

Statistical bulletin

Woodland natural capital accounts: ecosystem services for England, Scotland, Wales and Northern Ireland, 2020

Additional information splitting down UK data in the Woodland natural capital accounts, UK: 2020 publication for England, Scotland, Wales and Northern Ireland. Extra data on summary ecosystem services and asset value.

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1 . Main points

- The annual value of woodland ecosystem services in England is estimated to be £1.6 billion in 2017, representing 50% of the annual value for UK woodlands as a whole.
- Woodland accounted for 18% of Scotland's land area in 2019, above the UK-wide figure of 13%.
- Pollution removal by woodland in Wales is estimated to have an ecosystem services value of £100 million in 2017, representing 31% of the annual value of Welsh woodlands.
- Carbon sequestration by woodland in Northern Ireland is estimated to have an ecosystem services value of £42 million in 2017, representing 42% of the annual value of Northern Irish woodland.
- The annual value of timber and wood fuel, an important element on woodland ecosystem services value for Scotland, was estimated to be £165 million in 2017, representing 60% of the value of UK timber and wood fuel.

2 . Size of the area covered by woodland

This bulletin provides enhanced national breakdown for the [Woodland natural capital accounts, UK: 2020](#) publication.

The area of [UK woodlands in 2019 is 3.2 million hectares](#) (PDF, 5.25MB). Scotland has 46% of the UK's woodlands, England has 41%, Wales has 10% and Northern Ireland has 4% (Table 1).

Land covered by [woodland in the UK](#) (XLSX, 139KB) has increased from 9% of the land area in 1980 to 13% in 2019 (Table 2).

Table 1: Area of woodland in thousand hectares, UK, March 2019

Forest type	England	Wales	Scotland	Northern Ireland	UK
Conifers	340	152	1,072	67	1,631
Broadleaves	968	158	385	46	1,557
Total	1,308	310	1,457	113	3,188
UK percentage	41	10	46	4	

Source: Forest Research

Table 2: Woodland area in UK as a percentage of land area, 1980 to 2019

Year	England	Wales	Scotland	Northern Ireland	UK
1980	7	12	12	5	9
1995 to 1999	8	14	16	6	11
1998	10	14	17	6	12
2019	10	15	18	8	13

Source: Office for National Statistics – Woodland natural capital accounts, and Forest Research

3 . Overall quantity and value of UK woodland

The contribution woodland services provide to the economy and society are estimated to be valued at £3.3 billion in 2017 for the UK (Table 4).

Scotland has 46% of the UK's woodland area, the largest proportion among the four UK nations and 37% of the value of woodlands in the UK in terms of ecosystem services. While England has a smaller share of the UK's woodlands at 41% of woodland area, it accounts for 50% of that ecosystem's services value. This is mainly because of differences in the value of outdoor recreation. Scotland has more outdoor visits per person, but people spend less on these visits on average. In 2017, the average spend on a woodlands recreation visit in England was £1.18 compared with £0.70 in Scotland (2018 prices).

Statistics are not yet available for all ecosystem services for every year, hence the focus on 2017.

While statistics on wood fuel are not currently available by nation, these are currently being developed by Forest Research, which is the research agency of the Forestry Commission. As an interim measure, we have apportioned wood fuel figures from timber to give national figures. Additionally, flood prevention and urban woodland cooling data for Northern Ireland are not available.

Table 3: UK woodland annual physical flow by ecosystem service, UK, 2010 to 2017

	Provisioning		Regulating			Cultural (Recreation)	
	Timber (total fellings, thousand cubic metres of overbark standing)	Wood fuel (total fellings, thousand cubic metres of overbark standing)	Carbon Sequestration (removal) (million tonnes)	Pollution removal (thousand tonnes)	Noise reduction (number of buildings benefited (thousands))	Visits (millions)	Time at habitat (million hours)
2010	10,363	1,544	19	274		356	388
2011	11,345	1,544	19	273		371	414
2012	11,263	1,666	17	277		370	492
2013	11,983	1,972	18	278		399	496
2014	12,405	2,277	18	277		435	564
2015	11,255	2,400	18	273		448	544
2016	11,455	2,339	18	271		466	655
2017	11,541	2,617	18	269	167	475	718

Source: Office for National Statistics – Woodland natural capital accounts

Notes

1. Overbark is the volume of wood including the bark. Can be either standing volume or felled volume.

Table 4 provides a partial valuation as there are potentially significant exclusions such as food and tourism.

