

Free education resources linking research to the classroom helping deliver your school climate change action plans

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Here at the University of Birmingham we are undertaking ground-breaking research addressing the impact of climate change on the sustainability of our natural Woodlands. The centrepiece of the Birmingham Institute of Forest Research, (BIFoR) is a 15 year experiment that has already been running for 8 years. In our experiment we have been exposing mature oak trees to levels of carbon dioxide that we expect to see by 2050 and beyond, these trees are bringing us a timely message from the future about the impact of and adaptation to climate change.

Around this research we have built a set of [free education resources](#) that can directly drop into your curriculum and broaden your pupils experience of Biodiversity, Climate change and sustainability. They are scaffolded with lesson plans, adaptable slides and other resources that you can use directly or differentiate for your classes as appropriate.

Our resources can support you in delivering your DfE climate change action plans and cover learning outside the classroom (LOT), decarbonization and carbon capture, assessment of biodiversity, green skills and careers, as well as working together in groups to solve problems.

Decarbonisation: Tree planting is highly relevant for net Zero strategies. As you explore the [Virtual forest](#) you will discover that the Oak trees in our research woodland are fixing more carbon through photosynthesis and storing it. However, that carbon is also going elsewhere in the ecosystem system. Our [BIFoR in a box](#) citizen science project will allow you to install tree growth (dendrometer) bands in your school and calculate the carbon your tree is capturing. Our growing community of over 120 schools will allow you to compare the [carbon capture](#) of your trees with those in other parts of the country and across the world.

Climate change in the curriculum: Trees and woodland ecosystems are incredible vehicles for exploring the carbon cycle and the water cycle, as well as the interactions between them. We have examples of **virtual forests** including [oak forest](#) in Staffordshire, [mangrove forests](#) in Dubai and [rainforests in the Amazon](#) that illustrate many aspects of the curriculum in lessons. We have a series of online [mini lectures](#) delivered by PhD students doing the research.

Biodiversity: Our experiment monitors Biodiversity in a range of different ways and the impact of elevated carbon dioxide on these different ecosystems. We provide specific lesson plans on how to measure biodiversity and monitor its change. For example, a virtual exercise in the Norway assessing the distribution of the world's smallest tree away from a melting snow patch. This delivers the learning outcomes of the [plant distribution with quadrats](#) practical at A level and can be adapted for other year groups and key stages.

Climate education and green careers: There are huge diversity of careers available and these are increasing as we need to engage with climate change. We highlight these on our website illustrating [career paths](#) and the **green skills** that people have acquired and now deliver in the workplace.

Student projects: Collaboration and group work, are key skills that required for climate adaptation. Our [Future Forests](#) exercise allows students to work together to come up with solutions to the effects of climate change on forests locally and/or globally. Schools can take the lesson plans and work independently or intersect with us and other schools taking. We are holding a student symposium on the Edgbaston campus in Birmingham in Summer 2025 where students can present their findings and test their solutions against experts in the field. There may be an opportunity to take these solutions forward and present at COP30 Brazil, November 2025.

These are just some of the areas we think our education resources around the BIFoR FACE experiment can enrich your curriculum and support the development of your climate change action plans. These are free resources, that have been co-designed with educators to engage students with this cutting edge climate change research. Please use them as you see fit, we warmly welcome any feedback.