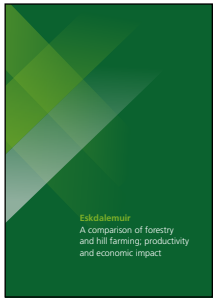
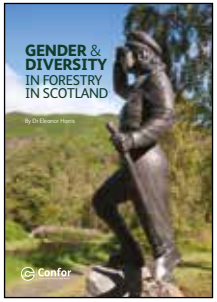
Confor
Promoting forestry and wood

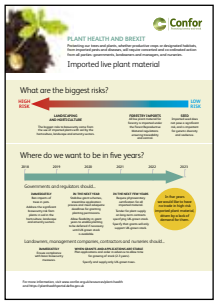


Eskdalemuir: a comparison of forestry and hill farming

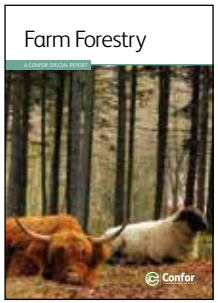
Forestry and Flooding



Gender & Diversity in Forestry in Scotland



Plant Health and Brexit



Farm Forestry

Eskdalemuir

carbon benefit from forestry and timber

Confor
Promoting forestry and wood

0131 240 1410 eleanor@confor.org.uk @forestsandwood www.confor.org.uk

Planting trees for carbon is now globally recognised. In the UK, the ambitious targets set by the Committee on Climate Change have been key in driving up woodland creation in recent years. Forest owners can become accredited under the Woodland Carbon Code.

However, there is as yet no recognition of the vital role of timber, the harvest of the forest, in carbon reduction. 'Carbon Capture and Storage' technologies (CCS) are deemed to be those which would lock up carbon for millions of years. Yet CCS is generally admitted to be decades away; and the need to reduce our carbon emissions rapidly is urgent.

Harvesting timber and making it into products means that carbon is locked up as long as the forest supplies new material faster than the timber products degrade.

In this important study, Sandy Greig has calculated that the carbon benefit of Eskdalemuir in southern Scotland is 7.3 tonnes of CO_2 per hectare per year. It demonstrates that farmers integrating forestry into their enterprises, could make a major contribution to meeting climate change targets.

In 2013, UK carbon emissions were reported as 7.1 tonnes per person.* This means every hectare of forest (complying with the UK Forestry Standard with 75 % productive conifer, see right) saves approximately one person's carbon emissions.

Even more important is the methodology developed by this study. This could be used to demonstrate the carbon benefit of woodland with different compositions, or different uses – for example if technologies like Cross Laminated Timber allowed more wood to be used in construction. It also highlights where further research would yield more accurate calculations, for example in forest soil carbon.

Besides carbon benefits, the restructuring of Eskdalemuir under the UK Forestry Standard is benefiting wildlife and providing places to walk and cycle. At only 40 years old, it demonstrates how significant a difference one generation can make.

The full report is available at http://www.confor.org.uk/resources/publications

* *Carbon Dioxide Information Analysis Center*

ESKDALEMUIR FOREST

20,000 hectares
established 1960s

Now being restructured in compliance with the UK Forestry Standard to incorporate:

15%
open space (3,000 hectares)

5%
native broadleaves (1,000 hectares)

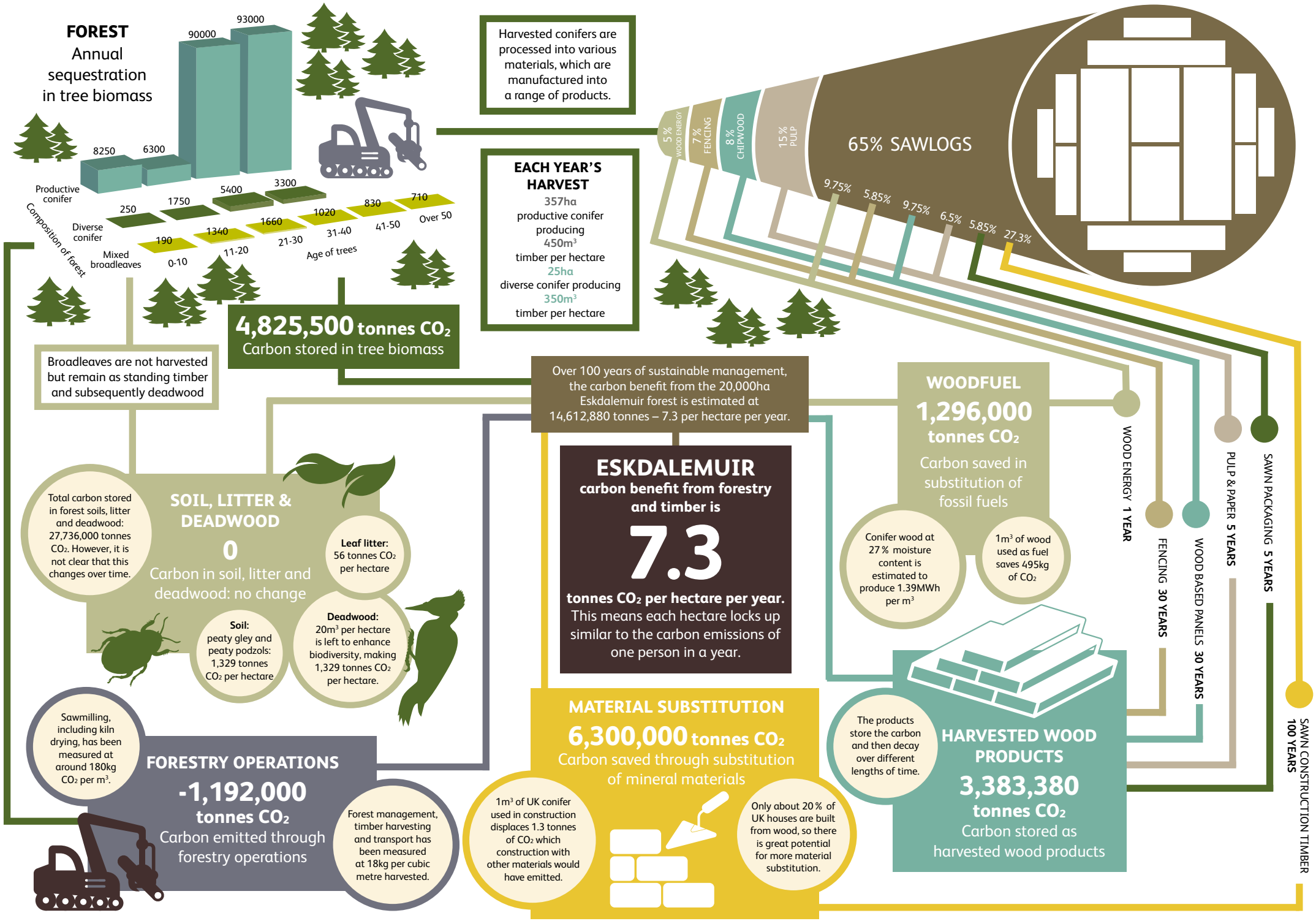
5%
other conifers (1,000 hectares)

