make a profit.

Such a shift would also cut greenhouse gas emissions from agriculture, support wildlife and help to prevent flooding. Animal farming currently uses 37 percent of land globally and is responsible for 15 percent of climate emissions. In the UK, pasture covers 29 percent of the nation's land yet, in 2018, 94 percent of livestock farm income came from EU subsidies.

Tree cover, meanwhile, accounts for just 8 percent of the UK's land, making it one of the least densely forested countries in Europe—but a national report led by Sir David Read, Emeritus Professor at the University of Sheffield, shows boosting this to 12 percent would absorb 10 percent of the country's climate emissions.

Converting land to carbon forests without the costs of planting trees is possible for farms close to existing woodland, which provides a natural source of seeds. However, the research found that even farmers who would need to plant the trees could break even if they were paid as little as £42 per ton of CO₂. The current market price of carbon is £15—however, the UK government values the true cost of CO₂ to

society at £52 per ton, suggesting tree planting could make economic and environmental sense if the carbon price increased. In England, the government also covers 80 percent of the cost of tree planting—a system that would allow farmers to turn a profit by charging just £9 per ton of CO₂.

Planting [trees](#) is widely acknowledged as an important method for mitigating the climate crisis, but the academics highlight that wealthy European nations currently focus reforestation efforts on the global south, while EU subsidies are used to maintain denuded landscapes and prop up unprofitable farms. The research suggests that it could make both economic and environmental sense for the UK government's post-Brexit Environmental Land Management scheme to provide funding for farmers who return their land to forest.

Professor Colin Osborne, Professor of Plant Biology at the University of Sheffield and lead author of the study, said: "Sheep farming in the UK is not profitable without subsidies, but forests that sell carbon credits can be economically viable—so it makes sense for the government to help farmers transition. Using public money to actively prevent reforestation in the UK and Europe is morally questionable given the pressure western governments place on the [global south](#) to end tropical deforestation. Ultimately, these come down to political questions of how we want our countryside to be used, how we value livestock production over the global costs of climate breakdown, and how the government supports farmers and rural communities."

More information: Connie O'Neill et al. Forest regeneration on European sheep pasture is an economically viable climate change mitigation strategy, *Environmental Research Letters* (2020). [DOI: 10.1088/1748-9326/abaf87](https://doi.org/10.1088/1748-9326/abaf87)

Provided by University of Sheffield

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