Table 4: Woodland ecosystem services for the UK were valued at £3.3 billion in 2017
Annual values woodland ecosystem services, £ million (2018 prices), UK, 2017

	England	Wales	Scotland	Northern Ireland	UK
Timber	51	30	135	7	224
Wood fuel	12	7	31	2	51
Carbon Sequestration	553	78	531	42	1,204
Pollution removal	390	100	411	37	938
Flood prevention (GB only)	146	23	49		219
Urban woodland cooling (GB only)	86	2	0		88
Noise reduction	13	1	1	1	15
Recreation	362	79	62	12	516
Total	1,614	320	1,220	100	3,254

Source: Office for National Statistics – Woodland natural capital accounts

Notes

1. Data not available for Northern Ireland for flood prevention and urban woodland cooling.

4 . Quantity and value of woodlands – England

The value of ecosystem services in England in 2017 is estimated at £1.6 billion (2018 prices), representing 50% of the annual value of woodlands as an ecosystem in that year.

Since 2010, the most recent year (2017) is the only one with available figures for all eight ecosystem services valued. The recreation value increase in 2016 is because of an increased number of visits to, and spend in, the woodlands in that year. There were an estimated 313 million visits to woodlands in England in 2016 compared with 307 million in 2017 (Table 5). Between 2010 and 2016, there was a year-on-year increase in the number of visits to woodlands, with a slight decrease in 2017.

Table 5: England woodland annual physical flow by service, 2010 to 2017

	Provisioning		Regulating		Cultural		
	Timber (total fellings, thousand cubic metres of overbark standing)	Wood fuel (total fellings, thousand cubic metres of overbark standing)	Carbon Sequestration (million tonnes)	Pollution removal (thousand tonnes)	Noise reduction (number of building benefited thousands)	Recreation (visits millions)	Recreation (time at habitat million hours)
2010	2,390	356	8.5	114.2		241	188
2011	2,533	345	8.5	113.5		252	227
2012	2,584	382	8.2	115.3		253	281
2013	2,666	439	8.3	115.9		269	281
2014	2,743	504	8.4	115.1		293	319
2015	2,544	543	8.3	113.8		301	301
2016	2,674	546	8.4	112.9		313	376
2017	2,627	596	8.4	111.8	143	307	398

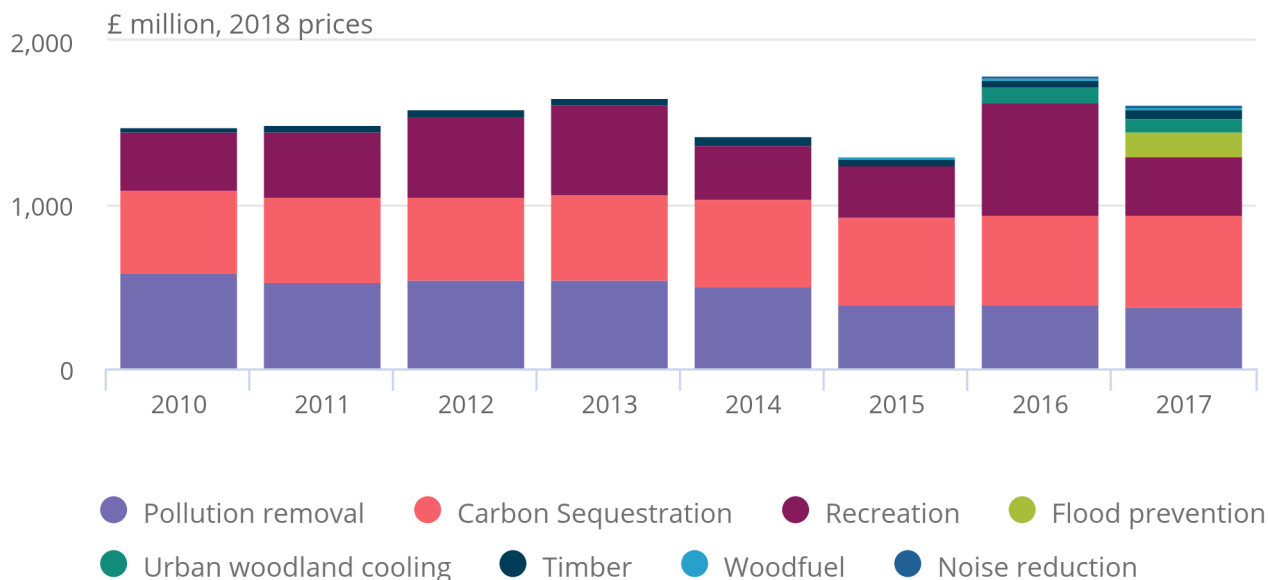
Source: Office for National Statistics – Woodland natural capital accounts

