

Why we need more trees in the UK



Friends of
the Earth

For nature, climate and health, to reduce the enormous harm caused by UK timber imports, and to enable resilient farmer-friendly farming.

“This is an important report which raises issues that need much more discussion, for example how can the UK replace biodiversity-damaging imports from places such as China, Russia and Brazil with home-grown timber, and at the same time ensure farmers are fully involved and benefit from the land-use changes needed”

Lord Deben

“We applaud the call for the UK to produce much more home-grown timber to reduce the significant biodiversity harm caused by rising imports from countries such as China, Brazil and Russia. Confor is ready and eager to discuss with the government, conservationists and farmers how a much-expanded industry can deliver jobs, carbon and nature benefits”

Stuart Goodall, Chief Executive of Confor

“This report highlights the important role that farming can play in integrating more trees and woodlands across our landscapes. To achieve this aim we must put farmers at the centre of this transition and ensure they are given the necessary support, including finance, tools and advice to make land management decisions that deliver climate mitigation, biodiversity recovery and sustainable food production. It emphasises the role agroforestry can play in combining trees with food production to make farming more resilient, while making a valuable call for a just transition in our use of land to ensure the benefits are shared by rural communities.”

Martin Lines, farmer and UK Chair of Nature Friendly Farmers Network

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Introduction



The government is setting a long-term target for tree canopy cover in England, primarily to promote biodiversity (Wales, Scotland and Northern Ireland have their own targets). It is proposing to increase the target from the current modest 14.5% to the slightly more ambitious 17.5% by 2050 and includes woodland over 0.5 hectares, smaller woodlands, groups of trees and individual trees, such as street trees in urban areas.

Friends of the Earth argues that this target needs revisiting – and substantially increasing – not least because we must reduce timber and timber products imported from countries that pose a high risk to global biodiversity.

We recommend the government develops a comprehensive land strategy for England to ensure farmers and farming communities are not left behind in the transition to a more wooded country. We also recommend that a Timber Sector Deal is negotiated between the government, farmers, foresters, conservationists and devolved nations, so that the UK can substantially increase timber production while benefiting wildlife and farming communities.

The current government target foresees 415,000 hectares of new tree canopy cover in England by 2050, of which 278,000 hectares would be woodlands and 137,000 would be agroforestry (tree planting integrated into agriculture). This, the government says, would add 150,000 hectares of “priority habitat” outside of protected areas by 2042. However, it also says it may review the target dependent on the outcomes of the forthcoming Biomass Strategy and how policy development and take-up of agroforestry fare. We would recommend adding to this list the need to review the target considering:



- the war in Ukraine and the need to reduce trade with Russia. (In 2021, the UK imported 883,000 tonnes of wood, paper, and furniture from Russia at a cost of £295 million);
- the forthcoming climate adaptation programme; and,
- how it fails to properly consider the massive negative overseas impact on biodiversity that the UK's timber and timber product imports have, particularly from "high risk" countries such as Brazil, China, and Russia (covered in **Section 1**).

Our report, produced in part as a response to the government's [Environmental Targets consultation](#), explores why the government's proposed targets for increasing tree cover in England are insufficient. It looks at the importance of trees for nature, carbon storage, public health, resilient agriculture, timber production, and why any transition must be a just transition for farmers and local communities.

Section 2 highlights the importance of trees for wildlife. It demonstrates the importance of forest maintenance, in addition to new tree cover. The 2020 National Forest Inventory found that only 7% of Britain's 1.51 million hectares of native woodland is in favourable condition. [Data analysis for Friends of the Earth and Rewilding Britain](#) showed that allowing existing broadleaf woodlands to expand 150 metres into low-quality agricultural land (grade 3b, and excluding nature reserves, priority habitats and productive farmland) could lead to 400,000 hectares of new woodland in England at low cost.

Section 3 identifies the importance of trees for carbon storage. This is one of the driving forces for the government's target for increasing tree cover. The importance of the right tree in the right place is as true for carbon as it is for nature. Trees provide numerous other services beyond carbon storage and the Office of National Statistics' woodland natural capital study has estimated the worth of woodland to the UK economy and society at [£3.3 billion every year](#).

