

Environmental Studies FACT SHEET



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The value of nature in the UK

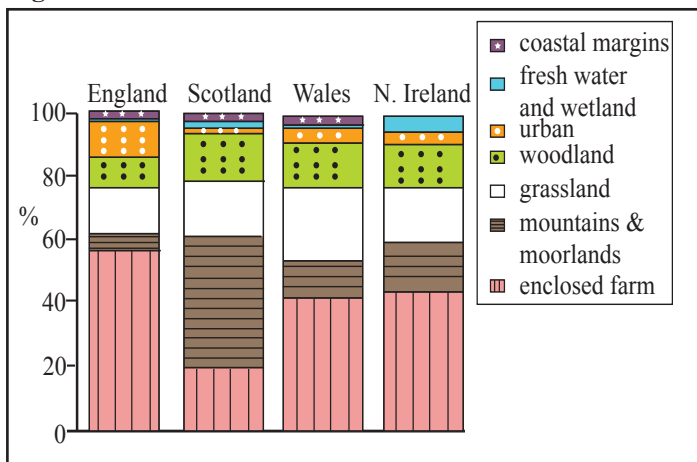
According to the National Ecosystem Assessment (NEA) the UK's lakes, forests, parks and wildlife are worth billions of pounds. Indeed, it is claimed that the natural world is vital for human existence, not only in providing food, water and air, but also for the cultural and spiritual benefits that it provides.

Economic benefits include food production, which utilizes insects for pollination, earthworms for mixing the soil, and soil microbes for recycling nutrients. The value of pollinating insects has been calculated to be £430 million, and the value of wetlands, which help to provide clean water, at £1.5 billion.

The UK, its people and its ecosystems

Ecosystems and ecosystem services constantly change as a result of demographic, economic, social and cultural factors. For example, since the 1940s there has been intensification of agriculture at the expense of many habitats, including wetlands, forests and grasslands. The benefits of ecosystems varies across the UK (Fig. 1).

Fig. 1 The benefits of nature



The report identifies eight main habitats in the UK (mountains, moorlands and heaths; semi-natural grassland; enclosed farmland; woodlands; freshwater e.g. open water, wetlands and flood plains; urban; coastal margin; marine) and the goods and services derived from each. The goods and services derived from mountains, moorlands and heaths and those from woodlands are shown in the table opposite

Types of ecosystem service

Supporting services

These are the essentials for life and include primary productivity, soil formation, and the cycling of nutrients. All other ecosystem services depend on these.

Regulating services

These are a diverse set of services and include pollination, regulation of pests and diseases, and production of goods, such as food, fibre and wood. Other services include climate- and hazard-regulation and water quality regulation.

Provisioning services

These are the services people obtain from ecosystems such as food, fibre, fuel (peat, wood and non-woody biomass) and water from aquifers, rivers and lakes. Goods can be from heavily managed ecosystems (intensive farms and fish farms) or from semi-natural ones (such as by hunting and fishing).

Cultural services

These are derived from places where people interact with nature, providing cultural goods and benefits. Open spaces – such as gardens, parks, rivers, forests, lakes, the sea-shore and wilderness – provide opportunities for outdoor recreation, learning, spiritual well-being and improvements to human health.

Ecosystem services		
	Mountains, moorlands & heaths	Woodlands
Provisioning services	Food* Fibre* Fuel* Freshwater*	Timber* Species diversity* Fuelwood* Freshwater*
Regulating services	Climate regulation† Flood regulation† Wildfire regulation† Water quality regulation† Erosion control†	Climate regulation† Flood regulation† Erosion control† Disease and pest control† Wildfire regulation† Air and water quality regulation† Soil quality regulation† Noise regulation†
Cultural services	Recreation and tourism* Aesthetic values* Cultural heritage* Spiritual values* Education* Sense of place* Health benefits*	Recreation and tourism* Aesthetic values* Cultural heritage* Employment* Education* Sense of place* Health benefits*

Key

Items marked * denote good

Items marked † denote services

(The supporting services, including primary production and nutrient cycling, are not listed for the individual habitats as they are considered necessary for the production of all other ecosystem services.)

UK National Ecosystem Assessment

According to the NEA, although the natural world provides many benefits including food supply, water supply, climate regulation and breakdown of waste products, we undervalue nature. Some of the ways we benefit from nature are non-quantifiable and include recreation and long-term health.

