ystadegau ar gyfer cymru
statistics for wales

Llywodraeth Cymru
Welsh Government

Woodlands for Wales Indicators 2014-15

ystadegau ar gyfer cymru statistics for wales

Llywodraeth Cymru Welsh Government

SDR: 204/2015

16 December 2015

Woodlands for Wales Indicators 2014-15

This is the sixth indicators report since the revision in March 2009 of Woodlands for Wales, the Welsh Government's strategy for woodlands and trees.

The aim of the indicators is to monitor progress towards achieving the 20 high level outcomes described in Woodlands for Wales. Many of the indicators relate to more than one of the high level outcomes. As some aspects of woodlands and trees change slowly, some indicators are not updated every year, but instead every two, three, or five years, in line with the reporting programme of the National Forest Inventory and some Natural Resources Wales surveys.

Some information is only available for limited periods or areas, while for some indicators there is only a baseline figure at present. A few of the indicators are still under development and reporting against these should occur in future years. For more information on the quality of the statistics and the definitions used please refer to the 'Key Quality Information' and 'Glossary' sections towards the end of the bulletin.

Key points

- The area of woodland in Wales has increased over the last thirteen years and is now 306,000 hectares.
- The amount of new planting increased between 2009 and 2014 when a total of 3,289 hectares were planted, but the rate of planting fell back in 2015 to 103 hectares.
- The forestry sector in Wales has an annual Gross Value Added (GVA) of £499.3 million and employs between 8,500 and 11,300 people.
- 64% of surveyed adults in Wales reported visiting woodland recreationally in the last few years and 52% of all outdoor visits included time spent in woodland.

Statistician: Richard Grove **Tel:** 029 2082 5064 **E-mails:** richard.grove2@wales.gsi.gov.uk

Next update: October 2016 (provisional)

Twitter: www.twitter.com/statisticswales | www.twitter.com/ystadegaucymru

Cyhoeddwyd gan Y Gwasanaethau Gwybodaeth a Dadansoddi
Llywodraeth Cymru, Parc Cathays, Caerdydd, CF10 3NQ
Ffôn – Swyddfa'r Wasg **029 2089 8099**, Ymholiadau Cyhoeddus **029 2082 3332**
www.llyw.cymru/ystadegau

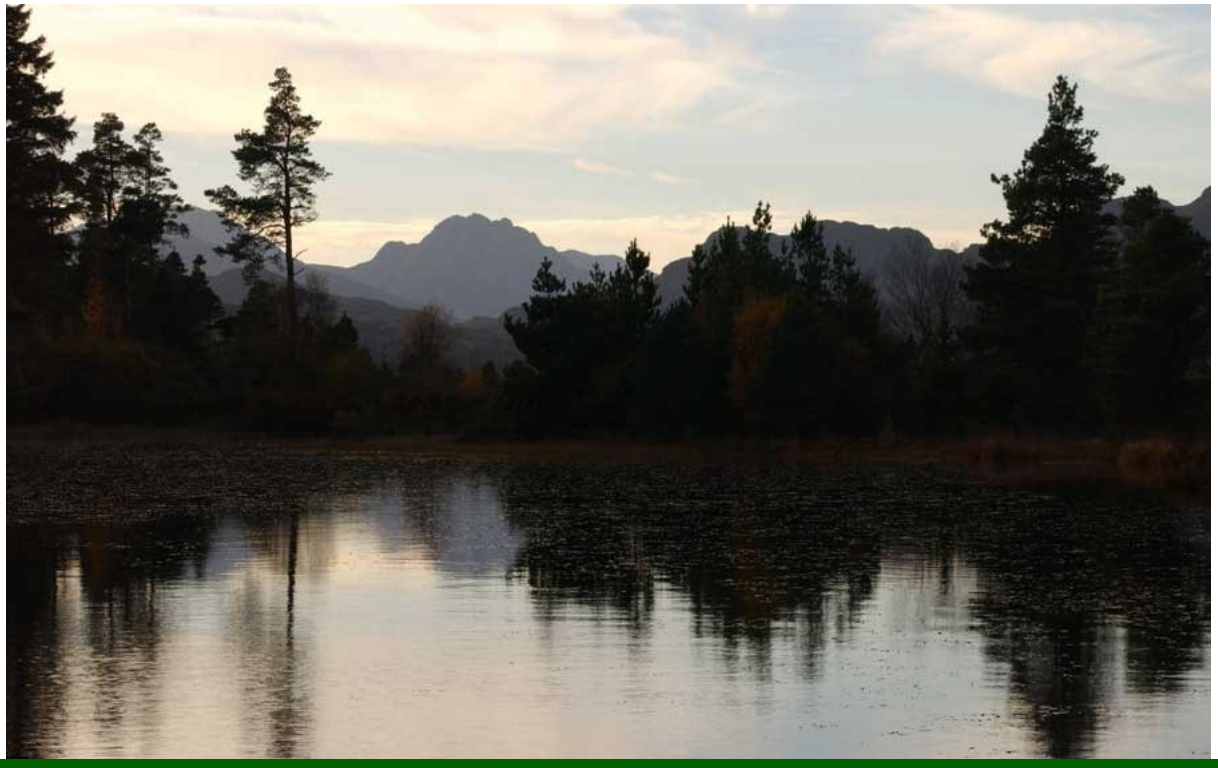
Issued by Knowledge and Analytical Services
Welsh Government, Cathays Park, Cardiff, CF10 3NQ
Telephone – Press Office **029 2089 8099**, Public Enquiries **029 2082 5050**
www.gov.wales/statistics

Llywodraeth Cymru Welsh Government

Woodlands for Wales Indicators 2014-15

Table of Contents

List of charts, figures, tables and maps



Introduction

This is the sixth indicators report since the revision in March 2009 of Woodlands for Wales, the Welsh Government's strategy for woodlands and trees.

The 23 indicators aim to monitor progress towards achieving the 20 high level outcomes described in Woodlands for Wales, and correspond to the list found on pages 54 and 55 in the strategy document. The first 6 indicators aim to monitor changes in the area and nature of Welsh woodlands and trees, while the remaining 17 aim to monitor the goods and services which woodlands and trees can provide: most are composed of a number of measures. Many of the indicators relate to more than one of the 20 high level outcomes: this is shown in a table at the end of the report. Some of the indicators show progress both for the Welsh Government Woodland Estate (WGWE) and for woodlands in general.

Data sources for the measures are shown, together with the desired and apparent trend for each indicator and baseline information where available. Accompanying commentary sets out the relevance, key points and any notes for each indicator to give context to the data. As this work is still in progress there are several indicators which are under development. As some aspects of woodlands and trees change slowly, some indicators are not updated every year, but instead every two, three, or five years, in line with the reporting programme of the National Forest Inventory and the Natural Resources Wales survey schedule.

Building on the 2001-2005 progress report, published in 2006 and based on the original Woodlands for Wales published in 2001, where possible indicators have been developed so that trends can be followed for the full 50-year lifespan of the strategy.

In future, the annual indicators reports will be published in October, enabling the report to take account of the most recent information from Forestry Statistics.

1. Woodlands and trees

Key points

- From 2001 to 2010 the estimated area of woodland cover in Wales was reduced by 1.7% to 284,000 ha, largely due to the restoration of priority open habitats on the Welsh Government Woodland Estate (WGWE). However most recent data estimates that woodland cover in Wales is currently 306,000 ha, an increase on the 2010 figure. Much of this increase, in particular the increase in estimated cover between 2010 and 2011, can be attributed to improved measurement techniques rather than increase in the actual amount of woodland.
- Since 2001, the estimated area of conifer woodland in Wales has decreased by 18,000 ha, while the estimated area of broadleaf woodland has increased by 35,000 ha.
- The length of woody linear features seems to have remained roughly stable; no trend data as yet on individual trees outside woodland is currently available.
- The rate of new planting increased between 2009 and 2014 when 3,289 hectares were planted, but in 2015 it fell back to 103 hectares of new planting.

Data

a) Area of woodland

Chart 1: Area of woodland in Wales split by woodland type

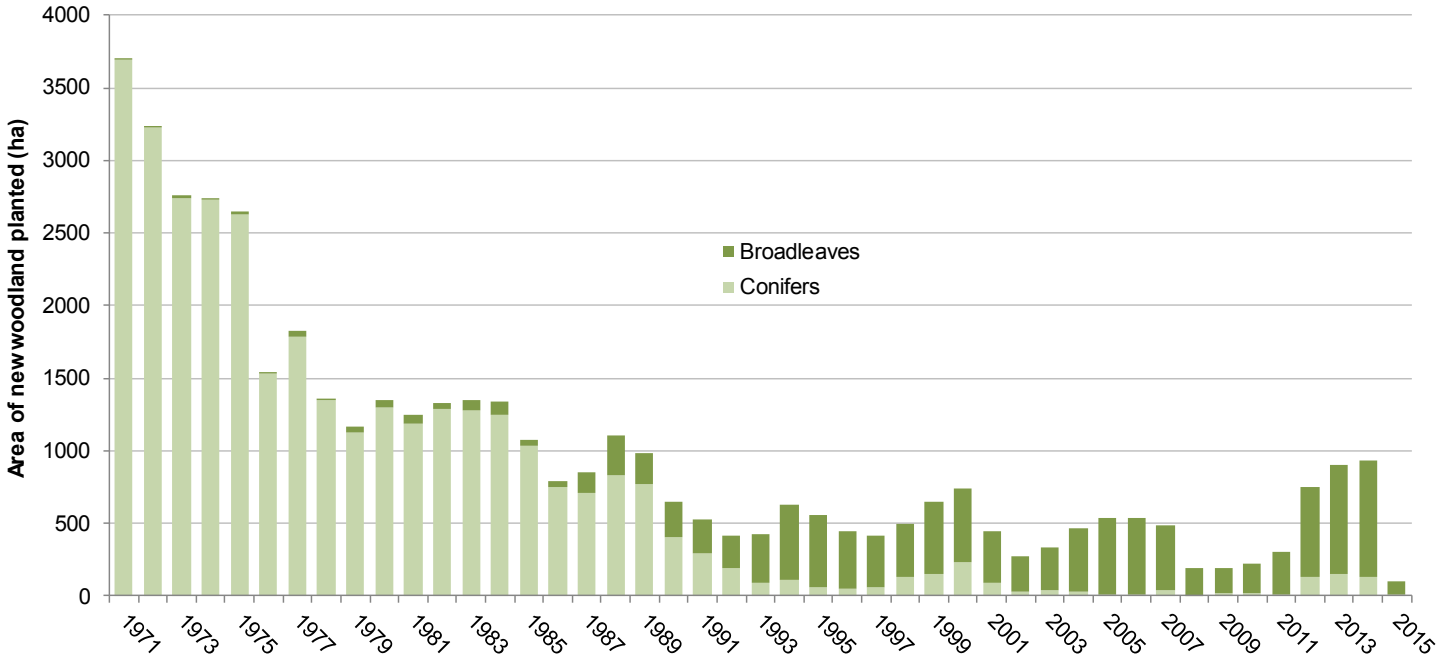
Source: Forestry Statistics

Since 2001, the estimated area of conifer woodland in Wales has decreased by 18,000 ha, while the estimated area of broadleaf woodland has increased by 35,000 ha. However the estimated area of conifer and broadleaf woodland has stayed approximately the same as in 2014.

b) New woodland planting

The rate of new planting increased between 2009 and 2014 but in 2015 it fell back. There was very little conifer planting (4 ha) and the majority of planting was broadleaved planting (99 ha). Funding towards the cost of establishing new woodland under the Glastir Woodland element of the Rural Communities – Rural Development Programme 2014-2020 is coming on stream and will stimulate new planting, the rate of which will be monitored in the next and subsequent releases of the Woodlands for Wales Indicators.

Chart 2: Area of new woodland planting per year by woodland type



Source: Forestry Statistics

c) Number of trees and length of linear features

The National Inventory of Woodlands and Trees (1997) provides baseline information on the number of trees and length of linear features, such as hedges, relict hedges and lines of trees, outside woodland. National Forest Inventory (NFI) data will be available to provide refreshed baseline information in the Woodlands for Wales Indicators 2015-16 release.

Table 1: Trees and linear features outside woodland

Date	1997
Total number of trees outside woodland	15.3 million
Total length of linear features	14,568 km

Source: National Inventory of Woodlands and Trees

The Countryside Survey uses a different methodology to report on the length of linear features, though it makes no estimate of the number of individual trees. This survey reports no significant

change between 1998 and 2007 in overall length of woody linear features, although there has been a significant decrease in the length of managed hedges and a concurrent increase in the length of relict hedges/ lines of trees/ shrubs/ fence (see Table 2).

Table 2: Woody linear features

Date	1998	2007
	Length (thousand km)	
Total woody linear features	107	106
Hedges	57	54
Line of trees/shrubs/relict hedge/ fence	27	30
Line of trees/shrubs/relict hedge	19	19

Source: Countryside Survey

Relevance

This indicator gives information on the overall level of the resource of woodlands and trees in Wales. One of the desired outcomes of the strategy is that woodland cover in Wales increases, particularly through the creation of new native woodland and new mixed woodland. This is, in part, to ensure that the overall production potential of Welsh woodlands is maintained. More woodland cover is also needed to provide the full range of ecosystem services including community benefits envisaged in the strategy, and contribute towards both achieving the well-being goals put in place by the Well-being of Future Generations (Wales) Act 2015 and delivering against the framework for natural resource management being put in place by the Environment (Wales) Bill.

Another desired outcome of the strategy is that there is better protection for individual trees and that more individual trees are planted in recognition of their contribution to ecosystem services and our quality of life.

Note

The initial results of the NFI 2010 were published for Wales in March 2011 and this estimated the area of woodland in Wales to be about 20,000 ha more than was estimated in 2010 (see Chart 1). The vast majority of the difference is a result of improvements in technology used in the releases between the National Inventory of Woodlands and Trees (1995 – 1999) and the NFI 2010, rather than being due to unrecorded woodland planting or natural regeneration. Updated NFI data will be available to inform next year's Woodlands for Wales Indicator's release.

2. Diversification of woodlands

Key points

- In 1997, conifer woodland was dominated by single species stands
- In conifer planting between 1991 and 1997, planting was dominated by Sitka spruce (63% of all conifer areas planted), and 80% of areas planted were of four main species – Sitka spruce, Japanese/hybrid larch, Norway spruce and Douglas fir.

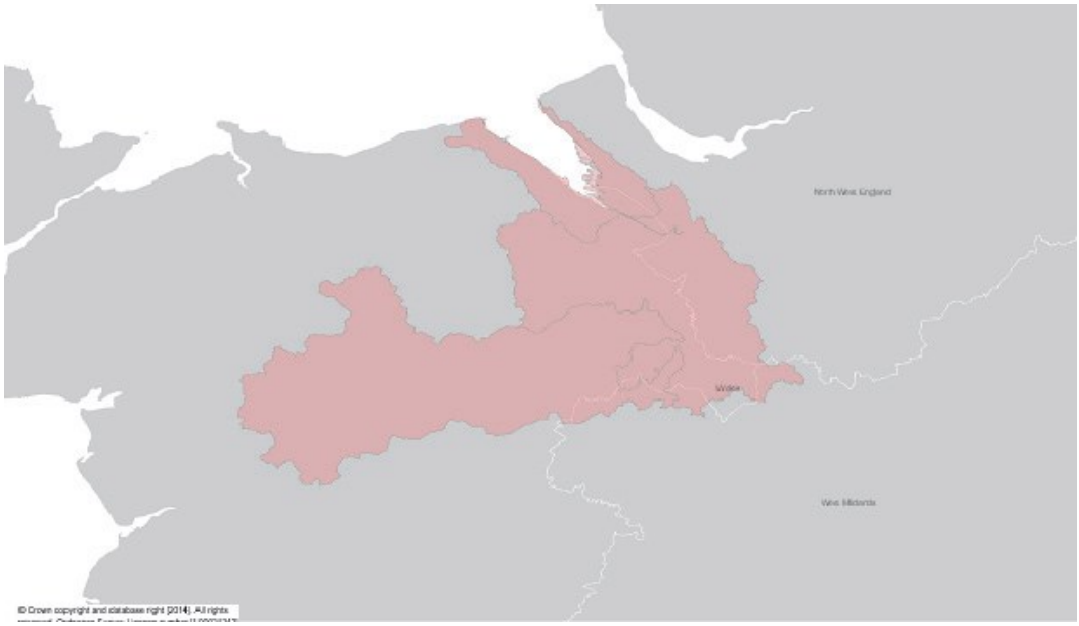
Data

a) Woodland diversity at the catchment scale

This section covers 3 catchment areas of Wales: the Dee River Basin District; the Severn River Basin District; and the Western Wales River Basin District. More detail on Woodland diversity at the catchment scale for these areas can be found by clicking the following link.

Dee River Basin District

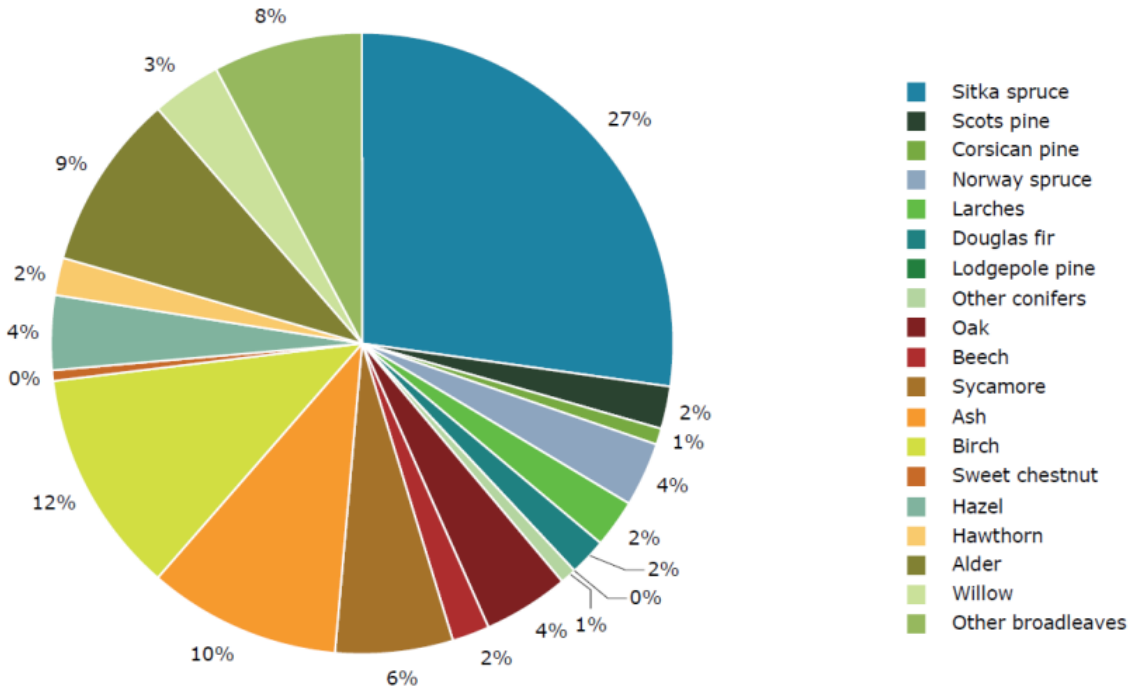
Map 1: Dee River Basin District



Source: Forestry Statistics

Figure 1 shows that in the Dee River Basin District the most common woodland trees are Sitka spruce trees (27%), the next most common trees in this area are Birch trees (12%), and the third most common being Hawthorn trees (10%).

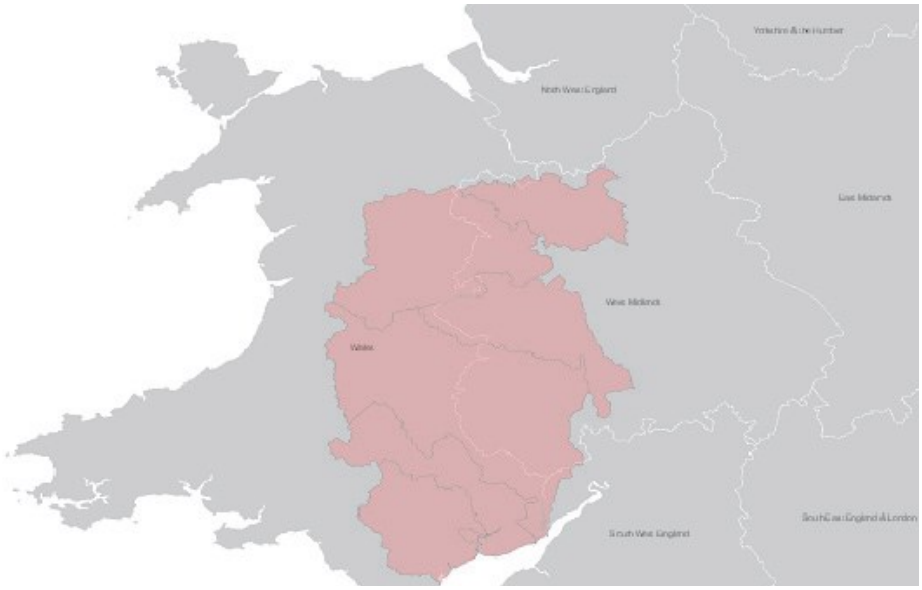
Figure 1: Principal tree species composition by stocked area at 31 March 2012 – Dee River Basin District



Source: Forestry Statistics

Severn River Basin District

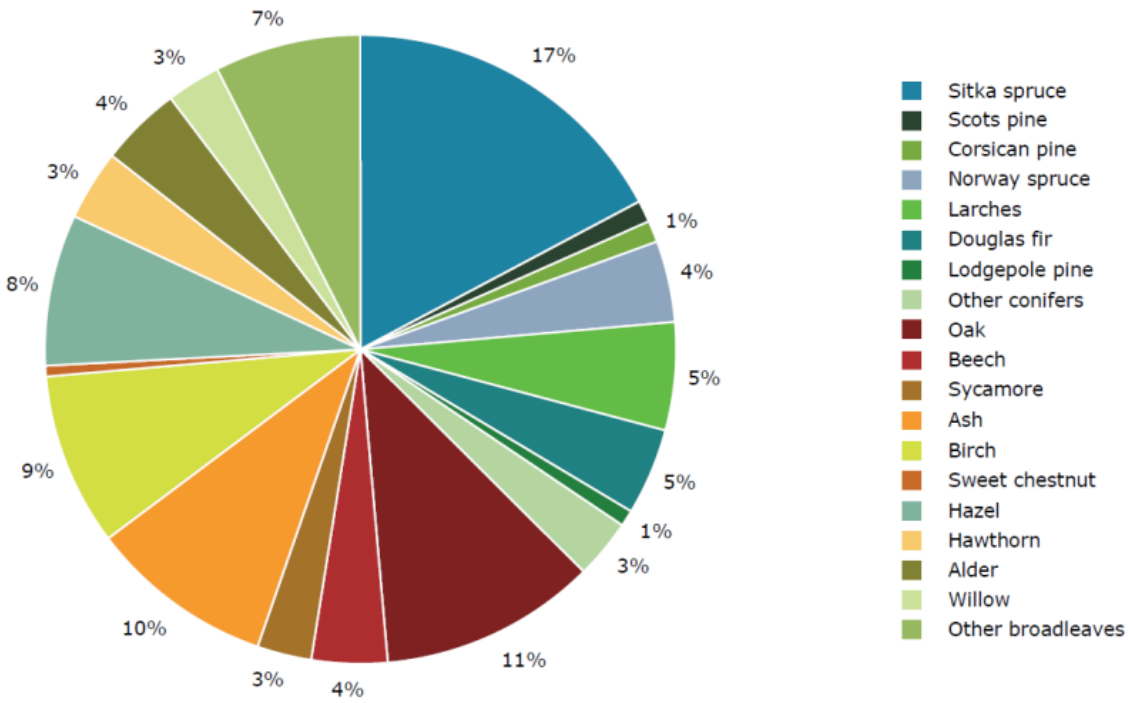
Map 2: Severn River Basin District



Source: Forestry Statistics

Figure 2 shows that in the Severn River Basin District the most common woodland trees are Sitka spruce trees (17%), the next most common trees in this area are Oak trees (11%), and the third most common being Hawthorn trees (10%).

