

**Written evidence submitted by the Birmingham Institute of Forest Research (BIFoR) at the
University of Birmingham (TPW0045)**

Introduction

The University of Birmingham's Institute of Forest Research ([BIFoR](#)) was founded to provide natural science, social science, and cultural research of relevance to forested landscapes anywhere in the world, with a particular focus on the UK. By forested landscapes we mean any landscape in which trees play a significant role: ancient woodlands; productive forest stands; agricultural land; and the urban forests in which the vast majority of UK citizen's live.

Of particular relevance for our evidence below are: (i) our Free-Air CO₂ Enrichment ([FACE](#)) facility, which, alongside two other similar facilities in North America and Australia, is the largest global-change experiment in the world; and (ii) our Forest Edge Doctoral Scholarship Programme, which is the UK's largest cohort of PhD researchers focused on interdisciplinary forest research.

This response was prepared by Professor Christine Foyer, Professor Robert Jackson, Professor Robert MacKenzie and Dr Sami Ullah.

Executive summary

- We support the principle of planting more trees in the English landscape. But this must be done in the right way, with the decision making underpinned by scientific evidence. If planting is carried out in the wrong way, we could see large scale losses of trees and damage to the landscape - a waste of taxpayers' money.
- Government tree planting targets are ambitious, since the UK has one of the lowest rates of forest coverage in Europe, and only just ambitious enough to meet net zero. If the Government is serious about delivering on the net-zero commitment, they should also commit to effective management of existing forested landscapes - since our FACE research shows that established woodlands will play a vital role in offsetting CO₂ emissions.
- Effective management of existing forested landscapes and the creation of new forested lands requires a skilled workforce and public support, since this would be a multi-generational endeavour. We recommend the Government bring in changes to the national curriculum to teach vital skills, while also involving schools in local planting and maintenance initiatives.
- Climate change adaptation and mitigation through biodiverse forested landscapes should be the primary goal of increasing forestry coverage. Our research strongly supports the idea of diverse forests as a resilient option for the UK. We need treescapes that are diverse in species, age, geographical context and management techniques.

Are the UK Government's targets for increasing forestry coverage, and tree planting, for England and the UK sufficiently ambitious and realistic?

1. Current [statistics](#) show the UK has a modest forest coverage amounting to around 13% of land – significantly lower than the European and world averages. With this context in mind the Government's 'afforestation' targets are ambitious, but only just ambitious enough to meet net zero under the scenarios put forward by the Committee on Climate Change.
2. An ambition to approach [the European Union average of 38%](#) forest cover would demonstrate that the UK is prepared to show global leadership on the issue and would, if accompanied by steep fossil-fuel emissions reductions and appropriate management to

conserve forest carbon, allow the UK to become net carbon negative. The UK's Presidency of COP26 represents a golden opportunity for us to take a global leadership role on this issue - while noting that reforestation was [one of Joe Biden's pledges](#) in the US presidential campaign and recent [NASA satellite data](#) shows China and India have made significant progress on 'greening' land in the last few years.

3. However, afforestation targets will remain unrealistic until supply-side incentives and demand-side value chains are aligned. [Natural Capital](#) accounting - as demonstrated by the Crown Estate (for [Windsor Great Park](#) and elsewhere) and the devolved elements of the UK public forest estate (e.g. [Forestry England](#)) - is a suitable supply-side structure and should be further improved to capture full greenhouse gas budgets and other ecosystem services more accurately.
4. The BIFoR FACE programme will help us to answer questions regarding the ability of mature woodland to capture carbon dioxide. Our initial results make clear that the UK forest's contribution to net zero will come from mature woodlands as well as new planting. Although still to be subject to peer-review, our initial analysis of the first three seasons of elevated CO₂ is that mature oaks in an under-managed UK forest are able to increase photosynthesis when offered increased CO₂ concentrations. The assimilated carbon is allocated above ground and below ground to ephemeral (e.g. leaves and fine roots) and longer-term (e.g. wood) carbon stores.
5. Therefore we believe Government targets for tree planting should be matched by targets to manage existing forested landscapes for long-term carbon storage, biodiversity, and social goods. The UK's contribution to net zero also requires preservation of forest genetic resources, to build in resilience and the ability to adapt to changing circumstances. Excessive use of monoculture practices are likely to erode the genetic diversity and therefore resilience of our forests. Therefore, we need to cultivate woodlands with a diverse mix of tree species.

Are the right structures in place to ensure that the UK wide target for increasing forestry coverage is delivered?