Figure 1: Value of woodland ecosystem services in England is estimated to be £1.6 billion in 2017 (2018 prices)

Annual values of woodland ecosystem services, £ million (2018 prices), England, 2010 to 2017

Figure 1: Value of woodland ecosystem services in England is estimated to be £1.6 billion in 2017 (2018 prices)

Annual values of woodland ecosystem services, £ million (2018 prices), England, 2010 to 2017



Source: Office for National Statistics – Woodland natural capital accounts

Notes:

1. 2017 is the only year in the time series with all eight ecosystem services having a valuation.

5 . Quantity and value of woodlands – Scotland

The value of ecosystem services is estimated to be £1.2 billion in 2017 (2018 prices) (Figure 2), with carbon sequestration representing 44% of the value.

During 2017, some 90 million visits were made to woodlands in Scotland for outdoor recreation (Table 6). The number of visits to Scottish woodlands has increased between 2010 and 2017. While the value of recreation has decreased, it is estimated in 2015 the average spend on a visit to woodlands in Scotland was £1.05 compared with £0.70 in 2017 (all 2018 prices). Scottish people are increasing the number of visits to woodlands, with the average spend being less per visit.

Table 6: Scotland annual physical flow by service, 2010 to 2017

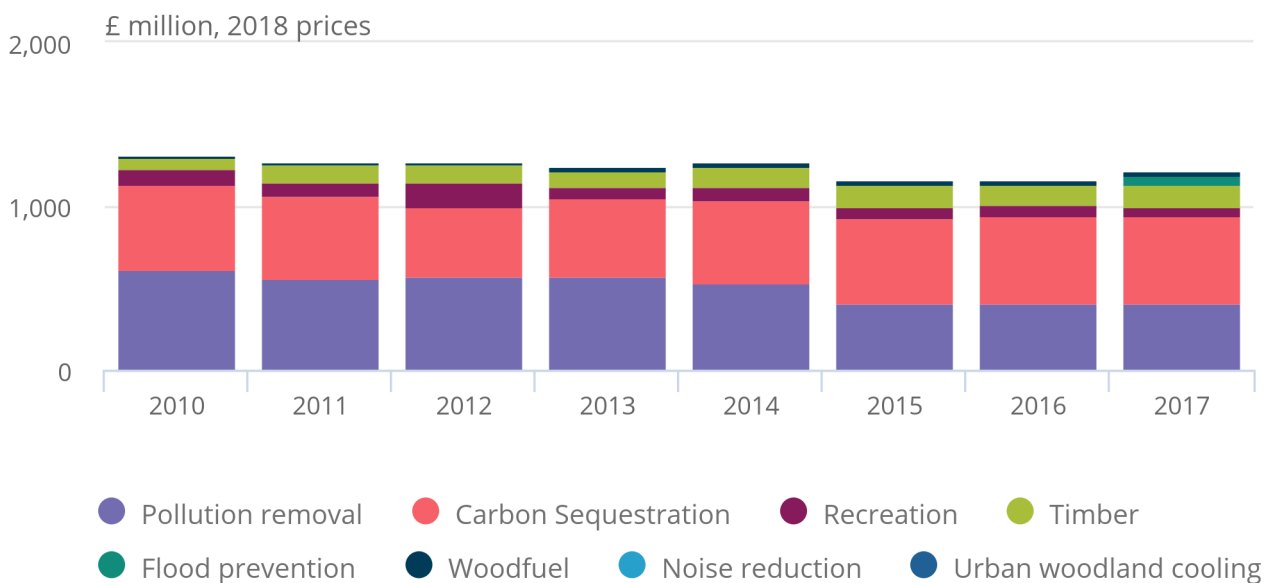
	Provisioning		Regulating		Cultural		
	Timber (total fellings, thousand cubic metres of overbark standing)	Wood fuel (total fellings, thousand cubic metres of overbark standing)	Carbon Sequestration (million tonnes)	Pollution removal (thousand tonnes)	Noise reduction (number of building benefited, thousands)	Recreation visits (millions)	Recreation (time at habitat, million hours)
2010	6,321	942	8.7	120.1		53	96
2011	6,990	951	8.4	119.4		54	69
2012	6,841	1,012	6.9	121.3		52	72
2013	7,410	1,219	7.8	121.9		61	77
2014	7,722	1,418	8.0	121.1		67	93
2015	6,936	1,479	8.0	119.7		70	95
2016	6,932	1,415	8.1	118.8		73	98
2017	6,966	1,579	8.0	117.6	7	90	133

