

Woodland creation as a carbon sink

Frequently Asked Questions (Derived from the Woodland Carbon Code <http://www.forestry.gov.uk/carboncode>)

1. How effective are trees at fighting climate change?

The primary focus of businesses and individuals should be to reduce direct emissions of greenhouse gases. Where this is not possible, woodland creation offers a cost-effective and tangible way of soaking up some of the CO₂ that has been released into the atmosphere. Currently, woodlands soak up around 2% of the UK's annual emissions of greenhouse gases (in CO₂e), but with increased planting rates, have the potential to soak up much more, thus being one of many measures that can help mitigate the effects of our emissions.

2. How does carbon sequestration work / how does planting trees help?

Carbon is a chemical element found in all known life forms. It is exchanged throughout the earth's biosphere and reused by all living organisms. When carbon is absorbed from the atmosphere, from a gas into a solid state, by the oceans, terrestrial environments or geological formations, it becomes 'locked' in a more stable form. This reduces the amount of carbon in the atmosphere. Trees are excellent at sequestering carbon from the atmosphere and retaining it for long periods in their wood and soil.

3. What are the main considerations for Woodland Carbon planting projects?

A woodland creation project has to ensure it meets three main requirements for it to ensure it is a worthwhile carbon sequestration tool.

Permanence - The climate benefits of forest carbon sequestration may be compromised through human or natural disturbances, such as fire, felling or insect infestation. In such cases, the carbon stored in a forest project may be emitted to the atmosphere. To guard against these kinds of possibilities, protocols such as management plans attempt to assure the permanence of forestry offset projects.

Additionality - For a project to be 'additional' it must be shown to remove additional amounts of CO₂ from the atmosphere compared to what would have happened in the absence of a forest carbon market.

Leakage - Some projects will be successful in sequestering carbon within the project area, but may result in changing activities or behaviours elsewhere. These changes may lead to reduced carbon sequestration or increased emissions outside the project boundary, negating some of the climate benefits associated with the project. This is called leakage.

4. Hasn't there been some criticism of projects designed to sequester carbon in trees?

There has been some criticism of woodland carbon projects largely because of the lack of standards and scrutiny. In the UK the new Woodland Carbon Code will address these concerns.

Some organisations would prefer to see direct reductions of greenhouse gas emissions. Woodland creation will never be an alternative to reducing emissions, but it can play a role in mitigating the effect of our emissions, as well as ensuring that our landscapes are more resilient to climate change.

5. Which sequesters more carbon - conifers or broadleaves?

The level of carbon sequestration depends heavily on both the species used and operational options chosen to manage the woodland. Currently, carbon sequestration rates are highest in fast-growing, highly productive sites of conifer stands. However, due to a warming climate, there is a need to select and use provenances and species that are more suited to the potential future climate changes.

In general most broadleaved species have a higher carbon content than conifers but this is offset by their lower rate of growth, although in species with very long rotations (i.e. >100 years) such as oak, the carbon stocks averaged over time can be higher than in faster growing conifer stands.

6. Where will the trees be planted?

On land made available by owners. Much of this is likely to be agricultural land, but there are also opportunities (for example) on brownfield sites. Within the UK, individual countries have their own policies regarding the suitability of different types of land for planting – and all planting is potentially subject to environmental impact assessment if it is likely to have a significant impact on the environment.

7. Are there any other benefits to planting more woodland?

Woodlands under sustainable forest management can deliver many and multiple benefits, in addition to their role in sequestering carbon. Timber and



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woodfuel, employment opportunities, areas for recreation, biodiversity benefits, flood alleviation, improvements in water quality and helping to adapt our landscapes to climate change by linking habitats to support wildlife.

8. Who owns the land where woodland will be created?

The Rockingham Forest for Life (in line with the Woodland Carbon Code) aims to encourage woodland creation on all types of currently unforested land, owned by a broad range of people and organisations. We anticipate woodland carbon projects to be brought forward from landowners, farmers, and land agents, communities and others.

9. Can I be sure that if I invest in woodland carbon projects in UK I'm not causing deforestation or forcing the need for intensive farming elsewhere in the UK or globally?

To meet the Code projects must include an assessment of whether they are likely to displace agricultural or other activities (which the woodland replaces) to another location. Ideally projects will not create the need for compensatory activities elsewhere but if they do they must, where possible, quantify the GHG (greenhouse gas) emissions created in another location and account for them within their project GHG budgeting.

10. How can I be sure the carbon is permanently taken out of the atmosphere?

Any woodland carbon project will result in a permanent land use change from open ground to woodland. Under the UK Forestry Act 1967, licences are required to fell trees (with certain exceptions, such as for development permitted through the planning system). The project owner will be required to take steps to ensure that the woodland is not removed or replaced by current or future land owners; placing on them a duty to carry out compensatory planting should an area be felled for development. Each project will require a risk assessment for the likelihood of failure e.g. due to damage by pests and diseases, wind or fire, and a strategy to minimise the risks.

