Key points for CCC Sixth Carbon Budget

A CONFOR BRIEFING

Summary

This year, three important new studies are available which should inform policies on forestry in the sixth carbon budget:

1. A long-term study showing that some afforestation in the UK can cause loss of carbon attracted considerable attention; however, this was a study of very slow-growing montane native woodland, not wood-producing forests.
2. A new interactive mapping tool shows that fast-growing timber crops on better land deliver the fastest and deepest net carbon benefit, even before the carbon benefit of the harvested wood is considered.
3. Confor published a major review of evidence on forestry and biodiversity, showing that forests planted for wood production have significant biodiversity benefit supplementing native woodlands, that active management for wood production often benefits wildlife, and the wood grown in the UK helps protect global forest habitats. This suggests that the trade-off between carbon/wood and biodiversity has been greatly overstated.

On the basis of this research, Confor recommends that the sixth carbon budget:

1. ***explores the potential for short-rotation forestry (SRF) as a farm crop;***
2. ***clarifies the carbon benefit of using more harvested wood products (HWP) from UK forests.***

1. Short Rotation Forestry (SRF)

SRF has been overlooked, possibly because (we understand) planting SRF was not eligible for EU co-funding and was therefore omitted from EU funded planting schemes. This is missing a major opportunity. SRF is low-input compared with other biomass crops, delivers on-farm climate resilience, and yields a flexible crop for applications such as construction board, biorefining and bioenergy.

2. Harvested Wood Products (HWP)

The CCC has recognised that HWP are a core part of the forest and wood carbon cycle. Yet HWP are often ignored or over-looked in policy analyses of the contribution of forestry to achieving net zero. Producing more home-grown wood will also assist with other key government policies of a green recovery, and will tackle the UK's unenviable position as the second largest net importer of wood products in the world after China.

Right: Spruce establishing on a former barley field at Lowther Estate, Cumbria.

The risk: forests for carbon loss?

A new paper *Tree planting in organic soils does not result in net carbon sequestration on decadal timescales* (Friggens et al 2020) gained considerable publicity for demonstrating that tree planting could result in net carbon loss:

- a long-term study of a small number of sites.
- sites were heather moorland on organic soils in northern Scotland.
- Trees were mostly birch with some pine, growing at yield classes of less than 2.
- The pine had returned to carbon equilibrium after 12 years, but some birch sites had suffered net carbon loss even after 39 years.

What does this mean for wood-producing forests?

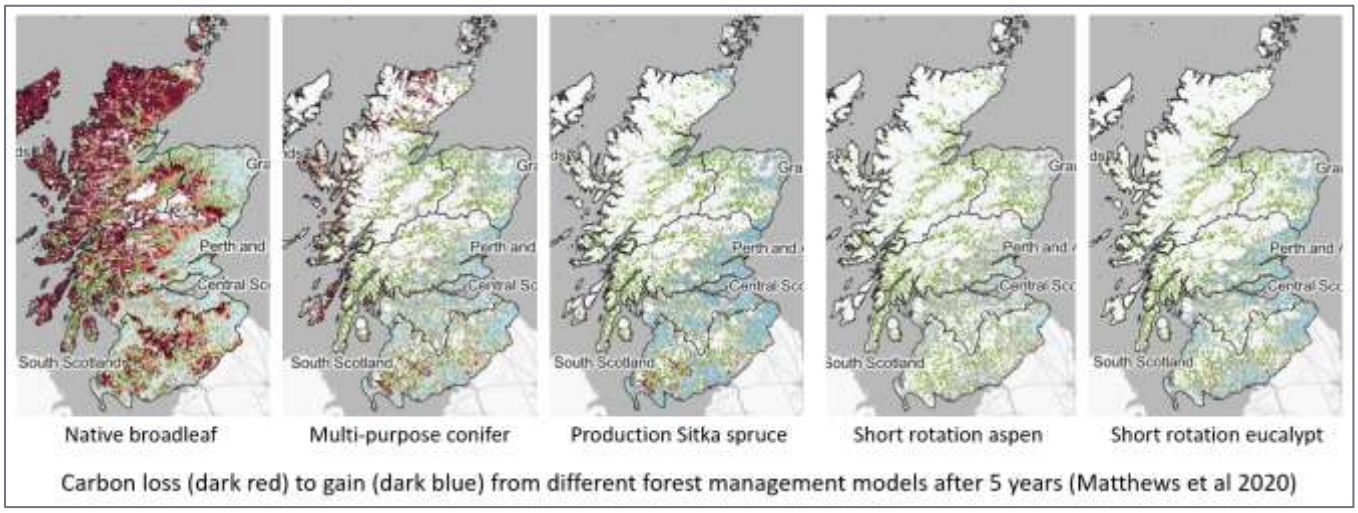
These slow-growing trees delivered a fraction of the carbon capture of a tree grown for timber, so the study has low relevance for the forests for wood production.