Figure 2: The value of ecosystem services for Scotland is estimated to be £1.2 billion in 2017 (2018 prices)

Annual values of woodland ecosystem services, £ million (2018 prices) Scotland, 2010 to 2017

Figure 2: The value of ecosystem services for Scotland is estimated to be £1.2 billion in 2017 (2018 prices)

Annual values of woodland ecosystem services, £ million (2018 prices) Scotland, 2010 to 2017



Source: Office for National Statistics – Woodland natural capital accounts

6 . Quantity and value of woodlands – Wales

The annual value of ecosystem services in Wales is estimated to be £320 million in 2017 (Figure 3), with pollution removal being 31% of this.

Only 2017 has all the eight ecosystem services valuation estimates. The decline in value from 2016 to 2017 (Figure 3) is a result of recreation falling, despite a similar number of visits to woodlands in Wales (Table 7). The average spend per trip fell from £2.11 in 2016 to £1.16 in 2017.

Table 7: Wales annual physical flow by service, 2010 to 2017

	Provisioning		Regulating			Cultural	
	Timber (total fellings, thousand cubic metres of overbark standing)	Wood fuel (total fellings, thousand cubic metres of overbark standing)	Carbon Sequestration (million tonnes)	Pollution removal (thousand tonnes)	Noise reduction (number of buildings benefited, thousands)	Recreation visits (millions)	Recreation (time at habitat, million hours)
2010	1,162	173	1.6	29.3		54	97
2011	1,304	177	1.5	29.2		56	111
2012	1,381	204	1.2	29.6		56	129
2013	1,480	243	1.3	29.8		60	129
2014	1,530	281	1.2	29.6		65	141
2015	1,411	301	1.2	29.2		67	138
2016	1,467	299	1.2	29.0		70	169
2017	1,565	355	1.2	28.7	12	69	174

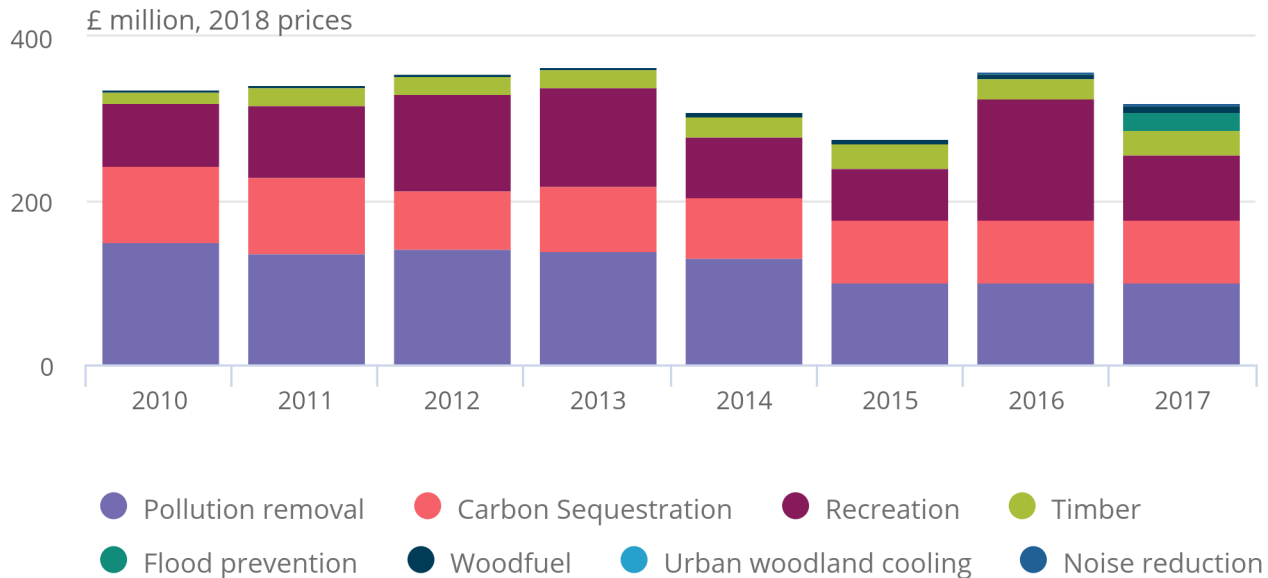
Source: Office for National Statistics – Woodland natural capital accounts

