Statistical bulletin

# Enclosed farmland natural capital accounts, UK: 2026

Natural capital accounts including estimates of the economic and social value of enclosed farmland natural resources to people in the UK.

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To be announced

## Notice

### 6 August 2026

We have identified an error in the 2026 edition of this bulletin. This is because of an issue in the input data provided by one of our data suppliers, relating to the Recreation and tourism (expenditure) ecosystem service. We estimate this to have a minor impact on this ecosystem service's physical flow, annual and asset value estimates for the UK and Scotland for 2022 and 2023.

We will not publish a correction to this release, as this would be data and resource intensive, risking delaying our upcoming UK natural capital accounts (NCA): 2026 release, scheduled for December 2026. Our statistical bulletin will contain a new methodology and data, along with corrected and revised data, for the Recreation and tourism (expenditure) ecosystem service, replacing and superseding the entire time series from the 2025 release.

A subset of the updated 2026 NCA figures, covering ecosystem physical flow, annual value and asset values for the UK will also be available on 30 October 2026, as part of the UK National Accounts, The Blue Book 2026 release.

We apologise for this error.

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# 1 . Main points

- Ecosystem services on enclosed farmland in the UK had an annual value of £5.9 billion in 2023, with £5.3 billion from biotic (living) services and £0.6 billion from abiotic (non-living) services.
- In 2023, the total asset value of enclosed farmland ecosystem services was £237 billion, with £228 billion from biotic services and £10 billion from abiotic services.
- The extent of enclosed farmland in the UK declined from 54% in 1990 to 52% in 2024.
- The annual value of the air pollution regulation service in enclosed farmland declined by 23% between 2005 and 2024; this is because of the decrease in pollutants for this habitat to remove.
- The annual value of recreation and tourism visits to enclosed farmland was £895 million in 2023.
- Between 2009 and 2024, organic land use in the UK declined by an average of 2% per year.

# 2 . Extent of enclosed farmland

Enclosed farmland is composed of arable and horticultural land, primarily used for crop production, and improved grassland, which is heavily modified for maximising forage production for livestock.

This habitat covers the majority of UK land (52% in 2024). However, enclosed farmland has fallen by 555,302 hectares, an area larger than Northumberland County, since 1990, when it covered 54% of the UK.

### Figure 1: Enclosed farmland in the UK decreased from 54% of land area in 1990 to 52% in 2024

**Change in extent of UK habitats, 1990 to 2024**

**Notes:**

1. Totals for each habitat do not equal habitat totals in the bulletin; this is because there is a further category where the land cover mapping was unable to identify what habitat was in an area for either 1990 or 2024, covering less than 0.1% of the UK in both years.
2. Raster data are from Great Britain and Northern Ireland land cover maps for 1990 and 2024 from the UK Centre for Ecology and Hydrology (UKCEH).
3. Land Cover Map (LCM) 1990 25-metre raster data for Great Britain by Rowland and others (2020), version 2, are from the Natural Environment Research Council (NERC) Environmental Information Data Centre.
4. LCM2024 25-metre rasterised land parcels data for Great Britain by Rowland and others (2025) are from the NERC Environmental Information Data Centre.
5. LCM1990 25-metre raster data for Northern Ireland by Rowland and others (2020), version 2, are from the NERC Environmental Information Data Centre.
6. LCM2024 25-metre rasterised land parcels data for Northern Ireland by Rowland and others (2025) are from the NERC Environmental Information Data Centre.

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We can now provide shares of habitat for each local authority area. Overall, enclosed farmland is most prevalent in the southeast of the UK.

Improved grassland is more prevalent in the west (notably the southwest of England), the west of Wales, and Northern Ireland.

Arable land is more prevalent in the east, particularly the east of England.

### Figure 2: Enclosed farmland is most prevalent in the southeast of the UK

**Percentage of local authority area where enclosed farmland is the dominant land cover, UK, 2024**

**Notes:**

1. Raster data are from Great Britain and Northern Ireland land cover maps for 1990 and 2024 from the UK Centre for Ecology and Hydrology (UKCEH).

2. Land Cover Map (LCM) 2024 25-metre rasterised land parcels data for Great Britain by Rowland and others (2025) are from the Natural Environment Research Council (NERC) Environmental Information Data Centre.

3. LCM2024 25-metre rasterised land parcels data for Northern Ireland by Rowland and others (2025) are from the NERC Environmental Information Data Centre.

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# 3 . Enclosed farmland condition indicators

Condition indicators reflect the health of a habitat and are defined as "the quality of an ecosystem measured in terms of its abiotic and biotic characteristics" in the United Nations' System of Environmental-Economic Accounting Ecosystem Accounting (SEEA-EA) framework (PDF, 6MB).

This framework provides a structure for habitat condition information and shows changes over time. We have sourced data where available for the categories suggested by the SEEA-EA. These categories cover the physical, chemical, compositional, structural, and landscape conditions specific to enclosed farmland habitats.

These data also provide contextual information useful for interpreting trends in ecosystem services. However, based on the current methodology, it is not possible to draw direct causal relations between trends in conditions and those in ecosystem services.

Table 1 provides an overview of the long-term trends for these indicators for UK enclosed farmland habitats.

### Table 1: Farmland butterflies and birds declined, while bats on farmland increased in abundance

**Summary of long-term trend for enclosed farmland condition indicators**

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# Physical and chemical indicators

## Nitrogen and phosphorous

Nitrogen and phosphorus are important nutrients for crops, but they can also cause damage to ecosystems.

The Food and Agriculture Organisation's Sustainable nitrogen management in agrifood systems report notes that misuse of nitrogen can result in negative consequences. These include injury to plants and crops, biodiversity loss, and contribution to global climate change.

Phosphorus can damage marine and freshwater ecosystem health through algal blooms, according to the United Nations' Environment Programme's Understanding phosphorus: global challenges and solutions news story. This is when algae grow too quickly and reduce the available oxygen in freshwater ecosystems. Given the fertiliser's long-lasting nature, it also has long-term impacts.

Nitrogen and phosphorus data are presented as inputs and offtakes. Inputs are ways in which the nutrient is added to the environment, such as through fertilisers. Offtakes are the amount of the nutrient removed from the environment in crops after harvest or grazing.

The nutrient balance is the inputs minus the offtakes. For this indicator, we present soil nutrients on commercial farms (those with an agricultural output worth £21,000 or more per year), in line with the Department for Environment, Food and Rural Affairs (Defra)'s soil nutrient inputs and offtakes dataset.

Nitrogen inputs on commercial farms in the UK decreased by 7%, from 194 kilograms per hectare (kg/h) of managed agricultural land in 2009 to 180 kg/ha in 2024. Nitrogen offtake decreased by 16%, from 108 kg/ha in 2009 to 90 kg/ha in 2024. Nutrient balance varied but remained relatively similar, from 2009 (86 kg/ha) to 2024 (89 kg/ha).

According to the Defra's Soil nutrient balances UK, 2024 statistics notice, nitrogen input decrease aligns with decreases in use of inorganic nitrogen fertiliser and livestock numbers, and therefore manure. The decrease in nitrogen offtake was in part because of the decline in grazing livestock, and a decrease in cereals harvested.

The amount of phosphorus inputs declined by 8%, from 22 kg/ha in 2009 to 20 kg/ha in 2024. Offtake also declined, by 13% from 18 kg/ha in 2009 to 16 kg/ha in 2024. As with nitrogen, this means that the nutrient balance has fluctuated but remained overall stable.

Phosphorus inputs and offtakes declined because of reduced use of fertiliser, reduced livestock production, and reduced harvest; the same reasons as with nitrogen.

For more information on nitrogen and phosphorus, please see the Defra's Soil nutrient balances UK, 2024 statistics notice.

