

Statistical bulletin

England natural capital accounts: 2023

Estimates the value of English natural capital and its beneficial effects for the population.

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1 . Main points

- The total asset value of natural capital in England we can currently value was an estimated £1.4 trillion in 2020, 78% of the total UK asset value.
- The total annual value of ecosystem services we can value in England was estimated to be £35.7 billion in 2020, 70% of the total UK annual value.
- Over half (57%) of the annual value in England in 2020 was derived from cultural services, predominantly recreation and tourism (£12.4 billion) and health benefits (£5.5 billion) associated with this.
- The annual value of renewable energy from nature in England increased by 59% between 2019 and 2020.
- The extent of enclosed farmland in England decreased by 7% between 1990 and 2021.
- The extent of urban in England increased by 37% between 1990 and 2021.

2 . Understanding natural capital

Natural wealth includes things like the productivity of soils and access to clean water. Any natural resource or process that supports human life, society and the economy forms an important part of our natural capital. We are estimating both the current value and what it could provide for future generations. Natural capital is an important part of a wider move to better understand inclusive wealth, as discussed in [The Economics of Biodiversity: The Dasgupta Review](#).

Natural capital monetary estimates should be interpreted as a partial or minimum value of the services provided by the natural environment, as a number of services, such as flood protection from natural resources, are not currently measured. We are working to include as much of the economic value of the natural world as possible, which is challenging given its scale and complexity. In addition to economic value, as part of the [United Nations System of Environmental-Economic Accounting - Ecosystem Accounting \(SEEA EA\) \(PDF, 5.33MB\)](#), we are continuing to develop methods for tracking changes in the [ecosystem's extent and condition](#).

You can view and download the complete list of data sources used in this bulletin on our [All data related to England natural capital accounts: 2023 web page](#).

3 . Extent of habitats in England

England is around 53% of the land area of the UK. Figure 1 gives headline figures for areas of seven habitats in England, using the broad classifications from the [UK National Ecosystem Assessment \(PDF, 2.09MB\)](#), with summary area statistics from the [UK Centre for Ecology and Hydrology \(UKCEH\) Land Cover Maps](#).

The extent of freshwater, wetlands and floodplains across England increased by 52% between 1990 and 2021. Many former quarries have been converted into artificial lakes. Such [re-purposing of former extraction sites can provide many benefits](#) including new habitats for wildlife. Read more in [Ecosystem services provided by a former gravel extraction site in the UK under two contrasting restoration states](#).

Enclosed farmland covered 71% of England's land area in 1990; by 2021 this area had decreased to 66%, with 239,443 hectares becoming semi-natural grassland. The extent of urban habitat increased by 37% between 1990 and 2021, to 12% of England's land area.

Figure 1: Enclosed farmland area in England decreased by 7% between 1990 and 2021

Change of broad habitat extent in England, 1990 to 2021

Notes:

1. Raster data were used from UK Centre for Ecology and Hydrology - Great Britain Land Cover Maps (LCM) for 1990 and 2021.
2. Digital Object Identifier (DOI) for LCM1990 raster data for Great Britain. Rowland, C. S., Marston, C. G., Morton, R. D., and O'Neil, A. W. (2020). Land Cover Map 1990 (25 metre raster, Great Britain) v2 [Dataset]. Natural Environment Research Council (NERC) Environmental Information Data Centre.
3. Digital Object Identifier (DOI) for LCM2021 raster data for Great Britain. Morton, R. D., Marston, C. G., O'Neil, A. W., and Rowland, C. S. (2022). Land Cover Map 2021 (25 metre rasterised land parcels, Great Britain) [Dataset]. NERC Environmental Information Data Centre.

Download the data

[.xlsx](#)

4 . Ecosystem services

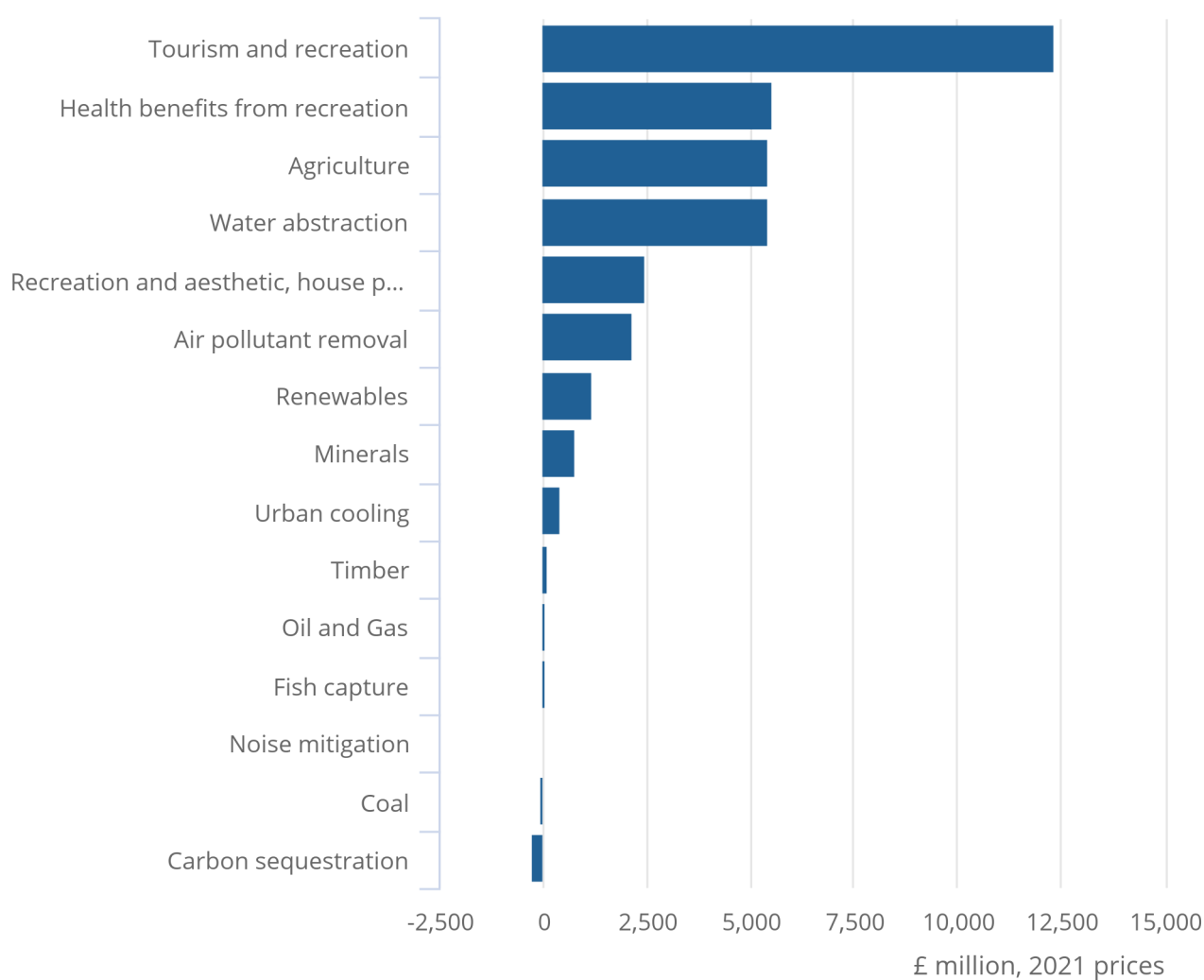
Ecosystem services are the contributions of ecosystems to the benefits that are used in economic and other human activity. In 2020, the total annual value for the ecosystem services we are currently able to measure was £35.7 billion (2021 prices), representing 70% of the UK value.

Figure 2: Tourism and recreation was the largest contributor to total annual value of natural capital in England, 2020

Ecosystem services for England, £ million (2021 prices), 2020

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Ecosystem services for England, £ million (2021 prices), 2020



Source: Department for Business, Energy and Industrial Strategy, Scientific, Technical and Economic Committee for Fisheries, Seafish, Marine and Management Organisation, British Geological Survey, Forest Research

5 . Provisioning services

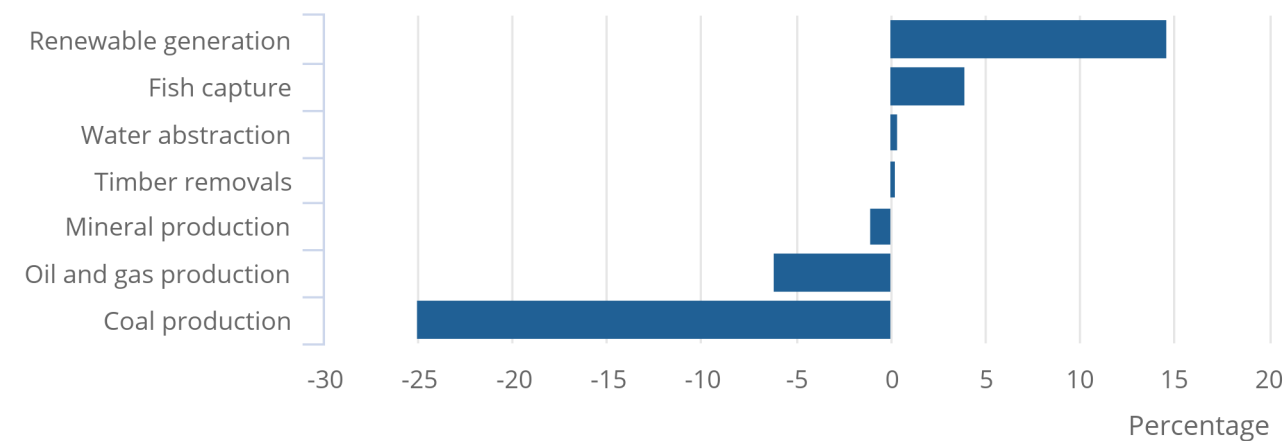
Provisioning services are products extracted, harvested or derived from nature, such as food, water, energy and materials. These include fossil fuel production, renewable energy generation, mineral extraction, water abstraction, timber removal and fish capture. Some of these services are discussed in detail in this section and the data for all services are available in the accompanying datasets.