However, an important finding is that carbon loss was not caused by ground preparation but soil respiration, particularly in birch, which is known by foresters as a soil improving species. This suggests that policies favouring natural regeneration or low disturbance cultivation techniques at the expense of slower growth may not be better for carbon.

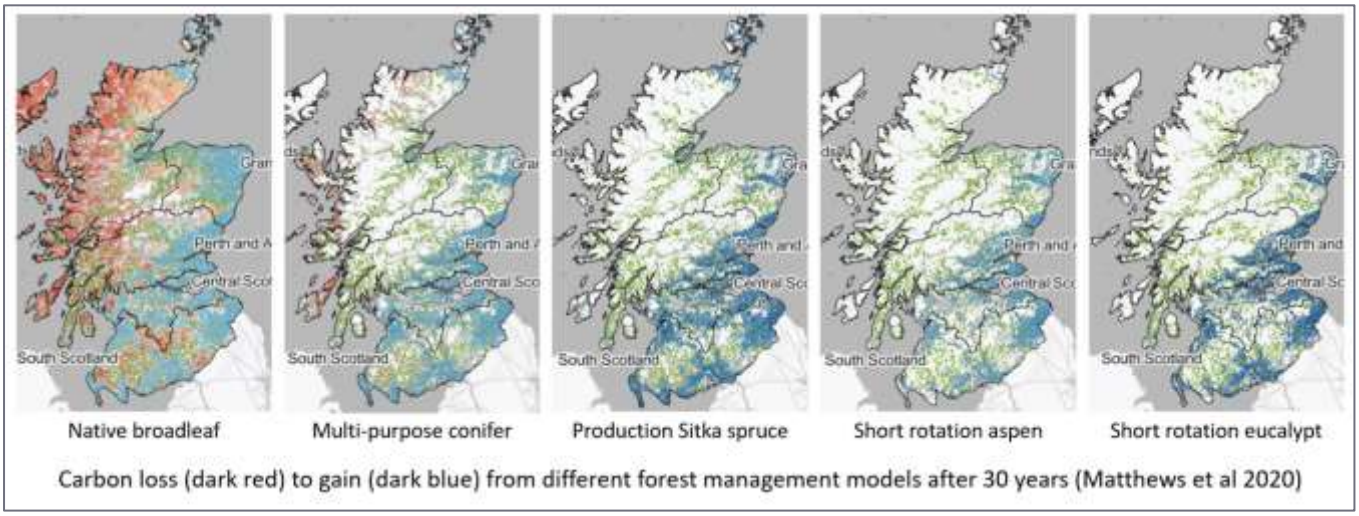
The opportunity: forests for carbon gain

A more significant piece of research is recent research by James Hutton Institute, Forest Research and University of Aberdeen, *Not seeing the carbon for the trees? Mapping net change in carbon from afforestation in Scotland* (Matthews et al 2020).

- This research used datasets on soil and site potential to calculate fluxes of above and below ground carbon across Scotland for the next 100 years.
- The research is visualised in an interactive map (screenshots below).
- The study notes that the carbon capture figures for wood-producing species are in many cases conservative, as these will frequently achieve higher yields than those used in the model.
- Even with these conservative figures, fast-growing wood-producing species including production Sitka spruce and short-rotation tree crops are already delivering carbon benefit after 5 years on better sites, at a rate which accelerates to 2050.
- In general, growth rates for trees of all types will be faster in England and Wales.
- The map only measures on-site carbon, and does not include carbon benefits of harvested wood products.
- Data of this sort raises the possibility of shifting from general woodland area targets to specific forest carbon targets, making more strategic use of land.