6. A pipeline of talent is essential to deliver UK forest targets through innovation and enterprise in the private, public, and third sectors. We consider the talent pipeline into the forest sector to be weak currently, despite the valiant efforts of the [Forestry Skills Forum](#). BIFoR has been set up in a Russell Group university specifically to foster a new generation of forest professionals with the interdisciplinary skills required to deliver a broad suite of ecosystem services via the natural capital of UK forests.
7. A vigorous talent pipeline engages children and young adults throughout their education, and offers a diversity of well-earning and well-respected career paths. We have engaged with the [Royal Society of Biology](#), the [Geographical Association](#), and local schools, providing [online educational materials](#) to embed UK forest science in curricula at GCSE and A-level (and their equivalents in the devolved nations). Much more needs to be done in this regard, so that tomorrow's schoolchildren recognise UK forest issues as central to their understanding of the response to climate change.
8. We therefore recommend the government should consider placing "responding to the climate emergency" in school Biology, Geography, Physics, and Chemistry curricula (pre- and post-16) for all the nations of the UK. Furthermore, we would encourage schools to get involved in local tree planting initiatives to help build a sense of connectedness and

responsibility towards nature among younger generations. Planting, and then nurturing, trees is a great way to make a positive case for climate action among new generations.

9. We welcome the Government's pledge to create more green jobs through a £40 million second round of the Green Recovery Challenge Fund, announced in the Ten Point Plan for a Green Industrial Revolution.
10. Provision of on-site training to land owners and tenant farmers in plantation management and silviculture is needed to ensure long-term sustainable management of tree resources from single trees on farm to patches of mature and restored woodlands in agricultural landscapes. The [Royal Forestry Society](#) and [Arboricultural Association](#) provide excellent training, but this needs to reach outside the forest sector through partnership with stakeholders such as the [CLA](#) and [NFU](#).
11. A one-stop, country-wide, regularly reviewed, survey of low productivity marginal lands in agricultural catchments suitable for reforestation is needed to replace the current provision through [MAGIC](#) and the devolved arms of the [Forest Commission](#). We are not persuaded that the current tools support owners and managers to plant the right trees in the right places to enhance carbon capture and manage the limited land resource both for ecosystem services and food security.
12. A key challenge related to subsidising restoration forests in catchments is the time scale. Forests reach maturity over decades and centuries and thus allocation of private land to long-lasting vibrant forests for ecosystem services requires incentives to cover the initial capital outlay but also rewards ongoing provision of public goods in a way that is economically viable for the land owners.

How effective is the co-ordination between the four nations on forestry issues, including biosecurity, plant health and other cross-border issues?

13. Local ownership of forestry strategies and schemes is important, such as the Northern Forest initiative. Getting local buy-in from the regions and authorities within the four nations themselves is an important factor in the success of the schemes. As far as co-ordination is concerned, we would encourage the Government to continue to develop the strategy for England and encourage the devolved nations to adopt strategies adopted to their own specific contexts.

Why were previous ambitions for increasing tree planting in England not met and what lessons should be learned?

14. The current dichotomies between farming and forestry and between productive forests (predominantly conifer monocultures) and amenity woodlands (predominantly mixed native broadleaves) place significant barriers in the way of achieving afforestation targets.
15. Long-term, multi-stakeholder, farm-and-forest strategies, such as the ground-breaking 50-year community-led strategy in the [Wyre Forest](#), offer the best way forward for radical adaptation of landscapes to climate change. Learnings from the Wyre Forest project need to be taken up on a wider basis to ensure the success of similar schemes.
16. Focusing on tree planting without also focusing on building a UK forest bioeconomy, is bound to fail. Forest policies should address forest management as well as forest establishment.

17. Under the EU Common Agricultural Policy, no subsidies were stipulated for farm owners for greenhouse gas emission reduction measures thus slowing down progress on allocating land for forest restoration. Redirecting public funding to 'public funding for public goods', under the emerging Environmental Land Management Policy of the Government will, if applied correctly, incentivise tree-planting on poor agricultural land, and is to be applauded.
18. We should also recognise the importance of trees in urban environments, where they perform vital roles in helping to cool our towns and cities. They also support urban biodiversity, especially in areas where innovations such as green walls and roofs are deployed. Urban trees help to reduce anxiety and deliver other mental health benefits for people. For example, our colleague Professor Dominique Moran has demonstrated that trees and green spaces in prison estates help to [reduce prisoner violence and support rehabilitation](#).

In relation to increasing forestry coverage in England, what should the Government be trying to achieve? For example, how should the following policy objectives be prioritised?

- **Mitigating or adapting to climate change;**
- **Promoting biodiversity and nature recovery;**
- **Increasing biosecurity and plant health;**
- **Improving human well-being and health;**
- **Protecting natural and cultural heritage;**
- **Food security;**
- **Creating commercial opportunities from forestry, tourism and recreation; and**
- **Any other priorities?**

19. The priorities above are all important but not all of the same kind. Mitigating and adapting to climate change and promoting biodiversity are existential goals needed to restore more balance to the Earth System; targeting one at the expense of the other will ultimately prove fruitless, because it is well-attested that biodiverse forests are more resilient.
20. Increased biosecurity is a necessary condition for accomplishing climate change adaptation and mitigation, and this is supported by our recent survey of around 8,000 trees planted in an unconventional mix, which shows that diverse tree planting stimulates vigorous growth and minimises pests. Similarly, protecting natural and cultural heritage is a boundary condition on where we can afforest.
21. Improving human health and well-being is an outcome of greater human exposure to a diversity of forested landscapes. Improved food security is also an outcome of the utilisation of trees in farming. Entrepreneurial opportunities for innovation (e.g. increased tourism) also derive as an outcome of increased forest coverage.
22. In summary, climate-change adaptation and mitigation through biodiverse forested landscapes should be the primary goal of increasing forestry coverage. Increased biosecurity and consultative processes to protect natural and cultural heritage enable the primary goal. Increased human well-being and food security arise from the primary goal.