Figure 3: Renewables had the largest average annual growth in provisioning services in England between 2015 and 2020

The average annual growth rate for each provisioning service in England, percentage, 2015 to 2020

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The average annual growth rate for each provisioning service in England, percentage, 2015 to 2020



Source: Department for Business, Energy and Industrial Strategy, Scientific, Technical and Economic Committee for Fisheries, Seafish, Marine and Management Organisation, British Geological Survey, Forest Research

Notes:

- 1. Agricultural biomass physical flow data are unavailable for inclusion in the average annual growth rate comparison.

The growth of renewables generation in England has been significant since 2008, driven by large increases in wind and solar energy generation, by 54% and 72% by 2020 respectively.

Fish capture, water abstraction and timber removal have grown at a slower rate, while mineral abstraction and fossil fuel production have declined since 2015.

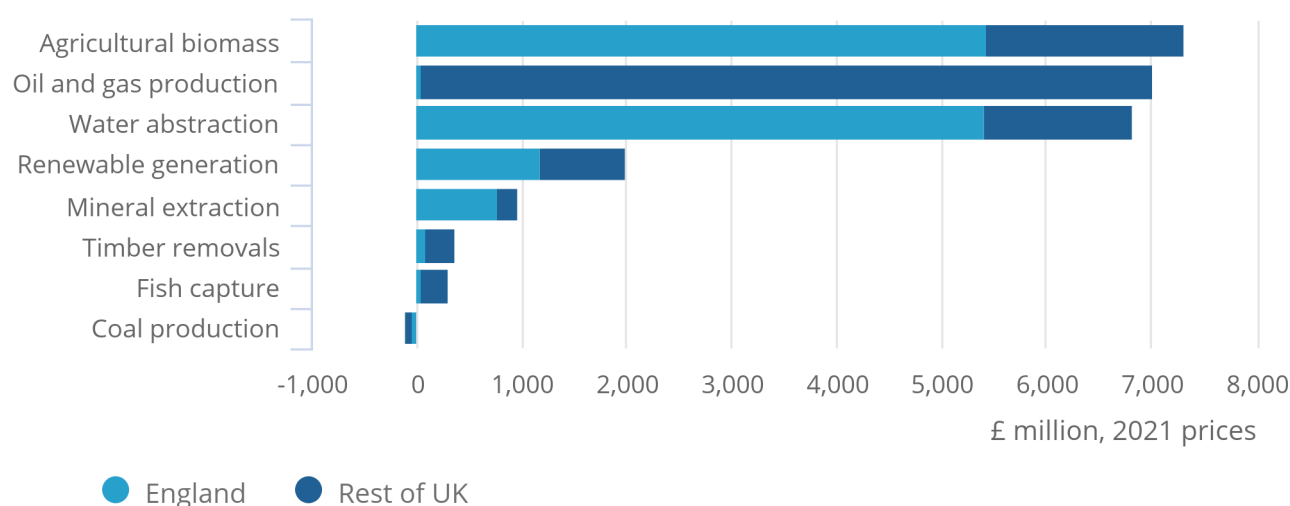
The most produced arable crop in the UK is wheat and the greatest proportion of that is grown within England. However, production of wheat declined by 41% in the UK and 43% in England between 2019 and 2020. The area dedicated to [wheat cultivation in England](#) saw a marked decline in 2020, which is likely to have contributed to the decreased output in this year. This followed the UK-wide trend of wheat yield decline, attributed to greater rainfall in Autumn 2019.

Figure 4: Agricultural biomass and water abstraction were the highest value provisioning services in England in 2020

Annual values of each provisioning service in England and the rest of the UK, £ million (2021 prices), 2020

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Annual values of each provisioning service in England and the rest of the UK, £ million (2021 prices), 2020



Source: Department for Business, Energy and Industrial Strategy, Scientific, Technical and Economic Committee for Fisheries, Seafish, Marine and Management Organisation, British Geological Survey, Forest Research

Generally, the value of provisioning services is determined by the extent and location of the underlying natural capital asset, rather than where the people that ultimately benefit from them are based.

England has around 85% of the UK's farmland, and 84% of the total value of the agricultural biomass provisioning service in the UK. Conversely, England has 21% of the UK's conifer woodland, as can be seen in our [Woodland natural capital accounts: 2022 bulletin](#). It accounts for 25% of the total annual value of timber provisioning in the UK.

Water

The annual value of water abstraction in England grew by 68% between 2019 and 2020. It has been largely driven by price increases, as the physical abstraction of water increased by only 1% between 2019 and 2020. England's proportion of the total provisioning annual value has also increased, from 37% in 2019 to 42% in 2020.

Fish

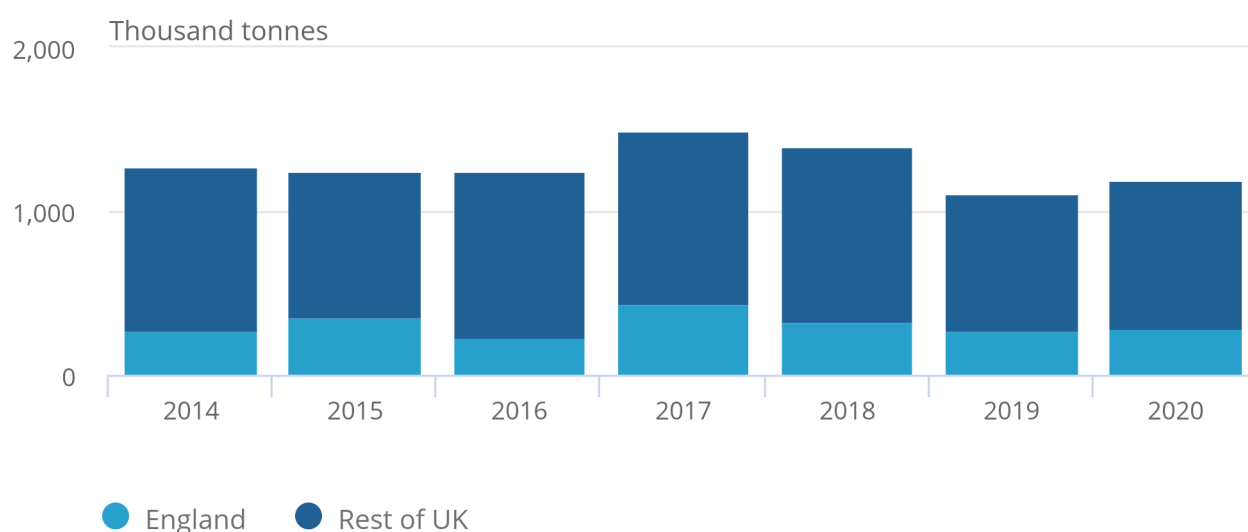
Fish capture refers to marine fish taken from mainland UK waters. Farmed fish, or aquaculture, is excluded, as in the System of Environmental-Economic Accounting (SEEA) these are produced, rather than natural, assets.

Figure 5: Fish capture in England represents approximately 25% of the total UK tonnage

Fish capture for England and the UK, thousand tonnes, 2014 to 2020

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Fish capture for England and the UK, thousand tonnes, 2014 to 2020



Source: Office for National Statistics, Scientific, Technical and Economic Committee for Fisheries, Seafish, Marine and Management Organisation

The borders of the UK's Exclusive Economic Zone do not perfectly align with fish capture statistics geographical areas, leading to some uncertainty in allocating the exact values for UK fish capture. More detail on how fish capture in UK waters is estimated is in our [England natural capital accounts methodology: 2023](#).

The range of external sources we rely on involve known uncertainties. The economic valuations are based on UK fleet data, which we also apply to foreign vessels that may face different costs and prices.

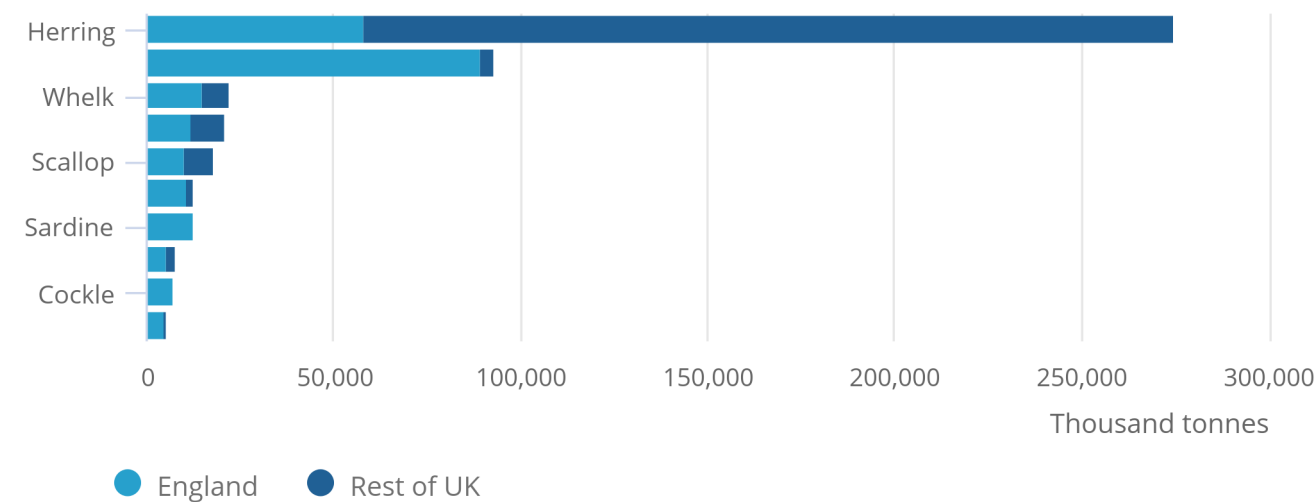
Some 25% of the UK fish capture in 2020 was in England. For certain fish species, England has a higher proportion of those caught in the UK. For example, 96% of sandeels were caught in English waters in that year (Figure 6). Sandeels accounted for an average of 40% of all fish caught in England's waters over the last five years. While 441 different species of fish were caught in England's waters between 2015 to 2020, almost half (49%) of total catches over these five years were sandeels (33%) and herring (16%). The ten most caught species represented 75% of the total catch in England for this period.

Figure 6: Sandeels, England’s most caught fish, represented 96% of total UK sandeel capture in 2020

Top 10 fish species caught in English waters compared with the rest of the UK, thousand tonnes, 2020

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Top 10 fish species caught in English waters compared with the rest of the UK, thousand tonnes, 2020



Source: Office for National Statistics, Scientific, Technical and Economic Committee for Fisheries, Seafish, Marine and Management Organisation

In the natural capital accounts, fishing pressure for each stock is tested for being at or below levels capable of producing maximum sustainable yield. We also check whether each stock's reproductive fish stock is at or above the level capable of producing the maximum sustainable yield.