Section 4 considers the important role of trees for health. The mental wellbeing benefits of green spaces and trees are now more widely understood following COVID-19 lockdowns. But trees also have an increasingly vital cooling role in cities as global heating increases, and an important role in reducing flood risk from more frequent and extreme rainfall events. This section provides provisional data on tree cover levels in neighbourhoods in England.

Section 5 identifies the myriad benefits of agroforestry. These range from improving nutrient levels and carbon storage, providing shelter for livestock, and generating new income from sales of fruit, nuts, or wood. While agroforestry in the UK is an emerging practice, ultimately as much as 900,000 hectares of tree cover could be delivered through this approach – as recommended by the Climate Change Committee – which is way beyond the 137,000 envisaged in the government's draft target.

Section 6 looks at how the UK can reduce the enormous harm its import of timber and timber products is doing to biodiversity overseas. We argue that at the very least the UK should seek to eliminate imports from high-risk countries such as Brazil, China and Russia. That implies 1 million hectares of new forests planted primarily for timber production, managed in a way that is also beneficial to wildlife, and additional to the new trees and hedgerows needed primarily for wildlife restoration. We recommend that a Timber Sector Deal is negotiated between the government, farmers, foresters, conservationists and devolved nations so that the UK can substantially increase timber production while benefiting farming communities and wildlife.

Section 7 identifies how farming interests and communities should be engaged in the transition to greater levels of tree cover and how current speculative land-grabs by investors



in the carbon offset market must be prevented. It highlights the need for a land strategy for England, as well as other nations, to ensure land is used strategically to serve the UK's wider needs, and farmers and farming communities benefit from the transition and are not left behind.



1

The UK's role in global deforestation and why we need more home-grown trees

We need more trees in the UK.

Trees for nature. Trees to improve soils for farming. Trees to hold back flood waters and moderate heat in our towns and cities. Trees to suck up carbon pollution. Trees for health, wellbeing and learning.

Less talked about are the trees we need to produce more home-grown timber to use in construction.

Less than 20% of wood consumed in the UK is homegrown, the rest is imported making the UK a major global importer of timber and wood products. Wood is used for a wide variety of purposes, from housebuilding to furniture-making to paper manufacture.

The UK is the world's second largest net importer by value of forest products, with net imports (imports less exports) of £6.7 billion, after China (£27.1billion).

The amount of land needed to satisfy the UK's consumption of imported wood products has increased 3-fold since 2011, from 2.8 million hectares to 8.4 million hectares. This is equivalent to an area a third of the size of the UK.

If all these wood products came from sustainably managed forests, then perhaps we could rest easy. But they don't.

For some types of wood product, a high proportion comes from EU countries and North America. These are not without sustainability challenges, as conservation groups in those countries attest. For example, WWF and the RSPB have classified the United States and Canada as "medium-risk" countries due to their poor controls on deforestation.

Of greatest concern is the large proportion of wood products imported from Brazil, China, and Russia (Table 1). These have been identified as "high-risk" countries because of deforestation, land grabs and poor human rights. A large proportion of furniture and other finished wood products, not included in Table 1, also come from high-risk countries, with China being the major source.

According to the latest estimates, the amount of land used in high-risk countries for export of wood products to the UK is equivalent to around 1.5 million hectares, which is 18% of the total amount of land need to satisfy UK imports (for comparison, Wales is 2 million hectares in size).



Table 1. Proportion of UK wood imports (%) by type and country, 2020

	Sawn soft-wood	Sawn hard-wood	Plywood	Particle board	Fibre board	Pellets	Wood pulp	Paper and paper board
EU + Norway	93	68	16	98	90	14	57	84
North America	0	17	1	0	0	81	2	7
Brazil	0	1	20	0	0	1	33	1
China	0	0	40	1	4	0	0	1
Russia	6	2	7	1	5	3	0	1
Other	1	12	16	0	1	1	8	6

Source: Forest Research, Forestry Statistics 2021

Deforestation and human rights



Brazil

Brazil's Amazon is well known as a biodiversity hotspot. The impacts of deforestation in the Amazon have been documented for decades, including the murder of indigenous people as they seek to protect their land and wildlife. Deforestation, alongside increased global heating, threatens to transform the Amazon from a carbon-rich wildlife hotspot to grassland.