23. Importing and exporting sustainability have environmental and economic implications. Within the context of the UK agriculture sector, allocation of land for afforestation can result in importing food from locations where no greenhouse gas emission reduction technologies are in place. For a reduction in importing food, measures for a transition to precision agriculture are needed to maintain productivity and food demands under the “landscape diversification policies” as outlined in the Environmental Land Management Policy of the Government.
24. In the UK, food worth millions of pounds is wasted each year, even though the bulk of the wasted food is usable at the time of disposal. A broader push for societal food consumption efficiencies can be one instrument to ensure food security without running the risk of agricultural expansion.
25. Diversification of catchments through forest restorations can be linked to sustainable rural tourism as a source of income for the governmental subsidies for landowners for afforestation.
26. Development and support for forestry products-based industries (e.g. furniture industry) in the UK can be instrumental in supporting the afforestation targets by landowners.

Are the right policies and funding in place to appropriately protect and manage existing woodlands in England? How will prospective changes to policy and legislation affect this?

27. We strongly endorse the ‘public money for public goods’ basis of the emerging [Environmental Land Management](#) scheme. Since the evidence base for delivery of public goods is still being enhanced by research, the ELM scheme should be sufficiently agile to adjust payments as new evidence accrues.
28. To protect existing woodlands and manage them for long-term climate mitigation, the ELM scheme must incentivise carbon-conserving management practices, such as [continuous cover forestry](#), use of long-lived hardwood species, and provision of wood to high-value, long-life products such as building materials, especially where they replace carbon-intensive building materials such as concrete.
29. Sustained funding is needed to support research focused on delivery of ecosystem services, including net zero, from forested landscapes in the UK. BIFoR has been instrumental in arguing for the first substantial UKRI strategic programme of research in this area. This [UK Treescapes](#) programme will not be sufficient on its own. Future research programmes, across all relevant elements of UKRI, should support basic research but also the applied research and innovation that has hitherto been focused in EU grants and in the research programme of Forest Research.
30. NGOs, funded by large and small donations, are important actors in the forest sector. The University of Birmingham has matched substantial private philanthropic giving to establish the world’s largest global-change facility, [BIFoR FACE](#). Other very significant philanthropic funding underpins the [Heart of England Forest](#) and the [Earth Trust’s Paradise Wood](#). Philanthropic vision, matched with academic engagement, is leading change in UK forested landscapes but will not be sufficient in itself.
31. The [Science and Innovation Strategy for forestry](#) should be enlarged and re-shaped to support research and innovation in all parts of the UK forest sector, rather than being the bespoke funding stream for Forest Research (FR) as currently. FR should be re-constituted to

be able to receive research funding directly from UKRI. Private-sector re-investment in its own sector could be channelled through a re-shaped Science and Innovation Strategy.

32. New support, that looks to be coming via the Nature for Climate fund, to revivify the [Community Forests](#) initiative, is very welcome. In our experience, Community Forests are an excellent vehicle for delivering social and ecosystem benefits to diverse communities.
33. We welcome the provisions in the Environment Bill around controlling the felling of trees in England (Part 6, Clauses 100 and 101) and believe the Bill should be amended so that these automatically come into force two months after the Act is passed.
34. As one of the largest custodians of land in the UK, the National Trust must be seen as a key stakeholder in the Government's afforestation plans. We recommend that the Government work closely with them to sustain new plantations and manage existing woodland areas.

Summary and recommendations

35. The UK should use its Presidency of COP26 to champion tree planting and management of existing forested landscapes, making this one of our key objectives. To demonstrate our leadership in this area, we recommend the Government have a stated aim to bring UK forest coverage in line with European average.
36. Effective maintenance of existing forested landscapes needs to be placed on an equal footing to tree planting.
37. Amendments should be made to the Environment Bill to bring provisions controlling the felling of trees in England into force automatically two months after the Act is passed.
38. We need to address a skills shortage in forest management. Curriculum change needs to happen, involving schools in planting initiatives. Tree planting is a positive step towards tackling climate change and we should encourage new generations to see this as important too - as tree planting and management is a task that spans generations.
39. In summary, climate-change adaptation and mitigation through biodiverse forested landscapes should be the primary goal of increasing forestry coverage. Increased biosecurity and consultative processes to protect natural and cultural heritage enable the primary goal. Increased human well-being and food security arise from the primary goal.

November 2020