### Figure 3: Both inputs and offtakes from nitrogen and phosphorus in the UK decreased between 2009 and 2024

**Inputs, offtake and balance of nitrogen and phosphorus, UK, 2009 to 2024**

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## Emissions on agricultural land

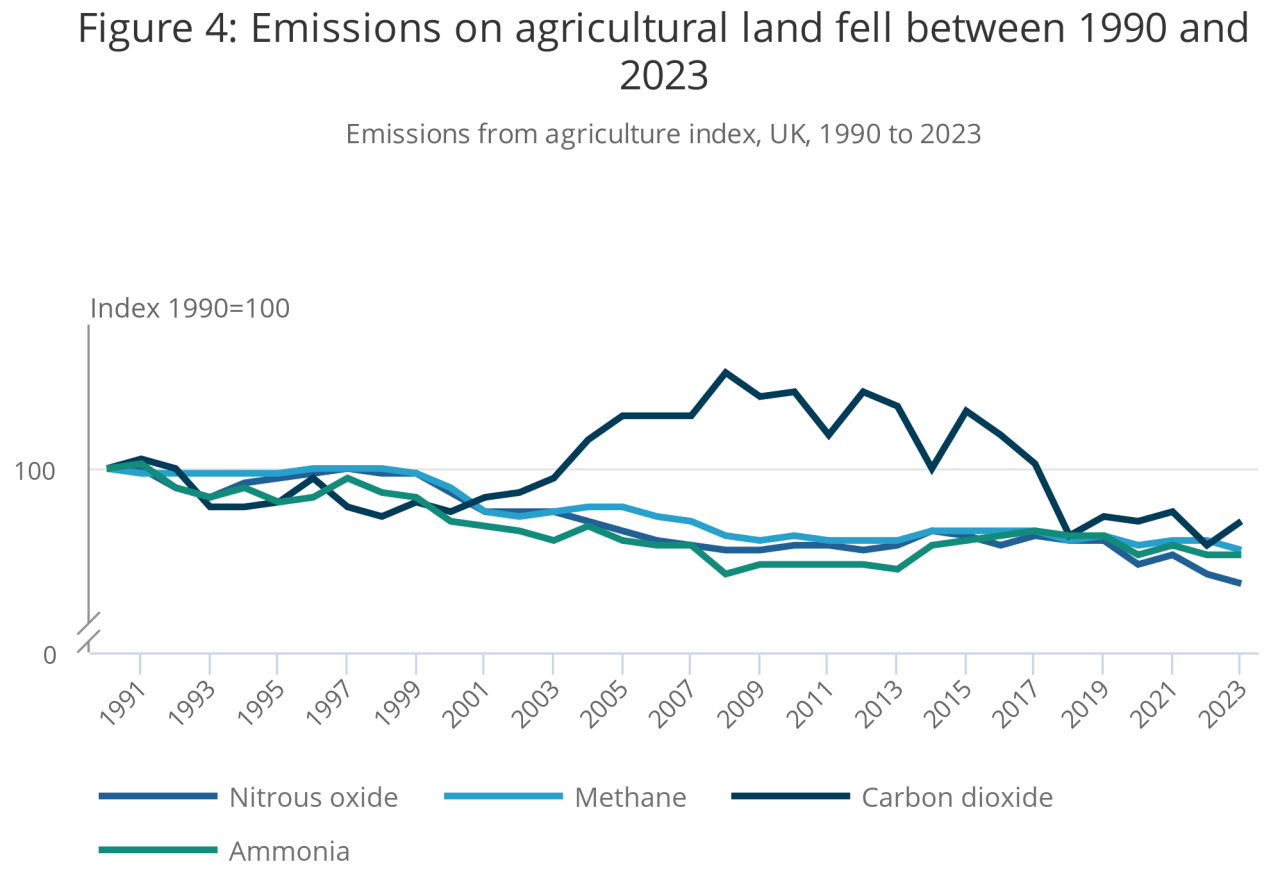
This condition indicator covers emissions of pollutants from human activities on agricultural land. This includes the greenhouse gases (GHGs) carbon dioxide, from agricultural machinery, and methane, produced by livestock, and the other pollutants ammonia and nitrous oxide, resulting from nitrogen fertiliser use. This differs from the GHG regulating service, which captures GHG emissions from soil which occur because of land use change.

Between 1990 and 2023, carbon dioxide emissions on agricultural land declined overall by 11%, while methane emissions declined by 17%, nitrous oxide emissions declined by 24%, and ammonia emissions declined by 18%.

Declines in ammonia and nitrous oxide emissions align with decreases in nitrogen fertiliser inputs, while declining methane emission aligns with reductions in livestock farming. For more information, see Defra's Agriculture in the United Kingdom 2023 statistics.

**Figure 4: Emissions on agricultural land fell between 1990 and 2023**

**Emissions from agriculture index, UK, 1990 to 2023**




**Source: Enclosed farmland natural capital accounts from the Office for National Statistics and Department for Environment, Food and Rural Affairs**

**Notes:**

1. The whole timeseries for greenhouse gas emissions is revised each year to take account of methodological improvements in the UK emissions inventory.

### Soil health

There are a variety of indicators of soil health. Here, we present several indicators collected and analysed by the UK Centre for Ecology and Hydrology (UKCEH) Countryside Survey (CS) of Great Britain, and Environment and Rural Affairs Monitoring and Modelling Programme.

These surveys were conducted in 1978 (CS1978), 1998 (CS1998), 2007 (CS2007), and in a multi-year sampling period from 2019 to 2023 (CS2020). For more information on soil health metrics, please see the Royal Society's Evidence synthesis report.

Mean carbon concentration reflects amounts of soil organic matter, which can be an indicator of good soil health. This has fluctuated but remained relatively stable since 1978.

pH reflects the acidity or alkalinity of soil, with a value of 1 being the most acidic, and a value of 14 being the most alkaline. pH values of between 6 and 7 in arable soils are typically considered to reflect good soil health. pH was 6.01 in 1978 and 6.21 in CS2020, remaining within the range for good soil health.

Bulk density indicates soil compaction, which may occur because of heavy machinery or industrial farming, and higher bulk density indicates less healthy soils. This can result in reduced porosity, which reduces the ability of soils to be able to hold water and gases for plant growth. Bulk density decreased from 1.06 grams per centimetre cubed (g/cm3) in 2007 to 1.02 g/cm3 in CS2020.

Topsoil carbon stock is a product of carbon concentration and bulk density, and indicates the mass of carbon stored in topsoils, an important source of energy for soil organisms. This has remained stable since 1978.

A further indicator is the abundance of phosphorus, Olsen P, that is in a form most useable by plants, necessary for healthy plant growth. Ideal levels in arable land are between 16 and 25 milligrams per kilogram (mg/kg), and values higher than 60 mg/kg indicate a risk of leaching and, therefore, of pollution. Olsen P was consistently above 25 mg/kg in the period sampled, though this had decreased since 1998.

Table 2: Soil health in Great Britain, 1978, 1998, 2007 and 2019 to 2023

| Time of survey | Carbon concentration (mean carbon concentration, g/kg) | Topsoil pH (mean pH) | Topsoil bulk density (mean build density, g/cm3) | Carbon stock (mean carbon stock, t/ha) | Plant-available phosphorus (Olsen P) (mean Olsen P, mg/kg) |
|---|---|---|---|---|---|
| **CS1978** | 37.25 | 6.01 | [x] | 58.13 | [x] |
| **CS1998** | 39.03 | 6.26 | [x] | 59.28 | 34.76 |
| **CS2007** | 36.57 | 6.54 | 1.06 | 59.07 | 28.93 |
| **CS2020** | 38.40 | 6.21 | 1.02 | 59.39 | 28.79 |

Source: UK Centre for Ecology and Hydrology (UKCEH) Countryside Survey of Great Britain

Notes

1. CS2020 refers to the countryside survey conducted from 2019 to 2023.
2. [x] indicates that data are not available.

## Compositional indicators

Compositional indicators show what a habitat is made of in terms of its composition and diversity of ecological communities.

## Species indicators

Biodiversity is a characteristic of ecosystems which is valued both in its own right and given its role in supporting other ecosystem services. Related indicators are important in assessing ecosystem overall condition.

We present species indicators for birds, bats, butterflies, bees and plants, which can be indicators of habitat health themselves or through their role of providing services, such as pollination.

Bee numbers have fluctuated from 2008 to 2025. This indicator shows the number of individual worker, drone and queen bees per kilometre for all bumblebee species combined and for honeybees.

Honeybees are a single domesticated species of bee and are valuable for the production of honey and for pollination services. Bumblebees are wild bees, with 24 different species, and are highly effective pollinators.

Butterflies are pollinators, while the caterpillars of some species are crop pests. Both can also be indicators of the health of a landscape because of their reliance on particular plants as food sources.

Both generalist (reliant on many habitats) and specialist (in this case reliant primarily on farmland habitats) butterfly species declined between 1990 and 2024, with generalists declining 21%, and farmland specialists declining 42%.

Flies, wasps, and beetles also pollinate, but they are less recorded so there are limited data.

Farmland specialist birds have been in decline since the 1970s. The number of farmland specialist birds declined by 75% between 1970 and 2024. Generalist bird species associated with farmland declined 24% over the same period, and primarily since 2010.

The Joint Nature Conservation Committee's Plants of the wider countryside in the UK indicator represents the abundance of wild plant species considered to indicate good habitat health in arable lands. This indicator remained relatively stable between 2015 and 2024.

Bats are important species for pest control and indicators of ecosystem health. The bat abundance indicator looks at three species, common pipistrelle, soprano pipistrelle and noctule. Between 1999 and 2024 bat abundance on enclosed farmland increased by 56%.