Deforestation rates have surged to their highest levels since 2006. 3.3 million hectares of natural forest was lost in 2020 alone. This rise coincides with the notorious leadership of President Jair Bolsonaro, who has struck election deals to exploit the Amazon and indigenous people's lands to meet the demands of industrial farming and mining interests.



Harvesting valuable trees is often the precursor to wider deforestation and the replacement of wildlife-rich forests with soy production or monoculture eucalyptus plantations. There are now 7.6 million hectares of eucalyptus plantations in Brazil. Wood pulp production in Brazil has tripled over the last 20 years and Brazil is now the second largest producer after the United States.

Bolsonaro is determined to nullify the land rights of indigenous people in his attempt to open up more land to logging and other activities, such as mining. Land conflicts are at a record high. Over 300 people have been murdered over the last decade.

While the UK government is producing legislation against imports from illegal logging, much of the logging driving deforestation in Brazil is legal, or will be if Bolsonaro gets his way. This illustrates the gaping hole in the UK government's approach. Without addressing all types of deforestation, ambitious plans to end tropical deforestation by 2030 that the UK and others committed to at Glasgow's COP26 international climate conference cannot be met.

China

China has passed stringent new laws to prevent logging from its own natural forests. But it has been a conduit for felled timber from outside the country, including biodiversity-rich nations such as Papua New Guinea (PNG), the Solomon Islands and Cameroon.

The abuse of land rights is rife in PNG, to the extent that experts say most of its timber exports should be considered illegal, and there are widespread human rights abuses, including forced labour and sexual abuse.

A 7-year investigation by the Environmental Investigation Agency (EIA) has revealed how a Chinese state-owned company used illegally sourced tropical woods to manufacture plywood for the EU market (including the UK) while claiming the produce was FSC-certified. The UK is a major importer of plywood.

Another EIA investigation revealed how China imported over 540,000 tons of rosewood from Ghana while bans on harvest and trade were in place. Rosewood, which is used for musical instruments as well as in luxury flooring and antique-styled furniture, is an internationally protected tree species. This illustrates how China is a source not only of illegally felled trees as plywood but also the finished products it exports, using rare and protected species from elsewhere.

In theory, China is now clamping down on the import of illegal timber with an amended forestry law, although how well implemented the law will be remains to be seen. As with the draft legislation the UK government has proposed, this law will still allow imports of legally felled trees, which will lead to large-scale deforestation in many countries, such as PNG. This completely undermines the stated aims of protecting nature, retaining forests for help in curbing climate change and respecting the rights of indigenous peoples.

Russia

Russia has more than one-fifth of the world's forests, making it the world's largest forest nation. It is also the world's largest wood exporter. In 2021, the UK imported 883,000 tonnes of wood, paper, and furniture from Russia at a cost of £295 million. Earthsight found that Russian oligarchs with close historic ties to Vladimir Putin are behind Russia's largest logging companies and wood products exporters.

Earthsight has highlighted how trees from protected areas precious for wildlife ended up for



sale as [children's furniture in retail giant Ikea](#). It says illegal logging in Russia is rampant.

Reducing imports and increasing UK production

There is a clear and pressing need for the UK to reduce its imports of wood products, particularly from high-risk countries such as Brazil, China, and Russia, as well as medium-risk countries such as the United States and Canada (see Table 1 above).

Some of this can be achieved by recycling, reusing and eliminating wasteful uses of wood, such as burning wood pellets to generate electricity. The UK's use of wood pellets has increased 9-fold over the past decade and now represents a third of all wood product imports. Much is burnt in the old and inefficient [Drax power plant](#) in Yorkshire. The electricity it generates is much more expensive than wind and solar. Wood pellets for Drax are sourced from North America and the Baltic states where significant concerns have been raised about the negative impacts on wildlife and ecosystems.