Carbon loss (dark red) to gain (dark blue) from different forest management models after 5 years (Matthews et al 2020)



Carbon loss (dark red) to gain (dark blue) from different forest management models after 30 years (Matthews et al 2020)

The opportunity: high-carbon forests for biodiversity

In June 2020, Confor released its report, *Biodiversity, forestry and wood*. This was based on a review of scientific literature, informed by comments from academic researchers and ENGOs, plus a series of case studies from forestry businesses around the Confor network. The report has been widely welcomed and is already informing the debate about forests and wildlife. The key findings of the report are:

- Forests planted for timber are important biodiversity habitats in their own right, and provide a vital supplement to native woodland habitat.
- Over the past 30 years, the provisions of the UK Forestry Standard adopted in all wood-producing forests have substantially improved these forests for wildlife. This includes leaving deadwood, planting native trees and diversifying forest structure.
- Bringing neglected native woodlands into management for products like firewood, such as former coppice or farm woodland, can deliver substantial benefits for biodiversity and creates an income stream for better general management, as well as supplying the low-carbon economy immediately.

- Growing wood in the UK, which at present imports 80% of what it uses, reduces pressure to exploit forests overseas with higher biodiversity value.

The report suggests that the perceived trade-off between forests which are good for carbon capture and the low-carbon economy, and forests which are good for biodiversity. When the whole picture is considered, the role of wood-producing forests is vital for biodiversity.

Key policy: short rotation forestry

For traditional forestry planted in the next 30 years, most carbon benefit will be onsite with the main timber harvest after 2050 although there are opportunities for the low-carbon economy in thinnings.

However, the development of faster-growing tree crops and the interest in using agricultural land for the low carbon economy raises the possibility of short rotation forestry which will capture carbon fast and deliver low-carbon material well before 2050.

These forests will not only service the biofuel sector. Short-rotation spruce crops can also supply fibre for UK board production, locking up carbon in construction.

Short rotation forestry, particularly of spruce, will not only deliver immediate benefit in tackling the climate emergency. It will also:

- increase resilience in the UK forestry sector by plugging the 'timber gap' caused by the uneven age of UK forests – sustaining jobs and businesses for this crucial sector of the low-carbon economy;
- Increase climate change resilience on farms by slowing the flow of water, protecting soil and creating shade and shelter for livestock.
- Increase farm biodiversity by diversifying habitat and creating margins.
- Diversify farm income streams with an investment crop which can be harvested when the time is right, either when the farm business wishes to realise capital or when the timber price is high.

Compared with other biomass and bioenergy crops, short-rotation forestry is much lower in chemical input and tillage, and provides a more flexible crop which can be used for fuel, construction board, biorefining feedstock or other uses.

The lack of clarity as to whether short-rotation forestry is a forestry or farm crop has resulted in a lack of attention amongst farmers and policymakers. The sixth carbon budget is a key opportunity to explore the potential of tree crops on farms which could be delivered through a programme including:

- Clarification of its status – regulated as an agricultural crop, not requiring planting permission or felling licenses
- Access to annual carbon payments to facilitate cash flow while the crop is established
- Information and training delivered by Farm Advisors for landowners wishing to establish a short-rotation forestry crop.

Key policy: harvested wood products

The CCC embed the link between a land-use change to forestry and the use of wood in the economy into their analyses.

- By creating jobs in forestry and wood processing, UK HWP have a vital role to play in the UK's green recovery.
- As a sustainable supply of high-quality fibre, UK HWP is essential to reducing pressure on high-nature-value and carbon storing forests overseas.

Lord Deben has highlighted the benefit of using more home-grown wood at the All Party Parliamentary Group on Forestry and Tree Planting (APPGFTP) and called on UK government to take a lead through public procurement. Scottish Government has raised its target for using more home-grown wood and Lord Goldsmith said at the APPGFTP that he wanted to reduce the UK's forecast level of imports by producing more.

Yet for government agencies, environmental campaigners or businesses focusing their thinking within their own sector, the links between forestry and wood are not intuitive:

- Architecture and construction understands wood as a sustainable material, but low awareness of the UK forestry industry.
- Farming and land use understands the importance of the food supply chain, but has low awareness of the wood supply chain, or high value of UK timber.
- Industry understands the need to replace polluting materials, but has low awareness of the potential for wood-based replacements to be grown and manufactured in the UK.
- International development understands the need to avoid illegal logging overseas, but not the potential of UK land to relieve pressure by supplying an alternative source of sustainably-grown fibre.

> *"The people of the towns do not look upon the countryside as the greatest and most important of their factories, and are apt to resent and be puzzled by any striking change in its appearance"*
>
> *James Macdonald, Forestry Commission, Lecture to Scottish forestry students, 1950.*

The CCC has a key role to play in making the cross-sectoral links between low-carbon land use and low-carbon construction and industry. The sixth carbon budget is an opportunity to challenge all UK governments to commit to do more to increase the use of HWP, in particular in construction.