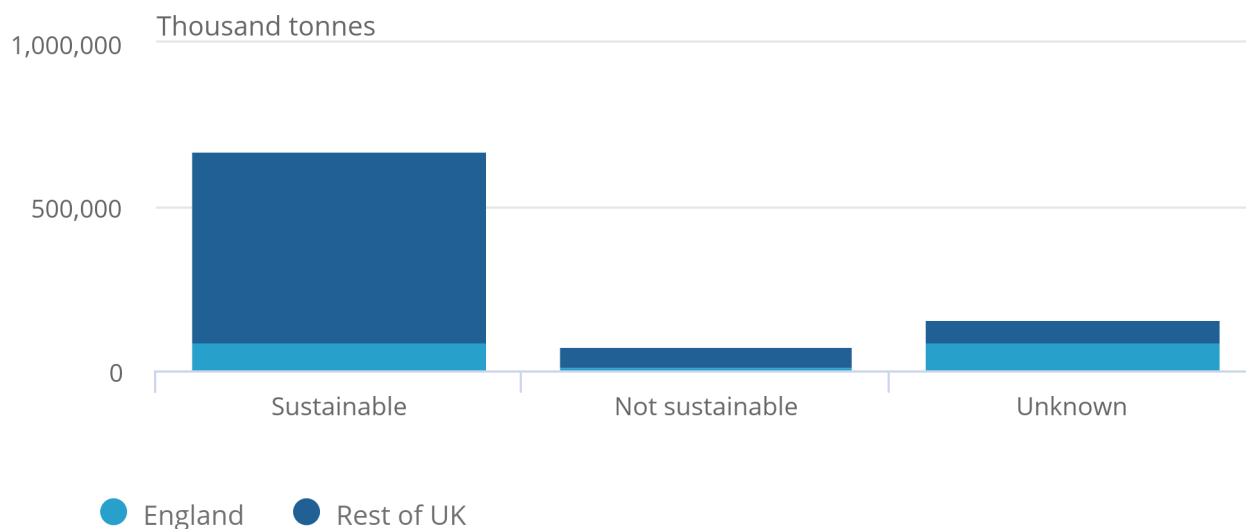
This approach does not consider the knock-on effects of unsustainable fishing to the ecosystem. For instance, if a fish species which forms a significant part of other fish species' diets is managed unsustainably, it may affect the sustainability of other fish stocks higher up the food chain.

Figure 7: For fish species where stock sustainability was known in 2020, 12% were captured in England

Sustainability of fish capture in England compared with the rest of the UK, thousand tonnes, 2020

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Sustainability of fish capture in England compared with the rest of the UK, thousand tonnes, 2020



Source: Office for National Statistics, Scientific, Technical and Economic Committee for Fisheries, Seafish, Marine and Management Organisation

In 2020, 46% of fish capture tonnage in England was categorised as sustainable, while 6% was categorised as unsustainable, and the sustainability status was unknown for 48%. The sustainability of fish caught in English waters is almost three times more likely to be unknown than those caught in the UK generally. This is mainly because sandeels, as the most caught fish in England, have an unknown sustainability status. Also, there are many small volume species caught in English waters, where less data are available to determine their sustainability.

Timber

Timber removals refer to the harvesting of roundwood (trunks and branches) from coniferous and broadleaved trees. Our data cover softwood, from coniferous trees such as spruce, pine and larch, and hardwood, from non-coniferous trees such as oak, birch and beech, from both private and public sources. This is measured in cubic metres overbark, being the volume of wood including the bark.

Timber provisioning valuation is based on the price paid for the right to harvest timber from a site, known as the stumpage price, multiplied by the volume of timber removed. Stumpage prices are consistently applied across the UK, so England's share of UK timber service value reflects its share of removals.

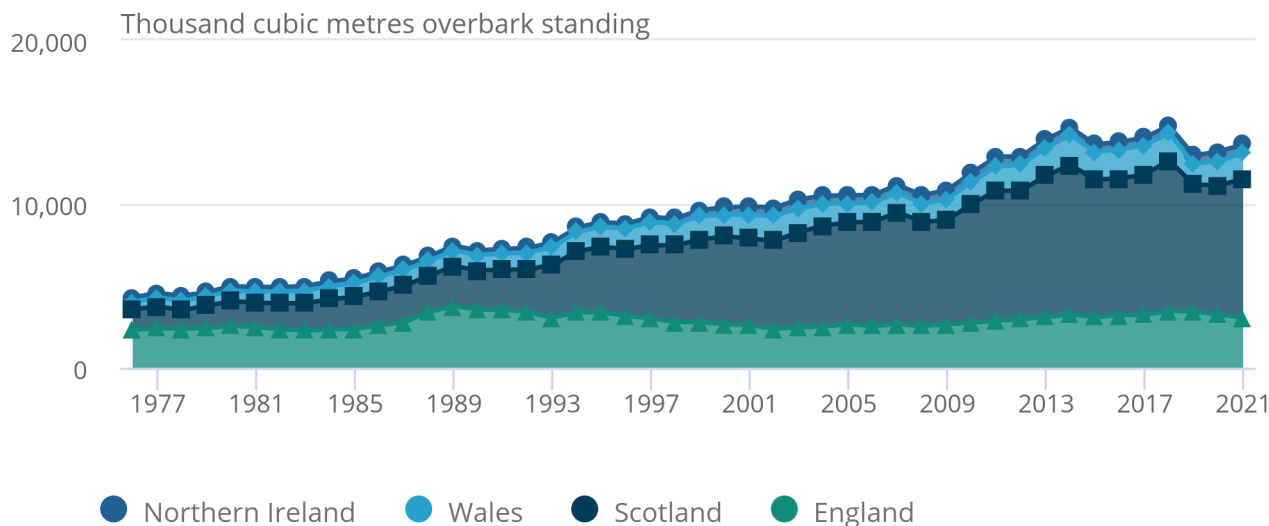
Almost a quarter of the timber removal annual value for the UK was derived from England in 2020 (Figure 8).

Figure 8: England had the second greatest amount of timber removals among UK nations in 2021

Timber removals for each region of the UK, thousand cubic metres overbark standing, 1976 to 2021

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Timber removals for each region of the UK, thousand cubic metres overbark standing, 1976 to 2021



Source: Office for National Statistics, Forest Research

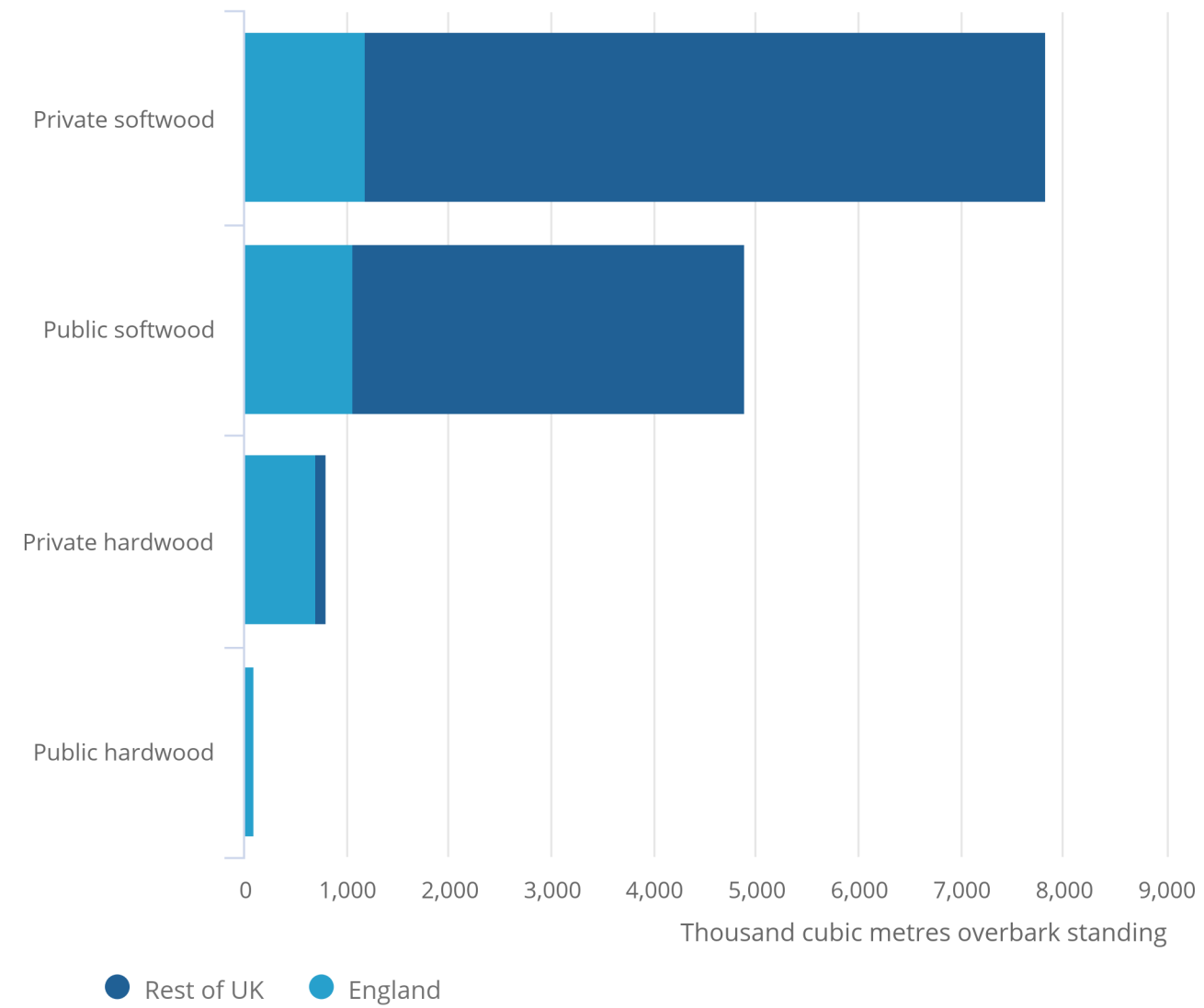
UK timber removal has increased significantly since 1976, largely because of removals in Scotland increasing by an average of 4% a year. Timber removal has remained relatively stable in England over this period, though hardwood timber removal has increased. England accounted for 88% of hardwood timber removal in 2021.