Figure 2: Principal tree species composition by stocked area at 31 March 2012 – Severn River Basin District



Source: Forestry Statistics

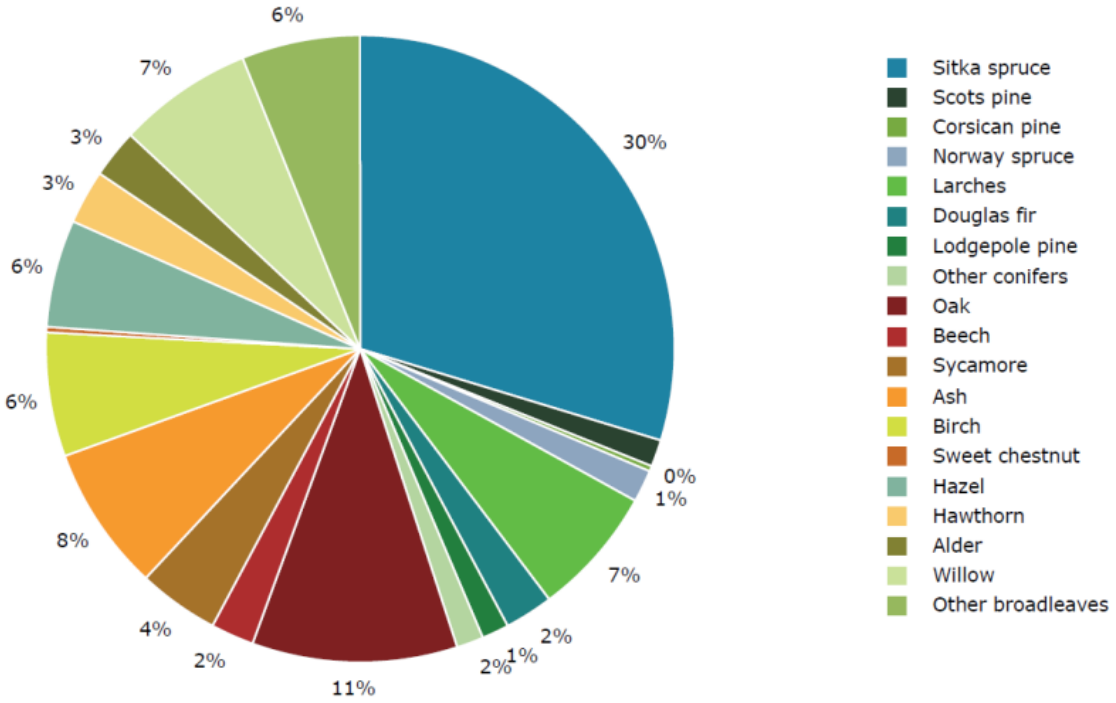
Western Wales River Basin District

Map 3: Western Wales River Basin District

Source: Forestry Statistics

Figure 3 shows that in the Severn River Basin District the most common woodland trees are Sitka spruce trees (30%), the next most common trees in this area are Oak trees (11%), and the third most common being Ash trees (8%).

Figure 3: Principal tree species composition by stocked area at 31 March 2012 – Western Wales River Basin District



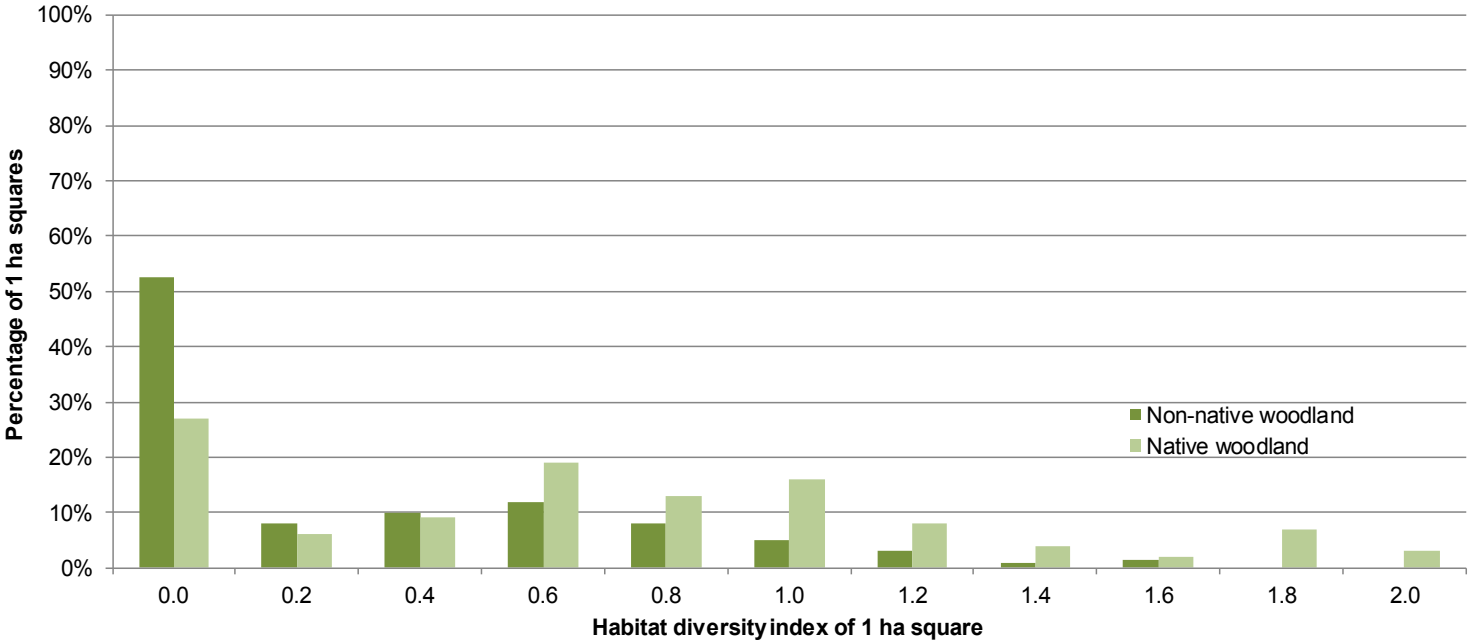
Source: Forestry Statistics

All three catchment areas appear to have a good diverse range of trees; however they all have large clusters of certain tree species such as Sitka spruce, Ash and Birch trees.

b) Woodland habitat diversity index at 1 hectare scale

This index distinguishes between different species of trees. A score of 0.0 means that only one species is present in the 1 ha square of woodland. At present only baseline data for 1997 from the National Inventory of Woodlands and Trees are available, but this will be updated when the results of the NFI enable.

Chart 3: Woodland diversity at 1 ha scale

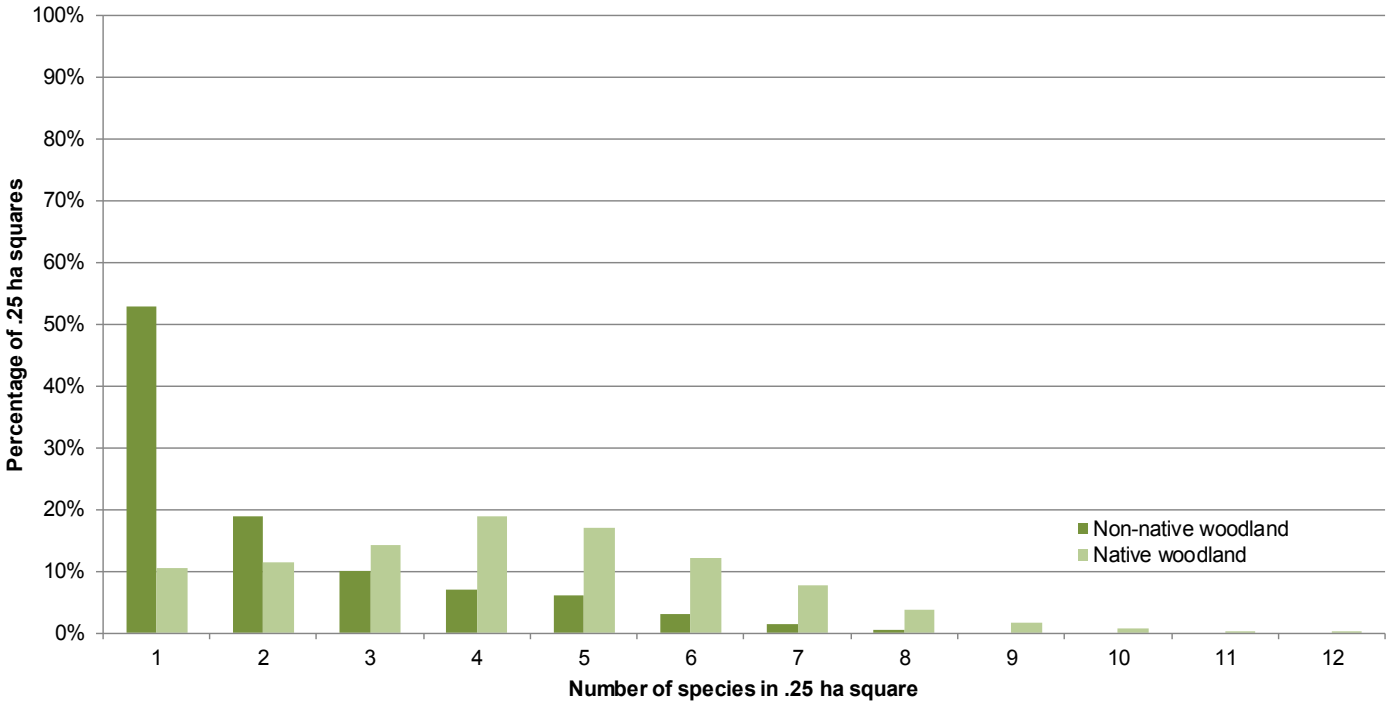


Source: Analysis of field survey data from the National Inventory of Woodlands and Trees 1997

c) Intimate mixtures: Number of tree species present per quarter hectare

As with the previous indicator, the available data provides a baseline for 1997, and will be updated using data from the National Forest Inventory.

Chart 4: Number of tree species per .25 ha

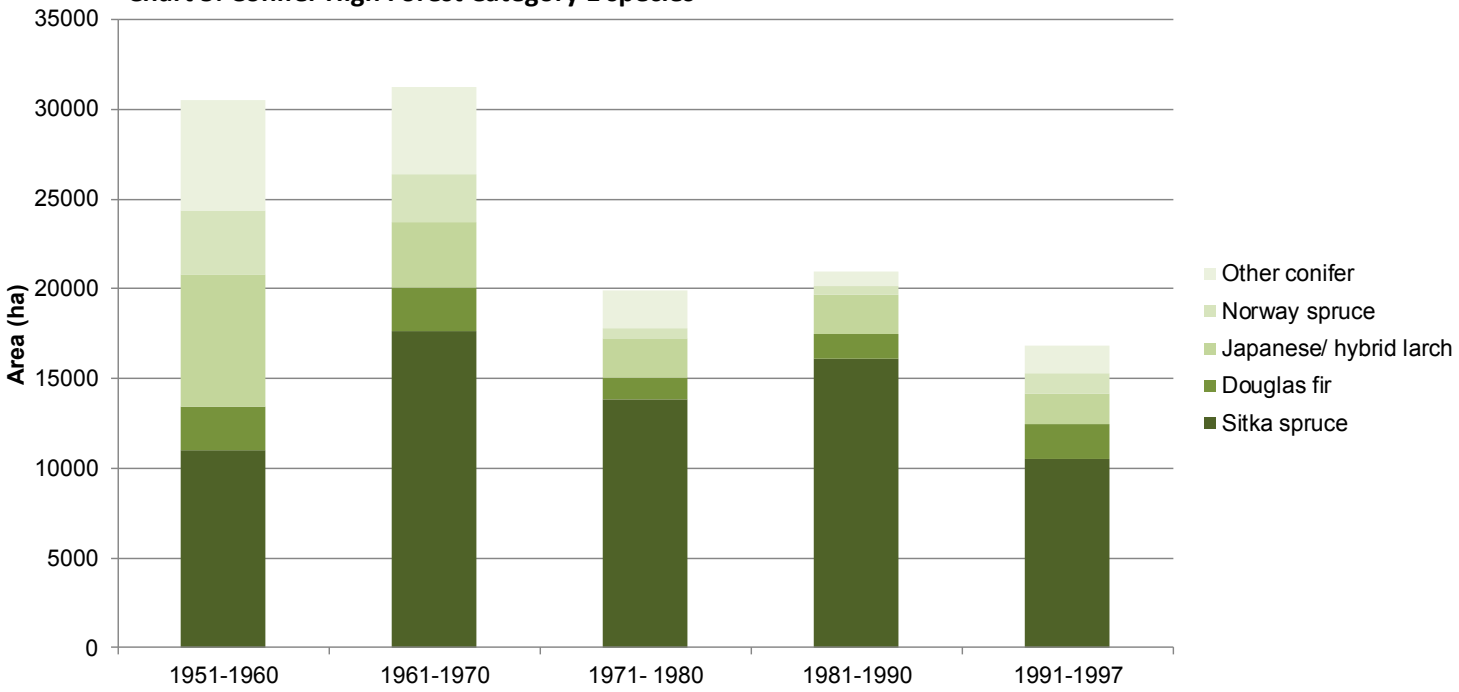


Source: Analysis of field survey data from the National Inventory of Woodlands and Trees 1997

d) Planting

The following graph shows the range of conifer species planted in Wales in High Forest Category 1 areas by planting year. These are the stands which are, or could become, capable of producing wood of a size and quality suitable for sawlogs. These figures include restocking and new planting.

Chart 5: Conifer High Forest Category 1 species



Source: National Inventory of Woodland and Trees

In conifer planting between 1991 and 1997, planting was dominated by Sitka spruce (63% of all conifer areas planted, although this is a decrease of 14% from the period before), and 80% of areas planted were of four main species – Sitka spruce, Japanese/hybrid larch, Norway spruce and Douglas fir. Although it should be noted that the area of conifer high forest category 1 species decreased from the period ending 1970 in comparison to the period ending 1997.

e) Genetic base

Further work is required to develop, if feasible, an indicator which can monitor the genetic diversity of stock being planted in Wales.

Relevance

This indicator monitors the diversity of woodlands in Wales at different scales, and looks at the range of tree species being planted. One of the desired outcomes of the strategy is the appropriate diversification of woodlands, particularly of non-native woodlands, at a range of scales, in terms of age structure, tree species, and genetic base. The desired trends are:

- Increasing diversity of woodland types both at a catchment and a woodland scale
- Increasing area of non-native woodlands with intimate mixtures
- Planting becoming less dominated by single species
- Planting of a wider genetic base

Notes

Updates for a), b) and c) can be expected as data from the National Forest Inventory becomes available.

3. Sustainable woodland management

Key points

- The total area of woodland known to be managed to the UK Forestry Standard has increased from 123,000 ha in 2001 to at least 203,000 ha in 2014. The total area managed to the UKFS is likely to be higher.

Data

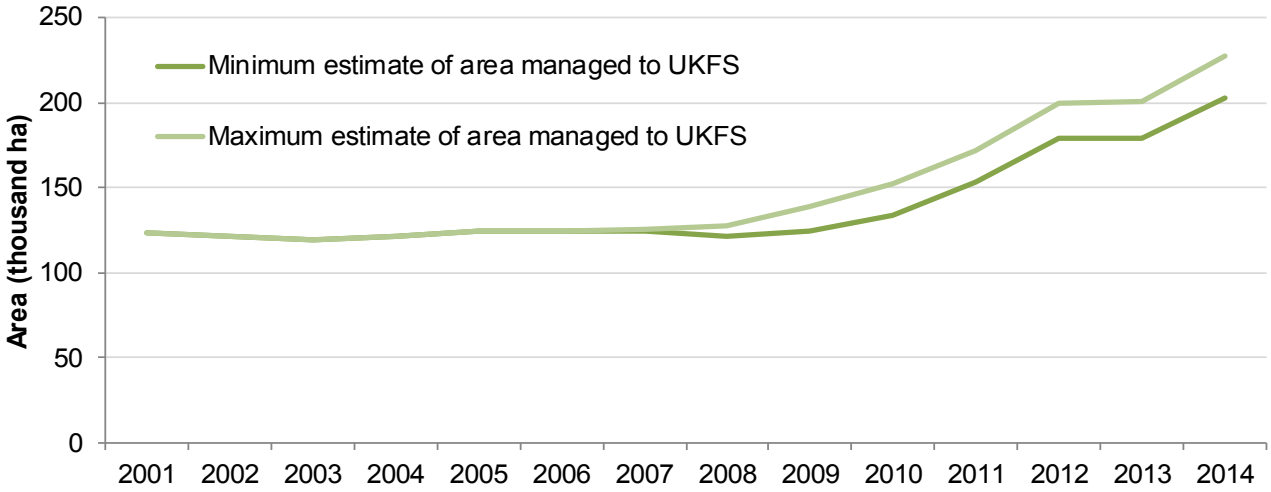
Table 3: Area of woodland in Wales known to be managed to the UKFS (thousand ha)

Year to 31st March	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Certified area WGWE	115	113	110	110	109	108	107	106	105	105	114	117	117	117
Certified area non-WGWE	8	8	9.5	11	15	16	17	15	19	18	19	21	22	24
Area in grant scheme to UKFS	0	0	0	0	0	0	1	6	15	29	39	62	62	86

Sources: Forestry Statistics , Natural Resources Wales and Welsh Government databases on woodlands in grant schemes

As it is impossible to tell whether areas within grant schemes are also certified, it is not possible to be sure of the total area of woodland managed to the UKFS, but a minimum and maximum estimate is shown below.

Chart 6: Woodland area managed to the UKFS



Source: Forestry Statistics, Natural Resources Wales and Welsh Government databases

Relevance

This indicator monitors the area of woodland in Wales which is known to be managed to the UK Forestry Standard (UKFS), including area of woodland certified to FSC or PEFC. One of the goals of the strategy is to bring more woodland, including many small and fragmented woodlands, into management to the UFKS and capable of providing usable timber and other services. Beyond this, the goal is to see more Welsh woodlands gaining certification to the UK Woodland Assurance Standard.

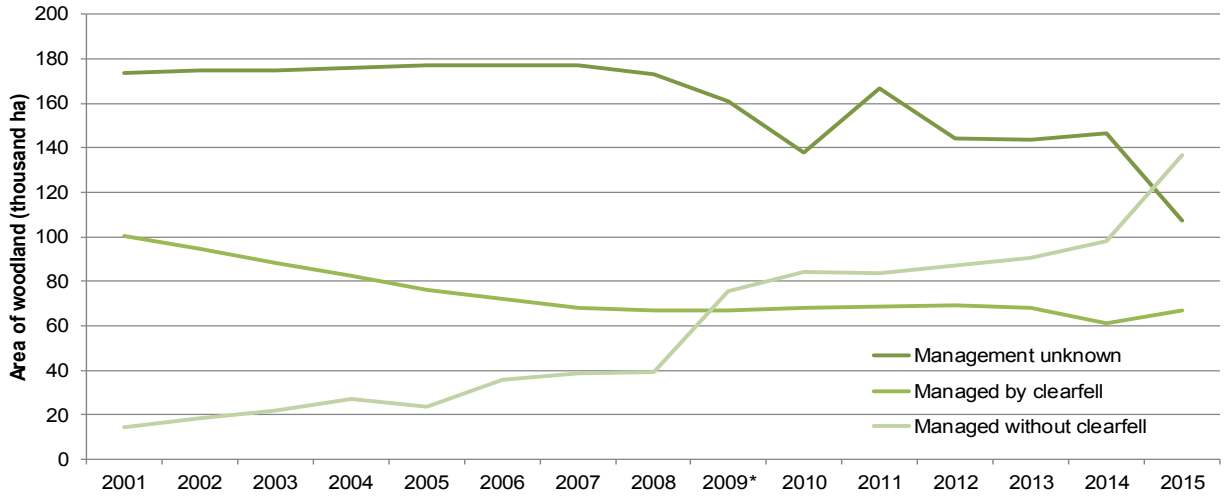
4. Management system

Key points

- The area of woodland known to be managed without clearfell has increased steadily since 2001
- The area of woodland known to be managed by clearfell and the area of woodland where management is unknown have both decreased overall since 2001

Data

Chart 7: Woodland area managed with and without clearfell



*The way the area of woodland managed without clearfell was calculated changed in 2009.

Source: Natural Resources Wales databases, Forestry Statistics

Relevance

One of the desired outcomes of the strategy is that woodlands are better adapted to deliver a full range of benefits, and to achieve this outcome, one of the goals is that clearfell is avoided where alternative management systems would make a better contribution to ecosystem services. This indicator monitors the area of woodland in Wales that is managed without use of clearfell. The desired trends are:

a) A decrease in the area managed by clearfell
b) An increase in area actively managed for timber by other systems

Note

The management of woodland areas (chart 7) has been estimated using data from the NRW grants database and GIS database. Areas where management is unknown may include areas managed with or without clearfell as well as areas not actively managed.

5. Farm woodland

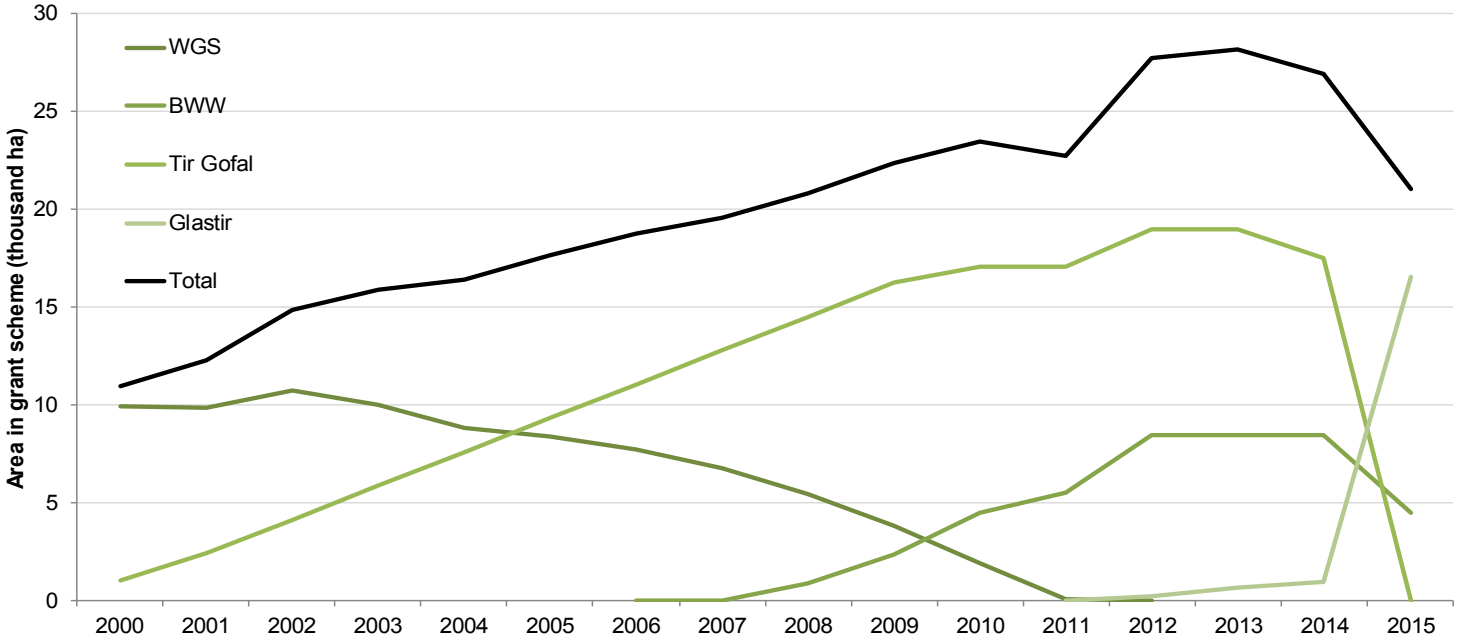
Key points

- The amount of farm woodland within a grant scheme has shown an increase since 2000, however since 2013 the amount of farm woodland within a grant scheme has begun to decrease.
- Only a small proportion of farmers are harvesting their woodland for timber or firewood to sell. Approximately two-thirds of farmers with woodland do not harvest timber or firewood from their woodland. This result should be treated with caution because of the different survey methodologies that have been used (Chart 9).