Figure 3: The annual value of woodland ecosystem services in Wales is estimated to be £320 million in 2017 (2018 prices)

Annual values of woodland ecosystem services, £ million (2018 prices), Wales, 2010 to 2017

Figure 3: The annual value of woodland ecosystem services in Wales is estimated to be £320 million in 2017 (2018 prices)

Annual values of woodland ecosystem services, £ million (2018 prices), Wales, 2010 to 2017



Source: Office for National Statistics – Woodland natural capital accounts

7 . Quantity and value of woodlands – Northern Ireland

The annual value of woodland ecosystem services in Northern Ireland was valued at £100 million in 2017 (Figure 4), with 42% of this being the value of carbon sequestration. This is a partial picture compared with other parts of the UK as currently no data are available for flood protection or urban woodland cooling in Northern Ireland.

In contrast to the rest of the UK, the combined quantity of timber and wood fuel produced has fallen from 2010 to 2017 (Table 8). Northern Ireland timber was 4.8% of the UK total in 2010, falling to 3.2% in 2018.

Table 8: Northern Ireland annual physical flow by service, 2010 to 2017

	Provisioning		Regulating		Cultural		
	Timber (total fellings, thousand cubic metres of overbark standing)	Wood fuel (total fellings, thousand cubic metres of overbark standing)	Carbon Sequestration (million tonnes)	Pollution removal (thousand tonnes)	Noise reduction (number of building benefited, thousand)	Recreation visits (millions)	Recreation (time at habitat, million hours)
2010	493	73	0.6	10.8		8	6
2011	519	71	0.6	10.7		8	8
2012	460	68	0.5	10.9		8	9
2013	427	70	0.6	10.9		9	9
2014	410	75	0.6	10.8		10	11
2015	363	77	0.6	10.7		10	10
2016	383	78	0.6	10.6		10	12
2017	383	87	0.6	10.5	5	10	13

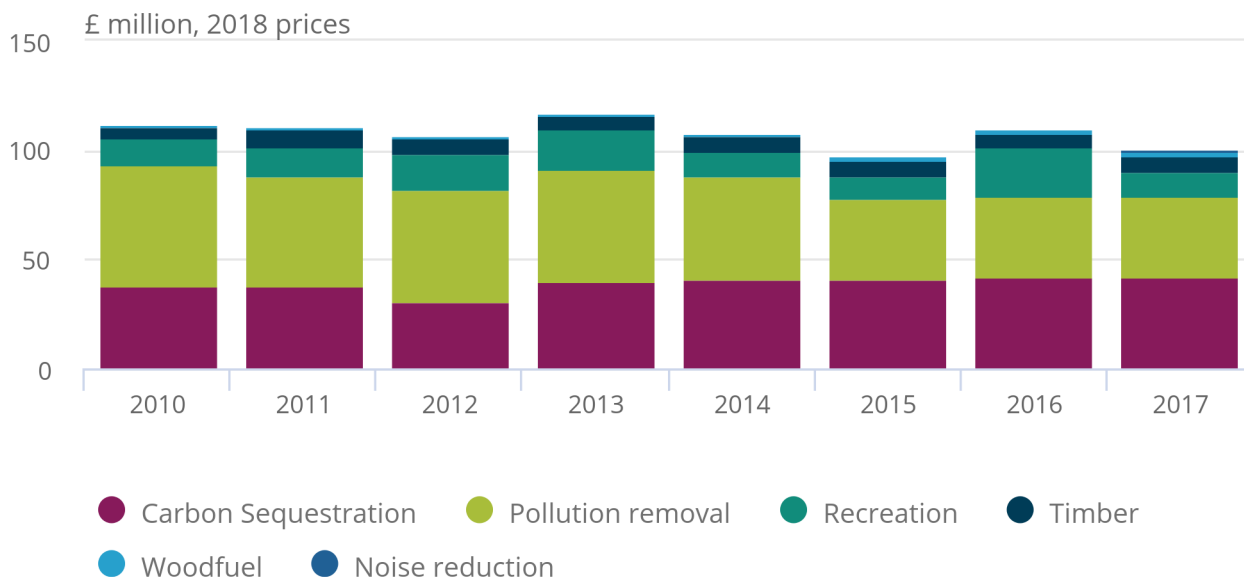
Source: Office for National Statistics – Woodland natural capital accounts

Figure 4: The annual value for ecosystem services in Northern Ireland was £100 million in 2017 (2018 prices)