Figure 9: England accounts for the majority of hardwood timber removal in both the private and public sector

Timber removals for each category in England and rest of the UK, thousand cubic metres overbark standing, 2021

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Timber removals for each category in England and rest of the UK, thousand cubic metres overbark standing, 2021



Source: Office for National Statistics, Forest Research

Renewables

Renewable energy generation refers to electricity generated from renewable sources, dependent on the natural services of wind, sunshine, tides and rainfall, through offshore and onshore wind turbines, hydroelectric plants and solar panels. While this requires human investment, natural capital enables this renewable energy to be generated.

The annual value of renewables in England were valued at £1,170 million in 2020, accounting for 59% of the total UK annual, up from 19% in 2008.

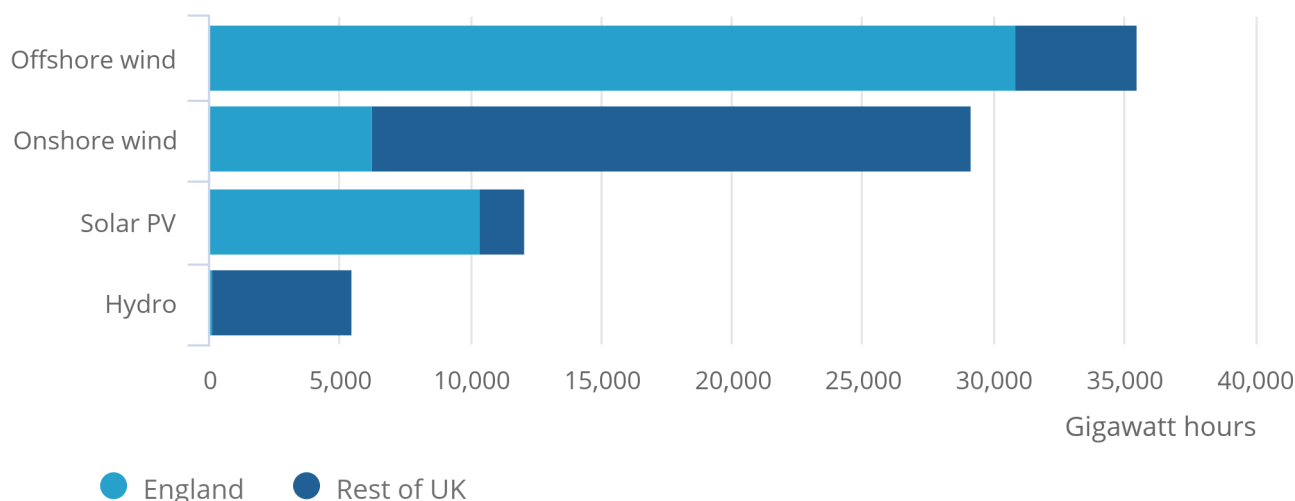
Renewable energy generation in England has also increased substantially between 2008 and 2021, with an average annual increase of 20% in electricity generated from such sources. In 2021, the largest share of renewable energy generation in England was from offshore wind, at 65% (Figure 10).

Figure 10: Offshore wind was the most significant contributor to renewable electricity generation in 2021 in England and the UK overall

Total electricity generated by different renewable technologies in England and the rest of the UK, gigawatt hours, 2021

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Total electricity generated by different renewable technologies in England and the rest of the UK, gigawatt hours, 2021



Source: Office for National Statistics, Department for Business, Energy and Industrial Strategy

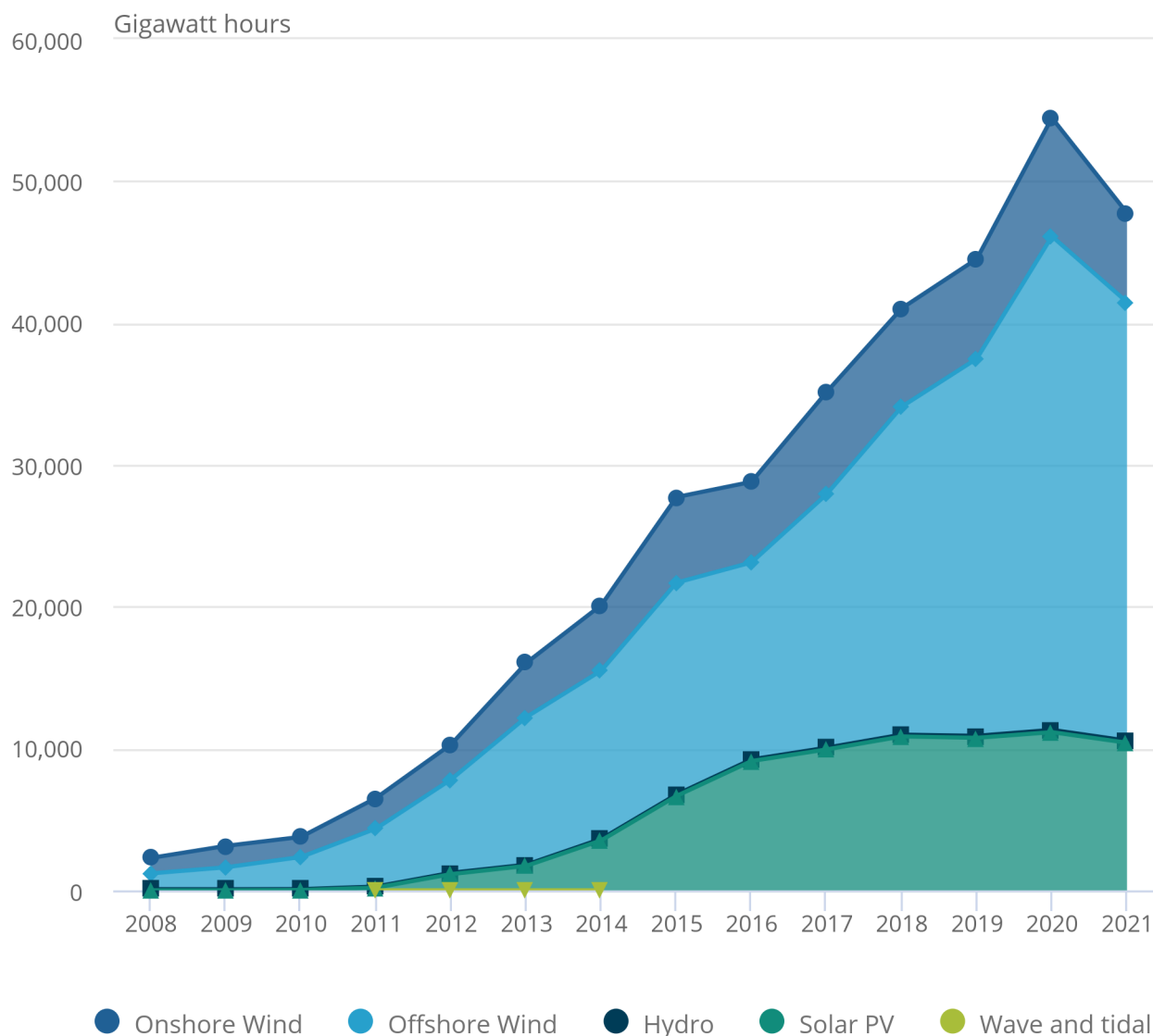
Solar photovoltaic (PV) saw the largest increase in output in the period 2008 to 2021 in England. Solar PV in England represented 3% of the UK's total solar PV output in 2008, and 86% of the UK's total output in 2021. [In 2020 and 2021 the Met Office recorded fewer sunny days](#), which may have contributed to this decreased output.

Figure 11: Solar electricity output in England increased 21% between 2008 and 2021 but offshore wind still provides the greatest proportion of renewable energy

Total electricity generated by different renewable technologies in England, gigawatt hours, 2008 to 2021

Figure 11: Solar electricity output in England increased 21% between 2008 and 2021 but offshore wind still provides the greatest proportion of renewable energy

Total electricity generated by different renewable technologies in England, gigawatt hours, 2008 to 2021



Source: Office for National Statistics, Department for Business, Energy and Industrial Strategy

While onshore and offshore wind electricity generation have steadily increased since 2008, both saw a decline in output in 2021. This could be because of a significant decrease in average windspeed in 2021, following years with higher UK windspeeds. See more in the [Met Office's datasets which include windspeed.](#)

6 . Regulating services

Regulating services help to maintain the quality of the environment we rely upon. They include the regulation of natural processes such as air quality regulation, climate regulation and natural hazard regulation such as flood regulation. For England these include:

- sequestering and storing of greenhouse gases (GHGs) - a range of habitats, particularly woodlands, enable the removal of GHGs, mostly carbon dioxide (CO₂), from the atmosphere; the capacity for habitats to sequester carbon from the air depends upon the habitat type, extent, and condition
- removing air pollutants - the removal of air pollutants by vegetation, the monetary value of which is measured in terms of the willingness to pay to avoid hospitalisation and mortality
- urban cooling - green (for example, parks) and blue (rivers, lakes, and canals) spaces can cool urban environments on hot days; benefits include limiting loss of labour productivity and reducing air conditioning use
- mitigating noise - vegetation acts as a buffer against noise pollution such as from road traffic

Air pollution removal represented 91% of the annual value of regulating services in England in 2020, 90% of the total UK value of these regulating services. As this is valued through avoided health effects, statistics are driven by England having 84% of the UK population in 2020.

As for the UK as a whole, nature in England is a net emitter of climate change gasses. England accounted for 16% (946 thousand tonnes of CO₂ equivalent) of the UK's nature's net carbon emissions in 2019. Both forestland and grassland habitats in England have consistently removed more climate change gasses than they emitted. Carbon sequestration by woodlands in England was valued at £2 billion in 2020 (2021 prices). See more in our [Woodland natural capital accounts: 2022 bulletin](#).

Emissions are particularly high in areas with degraded peatland since degraded peatlands emit the carbon they had locked up over centuries. Only 20% of [England's peatland](#) is in a near natural or rewetted condition. However, as England only has 23% of the UK's peatlands, the share of net land emissions is small. This is reflected in the corresponding carbon emissions value for each country and almost half of the UK carbon emissions value (46%) was derived from Scotland in 2019.