Moreover, the way in which ecosystems have been used has changed over the last sixty years or so. Population increase and rising standards of living in the UK have contributed to the huge growth in agricultural production. It has also, however, contributed to the decline in ecosystem services such as air-, water- and soil-quality.

Although some UK ecosystems are delivering services well, there are others which are showing long-term decline. Those that are in decline include marine fisheries, wild species diversity and soil quality. Ecosystem services are weakened when the extent of habitat is reduced.

The UK NEA report believes that the UK's population will continue to grow (by about 10 million by 2022) and that demand for services will increase. In addition, climate change will affect the ability of some ecosystems to deliver services. Extreme weather events (droughts as well as storms) may reduce food output whereas the demand for food will continue to increase.

Ecosystem services associated with mountains, moorlands and heath

Photo 1 Moorland ecosystem, Northumberland



Mountains, moorlands and heathlands (MMH) account for about 18% of the UK's land-use and form the largest area of natural and semi-natural landscape in the country. However, there have been substantial changes in the extent of MMH habitats since 1945 – much of the heathland has been built upon and much moorland has been converted to pastoral land and coniferous plantations. About 70% of the UK's drinking water comes from MMH habitats which act as a buffer against the effects of atmospheric point- and non-point-pollution. About 40% of soil carbon is obtained from MMH habitats, mainly in upland peaty soil. Mountains, moorlands and heathlands are well-loved landscapes which offer a breathing space for people. MMH are also important cultural landscapes and are steeped in history. They are also important havens for biodiversity.

Ecosystem services associated with woodland

Photo 2 Deciduous woodland carpeted in bluebells – more than just a cultural service



Since 1945 the area of woodland has doubled to cover about 12% of the UK land area, but is well below the EU average of 37%. There is very little, if any, truly natural woodland in the UK. Most has been influenced by human activity. Factors affecting UK woodland include climate change, pollution, government policy on land use and global trade in wood products.

UK timber production has increased from 4% of UK consumption of timber, pulp and paper in the 1940s to 20% of UK consumption of timber, pulp and paper in 2011. Woodlands are highly valued by people for social and cultural services – there are approximately 300 million day visits to woodlands each year.

Carbon sequestration is one of the most important services provided by woodlands. The social value of net carbon sequestration is double the market value of wood production per ha.

Conclusion

Ecosystems provide extremely beneficial services to people. Without healthy ecosystems, the health of the world's population is compromised. Even in the UK, the value of nature is recognized and beginning to be quantified.

Activities

1. Distinguish between the terms (i) supporting services, (ii) regulating services, (iii) provisioning services and (iv) cultural services.
2. What is the estimated economic value of (i) pollinating insects and (ii) wetlands?
3. What are the provisioning services associated with woodlands?
4. What regulating services do mountains, moorlands and heaths provide?
5. What are the likely cultural services from urban ecosystems?
6. Suggest the likely provisioning services from enclosed farmland.

Suggested answers

1. (i) Supporting services are the essentials for life and include primary productivity, soil formation, and the cycling of nutrients. All other ecosystem services depend on these.

(ii) Regulating services are a diverse set of services and include pollination, regulation of pests and diseases, and production of goods, such as food, fibre and wood. Other services include climate and hazard regulation and water quality regulation.

(iii) Provisioning services are the services people obtain from ecosystems such as food, fibre, fuel (peat, wood and non-woody biomass) and water from aquifers, rivers and lakes. Goods can be from heavily managed ecosystems (intensive farms and fish farms) or from semi-natural ones (such as by hunting and fishing).

(iv) Cultural services are derived from places where people interact with nature, providing cultural goods and benefits. Open spaces – such as gardens, parks, rivers, forests, lakes, the sea-shore and wilderness areas – provide opportunities for outdoor recreation, learning, spiritual well-being and improvements to human health.
2. (i) Pollinating insects £430 million.

(ii) Wetlands £1.5 billion
3. Provisioning services associated with woodlands include timber, species diversity, fuelwood, and freshwater.
4. The regulating services that mountains, moorlands and heaths provide include climate regulation, flood regulation, wildfire regulation, water quality regulation and erosion control.
5. The cultural services associated with urban ecosystems are likely to include recreation and tourism, aesthetic values, cultural heritage, spiritual values, education, sense of place and health benefits.
6. The provisioning services associated with enclosed farmland are likely to include food, fibre, biofuels and fresh water.