Scottish Forestry
Coilltearachd na h-Alba

Information Note – December 2020

Climate Mitigation: Woodland creation and management

Summary:

All woodland types have a role to play in climate mitigation. Slower growing broadleaves can accumulate high carbon reserves within the woodlands themselves over the longer term. Faster-growing conifers can sequester more quickly in the medium to long term (<50 years) and also produce wood products that substitute for high GHG materials and fossil fuels in the longer term. They support Scotland's economy, green recovery and job creation. Home grown timber additionally ensures we reduce offshoring of our wood production to natural forests.

Key points:

1. Forests have a key role to play in climate mitigation. There are a wide range of options for woodland creation and woodland management and in the right circumstances, all options can have benefits for climate mitigation.

2. In broad carbon terms, faster-growing, generally coniferous tree species sequester carbon quickly in the medium to long term (<50 years) and also avoid GHG emissions in the very long term (>50) by using renewable wood products and wood fuel in place of non-wood products that involve high GHG emissions in their manufacture, and fossil fuels. Slower-growing broadleaf tree species can accumulate high carbon reserves, within the woodland itself, in the very long term (>50-100+ years), but provide fewer substitution benefits.

3. Carbon is stored in the wood products harvested from forests. The wood products can substitute for non-renewable, non-wood products, such as made from concrete and steel, and wood fuel can substitute for fossil fuels. Wood products also substitute for wood products harvested elsewhere, including from forests that may not be managed sustainably. Recent research suggests that, typically, for every tonne of carbon sequestered in a new wood product, about 1 tonne of carbon is "saved" by avoiding the use of alternative materials. Home grown wood products will also reduce carbon miles to import the wood we use. The weight of softwood (conifer) harvested annually in Scotland is around the 6.5-7.0 million green tonnes mark, whereas for hardwood (broadleaves) it has recently risen to about 70 thousand green tonnes. In 2019 of all solid timber products (sawnwood and panels) consumed in the UK, 88% were made from softwood and 61% of the solid timber products were imported.

4. A recent study found that creating a forest by planting native broadleaf tree species today (2020), and managing them as conservation woodlands, could typically sequester 1.9 tonnes of CO_2 per hectare per year over the period up to 2050, and typically 6.2 tonnes of CO_2 per hectare per year over the period up to 2100 with potentially more under low impact management systems. Creating a new “productive forest” now (2020), with the objective of managing it for wood production, typically contributes overall GHG savings equivalent to 3.5 tonnes CO_2 per hectare per year up to 2050, and typically 7.0 tonnes CO_2 per hectare per year over the period up to 2100. These estimates allow for net carbon sequestered in the wood products harvested from the forest and for product substitution effects. However, there is considerable variability depending on species used and management system. For example, planting higher yielding (YC20) improved Sitka spruce now (2020), and managing for wood production can sequester more than 14 tonnes of C02 per hectare per year up to 2050, and more than 7 tonnes of C02 per hectare per year up to 2100. Product substitution effects can provide additional GHG savings of at least 3 tonnes CO2 per hectare per year up to 2050 and at least 6 tonnes CO2 per hectare per year up to 2100.

5. Climate mitigation is only one of the reasons for planting trees or creating new forests however, and since 1998 the UK has ensured that any new forest created complies with international standards of sustainable forest management though the UK Forestry Standard. We also work to the principle of getting the right tree in the right place, which is also important to maximise carbon benefits.