Close Drax and invest in energy efficiency

The government must close Drax and produce electricity from the UK's abundant wind and solar resources instead. There is also huge scope to cut the need to generate so much energy in the first place, by investing in the skills and jobs that could insulate homes and premises.

While avoiding the wasteful misuse of wood is an obvious first step, we should also be increasing timber use for house building and construction, to reduce the use of high-carbon materials such as cement, mortar and brick. More [innovative uses of timber](#) to replace high-carbon alternatives include car body parts, textiles and glass, which are in development.

Increase timber production

As we describe in Section 5, this shouldn't be done by planting monoculture plantations in inappropriate locations. The UK did that in the post-WWII decades and it harmed biodiversity and had negative impacts on land use.

Instead, timber production should exist as part of multi-functional woodlands where wildlife can thrive, and people can enjoy the outdoors. Woodlands that are fit for the changing climate, created in partnership with the rural community (Sections 6 and 7).

There is significant potential for woodland creation in the UK. Mapping commissioned by Friends of the Earth shows that there are [1.3 million hectares of land suitable for new trees, woodlands, and forest in England alone](#). As much as 3 million hectares could become available across the UK by reducing livestock numbers and adopting healthier diets. While much of this land could be primarily for wildlife restoration, the scale of potential land available suggests the UK should aim to use a large proportion of this for timber production so that the UK can reduce and cease imports of wood products from all high-risk countries.



2

Trees for nature restoration

Right tree, right place, right reason

The “right trees in the right place” mantra is true, but “for the right reason” should be added. We need a keener sense of how our trees, woodlands and forests are being created, planned and managed over time to ensure they play an effective role for climate, nature and other productive aims.



More trees should mean more and better wildlife. But it doesn't automatically follow, because the wrong trees in the wrong place can be harmful. Poorly sited woodlands and forests can be damaging and displace more suitable uses of land. Planting trees on peatlands is a classic example of tree policy going wrong. Monocrop plantations can denude habitat and alter soils and conditions for wild species that depend on woodland.

Having chosen the right tree species for the location and soil type, the last requirements are proper planting and ongoing management, all of which require skill and commitment over time. Poor woodland management is a lost opportunity to restore wildlife and undermines the efficacy of trees in achieving other aims, such as improved soils and storing carbon.

The need for proper woodland management

Active management and maintenance of woodlands are essential for maintaining rich and varied habitats capable of supporting other plants, insects, birds, and mammals. They can also ensure trees and woodlands play their role in other aims, such as improved soils, water and carbon storage.



Poor diversity of plants in woodlands, which can result from poor management, has impacts for other wildlife, such as many species of woodland birds and butterflies. For example, woodland flowers, liverworts, lichens and mosses will not thrive if the tree canopy is so dense that little sunlight reaches the forest floor. Ensuring adequate light requires proper planning of planting and ongoing active management including thinning, coppicing and pollarding.

Overgrazing harms woodlands but better managed grazing encourages plant species' diversity and is a form of natural regeneration. Controlled grazing by domestic livestock can be part of active woodland management and can be timed and tailored to the needs of different woodlands.

Evidence of decline

The number and range of woodland species have declined over recent decades. UK government [biodiversity indicators](#) for England show woodland butterfly species declining by 41% since 1990 and a 27% decline in breeding woodland birds such as lesser redpoll, spotted flycatcher, tree pipit and willow tit between 1970 and 2019.

A [study](#) into a big loss of wild daffodils identified a combination of the decline in woodland management, resulting in nature-rich open woodland becoming heavily shaded coppices, and a decline in grazing, allowing brambles to shade out daffodils and increase competition between plants at root-level.

The pearl-bordered fritillary, a butterfly whose preferred habitat is open woodland, has declined by 80% since 1985. Similarly, atmospheric nitrogen pollution – mainly nitrogen oxides and ammonia emissions from pig and poultry farming – harms woodlands by altering the acidity and nutrient balances of woodlands and soils.