Urban cooling refers to green (for example, parks) and blue (for example, rivers) spaces which can cool urban environments on hot days. The benefits of this service include limiting productivity loss and reducing the use of air conditioning. The annual value for 2020 for England was estimated to be £419 million (in 2021 prices).

Air pollution removal

The [World Health Organisation estimates that almost all the global population \(99%\) breathe air that exceeds their guideline limits](#). In 2019, [air pollution contributed to 12% of deaths worldwide](#). Vegetation can play a useful role in lessening this danger by removing pollution from the air. Polluting gases are absorbed by leaves' stomata, and particulate matter, suspended in polluted air, settles onto leaves.

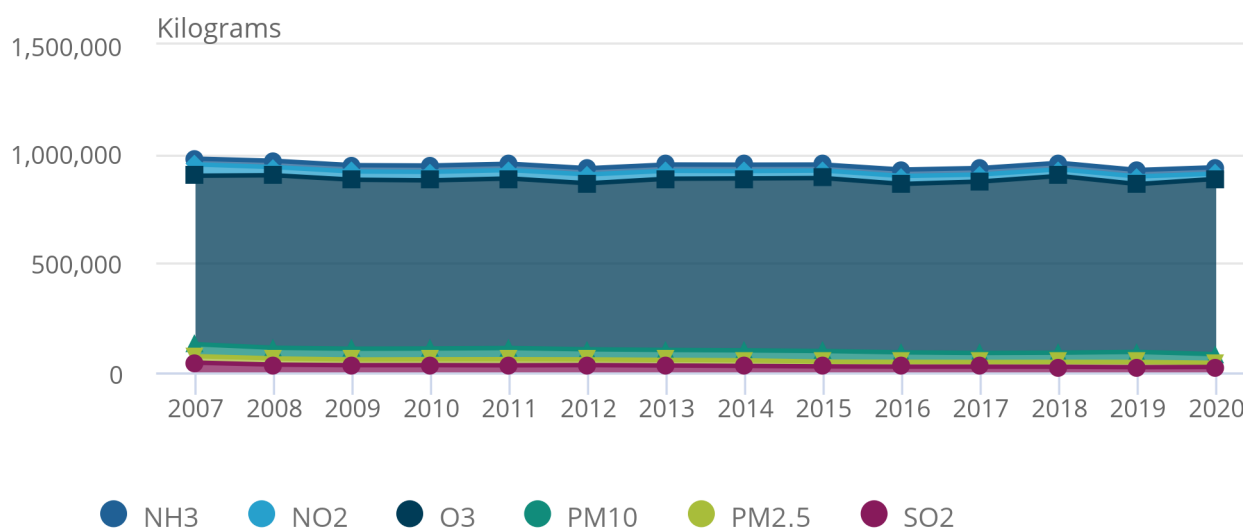
This is the largest regulating service in England, also accounting for over 90% of total annual value of these services in the UK.

Figure 12: Ground level ozone (O3) was the largest air pollutant removed by volume in England between 2007 and 2020

Air pollution removal by pollutant, kilograms, in England, 2007 to 2020

Figure 12: Ground level ozone (O3) was the largest air pollutant removed by volume in England between 2007 and 2020

Air pollution removal by pollutant, kilograms, in England, 2007 to 2020



Source: Office for National Statistics, National Atmospheric Emissions Inventory

Notes:

1. PM10 data include PM2.5.

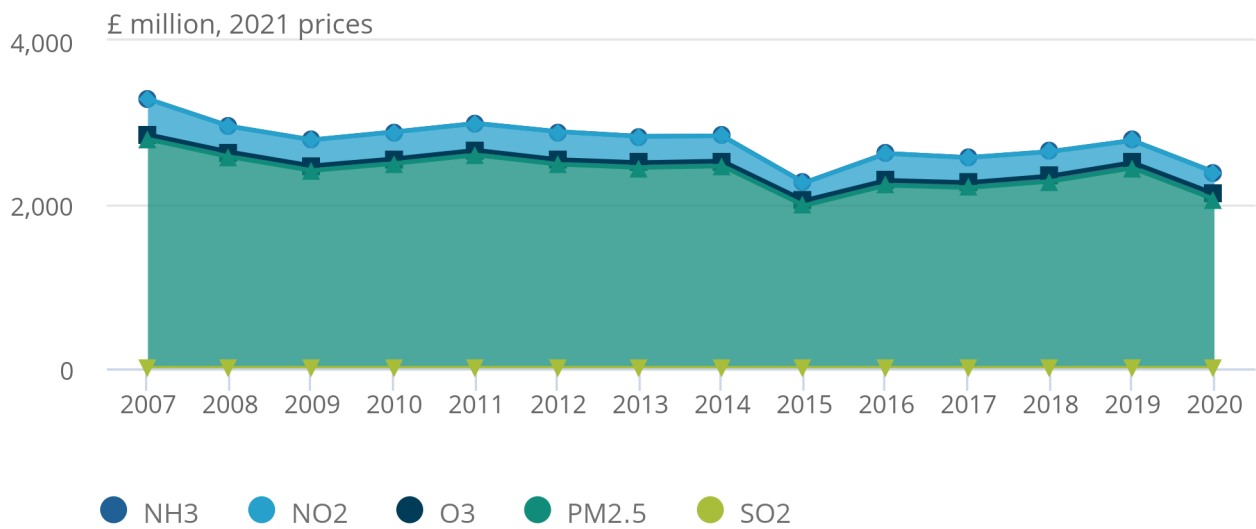
Although a relatively small amount of particulate (PM2.5) air pollution is removed by nature, it has consistently accounted for the highest annual value of regulating services in England and represents 86% of England's annual value in 2020. While the largest amount of pollutant removed is ozone (O3) (Figure 12), it accounts for a low proportion of the total annual value of air pollution removal, 3% in 2020.

Figure 13: PM2.5 removal accounted for 86% of total air pollution removal value in England in 2020

Annual value of each pollutant removed in England, £ million (2021 prices), 2007 to 2020

Figure 13: PM2.5 removal accounted for 86% of total air pollution removal value in England in 2020

Annual value of each pollutant removed in England, £ million (2021 prices), 2007 to 2020



Source: Office for National Statistics, National Atmospheric Emissions Inventory

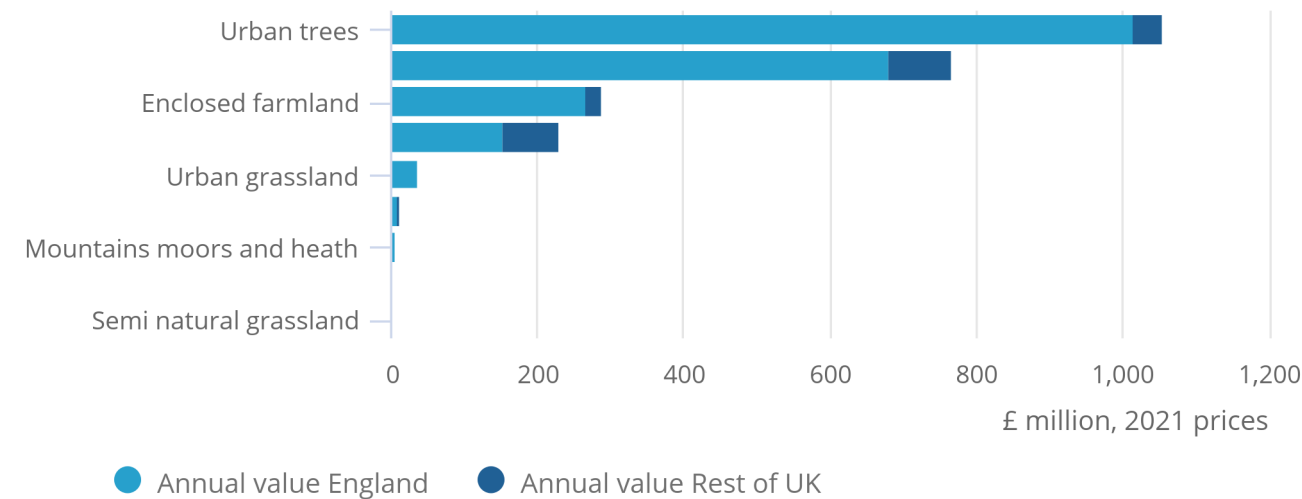
The biggest impact of particulate air pollution on public health is understood to be from long-term exposure to PM2.5, which increases the age-specific mortality risk, particularly from cardiovascular causes. Therefore, PM2.5 generates the greatest annual value. [PM2.5 is emitted from multiple sources](#) including wood and coal stoves, and wear of tyres and brakes. Inhalation of particulate pollution can have severe adverse health effects, and there is understood to be no safe threshold below which no adverse effects would be anticipated.

Figure 14: Urban trees represented 47% of the annual value of air pollution removal in England in 2020

Annual value of air pollution removal in all habitats, £ million (2021 prices), England, 2020

Figure 14: Urban trees represented 47% of the annual value of air pollution removal in England in 2020

Annual value of air pollution removal in all habitats, £ million (2021 prices), England, 2020



Source: Office for National Statistics, National Atmospheric Emissions Inventory

Urban trees account for the highest value in removing air pollution in England (Figure 14). As these are located in the most polluted and populated areas, urban trees offer the greatest benefit to affected populations.

As both urban trees and urban grassland contribute significantly to the value of air pollution removal in England, the most densely populated local authorities (Figure 15) demonstrate the highest value in air pollution removal. Furthermore, urban trees, on average, accounted for 80% of the green space area in these local authorities. Air pollution data for local authorities across England is included in our [accompanying datasets](#).

Figure 15: The 10 local authorities with the highest value of air pollution removed per square kilometre by nature in 2020 were in London

Top 10 local authorities by value per km squared air pollution removed in England, £ million per km squared, 2020

Source: Office for National Statistics, Department for Environment, Food and Rural Affairs

7 . Cultural services

Cultural services are the non-material benefits we obtain from the ecosystem through recreation, tourism, and their associated health benefits. There are three forms of cultural services, which are additive and should contain no overlap; these include:

- house prices (recreation and aesthetic) - recreation house prices include the additional value on houses that are near to green (land) and blue (water) spaces, enabling people to make "free trips" to the natural environment, while aesthetic house prices include how much value is added to a house that has a view of a green and/or blue space
- tourism and recreation - spending on travel to the natural environment and some aspects of expenditure incurred during visits (parking fees, transport costs, vehicle running costs, and admissions)
- health benefits from recreation - the value associated with improved health and well-being resulting from regular visits to nature

For these cultural services, we are able to quantify both welfare benefits, which is explored further by the [Department for Environment, Food and Rural Affairs \(Defra\)-funded Outdoor Recreation Valuation \(ORVal\) model](#), and the more direct and transactional aspects such as recreation and people's engagement with the outdoors. The natural environment provides a space for recreational activities, which in turn, creates additional satisfaction, pleasure, and enjoyment.