Annual values of woodland ecosystem services, £ million (2018 prices), Northern Ireland, 2010 to 2017

Figure 4: The annual value for ecosystem services in Northern Ireland was £100 million in 2017 (2018 prices)

Annual values of woodland ecosystem services, £ million (2018 prices), Northern Ireland, 2010 to 2017



Source: Office for National Statistics – Woodland natural capital accounts

8 . Asset value of woodlands

The UK asset value of selected woodland ecosystem services was estimated to be almost £130 billion in 2017 (Table 9). England's woodlands account for 51% of this, with the woodland area in England accounting for 41% of the UK woodlands. This is as a result of the higher value of recreation in England, where the average per person spend is higher than the rest of the UK.

The carbon sequestration calculation for each country uses a slightly different valuation for Land Use, Land Use Change and Forestry (LULUCF) rate than the UK rate for future projections. Hence the sum of the four countries is higher than that for the UK.

Table 9: Woodland ecosystem asset values, £ million (2018 prices), UK, 2017

	England	Scotland	Wales	Northern Ireland	UK
Timber	1,663	4,410	991	243	7,307
Wood fuel	377	999	225	55	1,656
Carbon Sequestration	25,388	23,051	4,381	1,824	54,620
Pollution removal	13,176	13,873	3,389	1,235	31,673
Urban woodland cooling GB	4,511	28	68		4,607
Flood prevention GB	4,361	1,469	681		6,512
Noise reduction	710	33	61	29	833
Recreation	16,027	2,537	3,210	760	22,534
Total	66,213	46,399	13,006	4,146	129,742

Source: Office for National Statistics – Woodland natural capital accounts

9 . Woodland natural capital accounts, ecosystem services data

[Woodland natural capital accounts: ecosystem services for England, Scotland, Wales and Northern Ireland, supplementary information](#)

Dataset | Released 11 May 2021

Physical (non-monetary) and monetary estimates of services provided by natural assets in the UK between 2010 and 2017.

10 . Glossary

Asset

Asset valuation is an estimate of the stream of services that are expected to be generated over the life of the asset. It looks at the pattern of expected future flows and the time period over which the flows of values are expected to be generated.

Ecosystem services

Ecosystem services are the flows of benefits that people gain from natural ecosystems. This includes provisioning services such as food and water; regulating services such as flood protection and pollution removal; and cultural services such as recreational and heritage.

Natural capital

Natural capital is a way of measuring and valuing the benefits that the natural world provides society. These benefits from natural resources include food, cleaning the air of pollution, sequestering carbon and cleaning fresh water.

Woodlands

Woodlands in the UK are tree-covered areas that include plantation forests, more natural forested areas, and lower density or smaller stands of trees.

11 . Measuring the data

In this release, the woodland habitat accounts are presented in three sections:

- the size of the area covered by woodland in the four UK nations (extent account)
- quantity and value of services supplied by the woodland ecosystem in the four UK nations (physical and monetary ecosystem service flow accounts)
- value of woodland as an asset, which represents the stream of services expected to be provided over the lifetime of the asset (monetary asset account)

The data underpinning woodlands natural capital come from a range of sources with different timeliness and coverage. This release is based on the most recent data as at January 2020.

Data sources include:

- Department for Business, Energy and Industrial Strategy
- Department for Environment, Food and Rural Affairs (Defra)
- Economics for the Environment Consultancy (EFTEC)
- Forest Research
- Forestry Commission
- Forestry England
- Met Office
- UK Centre for Ecology and Hydrology
- UK National Atmospheric Emissions Inventory (NAEI)

Collaboration

The Office for National Statistics natural capital accounts are produced in partnership with the Department for Environment, Food and Rural Affairs (Defra).



Methodology

Details of methodologies for woodlands can be found in [Woodland natural capital accounts methodology guide, UK: 2020](#). Further details on the concepts and methodologies underlying the UK natural capital accounts can be found in [Principles of Natural Capital Accounting](#).

12 . Strengths and limitations

Data quality

The ecosystems services are [experimental statistics](#). Currently, there is no single data source for the UK for the individual ecosystem services. They are calculated from data from the four countries with different timeliness.

Ecosystems provide a diverse range of services and not all have been included in this publication, either owing to unavailability of data or the need for new methods of evaluation. We intend to continue to develop our ability to report on all services.

13 . Related links

[Woodland natural capital accounts, UK: 2020](#)

Bulletin | Released 28 February 2020

Natural capital accounts containing information on ecosystem services for woodlands in the UK.