Data

a) Area of farm woodland within a grant scheme

Chart 8: Farm woodland within a grant scheme



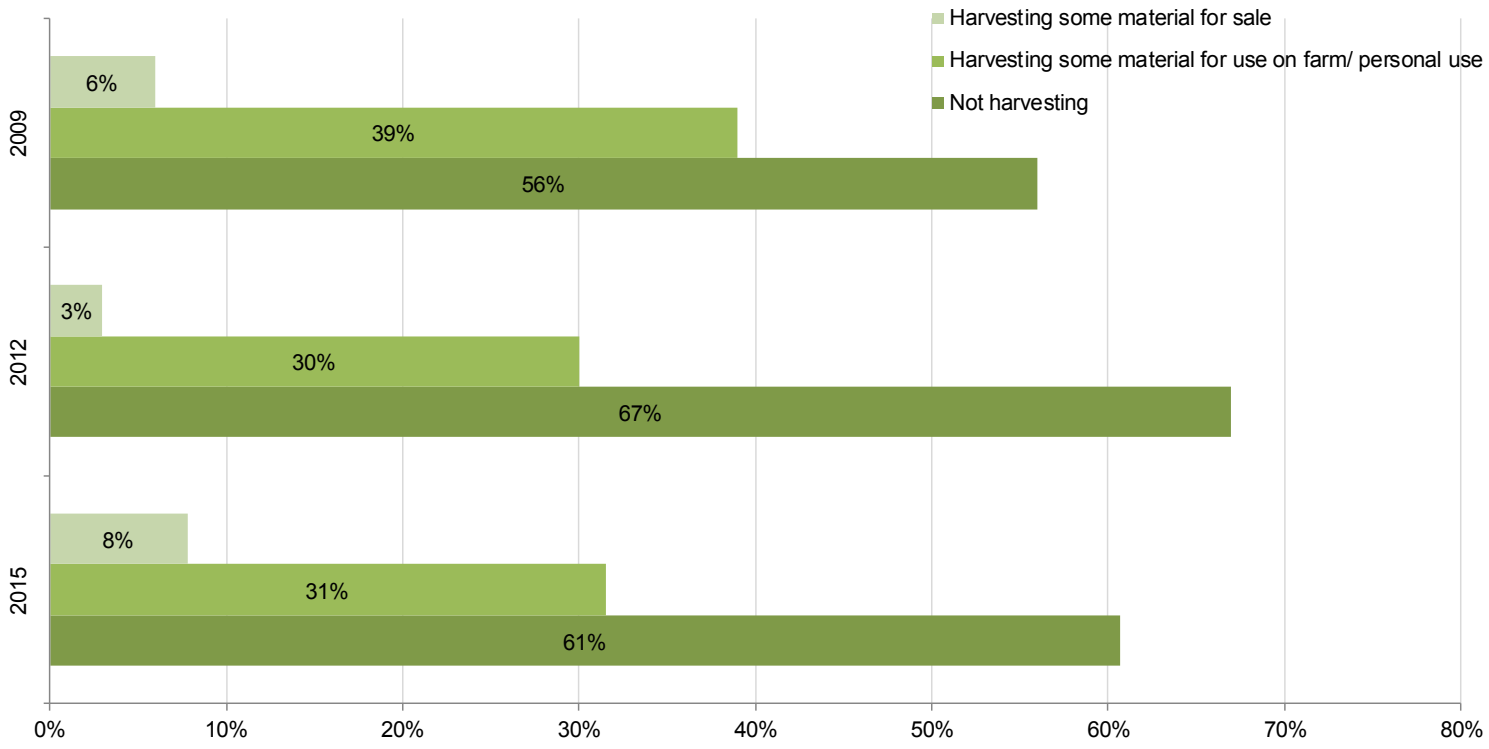
Source: Welsh Government and Natural Resources Wales databases.

Tir Gofal contracts ended in 2014 and some of the area of farm woodland previously managed under that scheme is likely to now be managed under the Glastir woodland grant scheme causing the large Tir Gofal decrease and the large Glastir increase over the last year.

b) Proportion of farmers who are harvesting firewood or timber

This data comes from three different sources: the data for 2009 comes from Forestry Commission Wales (FCW) survey of farmers with woodland on their farms; the data for 2012 comes from the Forestry Resource Study carried out by Mid Wales and the Marches Assessment Centre on behalf of FCW; and the 2015 data comes from the Agricultural and Horticultural Survey for Wales. Because of this, the data may not be directly comparable due to differences in survey methods and questions.

Chart 9: Harvesting from farm woodlands



Source: Forestry Commission Wales Survey of Farmers, Forestry Resource Study, Welsh Agricultural and Horticultural Survey

Chart 9 shows that over the last 6 years around 61% of farm woodland has not been harvested, whilst around 39% of farm woodland is harvested every year.

Relevance

There are approximately 75,700ha of woodland on farms in Wales (Source: Forestry Statistics 2015) – about a quarter of all woodland in Wales. One of the goals of the strategy is that farmers have better support in managing their woodlands and trees to provide ecosystem services and diversify their businesses. This indicator monitors the area of farm woodland within a grant scheme and the proportion of farmers who are managing their woodlands for timber products, including firewood. The desired trends are:

a) Increase in area of farm woodland within a grant scheme,
b) Increase in proportion of farmers harvesting firewood and timber from their woodlands, or generating income from woodlands in other ways.

Note

Amount of farm woodland in Tir Gofal has been estimated and methodology may not be comparable between 2011 and 2012.

6. Urban woodland and trees

Key points

- The apparent increase in canopy cover between 2006 and 2009 can be mostly explained by photography in 2009 having an increased resolution, enabling better identification of woodland and trees.
- There are generally higher levels of cover in the Valleys and lower levels in coastal towns.
- Over nine-tenths (91%) of people named at least one benefit of urban trees, while over half (58%) named at least one disadvantage

Data

a) Urban Canopy Cover:

These data look at areas identified as 'urban' by NRW's 'Tree Cover in Wales' Towns and Cities' report. Overall canopy cover for towns in Wales is shown below.

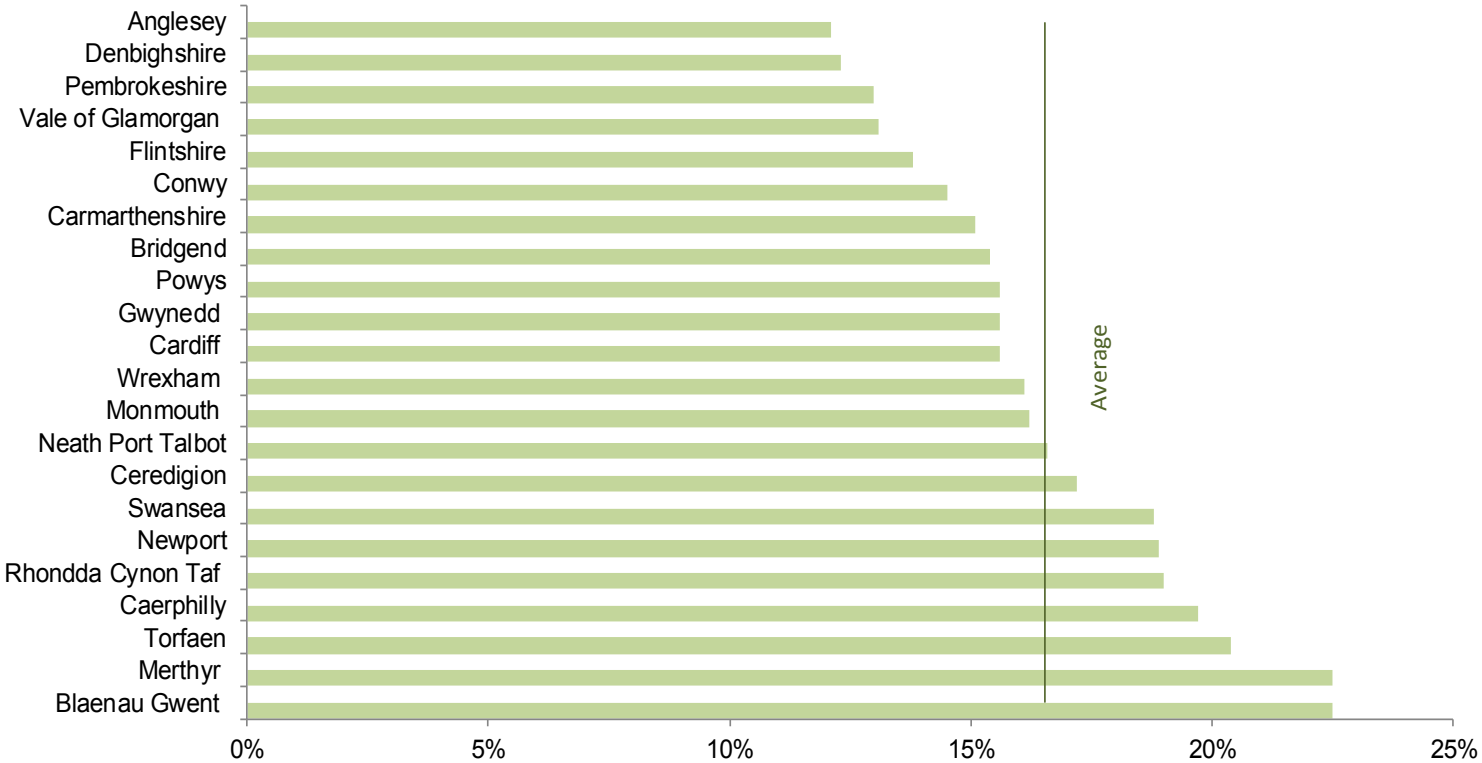
Table 4: Canopy cover in urban areas

Year	Urban Area (ha)	Woodland (ha)	Canopy Cover
2006	84,336	12,118	14%
2009	84,336	14,164	17%

Source: Tree Cover in Wales' Towns and Cities

The apparent increase in canopy cover between 2006 and 2009 in the table above can be mostly explained by photography in 2009 having an increased resolution, enabling better identification of woodland and trees.
The levels of canopy cover for the urban areas of Local Authorities in Wales are shown below.

Chart 10: Canopy cover by area



Source: Tree Cover in Wales' Towns and Cities

Different types of towns are identified as having different levels of canopy cover. Below are levels of canopy cover for Cardiff - the capital city, Port Talbot – a heavily industrial town, Pontypool – a Valleys town, and Rhyl – a northern coastal town.

Table 5: Canopy cover in selected towns

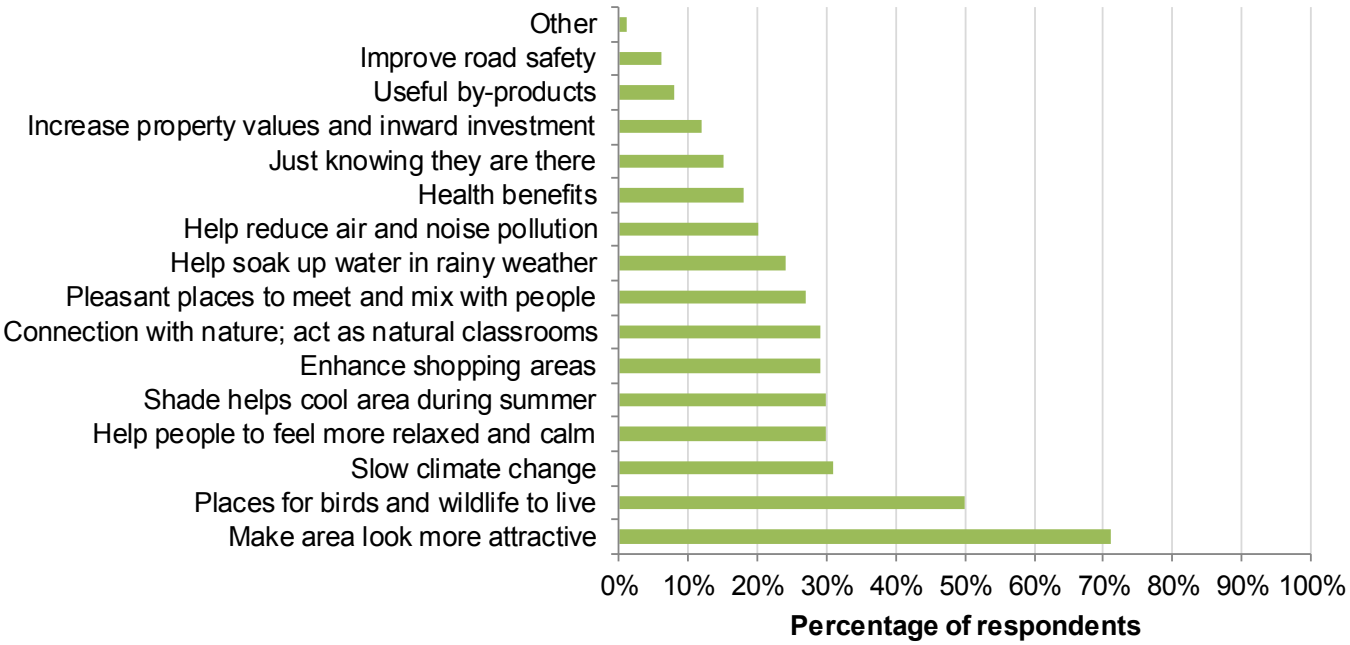
Town	Urban Area (ha)	Woodland Area (ha)	Canopy Cover (%)
Cardiff	8,082	1,264	15.60%
Port Talbot	2,302	201	8.70%
Pontypool (& Abersychan)	1,203	294	24.40%
Rhyl	659	40	6.10%

Source: Tree Cover in Wales' Towns and Cities

The table above appears to indicate that there are generally higher levels of canopy cover in the Valleys and lower canopy cover levels in coastal towns.

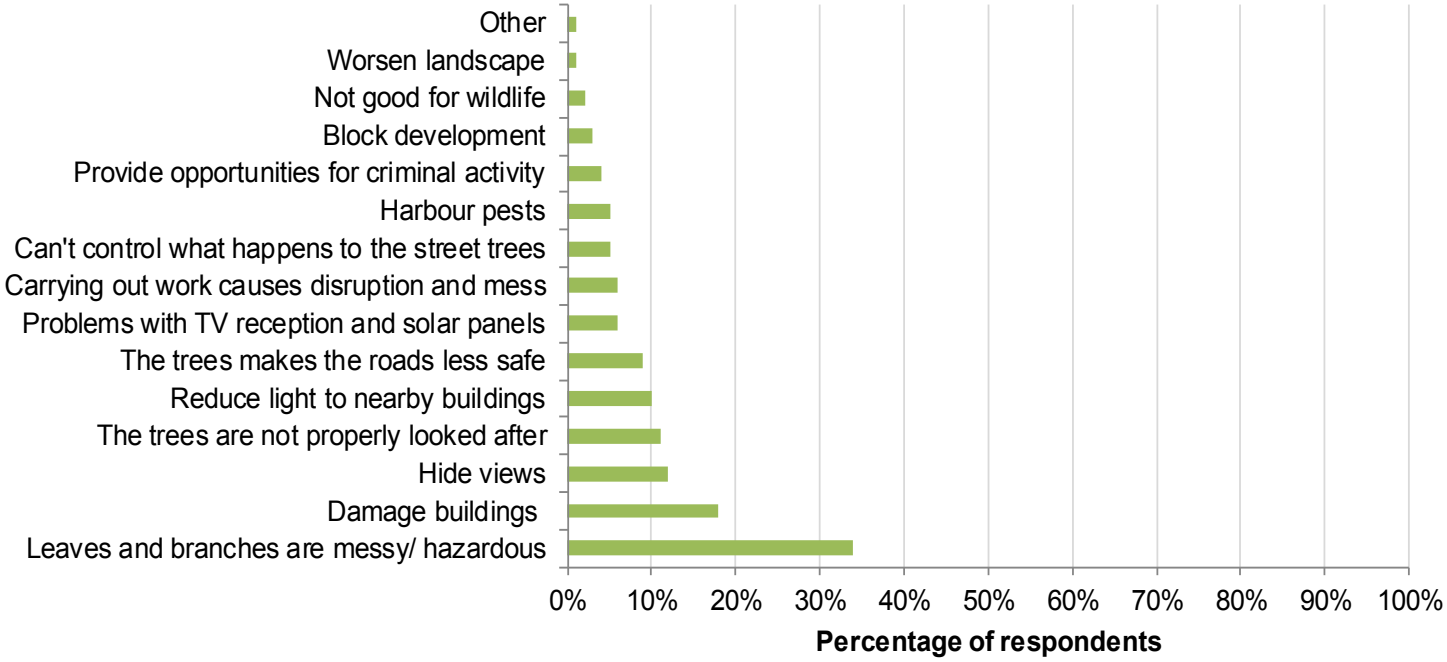
b) Perceptions of the benefits and disadvantages of urban trees:

Chart 11: Benefits of urban trees



Source: Public Opinion of Forestry Survey

Chart 12: Disadvantages of urban trees



Source: Public Opinion of Forestry Survey

In 2015, the most popular benefit of urban trees was that they "make the area look attractive", whilst the most popular disadvantage was that urban trees drop "leaves and branches that are hazardous and messy".

Relevance

One of the desired outcomes of the strategy is that urban woodlands and trees deliver a full range of benefits, with more creative use of opportunities for planting woodlands and trees in new developments and in the restoration of brownfield sites to provide people with better quality easily accessible green space. This indicator monitors the area of urban woodland.

As this outcome is delivered, shifts in perceptions of the benefits that urban trees bring would be expected. The second part of this indicator monitors these perceptions using data collected from the biennial Public Opinion of Forestry Survey.

7. Carbon balance

Key points

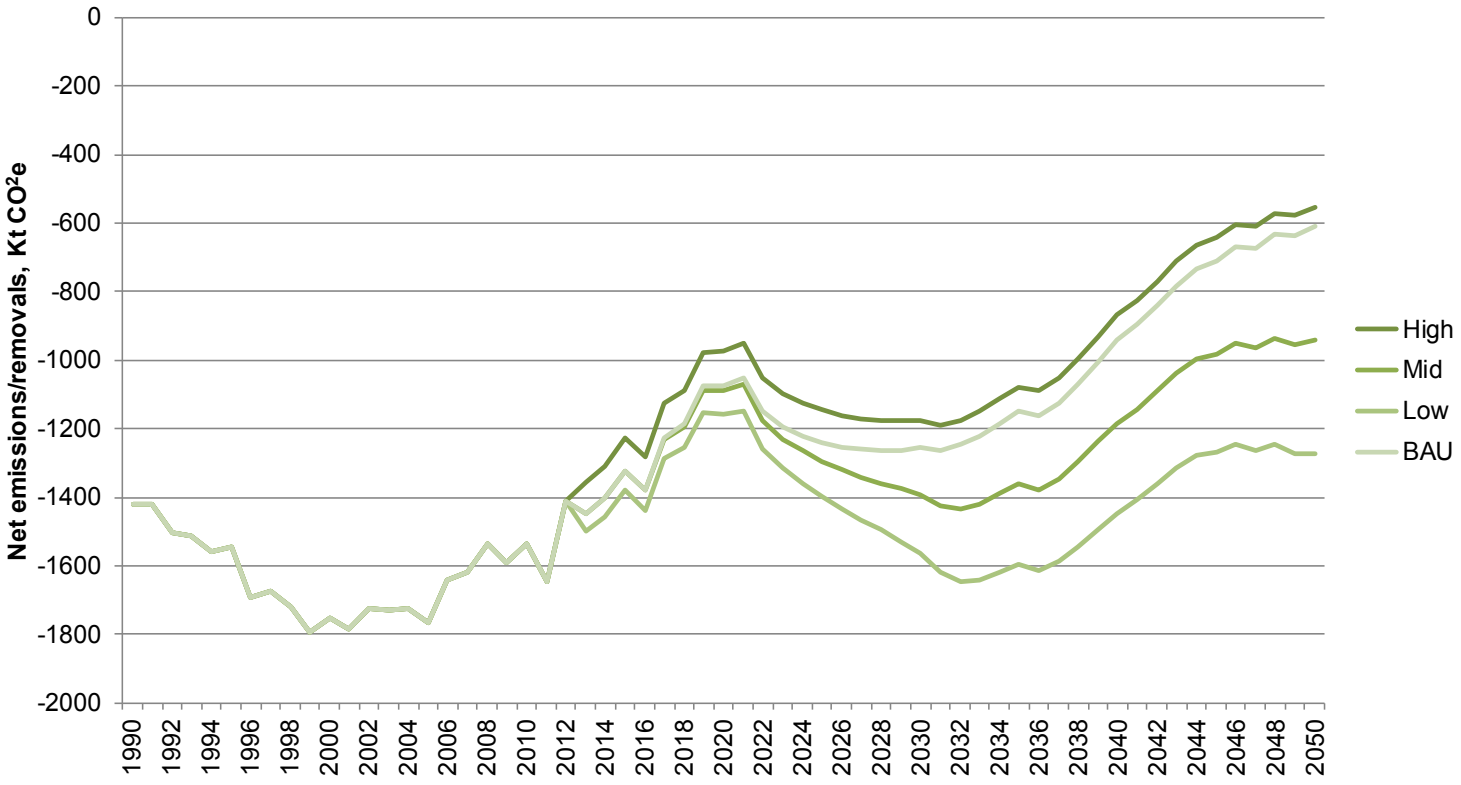
- Current sequestration from Welsh woodlands is estimated to be about 1,419 gigagrams (1,419,000 tonnes) annually.
- Forestry is predicted to remain a net sink for atmospheric carbon.

Data

Carbon emissions and removals

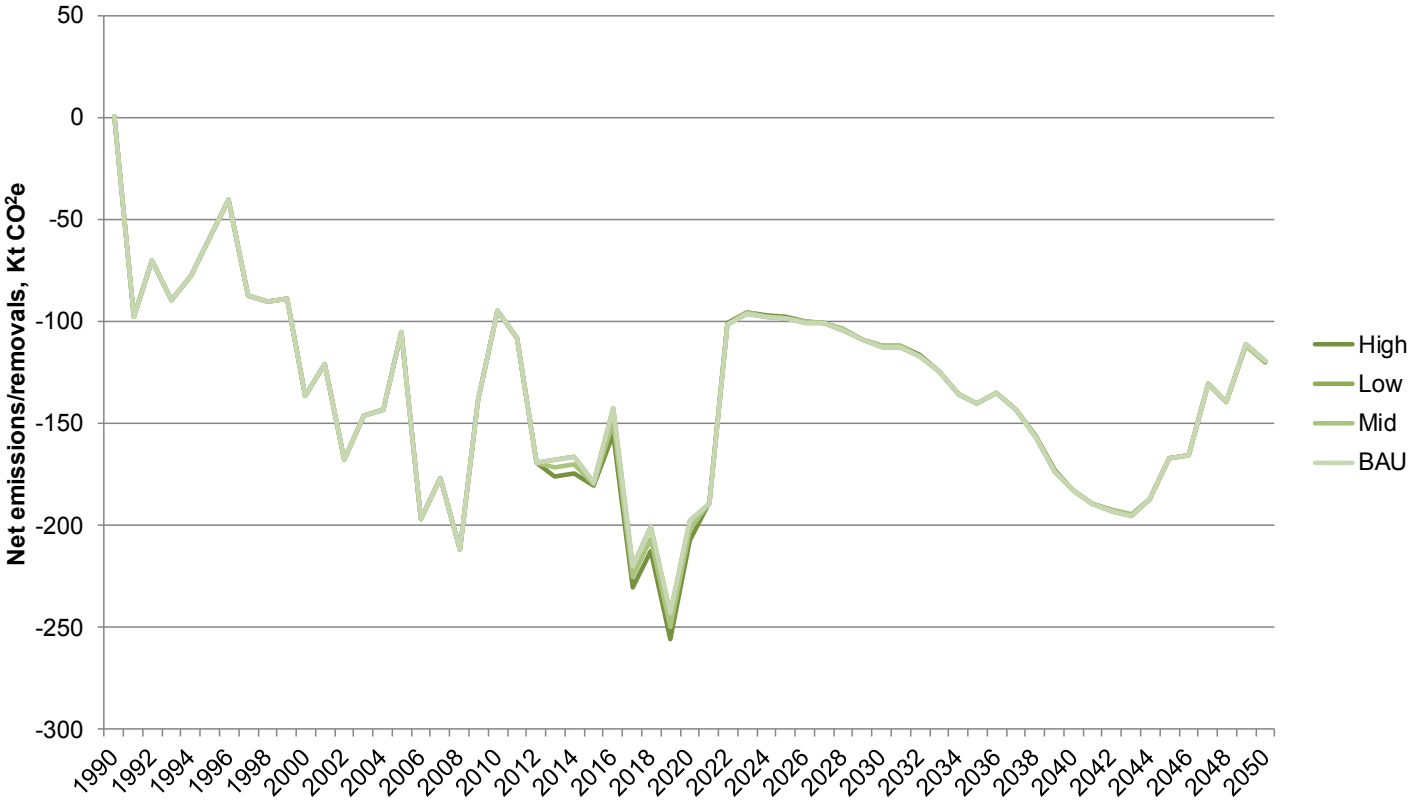
The chart below shows historic and projected carbon emissions under various scenarios: "Business As Usual", high, mid and low, as described in the report 'Projections to 2050 of emissions and removals from the LULUCF sector in Scotland, England, Wales and Northern Ireland'. Emissions of CO2 are shown as positive quantities and removals are shown as negative quantities. Under all scenarios, forestland remains a net sink for emissions during the time to 2050.