The state of UK woodlands

As well as more ambitious tree planting, the UK must address the poor state of existing woodlands.

The National Forest Inventory (NFI) identifies the size, distribution and composition of woodlands and forests, including their [woodland ecological condition](#) (WEC). WEC uses 15 ecological indicators to assess the condition of woodlands and forests as either favourable, intermediate, or unfavourable.

The 2020 NFI found that only 7% (109,000 ha) of Britain's total area of 1.51 million hectares of native woodland is in favourable condition, 92% (1.4 million hectares) in intermediate condition and 1% (16,000 ha) in unfavourable condition.

Poor management is the main reason for native woodlands being in unfavourable or intermediate condition although other factors play a role. Damage by deer and rabbits is a factor in 40% of woodland habitat being in unfavourable condition. Pests and diseases cause 3% of native woodland to be in a similar state. Non-native woodland was found to be in worse overall condition than native woodland.

Clearly, it makes sense for all woodlands and forests to be well planned and managed so that they are fully functioning to deliver nature, carbon and productive timber aims.

Long-term decline in biodiversity

The declining condition and management of woodlands are not new, as studies have charted



over recent decades. A study of the long-term ecological change in 103 woodlands between 1971 and 2001 found that overall richness of species in the ground flora had declined markedly, decreasing 36% per plot and 12% per wood.

Specialist woodland species such as wood sorrel, primrose, sanicle and yellow archangel had decreased in frequency, with 56 of 72 woodland specialists becoming significantly less common. There were also small increases in frequency of shade-tolerant species such as beech and holly, and a general shift towards more shade-tolerant vegetation.

Proper woodland skills and management would ensure the right balance of more shaded and more open woodland settings that can support a range of wild species that need more light.

The greatest diversity of woodland flora occurs in woodland with low nutrient levels. Where woodlands have high nutrient levels, species such as nettle, bramble and wild garlic outcompete other plants. Nitrogen enrichment from atmospheric pollution is altering the nutrient load of woodlands and soils. This has led to a smaller range of species, instead of the diverse woodland species that should characterise UK woodlands.

Stopping nutrient run-off from farmland, the release of nitrates and ammonia from transport, and agriculture's use of fertilisers and slurry would help mitigate this impact, as would proper woodland management practices, such as coppicing, that encourage nutrient depletion.

Getting it right

There is huge scope to turn round the decades-long declining state of UK woodlands in support of the nation's aims to restore nature, improve soils, reduce flood risk and store carbon.

More and better managed woodland is a win-win but requires proper skills and management to have lasting investment and attention. This is beginning to be recognised, but government ambitions for higher tree-planting targets are being obstructed by a lack of skills, and uncertainty that farmers, landowners, and the forestry sector will scale up as needed. This is resulting in current targets for tree planting and woodland creation in England being lower than they need be, with knock-on effects for the rest of the UK.