### Figure 5: Butterflies and birds on enclosed farmland have declined, plants have remained stable, bees have fluctuated and bats have increased in abundance

**Compositional species indicators on enclosed farmland for bees, bats, butterflies, birds and plants, Great Britain or UK**

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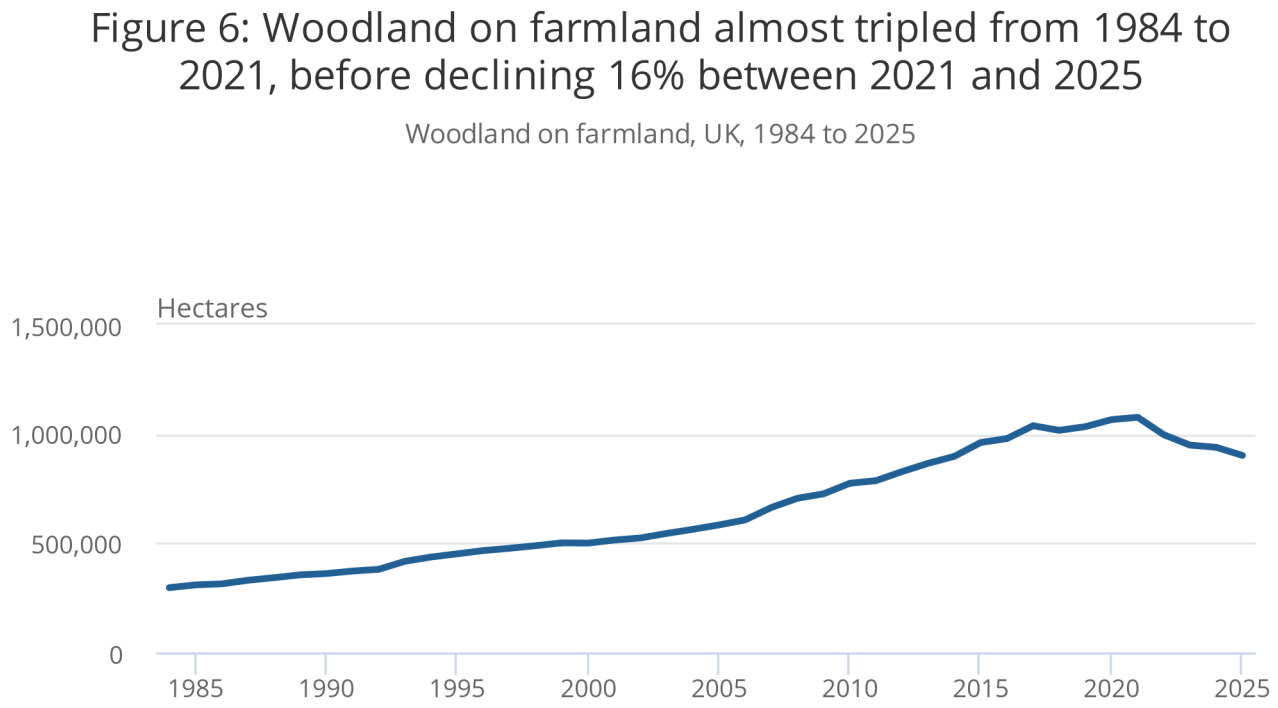
## Structural indicators

### Woodland on farmland

Woodland on farmland provides natural flood protection, and boosts biodiversity and habitat connectivity for wildlife. The proportion of woodland as a share of total UK farmland increased from 1.6% in 1984 to 5.8% in 2021, but has since decreased to 5% in 2025.

**Figure 6: Woodland on farmland almost tripled from 1984 to 2021, before declining 16% between 2021 and 2025**

**Woodland on farmland, UK, 1984 to 2025**




**Source: Department for Environment, Food and Rural Affairs**

### Arable land use

Arable land use includes arable crops, horticultural crops, uncropped arable land and temporary grass under five years of age.

In the UK, arable land without crops saw the largest increase in area between 2011 and 2025 compared with other land use types, with increases of 293% in England, 96% in Scotland, and 85% in Wales.

Horticultural crops have decreased by 16% and arable crops by 9%, while temporary grass under five years of age has increased by 3% between 2011 to 2025.

In 2025, the largest proportion of uncropped land was in England, with 101 thousand hectares left as bare fallow, and the remaining 444 thousand hectares being used for environmental benefits. These include pollen and nectar flower mixes, winter bird food, buffer strips on arable land, flower rich margins, and in field strips.

## Figure 7: Uncropped arable land increased almost fourfold in England from 2011 to 2025

**Land use by UK nation, 2011 to 2025**

**Notes:**

1. All arable land not in production, including bare fallow and arable land used for environmental benefit but not in production.

2. Arable land used for environmental benefit but not in production includes pollen and nectar flower mixes, winter bird food, buffer strips on arable land, flower rich margins, and in field strips.

3. Arable land includes cereals, oilseed crops, potatoes, other (non-horticultural crops), arable crops for stockfeeding, and all other arable crops.

4. Horticultural crops include vegetables grown outdoors, orchard fruit, small fruit, hardy nursery stock, bulbs, and flowers and glasshouse crops.

5. Non-horticultural crops include sugar beet, field beans, peas for harvesting dry, and maize (including fodder and green maize).

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## Organic land use

Organic farming involves specific farming methods, such as the avoidance of artificial fertilisers and pesticides, and the use of crop rotations and other forms of husbandry to maintain soil fertility and control weeds, pests and diseases.

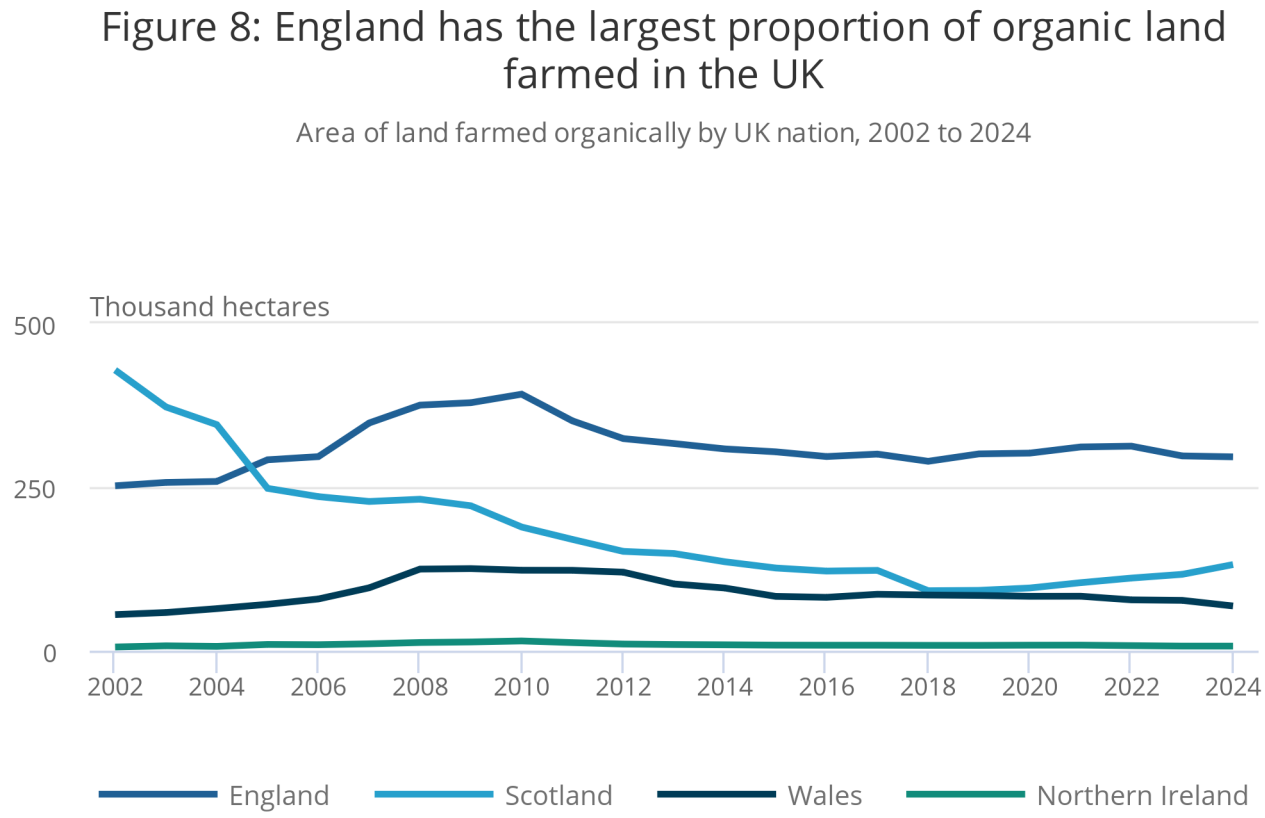
For more information, please see Defra's About organic farming statistics page.

The area of organic land farmed in England increased from 2002 to 2010, before declining from 2010 to 2024. While Scotland had the highest area of organic land farmed in 2002, this declined from 2002 to 2024, with England having the highest area of organic land farmed from 2005 onwards. Organic land farmed has fluctuated in Wales and Northern Ireland.