Chart 13: Forestland CO_2 emissions and removals



Source: 2013/14 projections to 2050 of emissions and removals from the LULUCF sector in Scotland, England, Wales and Northern Ireland, H. Malcolm *et al*

Chart 14: CO_2 emissions and removals from harvested wood products



Source: 2013/14 projections to 2050 of emissions and removals from the LULUCF sector in Scotland, England, Wales and Northern Ireland, H. Malcolm *et al*

Relevance

One of the desired outcomes of the strategy is that Welsh woodlands contribute to reducing the carbon footprint of Wales. This indicator monitors carbon stocks in woodland biomass and wood products, and carbon abatement due to product and fuel substitution. The desired trends are an increase in carbon stocks and also in carbon abatement.

Note

The carbon sequestration of woodland has been recalculated, taking into account sequestration from woodlands planted before 1920. This has increased the amount of sequestration, which has been retrospectively calculated for the past as well as the future.

8. Tree health

Key points

- Since 2010, there have been outbreaks of two quarantine diseases affecting tree species in Wales (*Phytophthora ramorum* and *Chalara fraxinea*).
- A Wales specific *Phytophthora ramorum* disease management strategy was launched in December 2013 which establishes management zones.
- There are also a small number of non-quarantine pests and diseases known to be affecting tree species in Wales, such as a small outbreak *of Phytophthora lateralis* in South Wales in 2012.

Data

An information system to allow annual reporting and mapping of the distribution of disease outbreaks throughout Britain is currently under development.

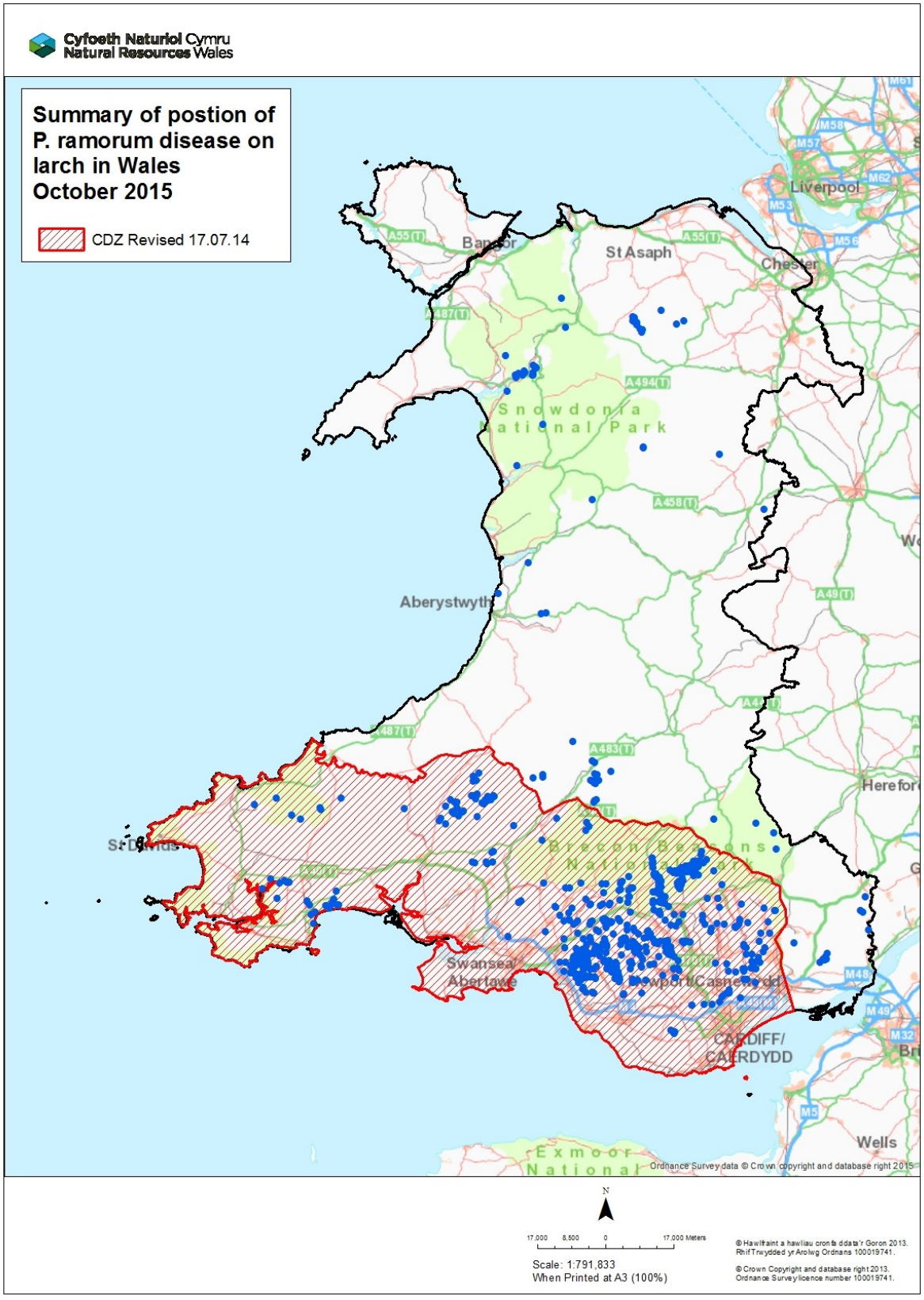
Ramorum disease in larch

The map on the next page shows the *Phytophthora ramorum* outbreaks in Wales, correct as of October 2015. Between 2003 and 2009, there were 51 reported cases of the quarantine disease *P. ramorum* in Wales, all affecting shrubs such as rhododendron in nurseries, garden centres and some open garden sites. The outbreak was thought to have been satisfactorily controlled. However, since 2009 the disease has been found infecting and killing large numbers of Japanese larch trees, first in South-West England, and since 2010 in Wales. Currently outbreaks in Wales are largely, but not entirely, confined to the southern half of the country and often on the Welsh Government Woodland Estate (WGWE). However, larch trees throughout Wales are considered to be at risk. Natural Resources Wales, the Forestry Commission, Forest Research, and the Animal and Plant Health Agency (APHA) are working together to survey, study and manage the disease.

The outbreak of the disease has increased. At the end of 2012 there were 2,700 hectares of larch affected. By September 2014 there had been a dramatic increase to 7,399 hectares of larch affected and by October 2015 this had increased to 9,263 hectares. 2014 did see a slowdown in the spread of the disease, mostly likely as a result of the prevailing weather patterns during the previous summer/autumn.

The disease management strategy for *Phytophthora ramorum* in Wales defines two zones for the management of the disease: a Core Disease Zone (CDZ) of areas with known high levels of infection; and a Disease Limitation Zone (DLZ) of areas with zero or very light infection. The strategy for management concentrates effort on the DLZ to tackle the spread of the disease. The CDZ was reviewed in November 2013 and amended in January 2014 and Map 4, showing the amended and revised CDZ, was published in July 2014. There were no further amendments to the CDZ in 2014 or 2015.

Map 4: Distribution of P. ramorum in Wales



Source: Natural Resources Wales

Chalara dieback of ash (Hymenoscyphus fraxineus)

This disease has already affected a high proportion of ash trees in many Northern European countries. It was discovered for the first time in Britain in a nursery in Buckinghamshire in February 2012. In October 2012, it was also found in the wider environment in woodland in the east of England and South Wales.

It is potentially a very serious threat, having caused widespread damage to ash populations in continental Europe, including estimated losses of between 60 and 90 percent of Denmark's ash trees. There is no reason to believe that the consequences of its entering the natural environment in Britain would be any less serious. Experience on the continent indicates that it kills young ash trees very quickly, while older trees tend to resist it for some time until prolonged exposure causes them to succumb as well.

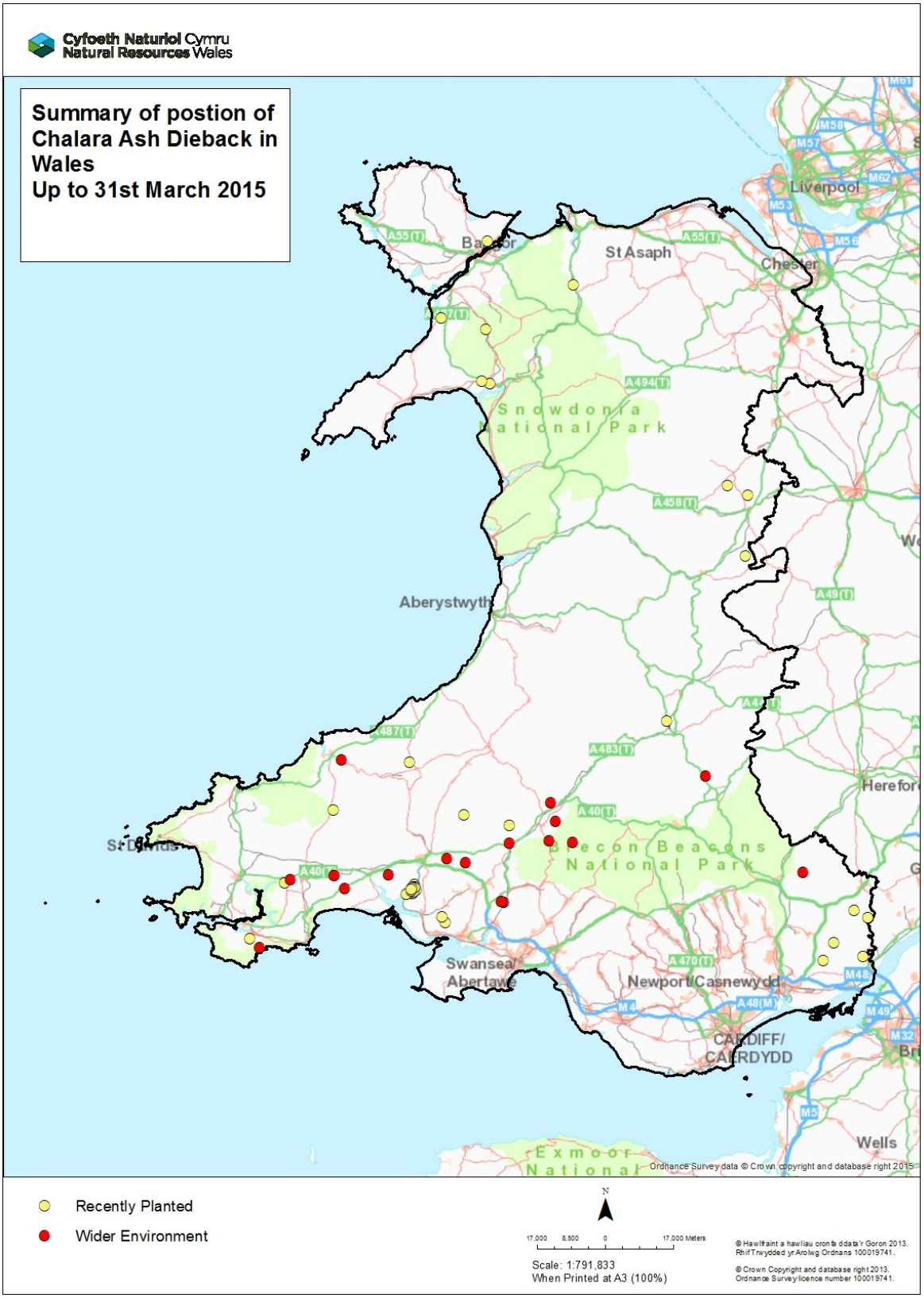
Chalara is now being treated as a quarantine pest under national emergency measures and any suspected sighting must be reported. There has been a major exercise to locate sites where ash has been recently planted where the trees are known to come from infected European sources. There has also been continued surveying of reported suspect sites by NRW staff and monitoring of any development associated with the wider environment. Map 5 shows the distribution of the disease in Wales up to 31 March 2015. NRW and APHA will be carrying out further surveys and inspections to assess the spread of the disease across Wales.

Table 6: Confirmed findings of Chalara Ash Dieback in Wales at 31st March 2015

Type	No of confirmed cases
Nursery sites	1
Recently planted sites	46
Wider environment, e.g. established woodland	14
Total	61

Source: Natural Resources Wales and the Animal and Plant Health Agency

Map 5: Distribution of Chalara Ash Dieback in Wales



Source: Natural Resources Wales

***Dothistroma* Needle Blight**

This is an economically important disease affecting conifers, particularly Corsican Scots and Lodgepole pine, of which there are about 14,000 ha in wales. The disease decreases timber yield and very heavy infections can kill the trees. It started to spread in the late 1990s and by 2006 had infected 70% of Corsican pine stands in Britain. A survey on the WGWE in 2012 has shown that over 80% of Corsican pine stands, about 30% of Scots pine stands and 3% of Lodgepole pine stands are infected.

Bleeding Canker of Horse Chestnut

This is a disease affecting horse chestnut which started to spread in the 1970s and by 2007 was found to have infected 36% of horse chestnuts in Wales. The disease initially causes disfigurement of trunks and branches but can eventually kill the tree

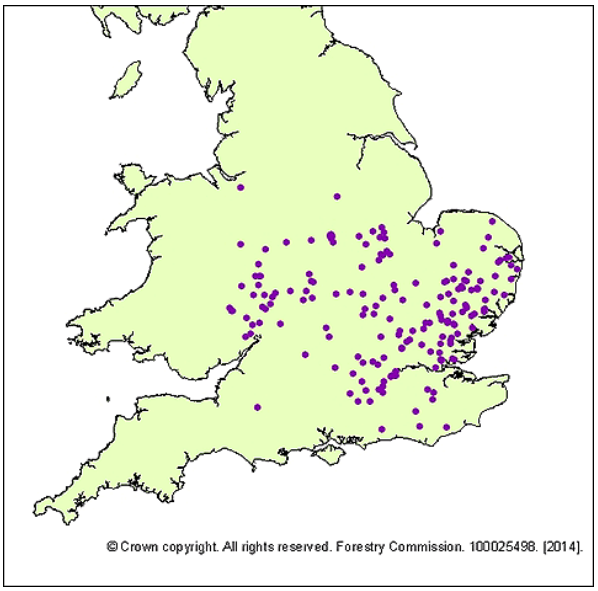
Acute Oak Decline

There are a number of confirmed infections on individual trees along the Wales border and a wider spread of unconfirmed but suspicious cases further across Wales (see Map 6). This disease is a major future threat which needs to be monitored.

Protected Zone Surveys

A number of surveys have been carried out across Wales in order maintain the GB Protected Zone Status for a range of species. The species monitored for including a number of bark beetles, Oak Processionary Moth, Chestnut Blight and Oriental Chestnut Gall Wasp. Additionally, surveys have been carried out under EU emergency measures for Pinewood nematode and Pitch pine canker. No findings of any of the above species have been found.

Map 6: Reports of Acute Oak Decline



Source: Forestry Commission

Relevance

One of the desired outcomes of the strategy is that woodland ecosystems are healthy and resilient. There are concerns that with climate change there may be more frequent outbreaks of pests and diseases, deterioration of the condition of some of our tree species, and more winter storm damage. This indicator will monitor reports of pests, disease, and damage to trees in Wales. Since changes in disease outbreaks, tree condition and windthrow are largely out of our control, this indicator also looks at the effectiveness of our response to pest and disease outbreaks.

9. Local benefits of woodlands

Key points

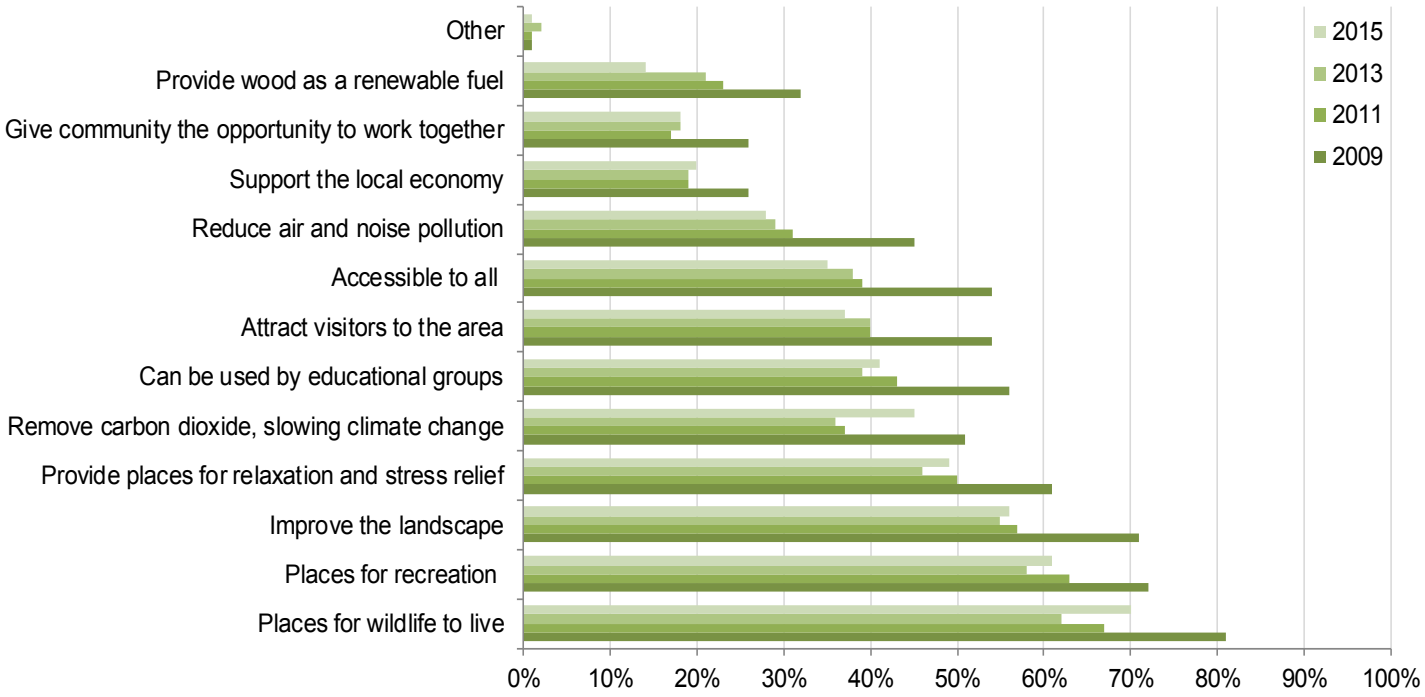
- The percentage of people naming at least one benefit of woodlands has decreased by 4 percentage points, since 2009.
- The percentage of people naming at least one disadvantage of woodlands has decreased by 5 percentage points, since 2009.
- Over nine-tenths (94%) of people named at least one benefit of woodlands to local communities, while nearly two-fifths (38%) named at least one disadvantage.

Data

Since 2005, the Public Opinion of Forestry Survey has asked respondents about their perception of benefits of woodlands to local communities, and since 2009 has asked about their perception of disadvantages of woodlands. Since 2013, new questions have been asked about the respondents' perceptions of the benefits and disadvantages of urban trees.

a) Changes in the perception of benefits to local communities:

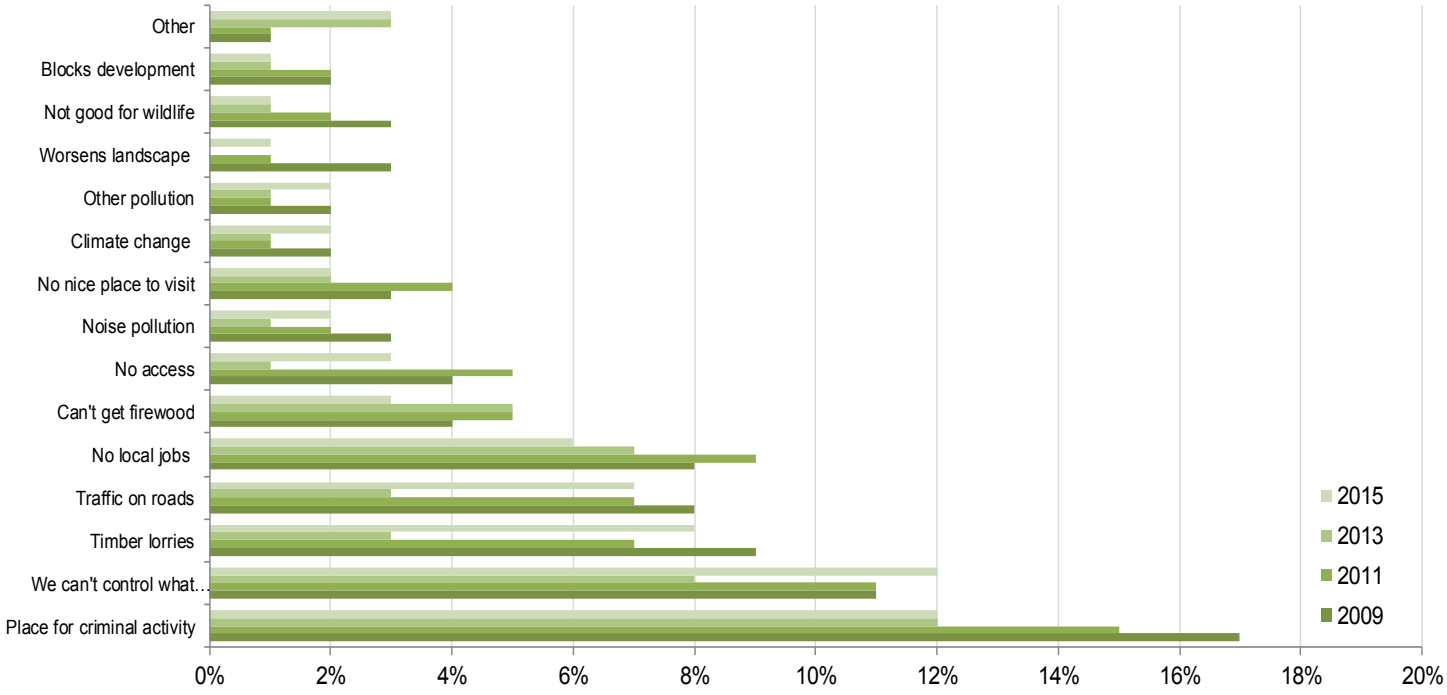
Chart 15: Benefits of woodlands to local communities



Source: Public Opinion of Forestry Surveys

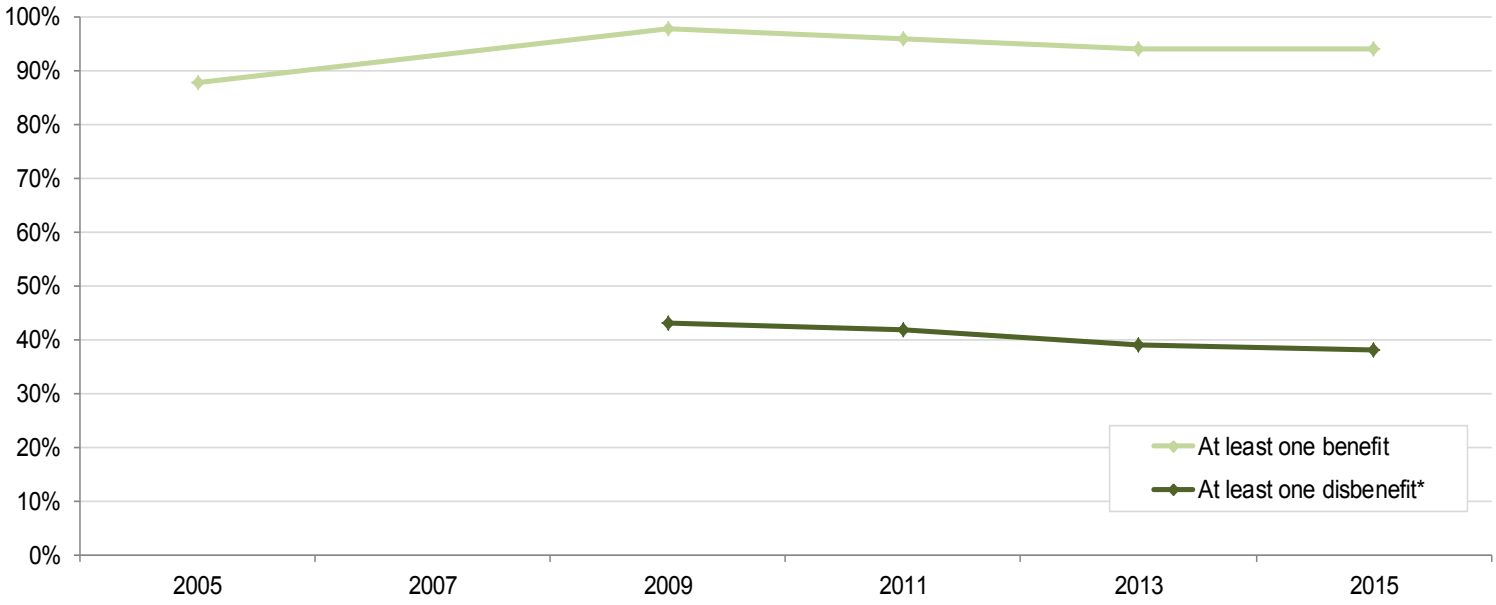
b) Changes in the perception of disadvantages to local communities:

Chart 16: Disadvantages of woodlands to local communities



Source: Public Opinion of Forestry Surveys

Chart 17: People naming at least one benefit or disbenefit



*Question not asked in 2005

Source: Public Opinion of Forestry Surveys

c) Benefits and disadvantages of urban trees:

In 2015, 94% of respondents to the Public Opinion of Forestry Survey identified at least one benefit of woodlands to local communities, while 38% identified at least one disadvantage. The most popular benefit of woodlands chosen was that they provide 'Places for wildlife to live', whilst the most popular disadvantage chosen was that woodland provide a 'place for criminal activity' to occur.