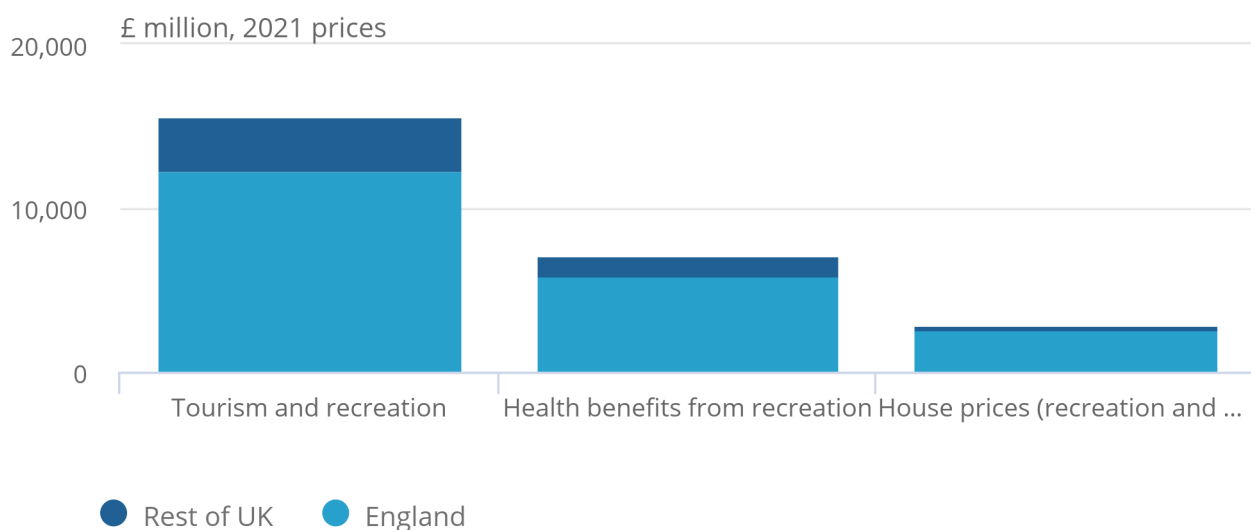
The recreation estimates were produced using the People and Nature Survey (PANS), and the Monitor of Engagement with the Natural Environment (MENE) survey. These surveys gather evidence and trend data relating to people's enjoyment, access, understanding of and attitudes to the natural environment, and contributions to well-being.

Figure 16: England accounted for 81% of UK annual value for cultural services from nature in 2019

England cultural services included in UK natural capital accounts and their annual values, 2019

Figure 16: England accounted for 81% of UK annual value for cultural services from nature in 2019

England cultural services included in UK natural capital accounts and their annual values, 2019



Source: Office for National Statistics - UK natural capital accounts

Overall, England accounted for 81% of the UK's total cultural services valuation in 2019. In that year, England contributed 79% of the UK's annual value from nature for tourism and recreation, compared with 88% for house prices and 82% for health benefits from recreation.

House prices (recreation and aesthetic)

The hedonic pricing approach analyses the variables that affect house prices, including the willingness to pay for living close to green and blue spaces. We are currently updating this methodology during 2023, so are not providing detailed accounts in this bulletin. However, the annual value from house prices was £2,566 million in 2019. This measures the value of the "free trips" to spaces within 500 metres.

Tourism and recreation

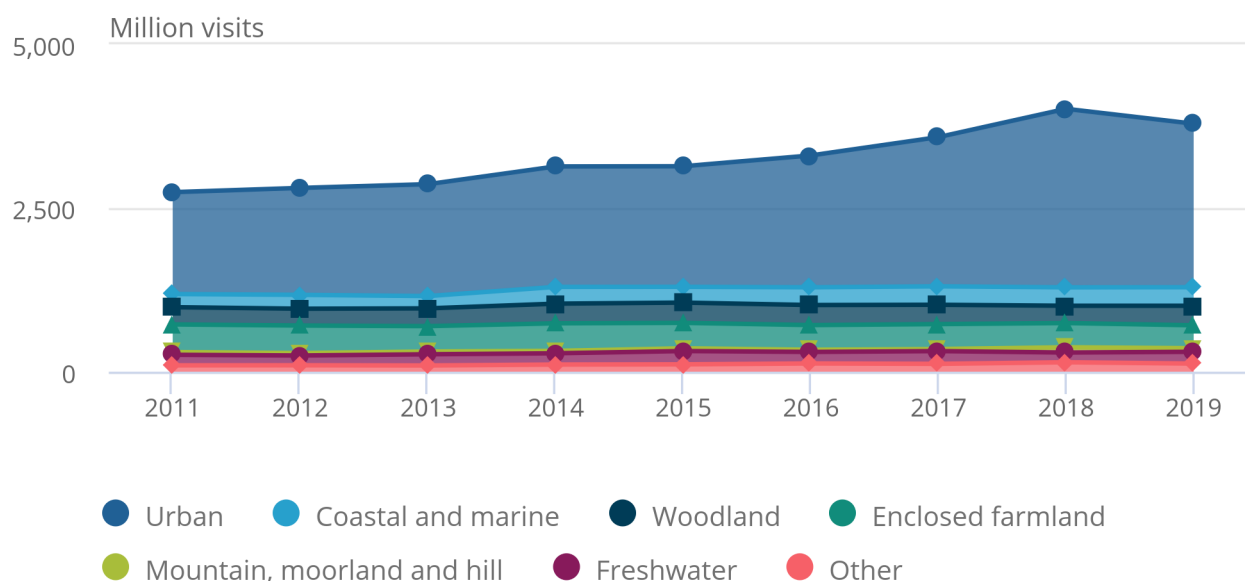
The surveys used to calculate the figures for tourism and recreation focus on both short recreational day-trips from home (trips equal to or shorter than three hours), and all spending on outdoor activity from domestic tourism, including spending from international visitors.

Figure 17: Total visits in England increased between 2011 and 2018 before falling in 2019

Total visits, tourism and recreation, England, 2011 to 2019

Figure 17: Total visits in England increased between 2011 and 2018 before falling in 2019

Total visits, tourism and recreation, England, 2011 to 2019



Source: Office for National Statistics, Monitor of Engagement with the Natural Environment (MENE) Survey, Great Britain Day Visits Survey and Great Britain Tourism Survey

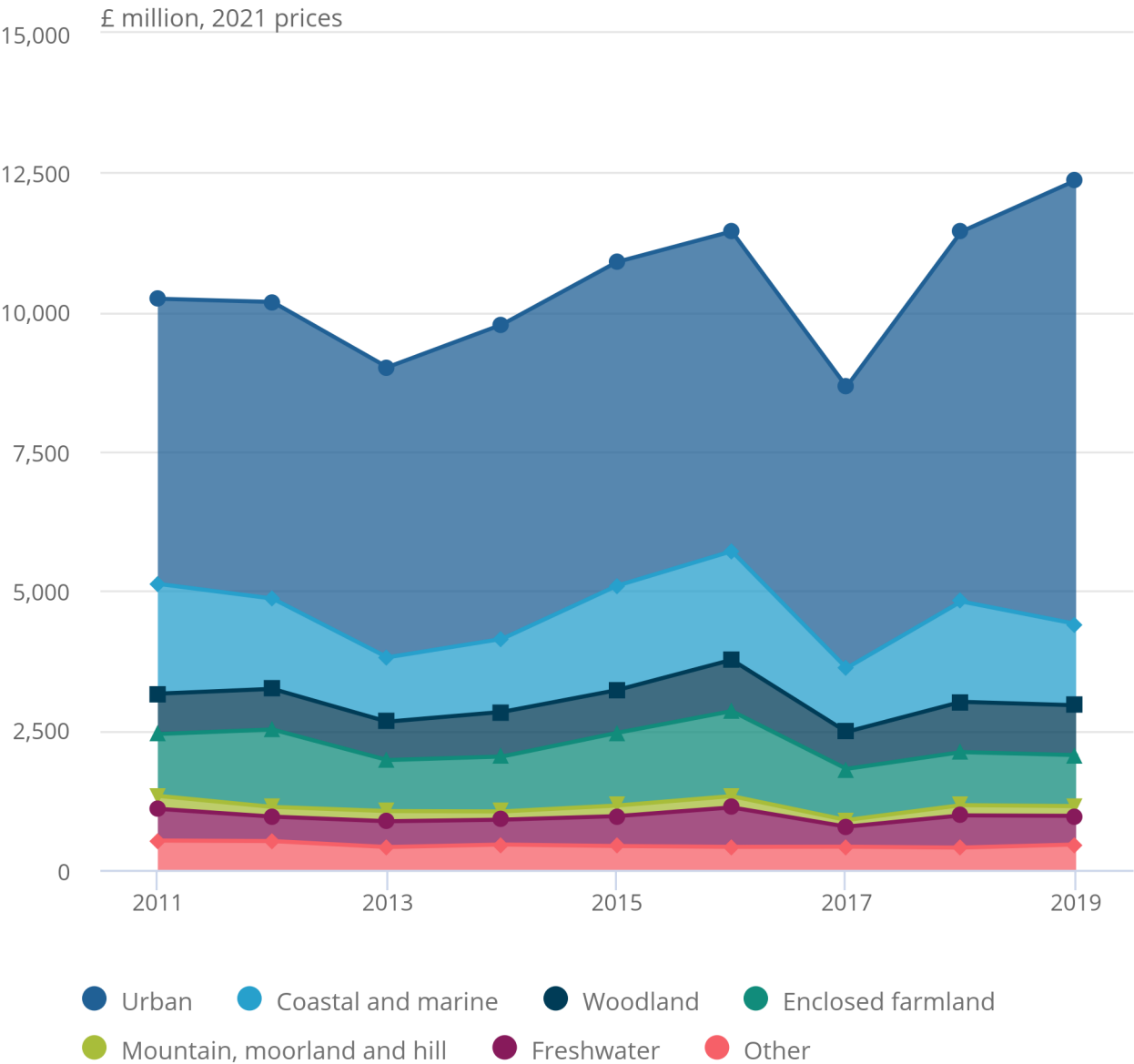
Since 2011, the number of trips which fall under tourism and recreation has increased from 2.74 to 3.79 billion in 2019. Urban visits made up most of these visits, increasing from 1.56 billion or 57% of all trips in 2011 to a peak of 2.73 billion or 68% in 2018. This decreased slightly to 2.50 billion or 66% of trips in 2019. There was a decrease in visits to urban, enclosed farmland, and mountain, moorland and hill whereas coastal, woodland and freshwater habitats saw an increase in 2019.