Between 2009 and 2024, organic land use in the UK declined by an average of 2% per year, with 2010 to 2011 and 2017 to 2018 showing the largest falls between years, of 9% and 8%, respectively.

**Figure 8: England has the largest proportion of organic land farmed in the UK**

**Area of land farmed organically by UK nation, 2002 to 2024**




**Source: Department for Environment, Food and Rural Affairs**

**Notes:**

1. Organic land includes in-conversion and fully organic land use.

2. Organic land use includes cereals, other arable crops (sugar beet, fodder, forage and silage, maize, oilseeds and protein crops), fruits and nuts, vegetables (including potatoes), herbaceous and ornamentals, temporary pasture, permanent pasture (including rough grazing) woodland, unutilised land, and unknown.

### Hedgerows

Hedgerows in enclosed farmlands are valuable habitats for biodiversity. In Wales, overall hedgerow length declined by 9% between 1990 and 2023, though it has increased by 4% since 2013. In England, hedgerow length has declined by 25% from 1984 to 2022 to 2023.

Table 3: Hedgerow length was lower in 2023 than in 1984 in England
Estimated hedge length, England and Wales, 1984, 1990, 2013 to 2016, 2021 to 2023 and 2022 to 2023

| Year | Estimated total length, Wales (thousand km) | Estimated total length, England (thousand km) |
|---|---|---|
| **1984** | [x] | 501 |
| **1990** | 58 | 432 |
| **1998** | 57 | 441 |
| **2007** | 54 | 405 |
| **2013 to 2016** | 50.5 | [x] |
| **2022 to 2023** | [x] | 378 |
| **2021 to 2023** | 52.7 | [x] |

Source: UK Centre for Ecology and Hydrology (UKCEH) Countryside Survey of Great Britain

Notes

1. [x] indicates that data are not available.

## Environmental pressure indicators

Environmental pressure indicators provide useful information on ecosystem health.

### Wildfires

The Parliamentary Office of Science and Technology's Wildfire risks to UK Landscapes publication (PDF, 524KB) notes that most UK wildfires are caused by human action.

For England and Wales, we are unable to separate wildfires on enclosed farmland (crops) from wildfires on woodland and grassland. For Scotland, we are unable to separate crops from grassland.

In 2024 to 2025, there were 18,125 primary (most serious) and secondary (small and low risk) wildfire incidents on woodland, grassland and crops in England, and 1,778 in Wales. There were 93 primary outdoor fires on grassland and crops in Scotland.

### Fly-tipping

There were 4,196 incidents of fly-tipping on agricultural land in England in the 2024 to 2025 recording period, with 250 incidents of fly-tipping on agricultural land in Wales in the same period.

# 4 . Ecosystem services

Any natural resource or process that supports human life, society, or the economy is an important part of our natural capital. Examples include the productivity of soils and access to clean water and recreational green space.

Our UK Natural Capital Accounts include both the biotic (living) and abiotic (non-living) aspects of nature that provide a range of services to our economy and society. Abiotic assets are not produced by the living environment, and the deriving flows of services are recorded in the United Nations' System of Environmental-Economic Accounting Ecosystem Accounting (SEEA-EA) framework (PDF, 6MB) separately from ecosystem services.

Despite the difference in the recording approach, we consider our accounts in line with the SEEA-EA's principles, as it explains that since the definition of an ecosystem involves the interaction of biotic and abiotic components, a separation that treats ecosystem services as purely or mainly "biotic" is not appropriate. More information is available in our UK natural capital quality and methods guide (QMG).

For each ecosystem service we measure physical flows (for example, the amount of crop produced in tonnes) and estimate a monetary value, both for the flow of services in each year and for the assets over a longer time period. This is in line with SEEA-EA guidance.

The natural capital accounts do not attempt to estimate an intrinsic value of nature. Instead, they allow us to better represent the importance of nature in the wider economy, and to assess positive and negative interactions between the state of the UK's natural environment and its economic activity. Tangible valuations help society to consider the scarcity of nature and the sustainability of its use.

Our monetary valuations are a partial or minimum valuation of nature's services. This is because they do not include all services that nature provides.

Additionally, several methods are available for monetary valuation, based on different theoretical approaches and produce different results. Because of this, any values such as those presented in these accounts depend on the methods and data used. Further details on interpretation can be found within this bulletin and our accompanying UK habitat natural capital accounts QMG.

## Annual value of ecosystem services for the UK and its constituent countries

The total annual value of the six ecosystem services that we currently measure for UK enclosed farmland was £5,941 million in 2023. Of this total, £5,294 million was from biotic services and £647 million was from abiotic services. All monetary values in this bulletin are in 2024 prices.

We currently measure abiotic and biotic ecosystem services for enclosed farmland.

Abiotic services include:

- renewable electricity provisioning

Biotic services include:

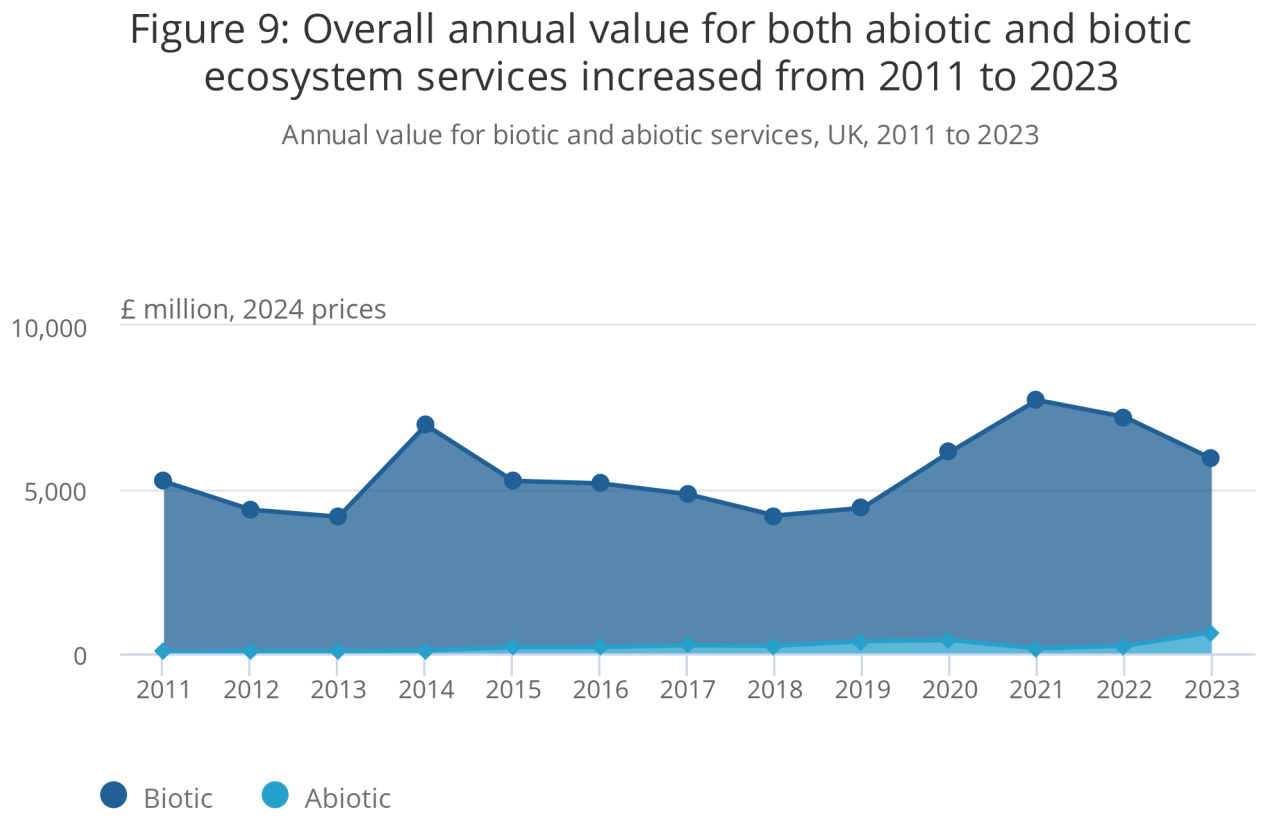
- agricultural biomass provisioning
- air pollution regulating
- greenhouse gas regulating
- recreation (health benefits)
- recreation and tourism (expenditure)

The annual value of renewable electricity provisioning, the only abiotic service included for the enclosed farmland habitat, increased from £42 million in 2011 to £647 million in 2023.

The annual value of biotic services has fluctuated, but this increased overall by £90 million between 2011 and 2023.