Relevance

Four of the desired outcomes of the strategy are that (i) woodlands are better adapted to deliver a full range of benefits, (ii) urban woodlands and trees deliver a full range of benefits, (iii) more communities benefit from woodlands and trees, and (iv) more people enjoy the life-long learning benefits of woodlands and their products.

As these outcomes are delivered, shifts in the perceptions of the benefits that local woodlands and urban trees bring to communities would be expected. This indicator monitors those perceptions using data collected from the biennial Public Opinion of Forestry Survey. The desired trends are that:

a) More people name several benefits of woodland to their local community
b) Higher percentages of people name individual benefits
c) Lower percentages of people name individual disadvantages
d) More people name benefits of urban or street trees

Notes

For more detail on the data regarding urban trees, see 6. Urban Woodlands and Trees.

10. Community involvement

Key points

- There was a sizeable increase in the percentage of households involved in woodland education in 2015, increasing by 9 percentage points from 2013. Also the percentage of adults involved in volunteering in the woodlands had increased by 2 percentage points between 2013 and 2015.
- There has been stability in the percentage of people consulted on woodland plans, and the percentage of members of woodland community groups.
- Our latest data shows that there was a large increase in the area of land leased or owned community groups between 2008 and 2010.
- There was a slight decrease in the numbers of woodland community groups between 2008 and 2010.

Data

Table 7: Involvement in woodland

	Baseline (%)	Baseline Date	2015 (%)
a) Consultation on woodland plans (% adults)	6	2003	5
b) Membership of woodland community groups (% adults)	2	2005	3
c) Involvement in woodland education (% households)	15	2005	27
d) Involvement in volunteering in woodlands (% adults)	3	2009	5

Source: Public Opinion of Forestry surveys

Table 8: Community groups

	2008	2010
e) Number of active community woodland groups	145	138
f) Area of land leased or owned by community woodland groups (Ha)	233 Ha	624 Ha

Sources: Cydcoed project reports, Forestry Commission Wales survey of Community Woodland Groups in Wales 2010

Relevance

Two of the desired goals of the strategy are that more communities are involved in decision making about woodlands, and management of woodlands so that woodlands deliver greater benefits at a community level and that more people of all ages benefit from the use of woodland as a setting for learning and play. This indicator monitors the proportion of the population getting involved in woodlands.

11. Recreation

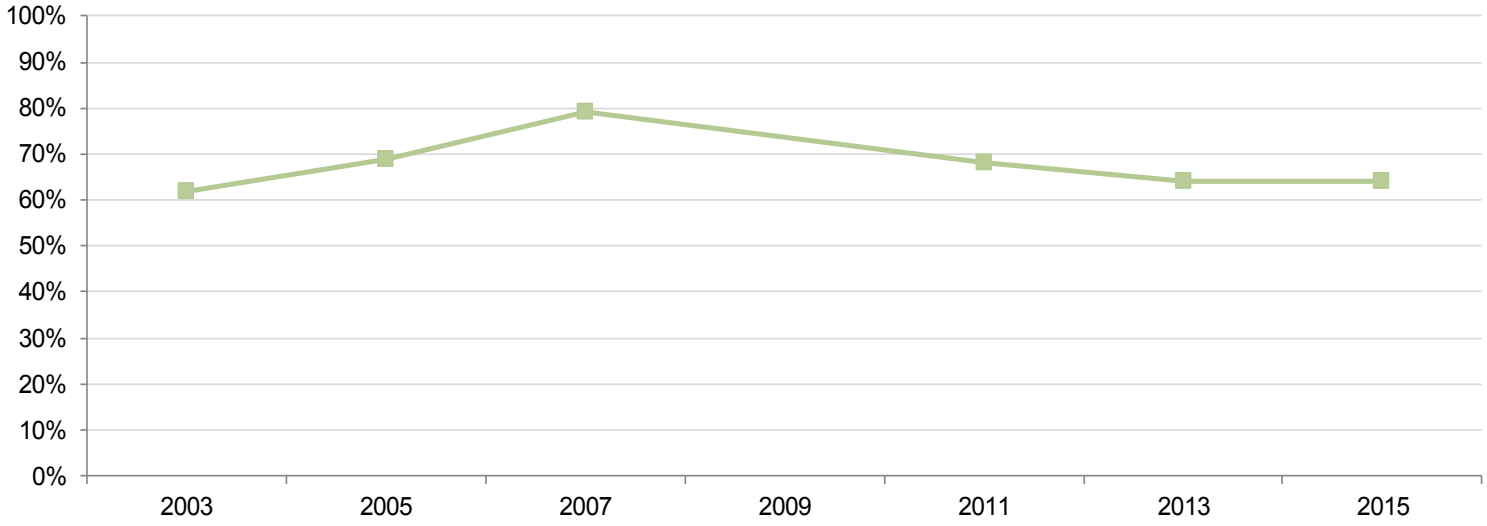
Key points

- In 2015, 64% of adults surveyed in Wales had visited woodland in the last 12 months.
- About half (52%) of all outdoor visits include time spent in woodland.
- The most popular activity reported in 2014 was walking.
- Woodlands were the second most favoured main outdoor destination.

Data

a) Proportion of adults visiting woodlands 2003-2015

Chart 18: Percentage of adults who have visited woodland in the last 12 months



Source: Public Opinion of Forestry Surveys; no data available for 2009

In 2015, 64% of adults surveyed in Wales had visited woodland in the last 12 months which was the same as in 2013; however it is 15 percentage points below the figure of 79% recorded in 2007. Of the respondents who had visited woodland in the last 12 months, almost two thirds (64%) visited woodlands in the countryside on their most recent visit rather than woodlands in and around towns. The most commonly stated reason given by respondents who had not visited woodlands in the last 12 months was that they were too busy/they didn't have enough time.

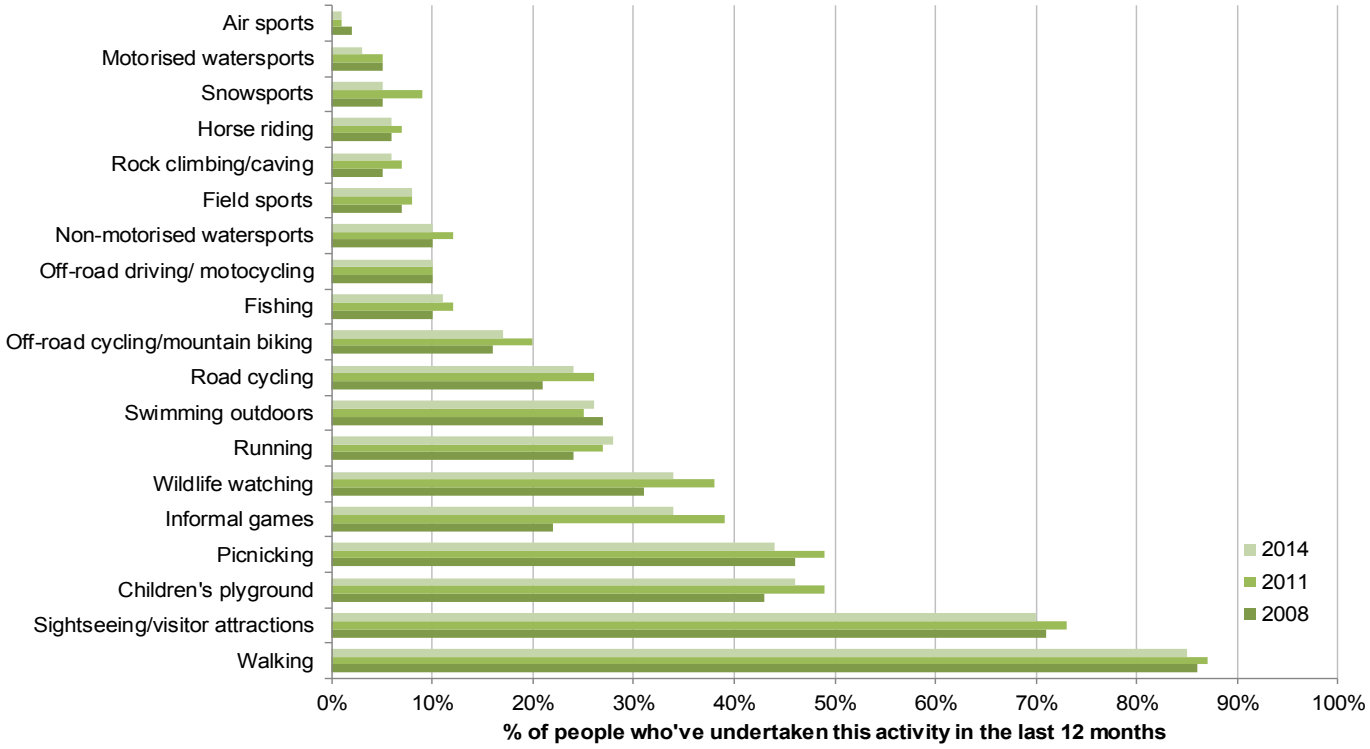
b) Types of activities undertaken in woodlands

The Wales Outdoor Recreation Survey was first run in 2008, and repeated in 2011 and 2014. In 2011, woodland was the main place visited in 18% of the respondents' most recent visits, in 2014 this had decreased to 15%, however in 2014 woodlands were the second most favoured outdoor destinations overall, behind local parks only. 12% of respondents said they would like to visit woodland more often. About half (52%) of outdoor excursions taken by the survey participants most recently included time spent in woodland.

When woodland visits were compared to all visits to the outdoors there were some statistically significant differences:

- Woodland visits were more likely to be taken by those aged 16-24 (57%), those living in North Wales (56%), dog owners (56%), those who were employed (56%), men (56%).
- Woodlands had a much lower percentage of expenditure at 23% than other outdoor locations such as the sea where on 74% of visits people had paid for something.
- Going to woodlands was more likely of interest to those with children in the household and to those in the bottom 10% most deprived areas than other locations.

Chart 19: Activities undertaken outdoors in 2014



Source: Wales Outdoor Recreation Survey

While the popularity of most activities seems to have remained roughly stable it should be noted that walking was by far the most popular activity undertaken in 2014 and that the only activities to record an increase in participation were running and swimming outdoors. All of the other activity percentage points stayed the same or decreased.

Relevance

One of the desired outcomes of the strategy is that more people live healthier lives as a result of their use and enjoyment of woodlands. This indicator looks at the use of woodlands for passive and active recreation.

Notes

The wording of the Public Opinion of Forestry Survey was modified in 2015 to focus on visits that had taken place in the last 12 months rather than during the last few years (which was the wording of the previous survey). Therefore, some of the results for 2015 are not directly comparable with figures from earlier surveys.

12. Accessibility

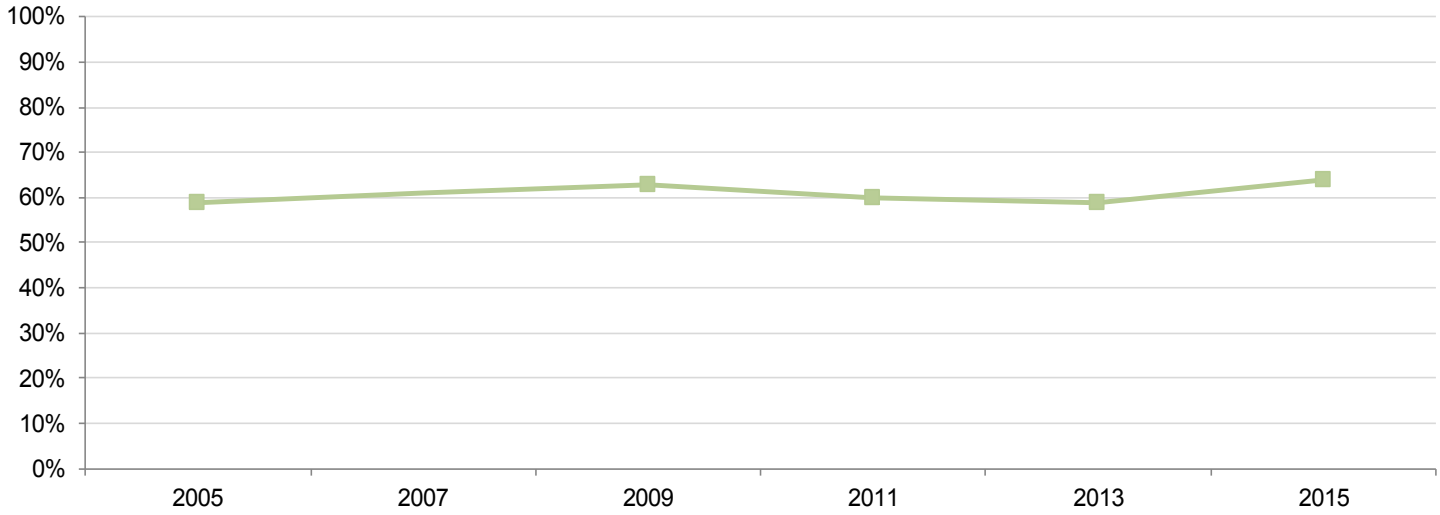
Key points

- 64% of adults in 2015 said that they have easy access to woodland without a car.
- The percentage of people who say they have easy access to woodland without a car has remained roughly stable over the last 10 years.
- The percentage of people with access to a 20 ha+ woodland within 4km has risen steadily between 2004 and 2012.

Data

a) Summary data

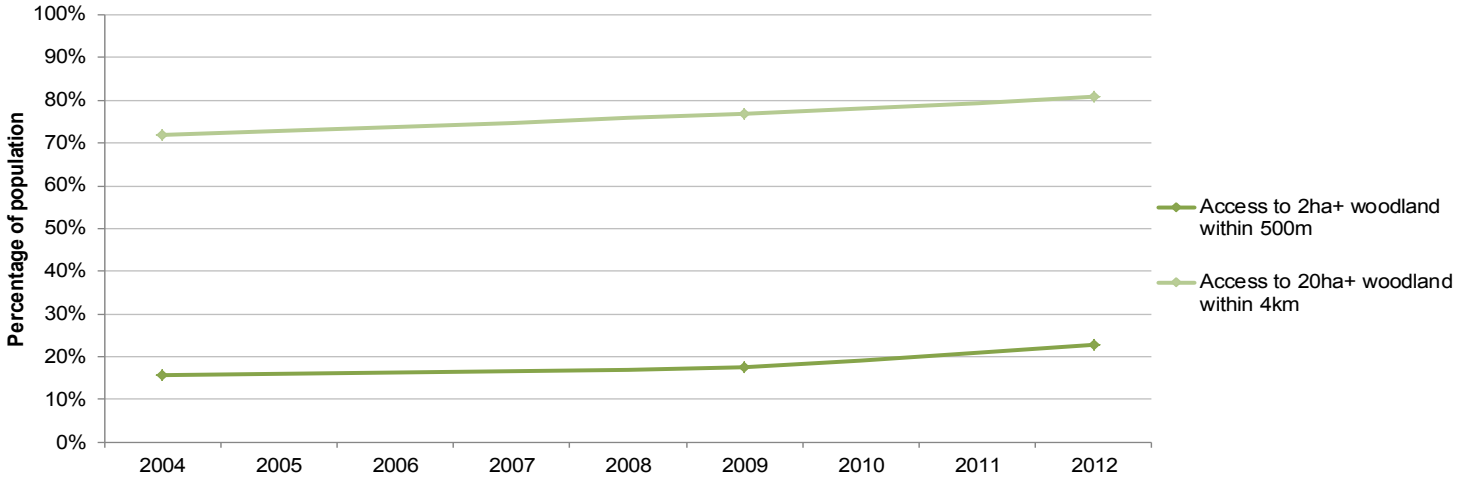
Chart 20: Percentage of adults who have easy access to woodland without a car



Source: Public Opinion of Forestry Surveys; no data available for 2007

The Woodland Trust's Woodland Access Standard aspires that everyone should have access to at least 2ha of woodland within 500m of their home and to at least 20ha of woodland within 4 km of their home. The data below show the extent to which this has been achieved so far in Wales.

Chart 21: Percentage population with access to woodland



Source: Space for People, Woodland Trust

The table below shows large increases in the percentage of the population with access to 2ha+ of woodland within 500m of their homes and access to 20ha+ of woodland within 4km of their homes from 2004 to 2012.

Table 9: Urban area with access to woodland

	Percentage of urban area, 2004	Percentage of urban area, 2009	Percentage of urban area, 2012
Access to 2ha+ of woodland within 500m	15.7	17.4	22.8
Access to 20ha+ of woodland within 4km	72.3	76.7	80.8

Source: Space for People, Woodland Trust

b) Data for areas of high health deprivation

The following table gives data on woodlands with public access in four counties in Wales which have high levels of health deprivation.

Table 10: Access to woodland for areas with high health deprivation

	% population with access to 2ha+ wood within 500m			% population with access to 20ha+ wood within 4km		
	2004	2009	2012	2004	2009	2012
Blaenau Gwent	32	43.9	43.1	99.8	93.4	99.3
Merthyr Tydfil	26	34.9	35.1	98	90.9	94
Neath Port Talbot	32	22.6	22.4	97	98.4	98.2
Rhondda Cynon Taff	32	36.6	35.5	99.9	99.8	99.8

Source: Space for People, Woodland Trust

Blaenau Gwent and Merthyr Tydfil both had large percentage point increases in population with access to 2ha+ wood within 500m of their homes between 2004 and 2012, whilst Neath Port Talbot had a large percentage point decrease.

Interestingly Neath Port Talbot was the only county to have an overall percentage point increase in population with access to 20ha+ wood within 4km of their homes out of the 4 counties in the table above.

Relevance

One of the desired outcomes of the strategy is that more people live healthier lives as a result of their use and enjoyment of woodlands, and one of the goals is to encourage the development and promotion of woodland access throughout Wales with suitable infrastructure and well managed woodlands which feel safe and welcoming. This indicator looks at the availability of woodlands with public access, and can be analysed by geographic area.

13. Local enterprises

Key points

- Employment in the forestry sector and the number of business units has remained roughly stable in recent years.
- Between 8,500 and 11,300 people work in the forestry sector in Wales.

Data

Table 11: Current estimates of employment in the forestry sector

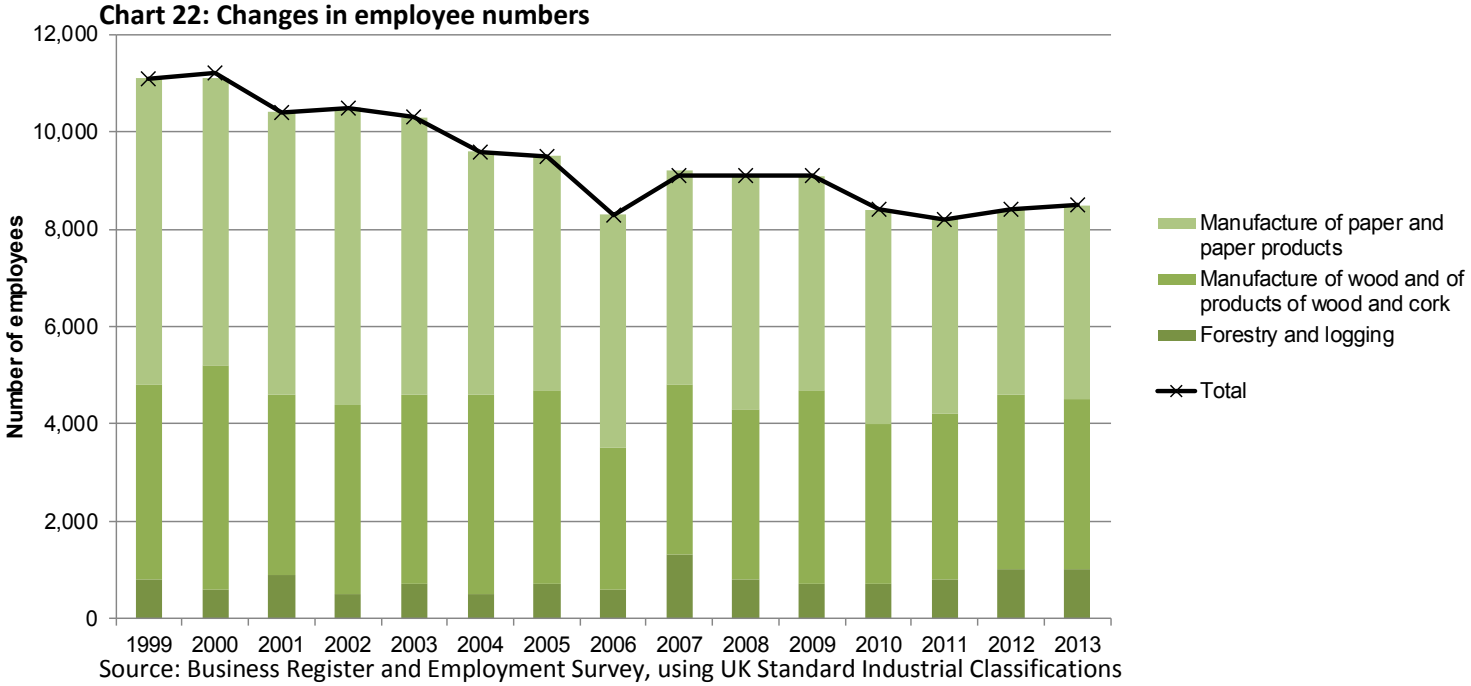
	Business units (2014)	Employees (2013)	
		Full-time	Part-time
Forestry and logging (SIC 02)	280	500	500
Manufacture of wood and products of wood and cork (SIC 16)	380	3,200	300
Manufacture of paper and paper products (SIC 17)	60	3,900	100
Total	720	7,600	900

Source: Business Register and Employment Survey (BRES), using UK Standard Industrial Classifications

In addition to this, the Annual Population Survey shows that there may be a further 2,800 self-employed people working in the sector, which would bring the total number of people working in the sector to 11,300.

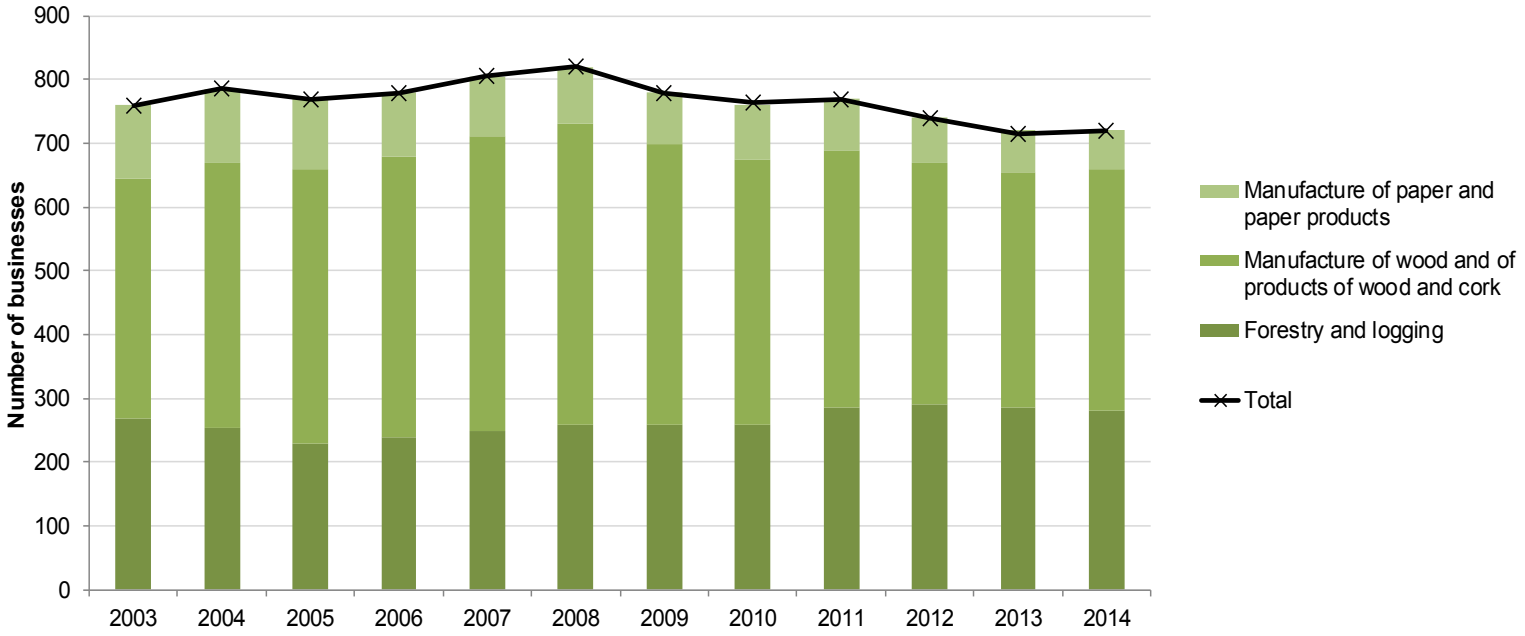
To put these figures in context, the total number of people estimated to be employed in the forestry sector across the UK as a whole is 119,000 with perhaps another 29,900 self-employed. This means that about one-thirteenth of all people working in the UK forestry sector work in Wales.