75%
productive conifer
(15,000 hectares)

This report is based on Eskdalemuir having been brought fully into sustainable production, with an equal distribution of tree ages. The report looks at the carbon benefits from the forest under sustainable management over a 100 year period.

Cover photo: Eskdalemuir forest. Webbaviation

Look inside to find out how Eskdalemuir locks up carbon...


FOREST
Annual sequestration in tree biomass
93000
90000
8250
6300
3300
5400
1750
250
1660
1340
1020
830
710
190
Productive conifer
Diverse conifer
Mixed broadleaves
Composition of forest
0-10
11-20
21-30
31-40
41-50
Over 50
Age of trees
Harvested conifers are processed into various materials, which are manufactured into a range of products.
EACH YEAR'S HARVEST
357ha
productive conifer producing
450m³
timber per hectare
25ha
diverse conifer producing
350m³
timber per hectare
5% WOOD ENERGY
7% FENCING
8% CHIPWOOD
15% PULP
65% SAWLOGS
9.75%
5.85%
9.75%
6.5%
5.85%
27.3%
4,825,500 tonnes CO₂
Carbon stored in tree biomass
Broadleaves are not harvested but remain as standing timber and subsequently deadwood
Over 100 years of sustainable management, the carbon benefit from the 20,000ha Eskdalemuir forest is estimated at 14,612,880 tonnes – 7.3 per hectare per year.
ESKDALEMUIR
carbon benefit from forestry and timber is
7.3
tonnes CO₂ per hectare per year.
This means each hectare locks up similar to the carbon emissions of one person in a year.
WOODFUEL
1,296,000 tonnes CO₂
Carbon saved in substitution of fossil fuels
Conifer wood at 27% moisture content is estimated to produce 1.39MWh per m³
1m³ of wood used as fuel saves 495kg of CO₂
WOOD ENERGY 1 YEAR
FENCING 30 YEARS
WOOD BASED PANELS 30 YEARS
PULP & PAPER 5 YEARS
SAWN PACKAGING 5 YEARS
SAWN CONSTRUCTION TIMBER 100 YEARS
SOIL, LITTER & DEADWOOD
0
Carbon in soil, litter and deadwood: no change
Total carbon stored in forest soils, litter and deadwood: 27,736,000 tonnes CO₂. However, it is not clear that this changes over time.
Leaf litter: 56 tonnes CO₂ per hectare
Soil: peaty gley and peaty podzols: 1,329 tonnes CO₂ per hectare
Deadwood: 20m³ per hectare is left to enhance biodiversity, making 1,329 tonnes CO₂ per hectare.
FORESTRY OPERATIONS
-1,192,000 tonnes CO₂
Carbon emitted through forestry operations
Sawmilling, including kiln drying, has been measured at around 180kg CO₂ per m³.
Forest management, timber harvesting and transport has been measured at 18kg per cubic metre harvested.
MATERIAL SUBSTITUTION
6,300,000 tonnes CO₂
Carbon saved through substitution of mineral materials
1m³ of UK conifer used in construction displaces 1.3 tonnes of CO₂ which construction with other materials would have emitted.
Only about 20% of UK houses are built from wood, so there is great potential for more material substitution.
HARVESTED WOOD PRODUCTS
3,383,380 tonnes CO₂
Carbon stored as harvested wood products
The products store the carbon and then decay over different lengths of time.