**Figure 9: Overall annual value for both abiotic and biotic ecosystem services increased from 2011 to 2023**

**Annual value for biotic and abiotic services, UK, 2011 to 2023**




**Source: Enclosed farmland natural capital accounts from the Office for National Statistics**

The total annual value of ecosystem services we currently measure for enclosed farmland in each country of the UK in 2023 was:

- £6,322 million for England
- negative £978 million for Scotland
- £313 million for Wales
- £294 million for Northern Ireland

### Figure 10: Agricultural biomass had the highest annual value in all countries, at £5,374 million in 2023 for the UK as a whole

**Annual value by biotic and abiotic ecosystem services, UK and constituent countries, 2023**

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## Renewable electricity provisioning service

Total electricity generated by renewable sources on UK enclosed farmland increased nearly six times between 2011 and 2023, from 3,526 gigawatt hours (GWh) to 20,873 GWh, respectively. In 2023, onshore wind generated 11,022 GWh and solar generated 9,851 GWh.

## Agricultural biomass provisioning service

Agricultural biomass includes barley, oilseed rape, oats and wheat, as well as feedstocks (animal feed) and grazed biomass.

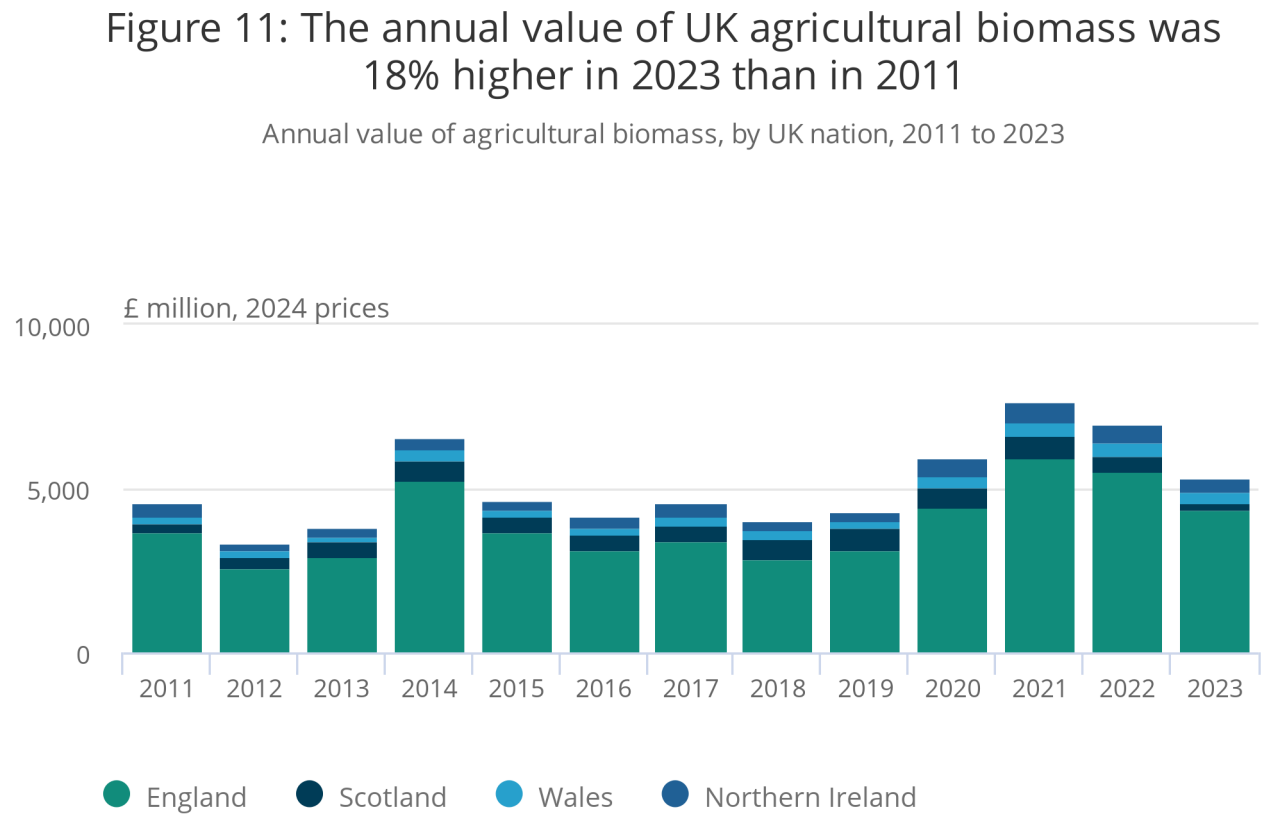
The annual value of the agricultural biomass provisioning service in the UK increased by 18% between 2011 and 2023, from £4,565 million to £5,374 million, respectively. England generated 82% of the total UK agricultural biomass annual value in 2023, Scotland 4%, Wales 6% and Northern Ireland 8%.

We calculate the monetary value for this ecosystem service using the resource rent approach. This aims to isolate the economic contribution of nature, starting from national accounts data for the whole industry using Standard Industrial Classification Crop and animal production, hunting and related service activities (SIC 01).

This industry has a wider definition than the value of crops, fodder and grazed biomass measured in the physical flows, including items such as economic activity of livestock and wider agricultural activities. More details on the approach are available in our UK habitat natural capital accounts QMG.

**Figure 11: The annual value of UK agricultural biomass was 18% higher in 2023 than in 2011**

**Annual value of agricultural biomass, by UK nation, 2011 to 2023**




**Source: Enclosed farmland natural capital accounts from the Office for National Statistics**

Physical data for agricultural biomass are available up to 2024, when the total UK production for this ecosystem service was 78 million tonnes. This is down from 82 million tonnes in 2023, and down by 8% when compared with 2011.

Feedstocks (animal feed) were the largest produced agricultural biomass in the UK in 2024, at 31 million tonnes, having surpassed grazed vegetation in most years since 2018. Grazed vegetation declined by 44% between 1999 and 2024, to 27 million tonnes.

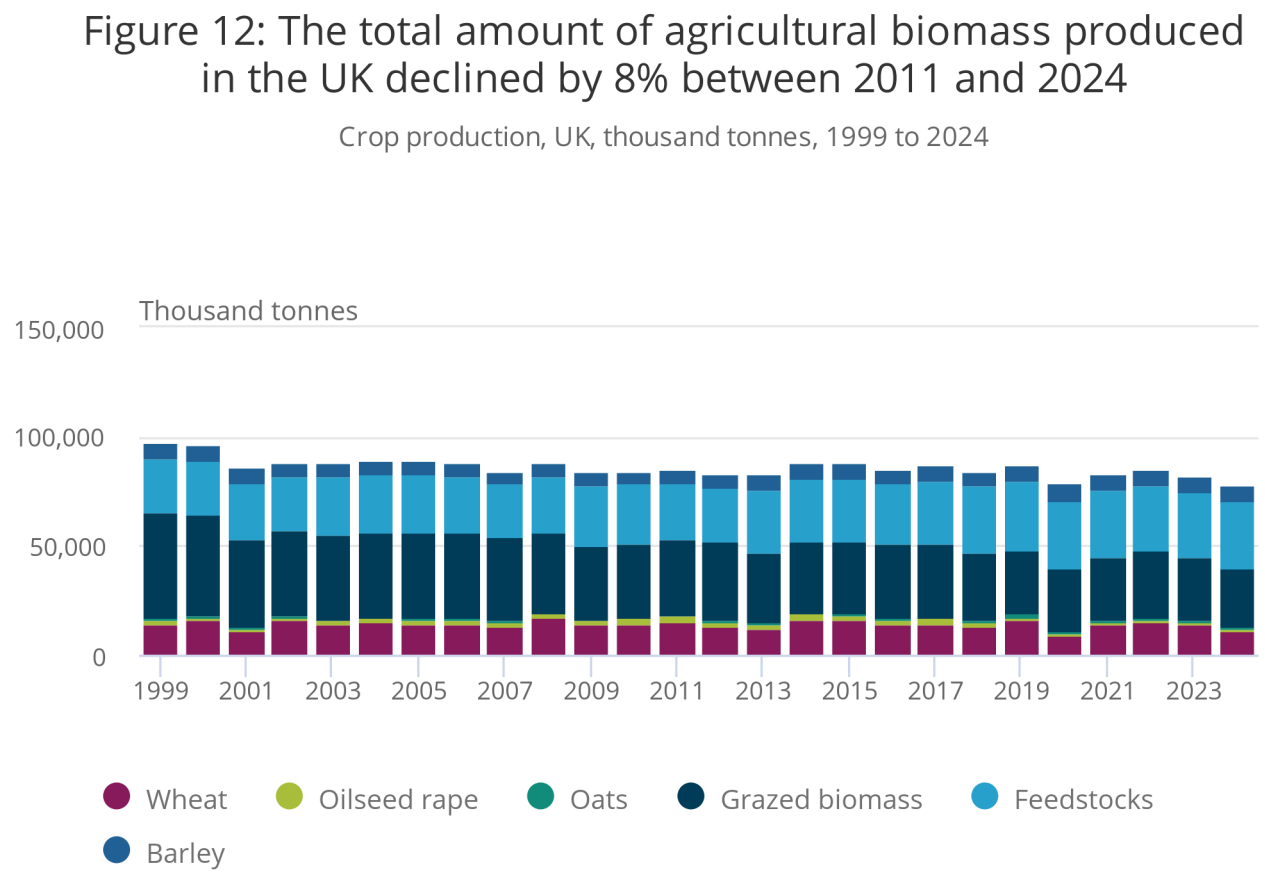
While annual figures have fluctuated, overall oilseed rape and wheat also declined, by 53% and 25%, respectively, between 1999 and 2024, with oilseed rape decreasing by 32% between 2023 and 2024.