Chart 22: Changes in employee numbers



Source: Business Register and Employment Survey, using UK Standard Industrial Classifications

Chart 23: Changes in number of businesses



Source: Business Register and Employment Survey (BRES), using UK Standard Industrial Classifications

Relevance

One of the desired outcomes of the strategy is that more people benefit from woodland related enterprises, and one of the goals is that more people operate businesses, develop skills and create jobs in enterprises associated with woodland and timber. This indicator uses data from the Office of National Statistics to monitor: -

- number of woodland-related enterprises in Wales including both VAT registered and non-VAT registered businesses; and
- approximate employment by these enterprises.

Notes

It should be noted that businesses other than those included in the sectors above can be considered to be supported wholly or partially by forestry; however at present the SIC classifications used do not allow us to include these businesses. In particular, no estimate has been made of the number of persons employed in woodland based recreation businesses.

All figures relating to Business units were last updated in 2014, whilst employee numbers were last updated in 2013.

14. Use of Welsh wood

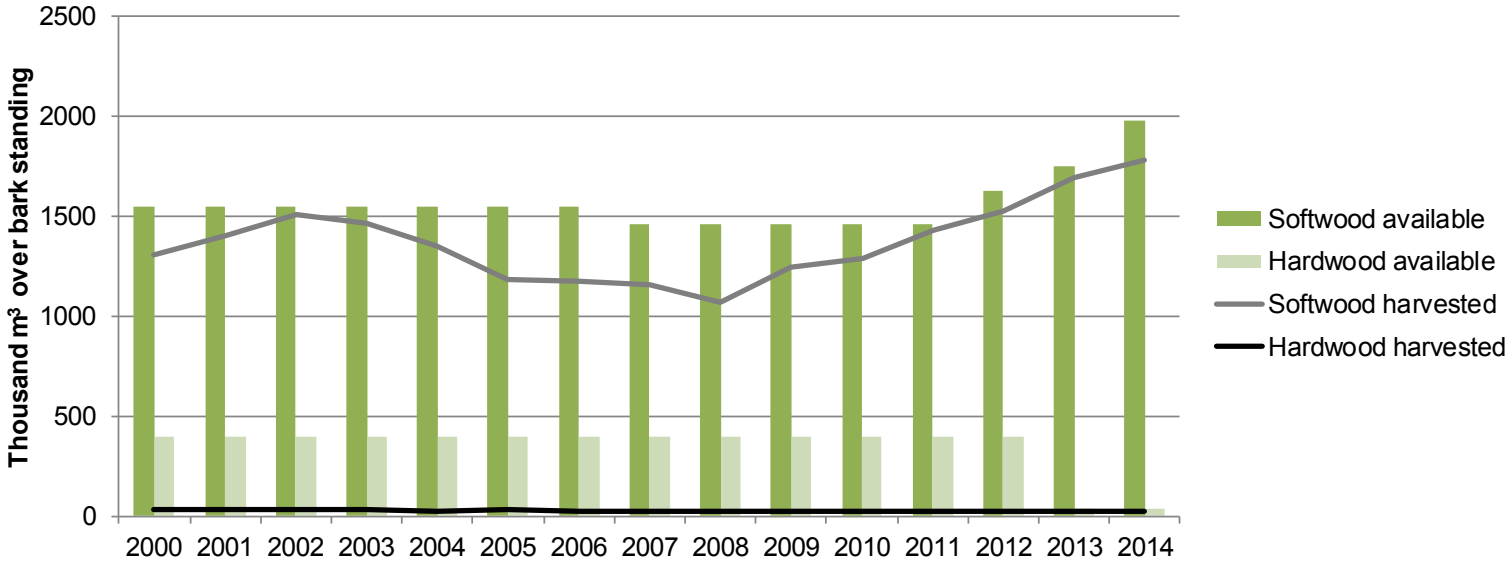
Key points

- The proportion of available softwood harvested this year remained at an acceptable level, however the softwood harvest to availability ratio over the last 10 years is slightly too high (86 per cent and it should be below this figure.)
- 64% of Welsh sawlogs are processed in sawmills in Wales

Data

a) Total harvest/availability ratio

Chart 24: Timber harvested



Source: Forestry Statistics, Forestry Commission Production Forecast, analysis of data from the National Inventory of Woodland and Trees

The key things to note from the Chart 24 are that Harwood availability decreased in 2013 which is explained in the note section, and that since 2008 both the demand and availability of softwood have increased.

Table 12: Harvest/availability ratios

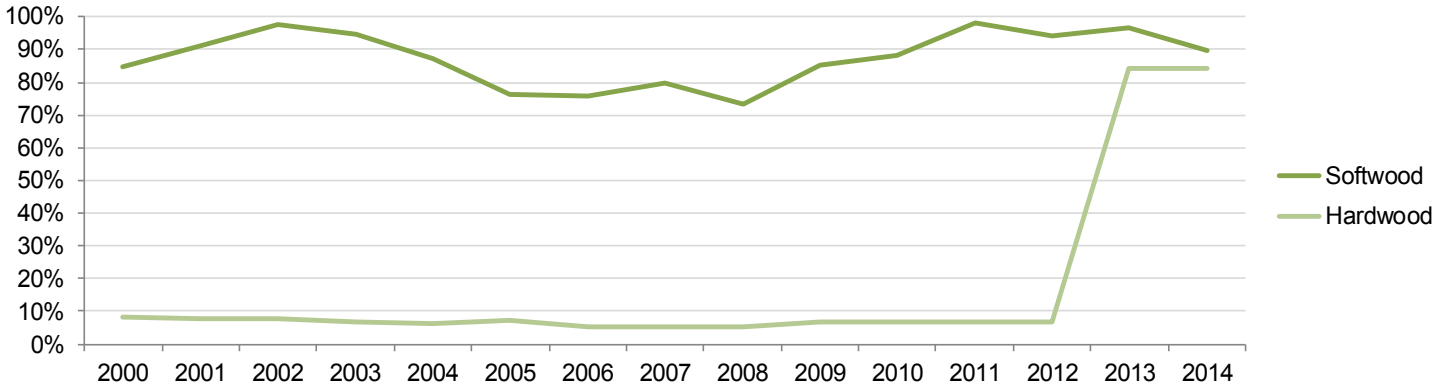
Year	2000	2001	2002	2003	2004	2005	2006
Softwood (%)	85	91	98	95	87	76	76
Softwood rolling 10 year average (%)	77	80	83	86	87	87	87
Hardwood (%)	8	8	8	7	7	7	5

2007	2008	2009	2010	2011	2012	2013	2014
80	73	85	88	98	94	97	90
86	85	85	85	86	85	86	86
6	5	7	7	7	7	84	84

Source: Forestry Statistics, FC Production Forecast, analysis of data from the National Inventory of Woodland and Trees

In recent years the softwood and softwood rolling 10 year average ratios have stayed relatively constant. For an explanation of the large increase in the hardwood availability ratio, see the note at the end of this section.

Chart 25: Harvest/availability ratios



Source: Forestry Statistics, FC Production Forecast, analysis of data from the National Inventory of Woodland and Trees

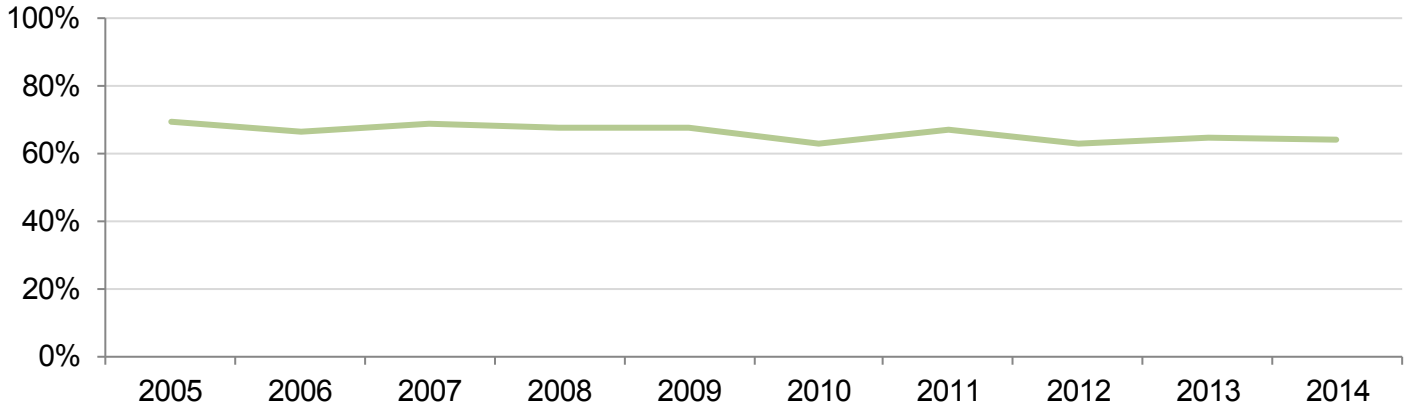
b) Proportion of Welsh sawlogs processed in Wales

Table 13: Welsh logs supplied to sawmills in the UK (thousand green tonnes)

Year	Location of sawmill				Year	Location of sawmill			
	Wales	England	Scotland	All UK		Wales	England	Scotland	All UK
2005	447	198	0	645	**2010**	419	147	2	568
2006	455	229	0	684	**2011**	477	233	1	710
2007	476	211	0	688	**2012**	485	277	5	767
2008	428	204	0	632	2013	520	276	5	801
2009	399	192	0	591	**2014**	560	311	0	871

Source: Forestry Statistics

Chart 26: Percentage of Welsh sawlogs processed in Wales

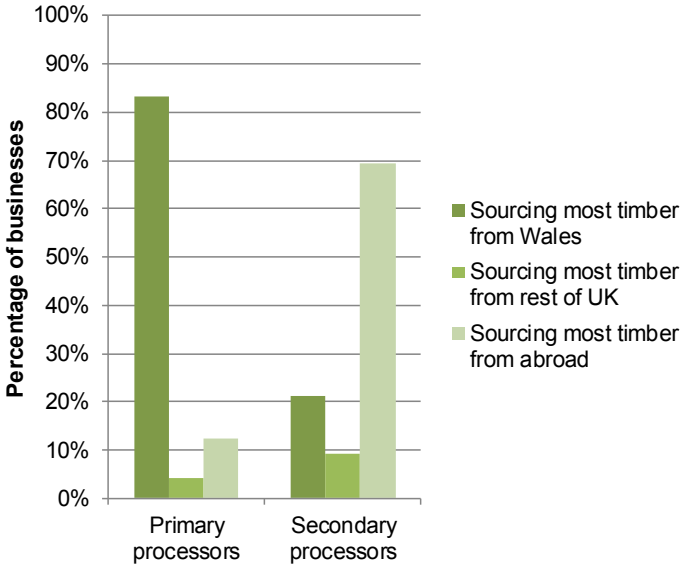


Source: Forestry Statistics

Table 13 shows that since 2010 the tonnage of Welsh saw logs supplied to sawmills in the UK has increased and Chart 26 shows that the percentage of Welsh sawlogs processed in Wales has stayed relatively constant over the 10 year period between 2005 and 2014, staying between 63 and 69 percentage points.

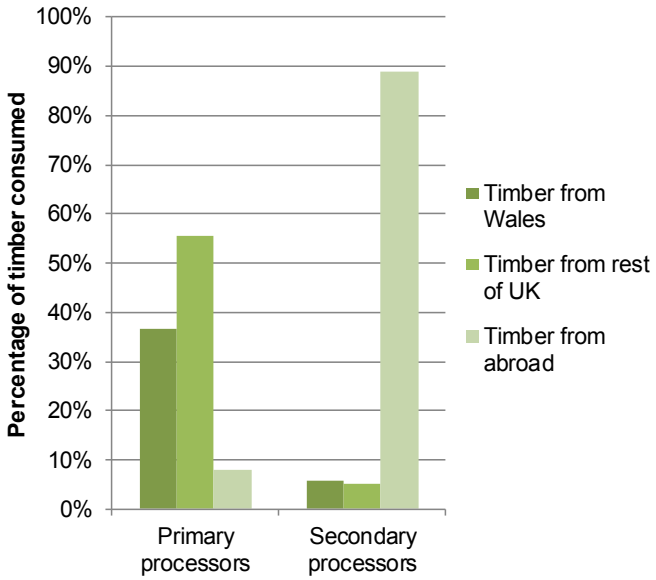
c) Source of timber inputs to primary and secondary timber processors in Wales (2010 baseline)

Chart 27: Businesses by main source of timber



Source: Forestry Commission Wales survey of woodland enterprises

Chart 28: Quantity of timber used by source



Source: Forestry Commission Wales survey of woodland enterprises

The charts above show that primary processors in Wales tend to source a high proportion of timber from Wales; yet secondary processors in Wales source the majority of their timber from abroad.

Relevance

One of the desired outcomes of the strategy is that more Welsh-grown timber is used in Wales. Delivery of this outcome will also help with another: that Welsh woodlands contribute to reducing the carbon footprint of Wales. This indicator monitors the proportion of available wood which is harvested (taken from softwood availability forecasts), and proportion processed in Wales to gain added value. The desired trends are that:

a) Total harvest to availability ratio increases, but primarily through the increased harvest of hardwood.
b) Softwood harvest to availability ratio is kept below 86% on 10 year average and annually within the range 77%-98%.
c) The proportion of Welsh wood processed in Wales increases.

Note

Before 2013, the hardwood availability forecast was estimated using data from the NIWT. A more accurate 50 year hardwood availability forecast has since been developed. This forecast gives a much lower availability of hardwood than was previously supposed, and is the reason for the apparent dramatic increase in the hardwood harvested/availability ratio and decrease in hardwood availability.

15. Value of forestry sector

Key points

- The most recent data indicates that the Total GVA of the forestry sector is £499.3 million.
- The GVA of the forestry sector has risen in the last few years and is now higher than it was in 2005.
- The GVA of the forestry sector in Wales has both fallen and risen more sharply than that of the UK in general.

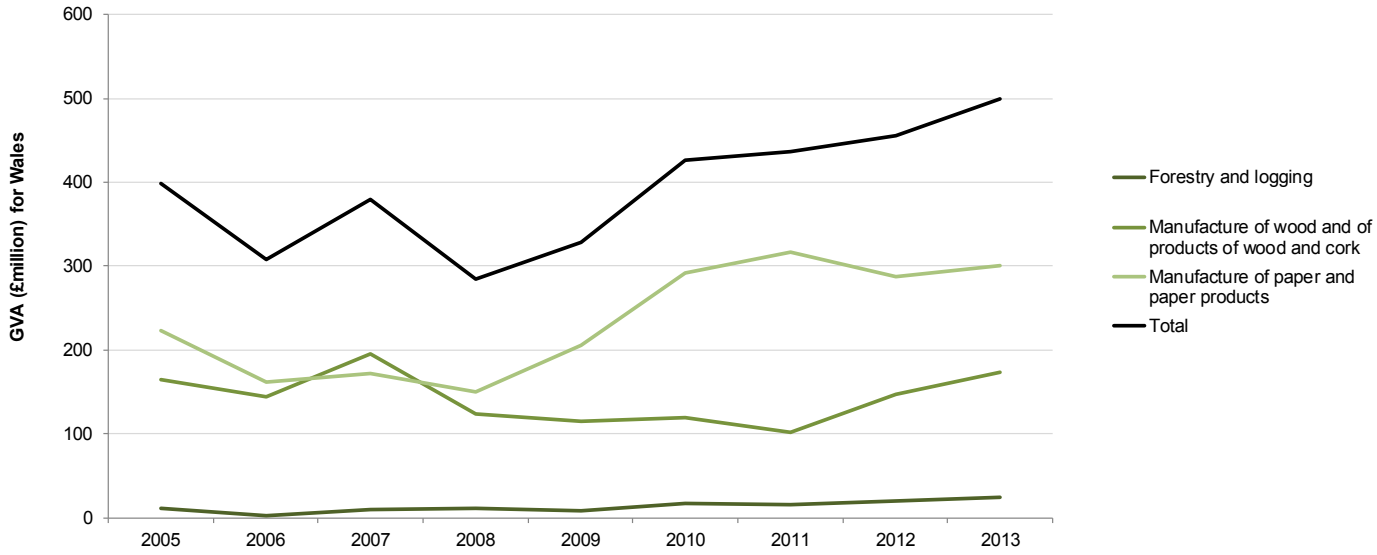
Data

Table 14: Gross Value Added (GVA) of the forestry sector in Wales

	GVA (£million)
Forestry and logging (SIC 02)	25.2
Manufacture of wood and products of wood and cork (SIC 16)	173.8
Manufacture of paper and paper products (SIC 17)	300.3
Total	499.3

Source: Annual Business Survey, Annual Population Survey and Regional Accounts, ONS, using UK Standard Industrial Classifications

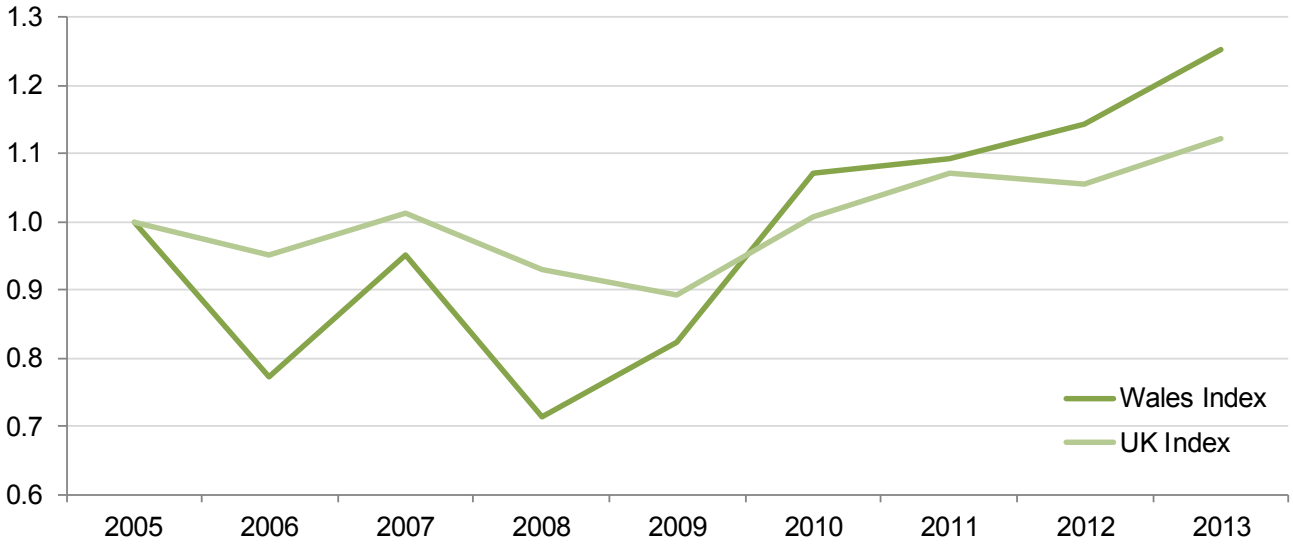
Chart 29: Change over time in Gross Value Added (GVA)



Source: Annual Business Survey, Annual Population Survey and Regional Accounts, Office for National Statistics

The chart below shows a comparison of the GVA of the forestry sector in Wales with that in the UK as a whole, using 2005 as a base year.

Chart 30: Gross Value Added (GVA) of forestry sector in Wales compared to UK



Source: Annual Business Survey, Annual Population Survey and Regional Accounts, Office for National Statistics

Relevance

One of the desired outcomes of the strategy is that the forest sector is better integrated and more competitive, supporting the Welsh economy. This indicator looks at the contribution of the forestry sector to the Welsh economy, using estimates of Gross Added Values from data provided by the Office for National Statistics.

Notes

It should be noted that businesses other than those included in the sectors above can be considered to be supported wholly or partially by forestry; however at present the SIC classifications used do not allow us to include these businesses. In particular, no estimate has been made of the GVA of woodland based recreation businesses.

A new methodology was used to calculate figures in the 2013-14 report and so these figures (and future figures) should therefore not be compared with figures in reports preceding 2013-14.

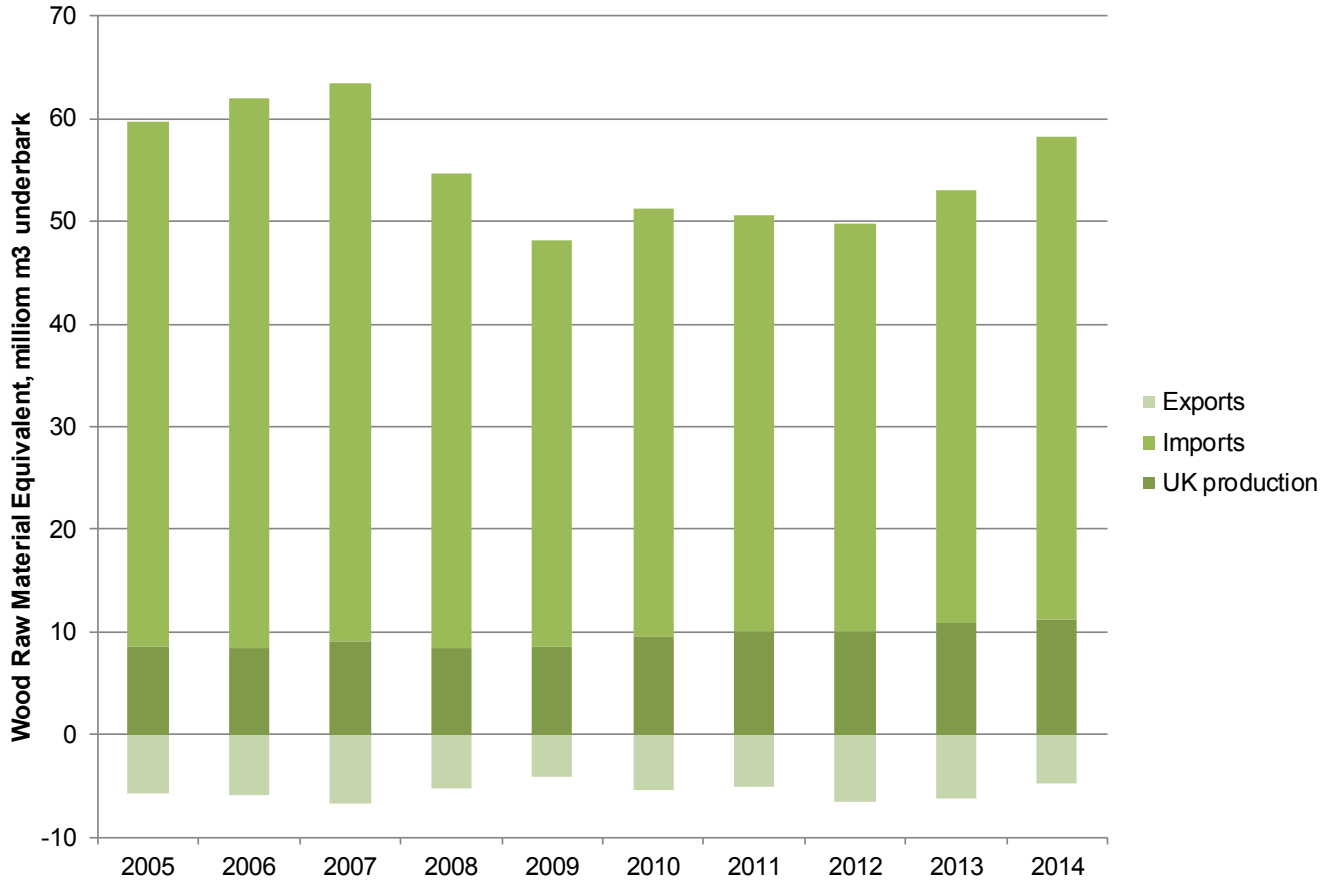
16. Demand for wood

Key points

- UK apparent consumption of wood is 53 million m^3 wood raw material equivalent.
- UK apparent consumption of wood has decreased overall since 2007; however it has begun to increase since 2012.
- Even though UK apparent consumption of paper has decreased overall since 2002, the consumption of sanitary and household papers has increased.