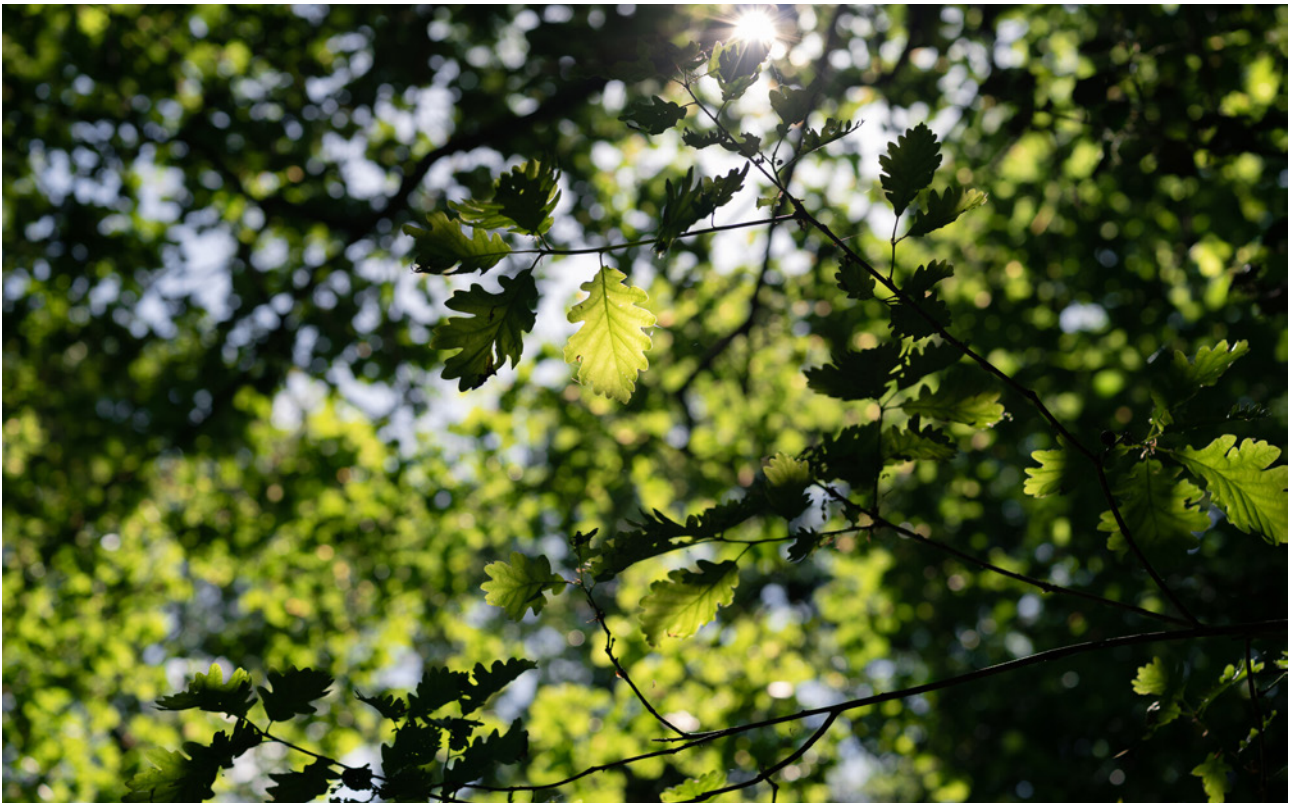
Good planning and ongoing management also apply to trees in the wider countryside and in the streets and parks of the nation's towns and cities. Trees and hedgerows are important for shade, they hold back potential floodwaters and support wildlife with shelter and food. Our wildlife needs green corridors to move between different habitats across the seasons and to enable them to cope with a changing climate.



3 Trees for carbon sequestration

More trees are not just a good thing for nature. They should be part of any credible action to address climate change – both for mitigation, like drawing down and storing carbon from the atmosphere, and adaptation, like curbing flooding and reducing heat in urban areas.

The choice of trees, their location and management are all important if these benefits are to be realised and the good intentions behind tree planting are not to be wasted.



Drawing down carbon

Sitka spruce and other faster-growing coniferous species have dominated the UK's post-WWII push for mass monocrop forestry, and some faster-growing tree species can play a role in sequestering carbon in relatively short timescales.

However, slower-growing species store more carbon per tree over their longer lifetime. Native oaks also support many more wild species than any other UK tree species. Slower-growing broadleaf trees typically take around 90 years to reach maturity, compared with around 60 years for conifers.

Having been damaged or destroyed by development and land-use pressures, our ancient woodlands (those aged 400+ years old) now form only a quarter of UK woodlands and cover just 3% of land. And yet they have a disproportionate effect on carbon levels by helping store a large proportion (77 million tonnes) of the 213 million tonnes of carbon stored within UK forests.



That illustrates the importance of protecting and improving existing trees and woodlands alongside action to plant new trees. Indeed, “Protect existing forests first” is the first of the 10 golden rules for restoring forests by scientists at the Royal Botanic Gardens, Kew.

Careful planning and management are needed to avoid the temptation of using mass monocrop plantations of one or two coniferous species. These may help to draw down carbon in the short term but will undermine aims to restore soil quality and habitats for wildlife.