In the same time period, wheat decreased by 20%, from 14 million tonnes to 11 million tonnes. In both cases, the decline was primarily because of falling area and yield.

Data on all crops are available in our Enclosed farmland natural capital accounts detailed summary tables dataset.

**Figure 12: The total amount of agricultural biomass produced in the UK declined by 8% between 2011 and 2024**

**Crop production, UK, thousand tonnes, 1999 to 2024**




**Source: Department for Environment, Food and Rural Affairs**

## Air pollution regulating service

The air pollution regulating service estimates nature's ability to remove non-greenhouse gas (GHG) air pollutants from the atmosphere and, therefore, avoid damage costs to health from pollutant exposure.

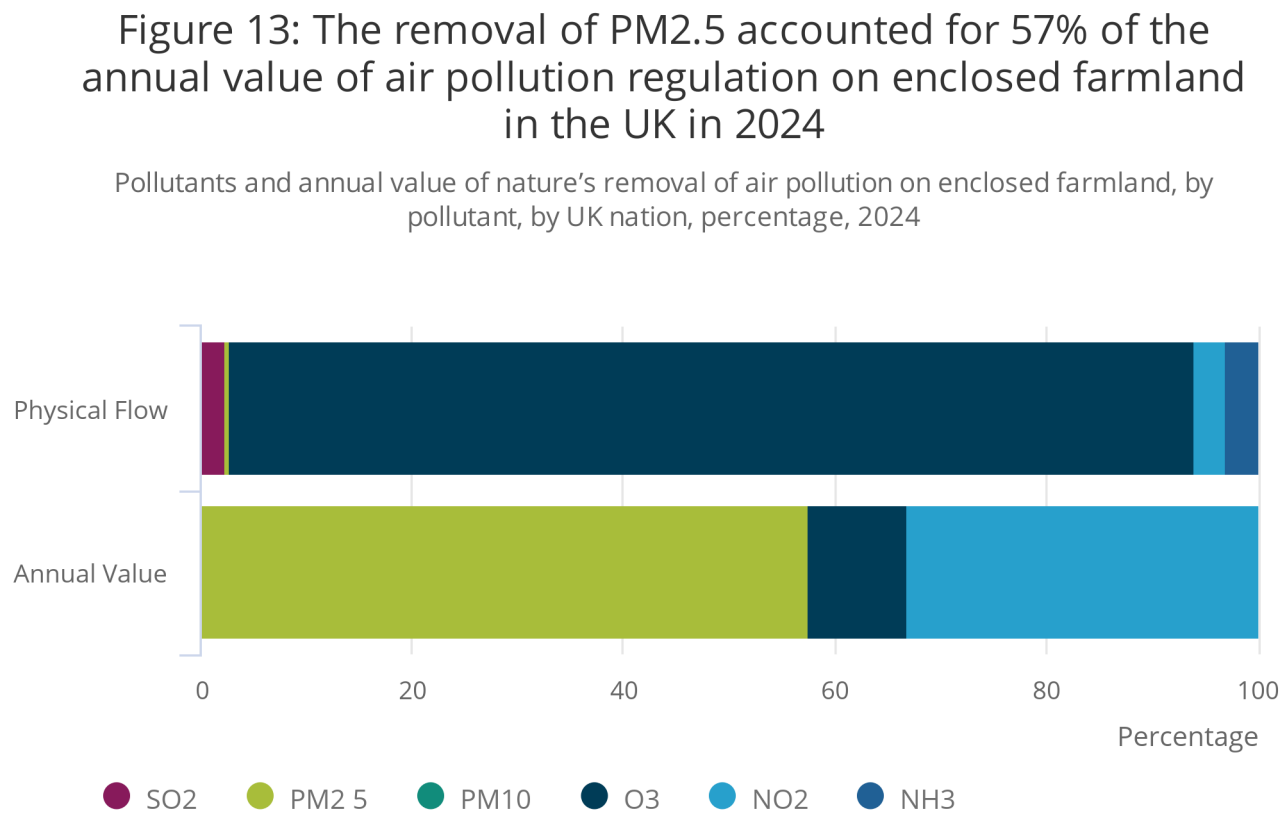
The air pollutants measured are ammonia (NH3), nitrogen dioxide (NO2), ozone (O3), sulphur dioxide (SO2), particulate matter equal to or less than 2.5 micrometres (PM2.5), and particulate matter equal to or less than 10 micrometres but more than 2.5 micrometres in diameter (PM10).

The annual value of air pollution regulation declined by 23% between 2005 and 2024. This decline was primarily because of the decrease in the emission of air pollutants, as seen for ammonia in Section 3: Enclosed farmland condition indicators. Less pollution for nature to remove means less economic damage caused by these pollutants, so a lower annual value of the removal of this pollution.

While PM2.5 is lowest in terms of amount removed (0.3% of the total), its removal has the highest annual value (57%), as it is the most hazardous to human health among the pollutants covered in these accounts.

**Figure 13: The removal of PM2.5 accounted for 57% of the annual value of air pollution regulation on enclosed farmland in the UK in 2024**

**Pollutants and annual value of nature's removal of air pollution on enclosed farmland, by pollutant, by UK nation, percentage, 2024**




**Source: Enclosed farmland natural capital accounts from the Office for National Statistics and UK Centre for Ecology and Hydrology**

## Greenhouse gas regulating service

This service measures the ability of the UK's enclosed farmland to remove GHGs, such as CO2, from the atmosphere. It measures net emissions as overall GHG sequestered minus GHG emitted by the enclosed farmland habitat. The annual and asset values for GHG regulating are based on the cost of mitigating the impacts of these emissions.

To produce these estimates, we use data compiled by the Department for Energy Security and Net Zero (DESNZ) for their annual greenhouse gas inventory to the UN. These estimates reflect changes in carbon stored in the environment, led by land use and land use change, using sectors (such as forest, cropland and grassland) from the Land Use, Land Use Change and Forestry (LULUCF) Territorial Emission Statistics (TES), described in DESNZ's Mapping greenhouse gas emissions and removals for the LULUCF sector report (PDF, 6.4MB).

We map TES sectors to the habitats in our Natural Capital Accounts. For the enclosed farmland habitat, we look at net emissions from two TES sectors, bioenergy crops and cropland mineral soils under land use change (LUC).