Data

Chart 31: UK apparent consumption of wood



Source: Forestry Statistics

Table 15: UK apparent consumption by product type (thousand m^3)

Year	2002	2003	2004	2005	2006	2007
Sawnwood	10,518	11,092	11,059	10,655	10,278	10,717
Plywood	1,082	1,188	1,385	1,302	1,371	1,555
Particleboard	3,372	3,502	3,670	3,513	3,414	3,717
Fibreboard	1,660	1,616	1,729	1,566	1,506	1,627
Total	16,632	17,398	17,843	17,036	16,569	17,616

2008	2009	2010	2011	2012	2013	2014
8,482	7,908	8,605	8,041	8,448	8,911	10,013
1,431	1,098	1,190	1,259	1,231	1,316	1,328
2,720	2,756	2,965	3,025	2,492	2,837	3,081
1,269	1,212	1,381	1,357	1,314	1,388	1,494
13,902	12,974	14,141	13,252	13,504	14,474	15,937

Source: Forestry Statistics

Table 16: UK apparent paper consumption (thousand tonnes)

Year	2002	2003	2004	2005	2006	2007
Newsprint	2,540	2,322	2,385	2,399	2,439	2,469
Other graphic papers	4,307	4,319	4,885	4,681	5,101	4,782
Sanitary & household papers	907	917	935	928	935	973
Packaging materials	3,603	3,241	3,307	3,164	3,287	3,535
Other paper and paperboard	597	1,094	624	631	583	383
Total	11,954	11,893	12,136	11,803	12,345	12,142

2008	2009	2010	2011	2012	2013	2014
2,142	2,055	1,704	1,971	1,500	1,410	1,404
4,548	3,706	3,647	3,675	3,185	3,078	3,051
913	1,065	886	1,129	1,133	1,159	988
3,424	3,325	3,341	3,280	3,327	3,442	3,568
347	266	325	199	247	273	316
11,374	10,417	9,903	10,254	9,392	9,362	9,327

Source: Forestry Statistics

Relevance

One of the desired outcomes of the strategy is that there is increased use of timber as a key renewable resource. This indicator monitors the demand for wood products in the UK; data for Wales are not currently available.

17. Business health in the forestry sector

Key points

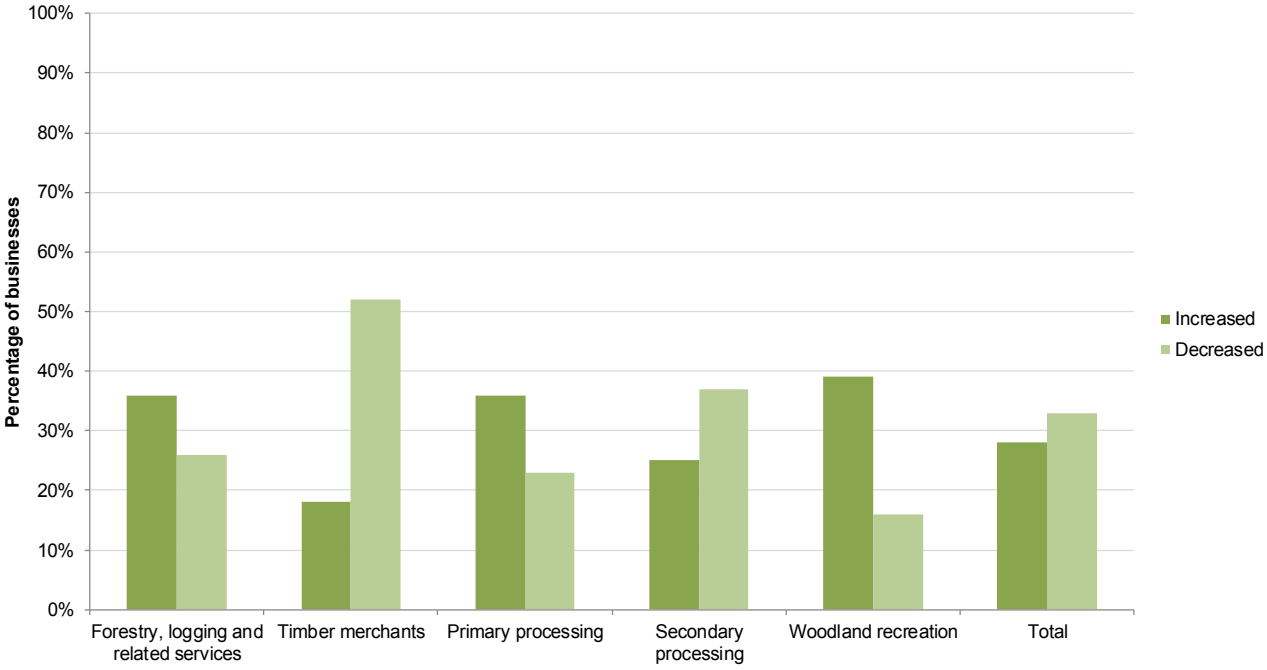
- Over the three years 2007-2010, just over a third of businesses have seen a decrease in turnover, with just under a third reporting an increase.
- Four-fifths of businesses do not report any change in employment.
- The majority of enterprises are confident in the future of their business.

Data

a) Perception of past performance

The charts below show the results of the most recent survey of woodland enterprises, carried out in 2010, which asked businesses to say whether their turnover had increased or decreased in the last three years.

Chart 32: Businesses reporting change in turnover 2007 – 2010

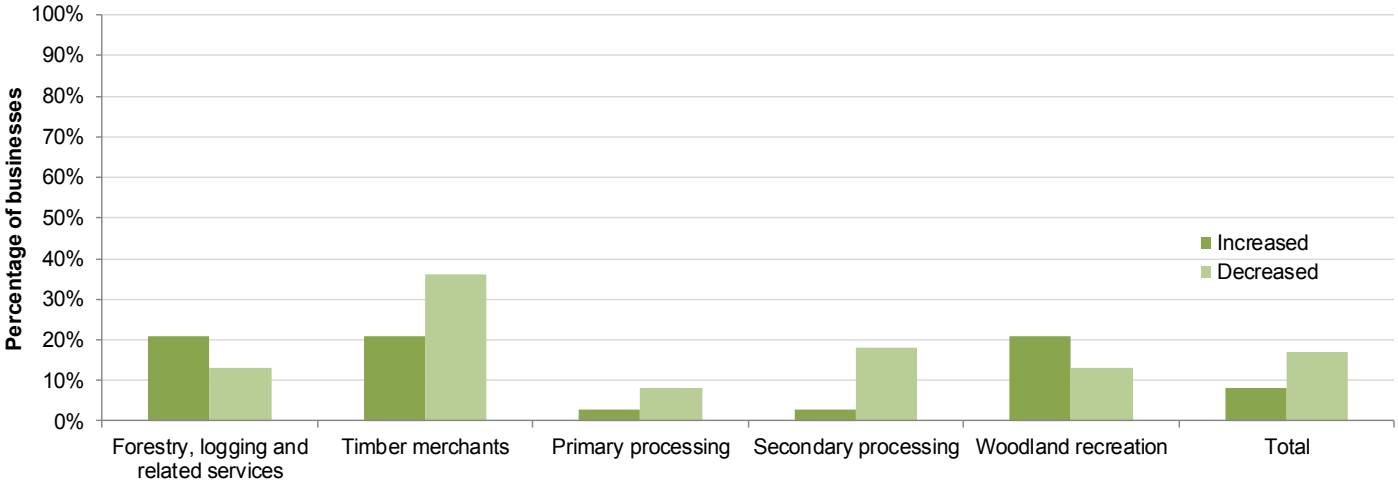


Source: Forestry Commission Wales survey of woodland enterprises

The survey also asked businesses whether the number of people they employed had increased or decreased over the last three years.

The survey of woodland enterprises produced worrying results in that the majority of woodland enterprises produced a lower turnover in 2010 than in 2007 and employed fewer people in 2010 than 2007.

Chart 33: Businesses reporting change in employee numbers 2007 – 2010



Source: Forestry Commission Wales survey of woodland enterprises

This compares to previous surveys done in 2007 and 2004 as shown below.

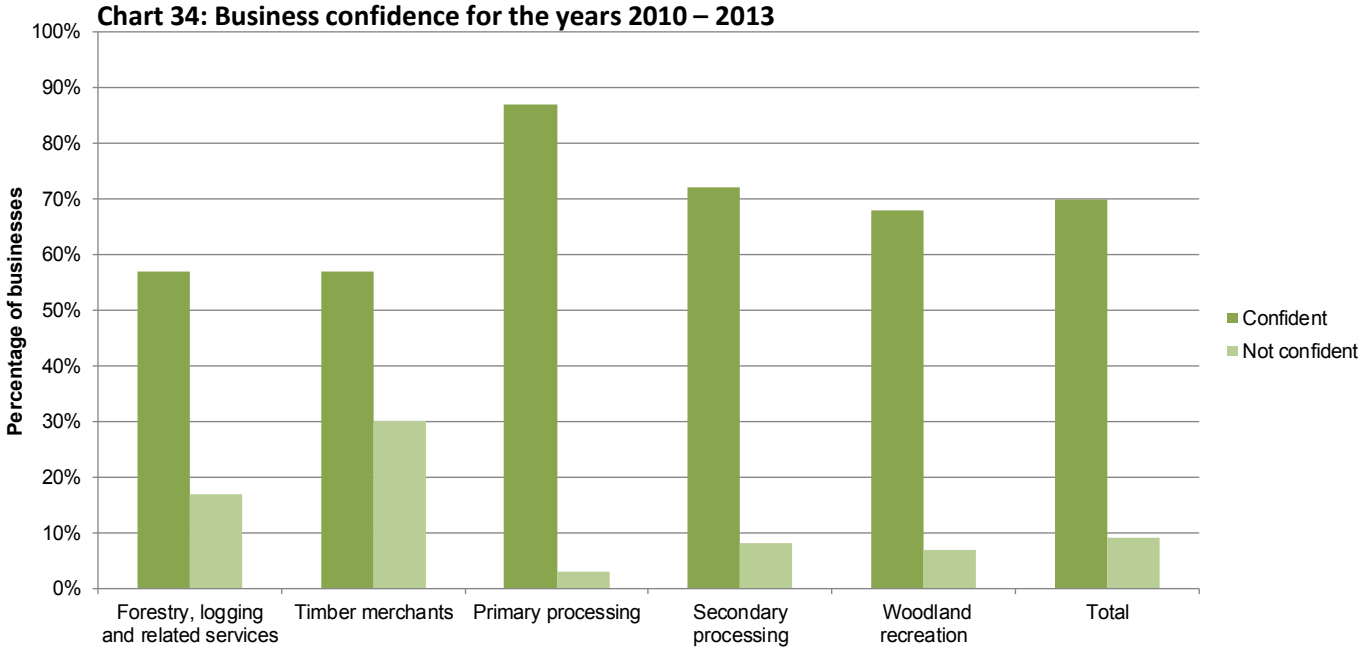
Table 17: Change in turnover for businesses 2001- 2010

% of businesses reporting :		2001 – 2004	2004 – 2007	2007 – 2010
Turnover	Increased	14	63	27
	Decreased	33	4	35
Number of employees	Increased	No information	4	5
	Decreased	No information	29	16

Source: Forestry Commission Wales survey of woodland enterprises

b) Expectations for future years

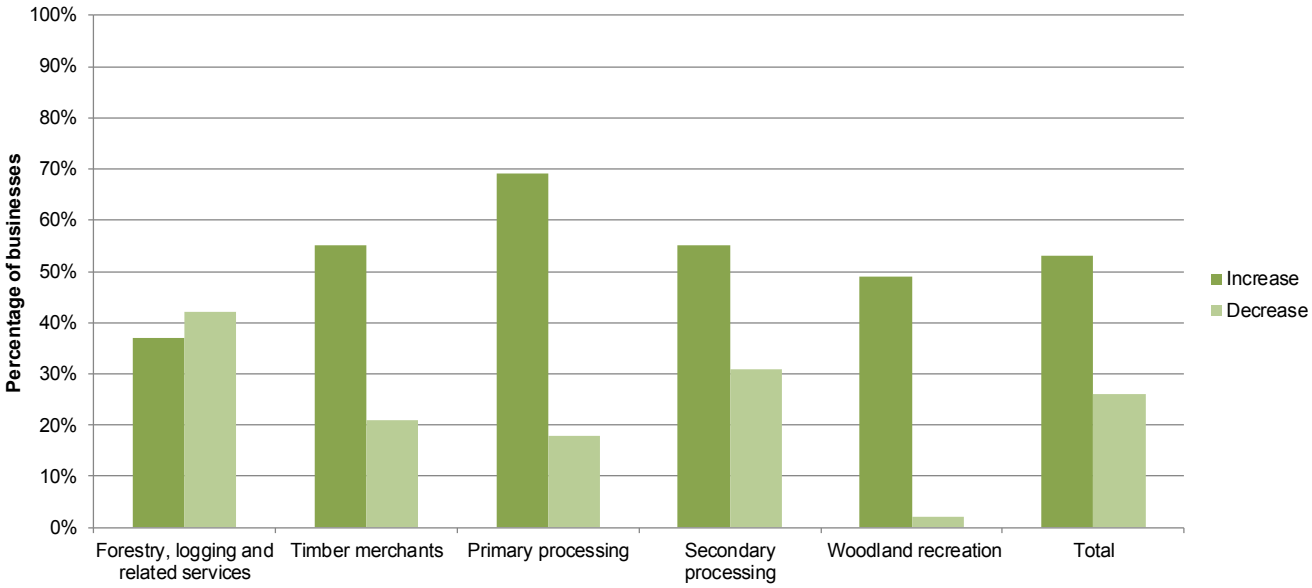
Chart 34: Business confidence for the years 2010 – 2013



Source: Forestry Commission Wales survey of woodland enterprises

Chart 34 suggests that most business' in 2010 expected that the number of market opportunities would've increased by 2013, leading to a higher expected turnover shown in Chart 35, however the actual results are unknown till another survey is released.

Chart 35: Businesses' expectations of turnover for the years 2010 – 2013



Source: Forestry Commission Wales survey of woodland enterprises

c) Obstacles identified by enterprises

For timber-related businesses, the main obstacles to business identified in the survey were rising costs of equipment, timber and fuel (identified by 15%), the economic climate (identified by 15%), and a lack of demand for their product (identified by 7%). Four percent of enterprises said that a lack of timber was a major obstacle.

For woodland recreation enterprises, the major obstacles to business identified in the survey were the economic climate (identified by 22%), followed by a lack of finance, grants or loans (11%). Five percent of recreation enterprises said that lack of access to woodland was an obstacle.

Relevance

Two of the desired outcomes of the strategy are that there is a thriving, skilled workforce in the forestry sector and that the forest sector is better integrated and more competitive, supporting the Welsh economy. This indicator looks at the health of the forestry sector in terms of business outlook, obstacles and opportunities. The data come from the Forestry Commission Wales survey of woodland enterprises 2010. A further survey will be required to refresh this indicator.

18. Woodland habitats and ancient trees

Key points

- The percentage of both area and number of woodland features in Special Areas of Conservation (SACs) which are in favourable condition has declined in the 2007-2012 reporting round compared to the 2002-2006 reporting round.

Data

a) Area of native woodland and area of restored Plantations on Ancient Woodland Sites (PAWS)

In 1997, there were 109,500 ha of native woodland in Wales, according to the National Inventory of Woodlands and Trees. It is anticipated that updated National Forest Inventory (NFI) data will be available to refresh this indicator in next year's Woodlands for Wales indicators release.

b) Improving condition of native woodland

The 1997 baseline for condition of native woodland is reported here. This will be updated when data from the NFI field survey become available next year.

Table 18: Condition of native woodland

Condition indicator	Value	Comment
Mean shrub layer cover as percentage of native woodland	**30**	**This is expected to remain stable or increase in the long term. Mean shrub layer cover in Wales is higher than that recorded for Scotland perhaps due to lower grazing pressure.**
Mean number of tree/ shrub species per quarter hectare of native woodland	**4.27**	**This is expected to remain stable or increase in the long term.**
Mean volume of deadwood in native woodland (m^3 per hectare)	**0.6**	**This is far below the volume of 20m^3 per ha required to comply with the UK Woodland Assurance Standard, and also falls below the 4.4m^3 per ha recorded for Scotland**
Percentage of (i) native woodland and (ii) oak woodland in old growth stage	**(i) 23** **(ii) 39**	**In the long term, it is expected that there will be an increase in the proportion of native woodland falling into the old-growth category. However, extensive areas of new native woodland planting could cause the proportion to dip in the short to medium term.**

Source: Analysis of data from the National Inventory of Woodlands and Trees

c) Improving condition of woodland on designated sites

Since 2002, Countryside Council for Wales (CCW), now part of NRW, has been assessing the condition of 47 woodland features within Special Areas of Conservation, establishing a baseline for

this indicator. 2006 is the baseline year, when assessments had been made for all features. In the most recent reporting round (2007-2012) the area had been extended slightly and some features were not assessed. The assessments are presented in terms of condition, expressed as a percentage both of woodland features and of woodland area contained within those features.

Table 19: Special Areas of Conservation by condition

	Features (2002-06) (%)	Woodland area (2002-06) (%)	Features (2007-12) (%)	Woodland area (2007-12) (%)	Features (2008-2013) (%)	Woodland Area (2008-2013) (%)
Favourable – maintained or recovered	21.3	8.8	17	2.5	17	2.5
Favourable – unclassified	4.3	0.5	4.3	0.9	4.3	0.9
Unfavourable – recovering	21.3	14.1	10.6	9.2	10.6	9.2
Unfavourable – no change	14.9	12.7	10.6	9.3	4.3	5.1
Unfavourable – declining	14.9	20.4	6.4	1.1	2.1	0.1
Unfavourable-unclassified	23.4	43.4	40.4	66.9	42.6	70.1
Total favourable	25.6	9.3	21.3	3.4	21.3	3.4
Total unfavourable	74.4	81.7	68.1	86.5	59.6	84.5
Total assessed	100	100	89.4	89.9	81.9	87.8

Source: Countryside Council for Wales, Natural Resources Wales

Relevance

This indicator tracks the area and condition of native woodland in Wales, and the condition of woodland on designated or ancient sites. Relevant desired outcomes of the strategy are:

- Woodland biodiversity is supported and native woodland is in favourable management
- Woodlands and trees of special conservation value are in favourable management
- Woodland management achieves high standards of environmental stewardship

The desired trends for this indicator are therefore:

a) Increasing area of native woodland
b) Improving condition of native woodland
c) Improving condition of woodland on designated sites
d) Increasing area of Plantations on Ancient Woodland Sites restored or under restoration

19. Woodland species

Key points

- The abundance of woodland birds in Wales has changed little since 1994.

Data

a) Population trends of species of principal importance

Work by Forestry Commission Wales identified 210 species from the 542 species in the Section 42 list which rely wholly or partly on woodland habitats, or that could potentially be affected by forestry operations. 26 of these species are regarded as high priority. The population trends of these species are reported through the UK Biodiversity Action Plan (UKBAP) reporting rounds.

The table below shows trends for the species for which information is available. Only a small number of species have information available (between 12 and 26 out of 210).

Table 20: All priority species

Reporting round	1999	2002	2005	2008
Increasing	3	5	4	4
Declining	7	8	9	10
Stable or no clear trend	2	8	13	12
Unknown	198	189	184	184

Source: UK Biodiversity Action Plans reporting

The table below shows trends for high priority species only. Again, information is only available for a small proportion of species.

Table 21: High priority species

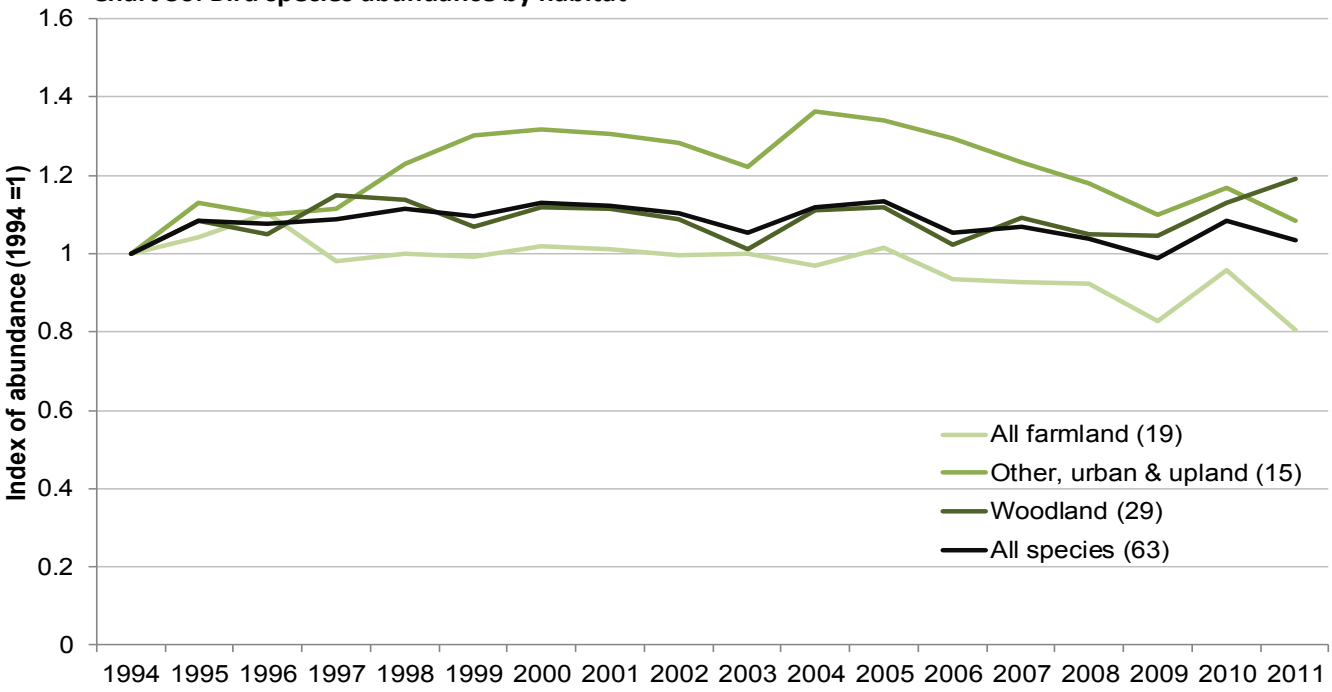
Reporting round	1999	2002	2005	2008
Increasing	2	4	3	3
Declining	2	4	3	2
Stable or no clear trend	1	1	3	3
Unknown	21	17	17	18

Source: UK Biodiversity Action Plans reporting

b) Woodland bird index

The chart below shows the change in abundance of bird species since 1994, showing that the abundance of woodland birds has risen slightly.

Chart 36: Bird species abundance by habitat



Source: Data from the Breeding Bird Survey by the British Trust for Ornithology and the Royal Society for the Protection of Birds

Relevance

This indicator tracks the population trends of woodland-related species listed in Section 42 of the Natural Environment &Rural Communities Act 2006: Species of principal importance for conservation of biological diversity in Wales. It also examines the population trends of widespread woodland birds.

One of the desired outcomes of the strategy is that woodland biodiversity is supported and native woodland is in favourable management. The desired trend in this indicator is therefore that fewer species have declining populations and more species have increasing populations.

20. Connectivity

Key points

- The proportion of woodland in network zones appears to have neither increased nor decreased overall.
- Total woodland in primary network zones amounted to 29% of the area in 2014, which is the same percentage as in 2011.
- The proportion of broadleaf woodland in key network zones has remained constant since 2011; over half the woodland in primary network zones is broadleaf.
- The proportion of conifer woodland in key network zones decreased between 2011 and 2014, but the proportion of mixed woodland in key network zones increased in this same time period.

Data

Table 22: Area of woodland in primary network by type

Type of woodland	Area in key network zones (ha)		% of network area	
	2011 (NFI)	2014 (NFI)	2011 (NFI)	2014 (NFI)
Broadleaf	53,670	53,984	17	17
Conifer	25,110	23,858	8	7
Mixed	4,620	4,782	1	2
Felled	2,680	3,666	1	1
Ground prepared for planting	70	464	0	0
Shrub	270	272	0	0
Young trees	3,590	4,086	1	1
Other	1,220	1,180	0	0
Total woodland	91,570	92,293	29	29
Land area in network	318,140	318,140	100	100

Source: Analysis of data from the National Inventory of Woodland and Trees and National Forest Inventory.