Figure 18: Total expenditure on tourism and recreation declined by 24% in 2017, recovering in the following years

Total expenditure on tourism and recreation, England, £ million (2021 prices), 2011 to 2019

Figure 18: Total expenditure on tourism and recreation declined by 24% in 2017, recovering in the following years

Total expenditure on tourism and recreation, England, £ million (2021 prices), 2011 to 2019



Source: Office for National Statistics, Monitor of Engagement with the Natural Environment (MENE) Survey and the People and Nature Survey (PANS)

From 2016 to 2017, there was a decline in total expenditure across all habitats, decreasing from £11.5 to £8.7 billion. However, since 2017 expenditure on outdoor recreation has grown to £12.4 billion in 2019. This recent growth was driven by increased expenditure in urban, woodland and coastal habitats, which were the only habitats to experience growth within the time period. This overall expenditure growth occurred despite decreasing visitor numbers because average expenditure per visit increased from £2.41 to £3.26 between 2017 and 2019. Urban visits made up most of the total expenditure, with the proportion increasing from 50% in 2010 to 64% in 2019.

Figure 19: The average English resident spends less money on tourism and recreation than the UK average

Expenditure per capita on tourism and recreation, UK, 2011 to 2019

Figure 19: The average English resident spends less money on tourism and recreation than the UK average

Expenditure per capita on tourism and recreation, UK, 2011 to 2019



Source: Office for National Statistics, Monitor of Engagement with the Natural Environment (MENE) Survey, Great Britain Day Visits Survey and Great Britain Tourism Survey

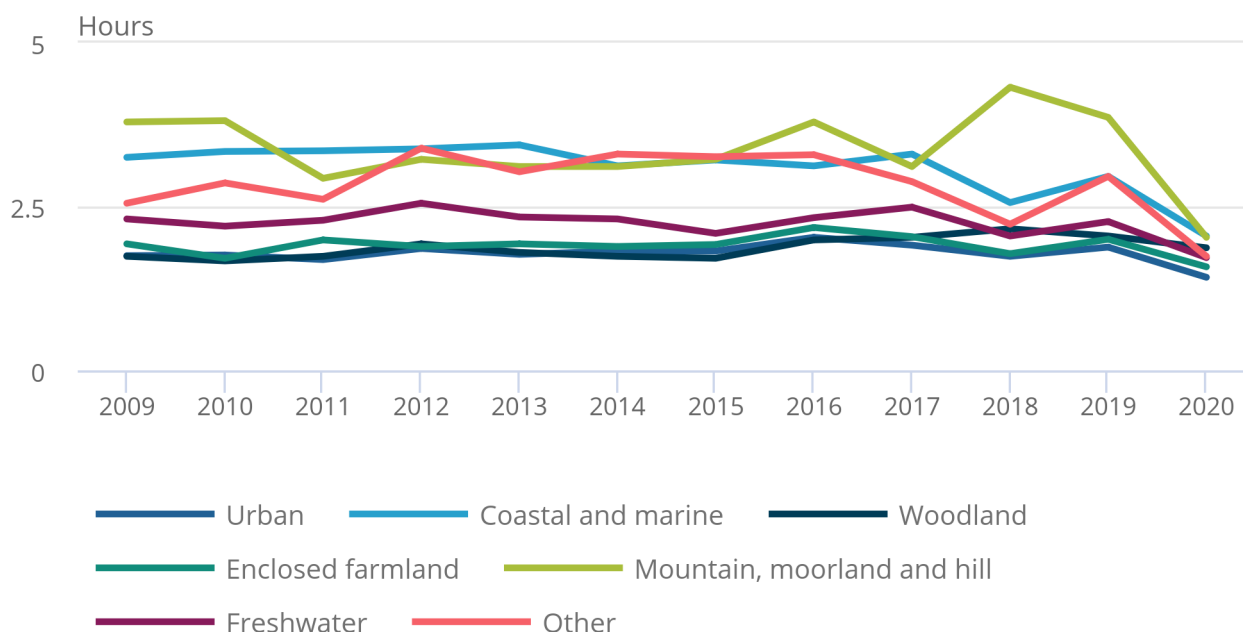
England's expenditure per capita on visiting nature in recent years has been below spending across Scotland, Wales, and Northern Ireland. However, in the most recent years, people living in Scotland began spending less on visiting nature than those in England. As England had approximately 84% of the UK population in 2020, the UK expenditure per capita largely follows the trends for England. Expenditure per capita in England has fluctuated around £200 to £300 between 2011 and 2019, with a dip in 2017, then recovering in 2018 and 2019.

Figure 20: Time spent per recreational day trip fell markedly across all habitats in 2020

Time spent per recreational visit, England, 2009 to 2020

Figure 20: Time spent per recreational day trip fell markedly across all habitats in 2020

Time spent per recreational visit, England, 2009 to 2020



Source: Office for National Statistics, Monitor of Engagement with the Natural Environment for England, Scotland's People and Nature Survey, National Survey for Wales, and People and Nature Survey

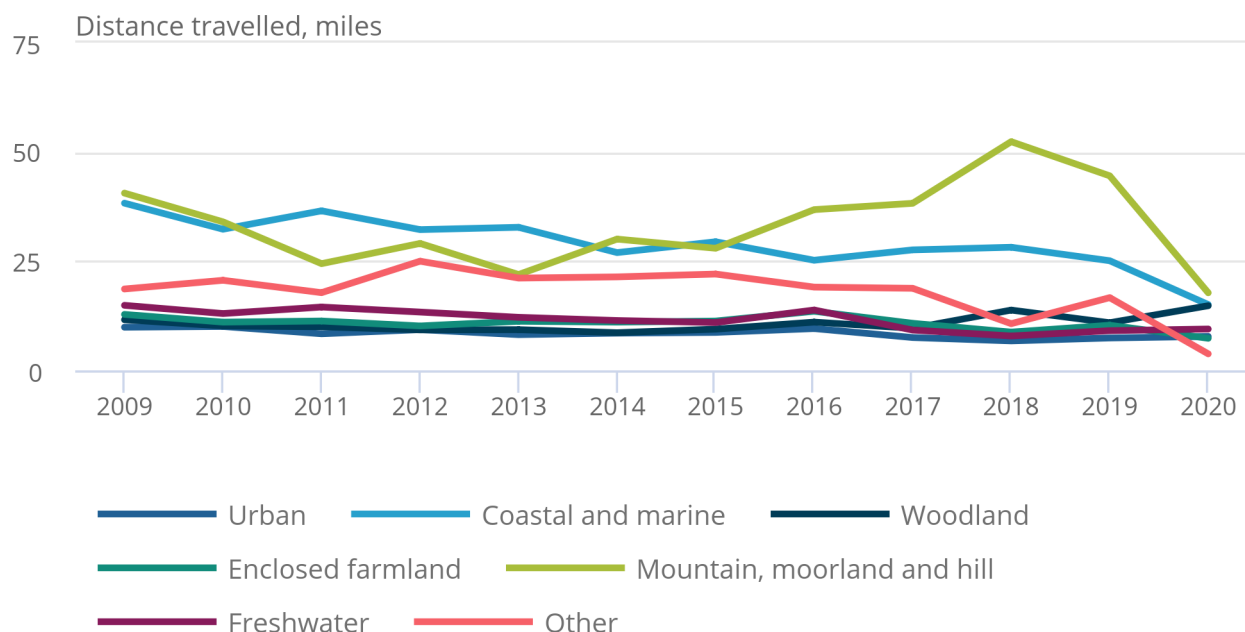
Between 2019 and 2020, total time spent in hours on day trips to nature decreased from 8.1 to 7.4 billion hours, while total visits increased from 3.9 to 4.5 billion. This is likely because of coronavirus (COVID-19) restrictions, with only essential travel permitted for periods; however, people in England visited nature more frequently.

Figure 21: Average distance travelled per visit to mountain, moorland and hills declined by 60% in 2020

Distance travelled per recreational visit, England, 2009 to 2020

Figure 21: Average distance travelled per visit to mountain, moorland and hills declined by 60% in 2020

Distance travelled per recreational visit, England, 2009 to 2020



Source: Office for National Statistics, Monitor of Engagement with the Natural Environment for England, Scotland's People and Nature Survey, National Survey for Wales, and People and Nature Survey

Coastal and marine, and mountain, moorland and hill had the greatest distance travelled per visit. As with time spent per visit, there was a drop in 2020, however, this only occurred mainly within visits to mountains, moorland and hills, and coastal and marine. Habitats that are more accessible from most people's local area, such as urban and freshwater, showed no change in distance travelled during 2020.