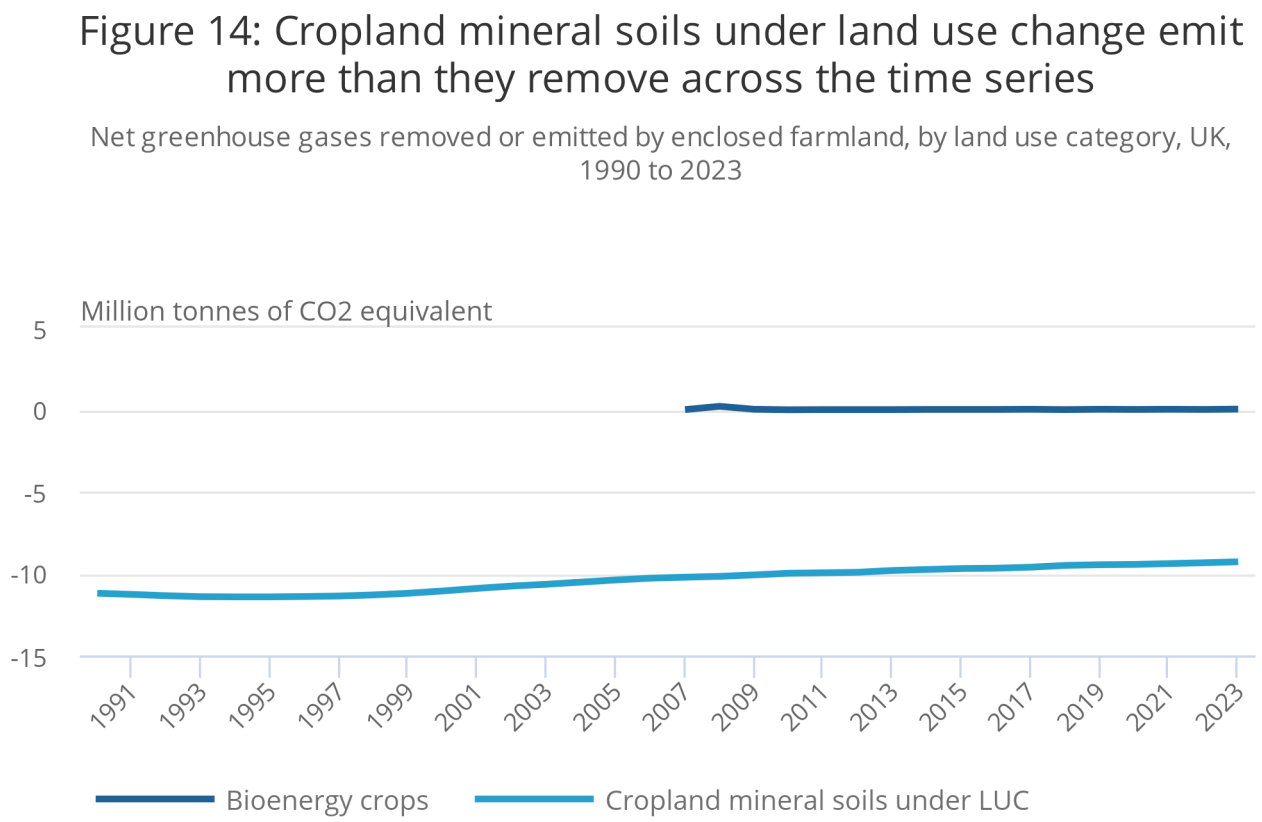
Bioenergy crops include plants with high rates of photosynthesis, a process which removes CO2 from the atmosphere, and cause minimal soil disturbance as their roots can stay in the ground for decades. Cropland mineral soils under LUC are often CO2 sources because soil used for food sources is often disturbed by ploughing and harvesting, activity which releases CO2 back into the atmosphere.

The annual value of this service was negative £3 billion in 2023. This is because enclosed farmland in the UK emitted more GHGs than it sequestered that year, as has been the case since the beginning of the time series, with a net emission of 9 million tonnes of carbon dioxide equivalent (CO2e).

The UK's GHG net emissions from enclosed farmland decreased by 17% between 1990 (11 million tonnes of CO2e emitted) and 2023 (9 million tonnes of CO2e emitted).

**Figure 14: Cropland mineral soils under land use change emit more than they remove across the time series**

**Net greenhouse gases removed or emitted by enclosed farmland, by land use category, UK, 1990 to 2023**




**Source: Department for Energy Security and Net Zero, and the National Atmospheric Emissions Inventory**

**Notes:**

1. Positive values indicate removal of greenhouse gases; negative values indicate emission of greenhouse gases.
2. Net refers to the overall greenhouse gases sequestered minus the greenhouse gases emitted by enclosed farmland.
3. Bioenergy crops data are for England and Northern Ireland only; comparable data are not available for Scotland and Wales.
4. LUC refers to land use change.
5. Much of the cropland in Scotland has higher soil carbon stocks and is on high carbon storage mineral soils; historic land use change from grassland to cropland has therefore typically resulted in higher emissions.
6. The underlying data for cropland mineral soils contain a high level of uncertainty in the modelling.

Since 2013, UK bioenergy crops have consistently captured more GHGs than they have emitted, with a net sequestration of 28,152 tonnes of CO2e in 2023. By contrast, cropland mineral soils under LUC have consistently emitted more GHGs than they have removed since 1990, emitting 9.3 million tonnes of CO2e net in 2023.

## Recreation (health benefits) service

Spending time in nature can have a positive effect on health, with people who spend at least two hours a week in nature reporting improved health outcomes, according to the 2016 article Recreational physical activity in natural environments and implications for health: A population based cross-sectional study in England, by White and colleagues.

In the UK in 2023, 3.3 million people benefitted from time spent in enclosed farmland, out of 19.9 million people gaining benefits from spending time in nature across all UK habitats.

The annual value of health benefits from recreation on enclosed farmland was £1 billion in 2023.

Table 4: Physical flow and annual value of recreation (health benefits), 2023

| | Physical flow (million visits) | Annual value (£ million, 2024 prices) |
|---|---|---|
| **England** | 2.9 | 1,140 |
| **Scotland** | 0.2 | 63 |
| **Wales** | 0.1 | 57 |
| **Northern Ireland** | 0.1 | 27 |
| **UK** | 3.3 | 1,287 |

Source: Enclosed farmland natural capital accounts from the Office for National Statistics

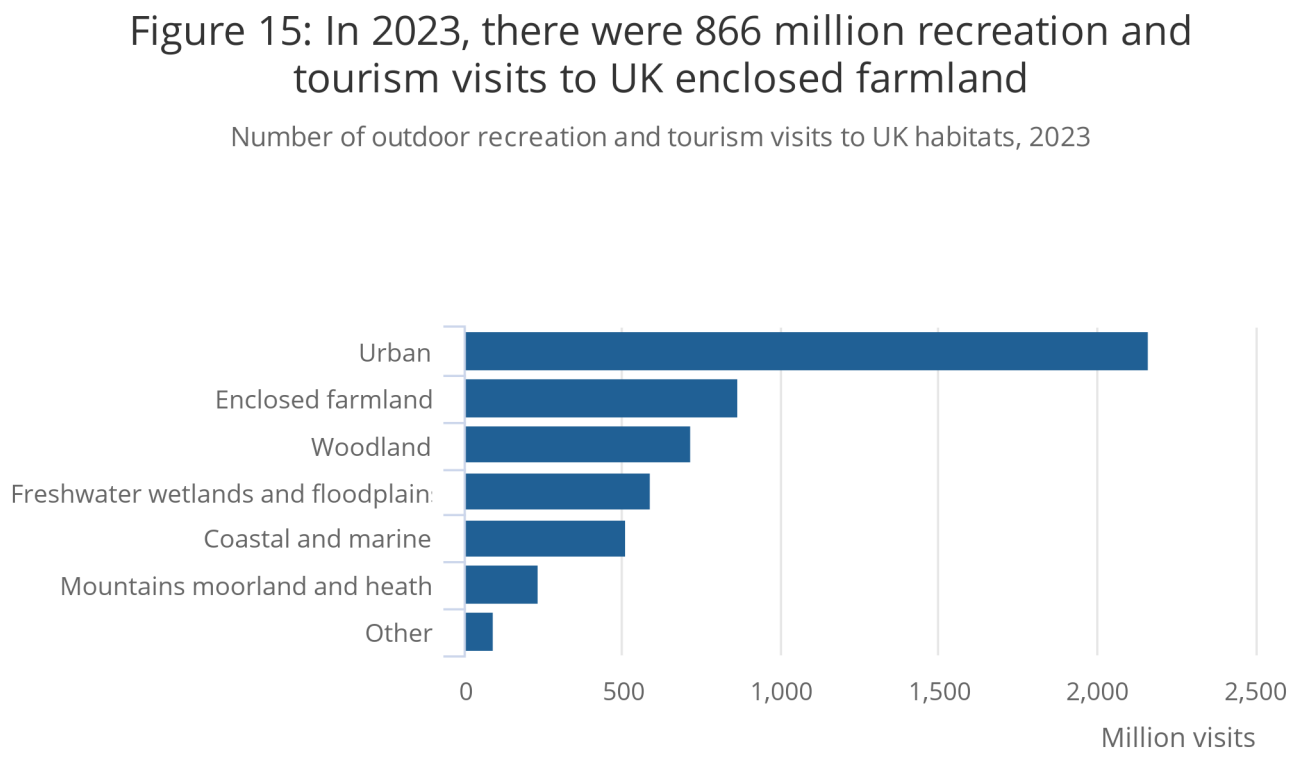
## Recreation and tourism (expenditure) service

In the UK, there were 866 million outdoor recreation and tourism visits to enclosed farmland in 2023, second only to urban green spaces, with 2 billion visits.

The annual value of visits to enclosed farmland was £895 million in 2023. That was £687 million in England, £34 million in Scotland, £70 million in Wales, and £43 million in Northern Ireland.

**Figure 15: In 2023, there were 866 million recreation and tourism visits to UK enclosed farmland**

**Number of outdoor recreation and tourism visits to UK habitats, 2023**




**Source: Monitor of Engagement with the Natural Environment Survey and People and Nature Survey from Natural England, Welsh Outdoor Recreation Survey from Natural Resources Wales (NRW), People and Nature Survey Wales from NRW and Natural England, Scottish Recreation Survey and Scotland's People and Nature Survey from NatureScot, and People in the Outdoors Monitor for Northern Ireland from Outscape**

## Education

There are a wide range of educational opportunities on UK farmland, including farm visits for children, accredited training for farmers and teachers, and land-based colleges and universities.