Table 23: Area of woodland in network zones

Type of network	Area of woodland		% of network area		Area of network
	2011 (NFI)	2014 (NFI)	2011 (NFI)	2014 (NFI)	
Primary	91,570	92,293	29	29	318,140
Secondary	36,860	37,195	26	26	142,030
Tertiary	27,570	27,630	20	20	134,820

Source: Analysis of data from the National Inventory of Woodland and Trees and National Forest Inventory.

Relevance

One of the goals of the strategy is to protect the structure and functioning of woodland habitat networks and, where necessary, to reverse the fragmentation of semi-natural habitats. This indicator monitors area and type of woodland in key network zones.

21. Woodlands as a pressure on water

Key points

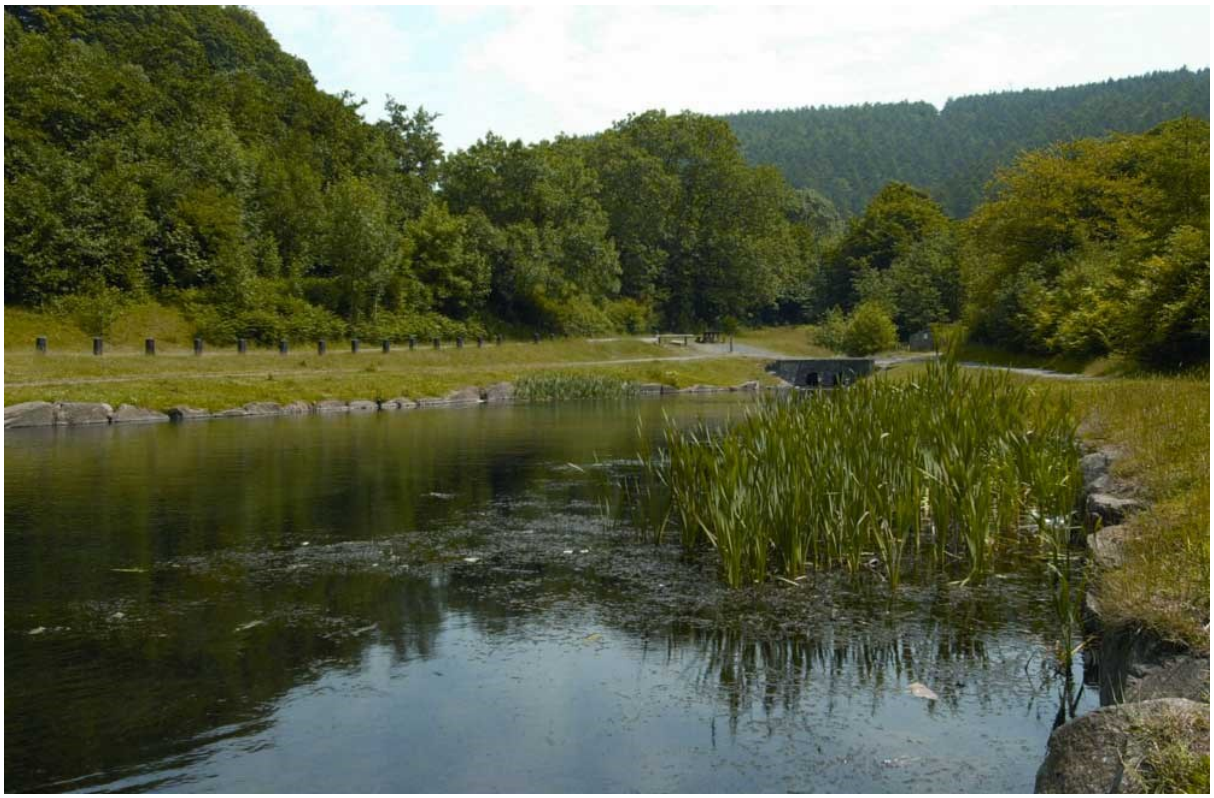
- This indicator is under development.

Data

This indicator is under development.

Relevance

One of the desired outcomes of the strategy is that new and existing woodlands contribute to water and soil management, through reducing any detrimental impact of woodland cover on water quality.



22. Woodlands as a solution for water management

Key points

- This indicator is under development.

Data

This indicator is under development.

Relevance

One of the desired outcomes of the strategy is that new and existing woodlands contribute to water and soil management, through reducing diffuse pollution and soil erosion and helping to reduce flood risk. The desired trends are to see:

- Increased area of riparian zones with appropriate woodland cover,
- Increased appropriate woodland covers within identified priority zones for flood risk management.

23. Heritage and landscape

Key points

- This indicator is under development.

Data

This indicator is under development.

Relevance

One of the desired outcomes of the strategy is that woodlands and trees make a positive contribution to the special landscape character of Wales and to sites of heritage and cultural importance. The monitoring of ancient woodland sites, linear features and ancient trees is dealt with under Indicator 18: Woodland habitats and ancient trees.

This heritage and landscape indicator will focus particularly on:

- The type of woodland within historic landscapes and its management,
- The extent and condition of ancient wood pasture in Wales.

Summary: Woodlands for Wales indicators table

Indicator	Description	Desired Trend	Baseline	Apparent trend to 2013	Related outcomes in WfW strategy
Welsh woodlands and trees					
1. Woodlands and trees	Area of woodland in Wales and number of trees outside woodland	Increasing	289,000 ha in 2000-01	Increase of 6% to 306,000 ha	4. Woodland cover in Wales increases
2. Diversification of woodlands	Diversity of woodland at a catchment scale, and at a smaller scale.	Increasing	1997 Baseline established for most measures	Monitor and update over the next three years	2. Woodland ecosystems are healthy and resilient
3. Sustainable woodland management	Area of woodland known to be managed to the UK Forest Standard	Increasing	123,000 ha in 2000-01	Increase of 65%	1. More woodlands and trees are managed sustainably
4. Management system	Area of woodland in Wales managed without the use of clearfell	Increasing	15,000 ha in 2000-01	Increase to 105,000 ha	3. Woodlands are better adapted to deliver a full range of benefits
5. Farm woodland	Area of farm woodland actively managed	Increasing	12,000 ha in 2000-01	Increase to 21,037 ha	5. The management of woodlands and trees is more closely related to other land uses
6. Urban woodland and trees	Canopy cover in urban areas	Increasing	14% urban canopy cover in 2006	17% urban canopy cover in 2009	6. Urban woodlands and trees deliver a full range of benefits 8. More communities benefit from woodlands and trees
7. Carbon balance	Carbon abatement from stocks in biomass and wood products, and product and fuel substitution	Increasing carbon stocks and carbon abatement	Annual abatement of woodlands in 1990 estimated at 1419 Kt CO_2e	Model estimates 1404 Kt CO_2e in 2014	7. Welsh woodlands contribute to reducing the carbon footprint of Wales
8. Tree health	Extent of disease and damage in Wales	Stable	Baseline partially completed	2 quarantine diseases affecting Welsh woodlands	2. Woodland ecosystems are healthy and resilient
9. Local benefits of woodlands	Public perception of local benefits of woodlands	Increasing	88% of adults identifying at least one benefit in 2005	94% of adults identifying at least one benefit	8. More communities benefit from woodlands and trees
10. Community involvement	Numbers of people having involvement in woodlands	Increasing	2% of adults members of woodland community group in 2005	3% of adults members of woodland community group	8. More communities benefit from woodlands and trees 9.More people enjoy the lifelong learning benefits of woodlands and their products
11. Recreation	Proportion of population using woodlands for passive and active recreation	Increasing	62% of adults visited in 2003	64% of adults visited in 2013	10. More people live healthier lives as a result of their use and enjoyment of woodlands
12. Accessibility	Proportion of people with accessible woodland close to where they live	Increasing	16% have 2ha+ accessible woodland within 500m in 2004	23% have 2ha+ accessible woodland within 500m	8. More communities benefit from woodlands and trees 10. More people live healthier lives as a result of their use and enjoyment of woodlands
Goods and services					
13. Local enterprises	Number of enterprises using woodlands	Increasing	760 businesses in 2003; 11,100 employees in 1999	715 businesses, 8,500 employees in 2013	11. More people benefit from woodland related enterprises 13. The forest sector is better integrated and more competitive, supporting the Welsh economy
14. Use of Welsh wood	Proportion of available wood which is harvested, and processed in Wales	Increasing	69% harvested (2000); 74% Welsh sawlogs processed in Wales (2004)	90% softwood harvested; 64% Welsh sawlogs processed in Wales	12. More Welsh-grown timber is used in Wales 7. Welsh woodlands contribute to reducing the carbon footprint of Wales

	15. Value of forestry sector	Value of the forestry sector to the Welsh economy	Increasing	Estimated GVA for forestry and related sectors: £402.7 million in 2005	Estimated GVA for forestry and related sectors: £499.37 million	13. The forest sector is better integrated and more competitive, supporting the Welsh economy 8. More people benefit from woodland related enterprises
	16. Demand for wood	Demand for wood products and consumption of wood in Wales, including the demand for certified timber	Increasing	Apparent consumption of 50.4 million m^3 WRME underbark in UK (2002)	Apparent consumption of 53 million m^3 WRME underbark in UK	14. Increased use of timber as a key renewable resource 1. More woodlands and trees are managed sustainably
	17. Business health in the forestry sector	Business health in the forestry sector, including skills	Improving	Partial 2004, full baseline 2010	Stable	13. The forest sector is better integrated and more competitive, supporting the Welsh economy 15. A thriving, skilled workforce in the forestry sector
	18. Woodland habitats and ancient trees	Area and condition of native woodland, plus woodland on designated or ancient sites, and number of ancient trees	Improving	Area of native woodland in 1997: 109,500 ha; Woodland features in SACs in favourable condition in 2002: 25.6%	Woodland features in SACs in favourable condition: 21.3%	17. Woodlands and trees of special conservation value are in favourable management 18. Woodland biodiversity is supported and native woodland is in favourable management 16. Woodland management achieves high standards of environmental stewardship
	19. Woodland species	Status of priority woodland species	Improving	1998 partial baseline – population trends known in only 12 species	2008 partial data – trends known in 26 species	18. Woodland biodiversity is supported and native woodland is in favourable management
	20. Connectivity	Area and type of woodland in key woodland network zones	Increasing	137,250ha of woodland in network zones (1997)	157,118ha of woodland in network zones	18. Woodland biodiversity is supported and native woodland is in favourable management
	21. Woodlands as a pressure on water	Area of woodlands that are a pressure for water quality or quantity	Decreasing	No baseline	Indicator not yet established	20. New and existing woodlands and trees contribute to water and soil management
	22. Woodlands as a solution for water	Woodlands that are contributing to improved water quality or quantity	Increasing	No baseline	Indicator not yet established	20. New and existing woodlands and trees contribute to water and soil management
	23. Heritage and landscape	Aesthetic suitability of woodland within areas where it forms an important part of the landscape character.	Improving	No baseline	Indicator not yet established	19. Woodlands and trees make a positive contribution to the special landscape character of Wales and to sites of heritage and cultural importance

Key Quality Information

1. Official Statistics are produced to high professional standards set out in the Code of Practice for Official Statistics. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political reference.

Users and Uses

2. The Woodlands for Wales Indicators are important for monitoring the progress of the Woodlands for Wales Action Plan, and the state of Welsh forestry in general. Some of the uses include:
    - Monitoring of progress towards targets
    - Policy development
    - Advice to Ministers
    - Informing debate in the National Assembly for Wales and beyond
    - Geographic profiling, comparisons and benchmarking

    There is a variety of users of these statistics including national and local government, those involved in the forestry sector, researchers, students and individual citizens.

Data Quality

3. Where historical data are given in this report, these data may have been updated or corrected since the publication of previous reports. Any historical comparisons should therefore be made on the basis of the data contained in this report where possible.
4. In tables where figures have been rounded, the sum of the individual figures may not equal the total shown.

Data Sources and Coverage

5. Data in this report come from a variety of sources. Much of this data is published in other publications. Sources are given below, with links where further information or data can be found:
    - Forestry Statistics
    - The National Inventory of Woodland and Trees
    - The Countryside Survey
    - Forestry Commission Wales Survey of Farmers
    - Forestry Resource Survey
    - Wales Inventory of Urban Trees, available as geographic data on the Forestry Commission map browser
    - Public Opinion of Forestry surveys
    - Forest Research
    - Forestry Commission Wales Survey of Community Woodland Groups in Wales
    - Cydcoed project reports
    - Wales Outdoor Recreation Survey
    - Space for People

- National Forest Inventory
- Classification data from the Office for National Statistics
- Business Register and Employment Survey
- Annual Population Survey
- Forestry Commission Production Forecast
- Annual Business Survey
- Regional Accounts
- Forestry Commission Wales Survey of Woodland Enterprises
- Projections of emissions and removals from the LULCF sector to 2050

Related statistics for other UK countries

6. UK indicators are published in 'UK indicators of Sustainable Forestry', available from the Forestry Commission website
7. Forestry Commission Corporate Plan Performance Indicators and headline performance reports are available from the Forestry Commission England website
8. Indicators for the England Biodiversity Strategy include information on woodland and are available from GOV.uk
9. The Scottish Forestry Strategy progress indicators are available from the Forestry Commission Scotland website

Glossary

Active recreation: *Recreation involving activity which raises the heart rate or causes the participant to sweat. Examples would include mountain biking or trail running*

Ancient Semi-Natural Woodland (ASNW): *Ancient woodland where the trees and shrubs are semi-natural. These are generally the most important woodlands for biodiversity*

Ancient Woodland: *Sites that have been continuously wooded since before 1600 AD*

Apparent consumption: *The amount of something used in a country or area, calculated by adding the total produced in that country or area to the amount imported and subtracting the amount exported*

Biodiversity Action Plan (BAP): *A plan for a key habitat or species, to establish the factors for its decline and the work necessary for its recovery. National BAPs are approved by Government and form part of the overall UK Biodiversity Action Plan. The original impetus for these plans derives from the 1992 Convention on Biological Diversity*

Brownfield site: *Land previously used for industry, buildings, etc. but no longer in use for that purpose*

Canopy cover: *The proportion of an area covered by tree canopies*

Carbon abatement: *Reduction of the amount of carbon added to the atmosphere*

Carbon footprint: *a representation of the effect that human activities have in terms of the net amount of greenhouse gases, such as carbon and methane, produced, usually expressed as tonnes of carbon in the form of CO_2 equivalent*

Carbon stocks: *Carbon stored, such as the carbon locked up in trees or in wood products*

Catchment: *The area of land which contains a river system*

Clearfell: C*utting down an area of woodland (if within a larger woodland it is typically a felling area greater then 0.25 hectares). Sometimes scattered or clumps of trees may be left standing within the felled area*

Community: *A group of people holding something in common, such as a place or interest*

Countryside Council for Wales (CCW): *Until April 2013 was the Government's statutory advisor on sustaining natural beauty, wildlife and the opportunity for outdoor enjoyment in Wales and its inshore waters. From April 2013, the functions of CCW have been taken over by a new body, Natural Resources Wales (NRW)*

Cydcoed: *This was a £16 million project funded by the Welsh Government and the European Union, through Objective One, engaging communities in local woodland in order to increase social, economic and environmental benefits locally*

Diffuse pollution: *Pollution not coming from a single source*

Ecosystem: *The interaction of communities of plants and animals (including humans) with each other and with the natural environment. Balanced ecosystems are stable when considered over the long term (hundreds of years in the case of woodland)*

Ecosystem services: *Benefits people receive from resources and processes supplied by natural ecosystems.. Many studies have attempted to quantify the economic value of these services, which include:*

- *provisioning services, such as food, water and timber,*
- *cultural services, such as the provision of recreational, health and aesthetic benefits,*
- *regulating services, such as providing shelter, shade and cooling in towns, and shelterbelts on farmland*
- *supporting services, such as carbon sequestration (locking up atmospheric carbon), soil formation and photosynthesis*

Environment Agency (EA): *Non-departmental government body aiming to protect the environment and promote sustainable development. From April 2013, the functions of the EA in Wales have been taken over by a new body, Natural Resources Wales (NRW)*

Forestry Commission (FC): *The government department responsible for the protection and expansion of forests and woodlands in England and Scotland*

Forestry Commission Wales (FCW): *Until April 2013 acted as the Welsh Government's Department of Forestry, responsible for managing the 38% of Welsh woodlands on the Welsh Government Woodland Estate. On behalf of the Welsh Government, FCW advised on the development of forestry policy and its implementation; encouraged sustainable woodland management within the private sector; administered grants; and was responsible for regulatory work, including licensing felling and replanting. From April 2013, the functions of FCW have been taken over by a new body, Natural Resources Wales (NRW)*

Forests: *Generally large areas of predominantly tree covered land*

Forest Research(FR): *An agency of the Forestry Commission providing research, development and monitoring services to support UK forestry, the Forestry Commission, Natural Resources Wales and the policies of the UK Government and the devolved administrations*

Gross Value Added (GVA): *The current recognised method of assessing the economy, and the proportion which different industries contribute towards it*

Habitat: *An area inhabited by a particular species*

Hardwood: *Wood harvested from broadleaved trees*

High priority species: *Species identified as being the most threatened and requiring action under the UK BAP.*

Intimate mixture: *A mixture of different tree species within a small area*

National Forest Inventory (NFI): *The successor to the National Inventory of Woodlands and Trees; a rolling national survey identifying woodland cover; woodland by ownership, and woodland by Interpreted Forest Type. A wide range of information is gathered, including tree species, age and stocking density*

National Inventory of Woodlands and Trees (NIWT): *A survey identifying woodland covered carried out in the last decade of the 20th century; 1997 is generally the reference year for this survey. This survey was the precursor to the National Forest Inventory*

Native species: *One that arrived in Wales without assistance of humans during post-glacial colonisation*

Native woodland: *Woods mainly or entirely composed of locally native species*

Natural Resources Wales (NRW): *Brings together the work of the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales, as well as some functions of Welsh Government. Their purpose is to ensure that the natural resources of Wales are sustainably maintained, enhanced and used, now and in the future.*

Network zone: *In a woodland habitat network, woods are connected enough to function together, with exchange of individuals between woodlands.*

Open habitat: *A habitat where there is no (or limited) tree cover e.g. bog, heath and grassland*

Passive recreation: *Recreation which does not involve activity which raises the heart rate or cause the participant to sweat. Examples would include bird watching or picnicking.*

Plantation on Ancient Woodland Site (PAWS): *Former Ancient Semi-natural Woodland (ASNW) that has been more or less completely replanted with native or non-native species and the ecological value has been degraded. The degree of loss of biodiversity varies markedly with species planted and subsequent management*

Primary timber processor: *A business which undertakes the initial conversion of wood into a product.*

Priority open habitats: *Open habitats identified as threatened and subject to a UK BAP. These include upland heathland, blanket bog, lowland dry acid grassland, lowland meadows and lowland calcareous grassland*

Priority species: *Species identified as threatened and subject to a UK BAP. Priority woodland species in Wales include the spotted flycatcher, wood warbler, black grouse, bullfinch, red squirrel, dormouse and several species of bat*

Relict hedge: *A line of trees which once formed a hedge but no longer forms a complete border*

Riparian zone: *The area around the edge of a river, stream or other freshwater body*

Secondary timber processor: *A business which converts one type of timber products to another.*

Semi-natural woodland: *In the UK no truly 'natural' woods remain. Semi-natural woodlands are mainly made up of trees and shrubs that are native to the site and are not obviously planted. They will usually have grown from natural regeneration, or from coppice/pollard growth*

Softwood: *Wood harvested from coniferous trees*

Soil erosion: *The removal of soil by natural processes such as water or wind*

Special Area of Conservation (SAC): *A protected site designated under the EU Habitats Directive*

Timber yield: *The quantity of timber produced*

UK Forestry Standard (UKFS): *The UK government's approach to sustainable forestry. It sets out the criteria and standards for the sustainable management of all forests and woodlands in the UK*

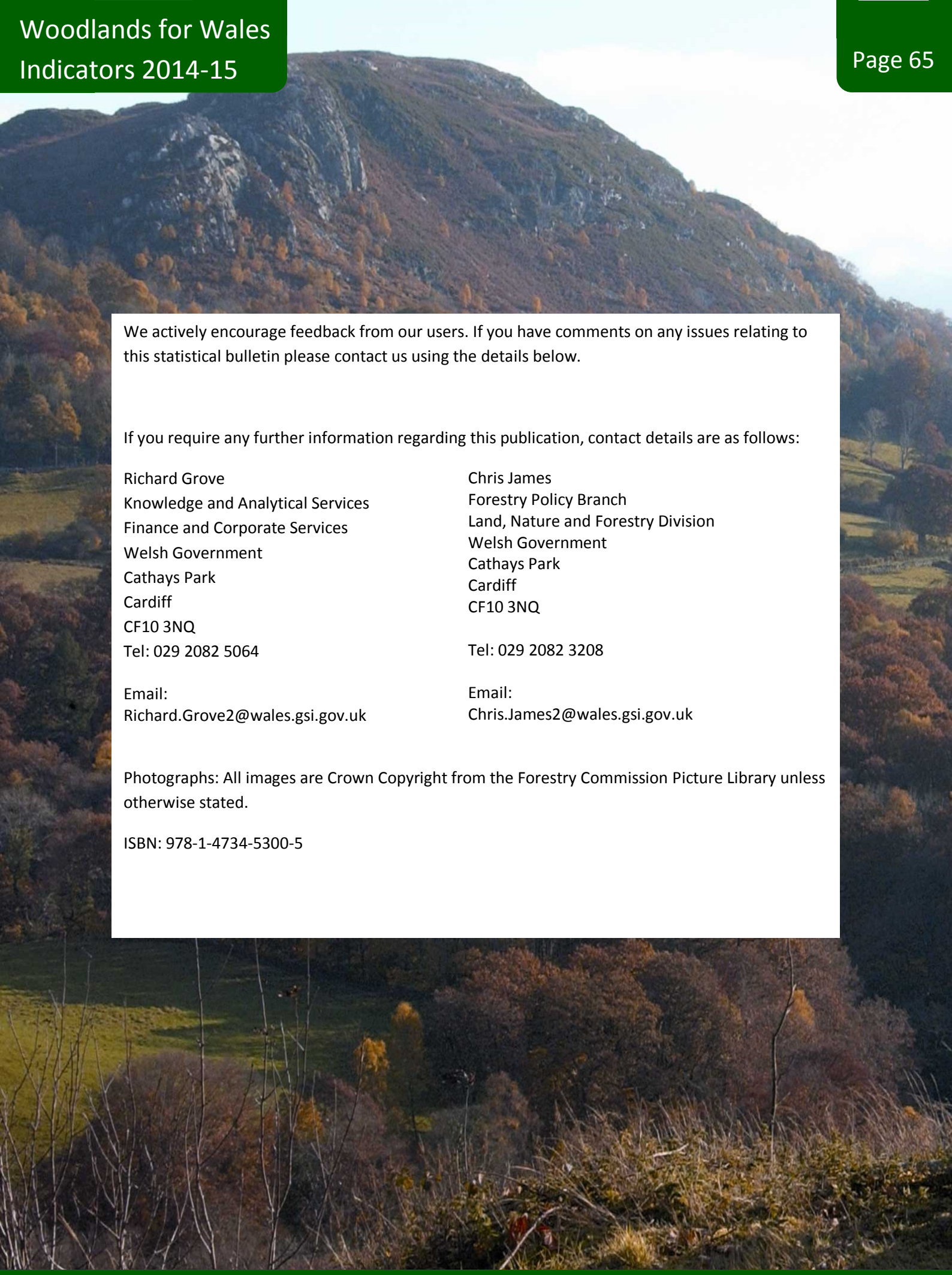
Welsh Government Woodland Estate (WGWE): *Woodlands managed by Natural Resources Wales on behalf of the Welsh Government. This amounts to 38% of the woodlands in Wales.*

Windthrow: *Trees uprooted or broken by wind*

Woodland: *Land predominantly covered by trees. In the National Forest Inventory (in the UK), woodland is currently defined as land where the mature trees would cover more than 20% by area.*

Woodland cover: *Amount of woodland, possibly expressed as an area, or as a proportion out of all the land in a country or other area*

Woody linear feature: *Line of trees, less than 5m wide, with gaps of up to 20m and a minimum length of 20m*



We actively encourage feedback from our users. If you have comments on any issues relating to this statistical bulletin please contact us using the details below.

If you require any further information regarding this publication, contact details are as follows:

Richard Grove
Knowledge and Analytical Services
Finance and Corporate Services
Welsh Government
Cathays Park
Cardiff
CF10 3NQ
Tel: 029 2082 5064

Email:
Richard.Grove2@wales.gsi.gov.uk

Chris James
Forestry Policy Branch
Land, Nature and Forestry Division
Welsh Government
Cathays Park
Cardiff
CF10 3NQ

Tel: 029 2082 3208

Email:
Chris.James2@wales.gsi.gov.uk

ISBN: 978-1-4734-5300-5