Health benefits from recreation

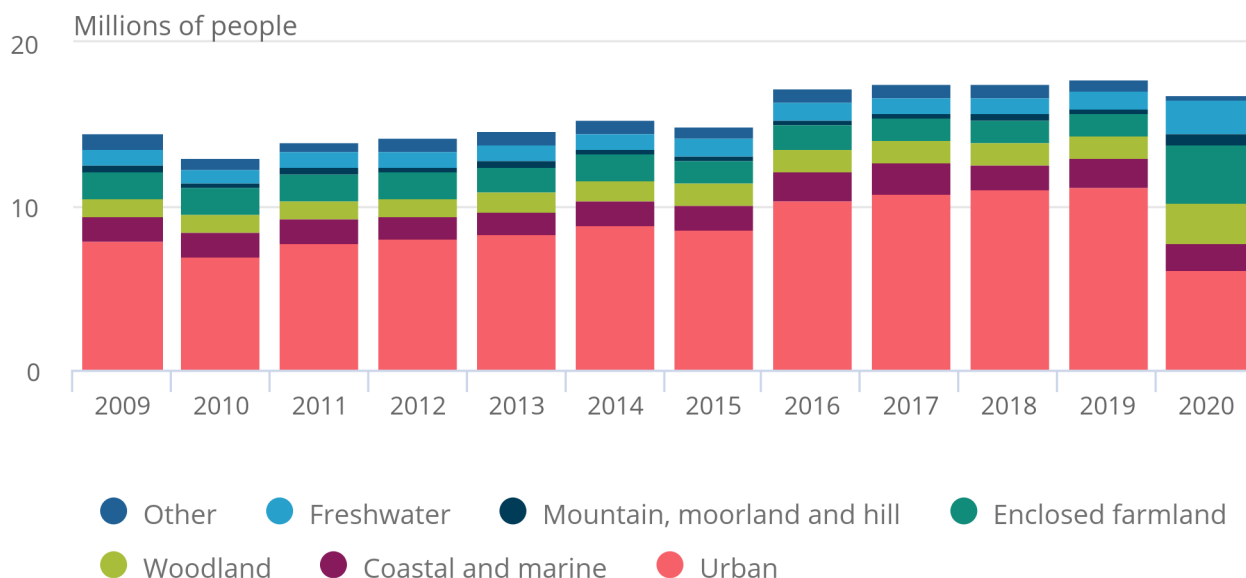
Research has shown that there are clear health benefits from spending time in nature. For example, in their [Recreational physical activity in natural environments and implications for health article](#), White and others (2016) found that spending at least 120 minutes a week in nature gives statistically significant health advantages.

Figure 22: The number of people who gained health benefits from outdoor recreation increased between 2009 and 2019, before declining in 2020

Total number of people who gained health benefits outdoor recreation, England, 2009 to 2020

Figure 22: The number of people who gained health benefits from outdoor recreation increased between 2009 and 2019, before declining in 2020

Total number of people who gained health benefits outdoor recreation, England, 2009 to 2020



Source: Office for National Statistics, Monitor of Engagement with the Natural Environment for England, Scotland's People and Nature Survey, National Survey for Wales, and People and Nature Survey

The number of people estimated to have gained health benefits from recreation in England fell by 1 million from 17.9 million in 2019, to 16.9 million in 2020 (Figure 22). This was driven by a decline in the average length of trips taken within nature. The average duration of a trip was 125 minutes in 2019, which fell to just 98 minutes in 2020. As a result, people are less likely to meet the threshold of spending 120 minutes or more a week in nature to receive health benefits. It is important to note that people still gain health benefits for spending under 120 minutes a week in nature, so we are potentially underestimating the health benefits.

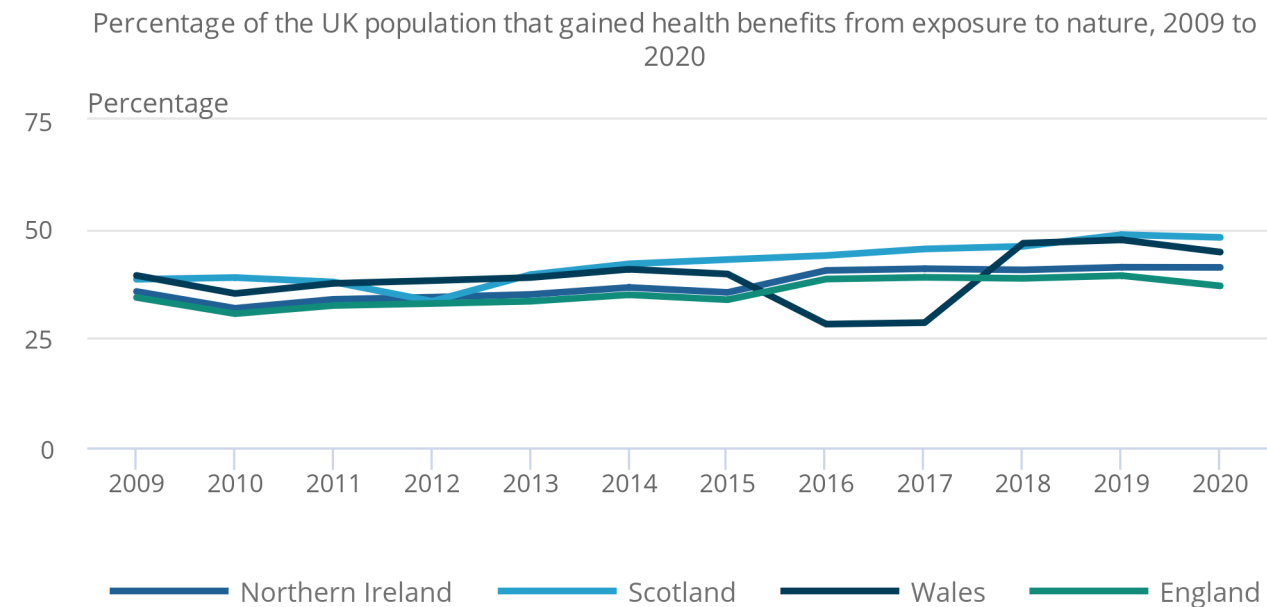
The number of people who gained health benefits within England from exposure to nature peaked at 17.9 million in 2019. Within urban areas, the number of people estimated to have gained health benefits from recreational visits increased from 7.9 to 11.3 million between 2009 and 2019, before falling to just 6.2 million in 2020. However, in 2020 all the other habitats saw the reverse, with the number of people gaining health benefits increasing, a period that coincided with the start of the coronavirus pandemic. One factor of this shift could have been the change of survey from MENE (2009 to 2019) to PANS in 2020.

The average health benefits per person in England were estimated at £121 in 2020. This was up more than 19% from £112 in 2009.

Figure 23: The proportion of people in England who received health benefits from nature remains the lowest out of all four countries, increasing from only 34% to 37% between 2009 and 2020

Percentage of the UK population that gained health benefits from exposure to nature, 2009 to 2020

Figure 23: The proportion of people in England who received health benefits from nature remains the lowest out of all four countries, increasing from only 34% to 37% between 2009 and 2020



Source: Office for National Statistics, Monitor of Engagement with the Natural Environment for England, Scotland’s People and Nature Survey, National Survey for Wales, and People and Nature Survey

Figure 23 shows the proportion of the population in the UK nations that gained these health benefits from exposure to nature. All four see a long-term upwards trend from 2009 to 2020. England consistently has the lowest proportion, with the exception of 2016 to 2017 where Wales was lower, with only 28% of the population of England passing the threshold to obtain health benefits form recreational visits.

The annual value of health benefits is estimated at £5.5 billion in 2020 (Figure 2), up 16.4% from £4.8 billion in 2009.

8 . Asset values

The asset value for ecosystem services we can currently value in England was an estimated £1.4 trillion in 2020, which was 78% of the total UK asset value. Asset values of natural resources refer to the long-term potential (stock) of that resource to provide goods and services to humans.

Figure 24: Tourism and recreation had the highest total asset value in 2020, while England represented the highest proportion of asset value for air pollution removal

Asset values for all services, comparing England with the rest of the UK, £ million (2021 prices), 2020

Tourism and recreation had the greatest total value in the UK in 2020 and England represents 75% of this value. England has a higher proportion of the asset value for health benefits from recreation, as this measure is more dependent on population. The services for which England accounted for the greatest asset value in 2020 were urban cooling (98%) and air pollution removal (92%). Again, these services will have more valuable impact in England as it is the most densely populated country in the UK.

9 . England natural capital accounts data

[Natural capital accounts, England, detailed supplementary tables](#)

Dataset | Released 25 January 2023

A detailed data breakdown of the financial and societal value of England's natural resources in the UK.

[Natural capital accounts, England, supplementary tables](#)

Dataset | Released 25 January 2023

Estimates of the financial and societal value of natural resources to people in England and the UK

10 . Glossary

Asset

A natural asset is a resource that can generate goods or services to humans into the future. The valuation of the natural asset estimates the stream of services that are expected to be produced over a reasonably predictable time horizon.

Ecosystem services

Ecosystem services are the living (biotic) components of the Earth that provide services to humans, such as woodland.

Overbark

The volume of wood including the bark. Can be either standing volume or felled volume.

Physical flow

The physical flow of a natural asset is the measure of its output in units appropriate to the good or service. This differs from the annual value and asset value, which measure the monetary value of a natural resource.

11 . Measuring the data

We have used a wide variety of sources for estimates of UK natural capital.

The Office for National Statistics (ONS) and the Department for Environment, Food and Rural Affairs (Defra) have published a summary of [the principles underlying the natural capital accounts](#).

These accounts have been compiled in line with the guidelines recommended by the United Nations (UN) System of Environmental-Economic Accounting (SEEA) Central Framework and [the UN SEEA Experimental Ecosystem Accounting principles](#). These are, in turn, part of the wider framework of the system of national accounts. UN guidance continues to develop.

We welcome feedback on this output or any of our approaches to natural.capital.team@ons.gov.uk.

More detailed quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in the accompanying [England natural capital accounts methodology: 2023](#).

The ONS' natural capital accounts are produced in partnership with Defra.



12 . Strengths and limitations

These experimental accounts are being continually revised to produce the best statistics with the available data and methods.

We have identified strengths and limitations of the data as well as areas for future development. These are outlined, along with detailed information on quality, methodology and appropriate uses, and how the data were created, in the accompanying [England natural capital accounts methodology: 2023](#).

13 . Related links

[Woodland natural capital accounts: 2022](#)

Bulletin | Released 15 December 2022

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

[UK natural capital accounts: 2022](#)

Bulletin | Released 10 November 2022

Estimates of the financial and societal value of natural resources to people in the UK.

[Health benefits from recreation, natural capital, UK: 2022](#)

Bulletin | Released 27 May 2022

Further development of the UK recreation natural capital ecosystem service accounts, including specific methods used to estimate the health benefits gained from nature-based recreational activities.

[Habitat extent and condition, natural capital, UK: 2022](#)

Bulletin | Released 3 May 2022

The size of area and condition indicators for eight natural UK habitats, including woodland, enclosed farmland, semi-natural grasslands, and coastal margins. Uses the System of Environmental-Economic Accounting framework for Ecosystem Accounting. Experimental estimates.

14 . Cite this statistical bulletin

Office for National Statistics (ONS), released 25 January 2023, ONS website, statistical bulletin, [England natural capital accounts: 2023](#)