Linking Environment and Farming (LEAF)'s Education and Public Engagement page reported that they worked with 26,521 young people on farms and in schools, while 1,497 teachers benefitted from education specialist knowledge and training on farms in 2024.

Since the start of the Open Farm Sunday initiative in 2006, more than 3.25 million people have visited over 6,000 farm events held across Great Britain, building important connections between society and food producers.

## Asset values

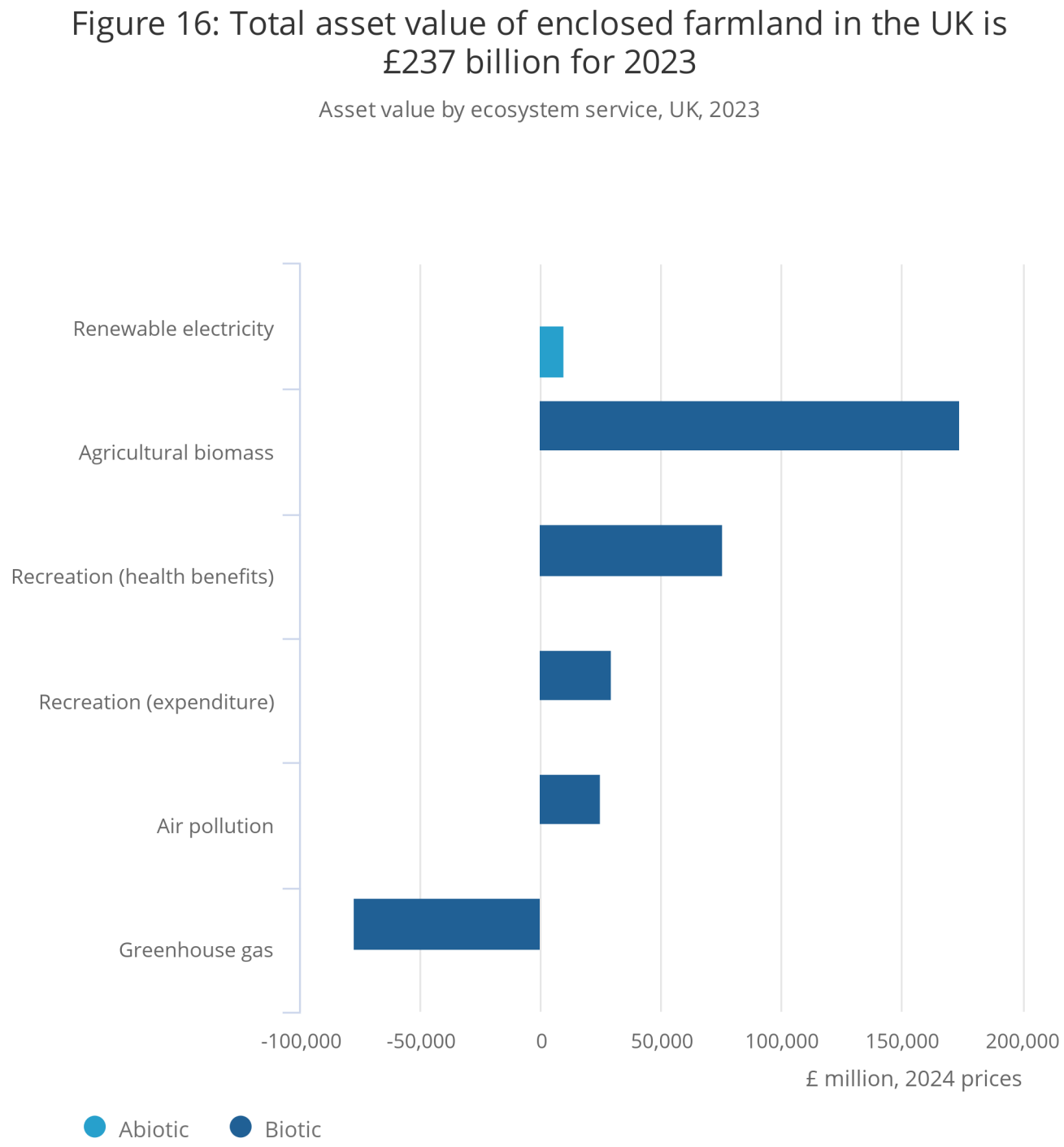
While annual valuations look at a given year, asset values measure the value of services from, or stock of, natural resources in terms of the future expected supply and use over a reasonably predictable time horizon.

The overall asset value of enclosed farmland in the UK was £237 billion in 2023, with £228 billion being from biotic services and £10 billion being from abiotic services (renewable electricity).

The highest asset value in enclosed farmland in the UK was from agricultural biomass, which had an asset value of £175 billion in 2023.

**Figure 16: Total asset value of enclosed farmland in the UK is £237 billion for 2023**

**Asset value by ecosystem service, UK, 2023**




**Source: Enclosed farmland natural capital accounts from the Office for National Statistics**

# 5 . Data on enclosed farmland natural capital accounts, UK: 2026

Enclosed farmland natural capital accounts, UK: summary tables
Dataset | Released 8 July 2026
Summary data breakdowns of the economic and social value of natural resources to the UK's economy and people.

Enclosed farmland natural capital accounts, UK: detailed summary tables
Dataset | Released 8 July 2026
Detailed data breakdowns of the economic and social value of natural resources to the UK's economy and people.

# 6 . Glossary

For more detail on these accounts, please see our UK natural capital habitat accounts quality and methods guide.

## Asset

A natural asset is a resource that can generate goods or services to humans into the future.

Asset valuation estimates the stock, or stream, of services that are expected to be produced by the natural resource over a reasonably predictable time horizon.

## Ecosystem services

Ecosystem services estimate the contribution of natural assets to the economy and society in the UK.

This includes provisioning services, such as food, regulating services, such as pollution removal, and cultural services, such as recreation.

## Physical flow

The physical flow of a natural asset is the measure of its output in units appropriate to the goods or services.

This differs from the annual value and asset value, which measure the monetary value of a natural resource.

## Biotic

Ecosystem services that are produced by the living environment are referred to as biotic.

## Abiotic

Services that are not produced by the living environment are referred to as abiotic. In some cases, these were produced by the living environment, but this is no longer the case. Examples include oil, gas and some minerals.

## Habitat generalist

Species that can exploit a variety of environments, or do not rely on one specific environment.

## Habitat specialist

Species that can survive mostly or exclusively in one or a few habitats.

# 7 . Data sources and quality

In this bulletin, we present accounts for the enclosed farmland habitat in four sections:

- area of enclosed farmland in the UK (extent account)
- indicators of the quality of ecosystems and their ability to continue supplying services in the enclosed farmland habitat (condition account)
- quantity and value of services supplied by enclosed farmland ecosystems (physical and monetary ecosystem service flow accounts)
- value of enclosed farmland ecosystems as an asset, representing the stream of services expected to be provided over the lifetime of the asset (monetary asset account)

More information on strengths, limitations, appropriate uses, and how the data were created is available in our UK habitat natural capital accounts quality and methods guide (QMG) and our UK natural capital accounts QMG.

We use a wide variety of sources to create our estimates of UK natural capital on enclosed farmland.

These accounts have been compiled in line with the guidelines in the United Nations (UN)'s System of Environmental-Economic Accounting (SEEA) Central Framework and the UN SEEA Ecosystem Accounting framework. These relate to the wider framework of the system of national accounts. We have published our interpretation of the UN guidance used to produce our habitat natural capital accounts in our Principles of UK natural capital accounting: 2023 methodology.

## Official statistics in development

These statistics are labelled as "official statistics in development". Until September 2023, these were called "experimental statistics". Read more about the change in the guide to official statistics in development.

We frequently review the methods and data sources of these statistics to ensure the accounts use the most appropriate data sources available and that our methods are still suitable.

# 8 . Related links

Woodland natural capital accounts, UK: 2026
Dataset | Released 26 February 2026
Natural capital accounts containing information on the extent and ecosystem services for woodlands in the UK.

UK natural capital accounts: 2025
Bulletin | Released 5 December 2025
Estimates of the economic and social value of natural resources to the UK's economy and people.

Marine and coastal margins natural capital accounts, UK: 2025
Bulletin | Released 8 August 2025
Natural capital accounts estimating the extent, condition, and annual and asset value of biotic (living) and abiotic (non-living) ecosystem services for marine and coastal margins habitats in the UK.

Urban natural capital accounts, UK: 2023
Bulletin | Released 7 September 2023
Natural capital accounts estimate habitat extent, condition indicators, ecosystem services and asset value of urban areas 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. Official statistics in development.

# 9 . Cite this bulletin

Office for National Statistics (ONS), released 8 July 2026, ONS website, statistical bulletin,Enclosed farmland natural capital accounts, UK: 2026