11. How do I know the carbon scheme I want to invest in is planting woodland that meets the code?

Woodland creation projects which are working towards, or have been certified as meeting, the standards set out in the code will be listed in the registry of UK woodland carbon projects. The registry is publicly available and will allow people to search for particular projects. Each project will have a unique reference number. Certified projects will carry the Woodland Carbon Code approved stamp.



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12. What happens if the 'carbon woodland' burns/blows down or is illegally felled?

Felling licence controls apply regardless of whether the woodland is a carbon project or not. If woodland is illegally felled there are powers to require the owner to replant it. Illegal felling of any carbon project would automatically result in the withdrawal of its certification status and the refusal of any application for future projects on the same land. Contractual liability under the Code would also obligate the project owner to compensate clients for the lost carbon.

13. Where does the carbon go if a woodland is felled for timber/woodfuel?

When trees within the woodland are felled the carbon which was stored in the trees remains in the wood products unless, or until, they are burned or decompose. Following clear-felling, woodlands are replanted so the woodland will continue to sequester carbon. Carbon credits will be allocated based on the long-term (e.g. 100 year) average sequestration rate of a particular woodland project, given the plans for felling and replanting trees.

14. How do we know that planting projects are sequestering the CO₂ claimed?

Methods of carbon measurement have been developed which will allow projects to consistently predict and measure carbon

- Carbon Lookup Tables allow a project to predict the amount of carbon that might be sequestered for a range of site, woodland, and management types.
- Direct measurement of the volume of trees as they grow will give a more precise picture of the carbon actually sequestered

15. What's the difference between the compliance and voluntary market?

The compliance (or regulated) carbon market is created and regulated by mandatory international or national agreements. These agreements set targets for countries to reduce their emissions, which they can do in several ways. They may attempt to streamline operations and introduce low carbon options into work streams to reduce their own output. When methods for



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personal or business reduction have been exhausted, they may further help to compensate for emissions they cannot reduce by investing in carbon reduction projects. For example under the Kyoto Protocol, there are two internationally recognised methods for carbon reduction, accounting and trading:

- [UN's Clean Development Mechanism](#), which creates 'Certified Emissions Reduction' (CER's) credits
- [UN's Joint Implementation mechanism](#), which creates 'Emissions Reduction Unit' (ERU's) credits

Within Europe, the [European Union's Emissions Trading System](#) (EU ETS), allows for the trade of carbon in a number of sectors and generates 'European Union Allowances' (EUA's).

In the voluntary market a number of carbon standards have been established which follow stringent standards. This voluntary market for carbon works outside the compliance market. It enables sectors of the economy which are not regulated or countries which have not ratified the Kyoto protocol to trade in carbon. Some of the most well known voluntary standards are:

- The Voluntary Carbon Standard
- The Gold Standard
- Climate, Community and Biodiversity Standards
- Plan Vivo

16. How does the Woodland Carbon Code standard relate to others such as the government's Quality Assurance Standard?

The Woodland Carbon Code is a voluntary standard for woodland creation projects in the UK. As such it relates only to 'voluntary' projects and these



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projects cannot sell carbon into the compliance or regulated carbon markets. The Code is based upon similar criteria and standards as other globally recognised carbon standards.

The UK Government launched a Quality Assurance Scheme for carbon offsetting in 2009. This scheme is underpinned by similar standards to those in the woodland carbon code, but it only provides assurance for Kyoto-compliant (compliance) projects at present, and as such does not include woodland creation projects.

17. How much does it cost to create a woodland?

The costs of woodland establishment differ depending on the nature of the site and the type of woodland that will be established. A general guide is approximately £5000 per hectare (up to circa £10000 per ha if land purchased).

18. How much carbon does woodland actually sequester?

This is variable dependant on the type of woodland planted and its volume of trees. A “ball park figure is approximately 10tCO₂ per hectare per year if the woodland is a mixed stand of 70% broadleaved and 30% other species at 1200 trees.

19. How much does it cost to offset 1 tonne of CO₂ by planting woodland?

Woodland creation is a cost-effective way of sequestering carbon dioxide. [The Read Report](#) shows that woodland, on average, delivers abatement at a cost of about £25 per tonne of CO₂. Costs vary according to the type of woodland. The most cost-effective are energy crops and faster growing productive species although mixed and native woodlands are also cost-effective. The cost-effectiveness of woodland creation is further increased if an evaluation of the co-benefits is included (e.g. biodiversity, recreation and other ecosystem services).

20. What steps has the Forestry Commission taken to reduce its carbon footprint?

Facilitating the development and introduction of the Woodland Carbon Code on behalf of the UK’s forestry sector is just one example of the wide range of initiatives the Forestry Commission (FC) is taking to reduce its carbon footprint and help tackle climate change. See the [FC’s Business Sustainability Programme](#) for more information.



Amongst other things, to minimise the impact of its activities, the FC has;

- set annual targets for reducing emissions from travel and energy use;
- introduced initiatives on waste management and recycling
- installed new video conferencing facilities at main offices
- ***committed to achieving independent certification to international standards of environmental management under ISO14001***