No offsetting

There is also the temptation to use tree-planting schemes and forested land to “offset” the ongoing failure to end dependence on fossil fuels. Yet carbon emissions from burning fossil fuels will remain in the atmosphere for hundreds or thousands of years, whereas carbon locked up in forests is less permanent due to losses from pests, fires, storms and human activities. In other words, you cannot offset fossil fuel emissions with tree planting. And attempting to do so risks higher cumulative emissions and provides an excuse to further prolong the use of fossil fuels.

Trees and climate

In the UK, tree planting will have a net positive effect for the climate, but only if we avoid tree planting on peat soils, which releases carbon locked up in peat when previously waterlogged areas dry out. In England 51,447 hectares of woodland are on deep peat (more than 40 cm in depth) and 60% of this is conifer plantation. New guidance is being produced by Natural England about trees and peat, which will in effect be a presumption against woodland creation on peat soils.

Trees capture carbon through photosynthesis, where carbon is sequestered from the air and stored in soils and the biomass of trees – trunks and root systems. According to Forest Research, around 70% of carbon in woodlands is stored in woodland soils, 15% in biomass above ground, and the rest in biomass below ground, litter or dead wood. Carbon is also released through respiration, and wood and leaf litter decay.

Other greenhouse gases are also exchanged between forests and the atmosphere. For example, waterlogged soils can produce methane, but drier forest soils usually absorb it, while the exchange of nitrous oxide is usually very small compared with agriculture.

As well as capturing carbon, forests can have additional important biophysical effects on regional climate through processes of evaporation, transpiration and the albedo effect. Forests can have a cooling effect, by intercepting more rainfall than other, shorter types of vegetation, which then evaporates. Forests transpire more water from deep soils, particularly during dry periods, which helps cool the air.

Surface albedo is the proportion of solar radiation reflected back into the atmosphere from the earth’s surface. Generally, the lighter the surface, the more solar radiation is reflected. Changes in land use can therefore impact albedo. For example, an evergreen conifer forest with a dark green permanent canopy and dense branches will tend to absorb more solar radiation than if the same land had been used to grow arable crops. That can have a warming effect which can, potentially, count against some of the carbon sequestration benefits.

The scale of the albedo effect will vary by broad climatic region and vegetation type. In the UK there will be a net benefit from woodland creation. In the arctic the reverse may be true, as the strong albedo effect of snow is lost as trees grow.



Tree species for carbon storage

Some tree species will be more effective for carbon sequestration than others. Efficacy depends on factors like the age of the trees, their location, and how they are managed. Forest Research's [Woodland Carbon Code](#) uses a carbon model to predict how much CO₂ trees may capture and store at a given location, taking into consideration tree planting density and how well they are managed.

[Forestry Commission research](#) has found some tree species with highly dense wood are especially effective for storing carbon. For example, in lowland areas oak stores 118 tonnes of carbon per hectare over its average 300-year lifetime, while Scots pine stores 91 tonnes per hectare over an average 135-year lifetime. In contrast, in upland areas, fast-growing Sitka spruce stores an average of 78 tonnes per hectare over an average 110-year lifetime, with Scots pine storing 74 tonnes over a 140-year lifetime.

The Forestry Commission has recently [licensed the planting in Suffolk and Norfolk of 468 hectares of hybrid Paulownia trees](#), which are said to be 10 times faster than native forests at storing carbon. These hybrids have been bred to be infertile to prevent them becoming invasive. The company behind the project, [Carbon Plantations](#), says these trees are being grown for carbon sequestration and timber production, and it will plant 15% native trees alongside the Paulownia trees. It may look to sell sequestered carbon for offsets.

Trees and climate projections

More trees are needed for a range of reasons, not least carbon storage and resilience to changing conditions. But a changing climate will also be challenging for trees, woodlands and forests, as they are susceptible to drier conditions in some areas, more frequent storms in others and the influx of new pests and diseases.

It is not a straightforward picture. For example, a longer and warmer growing season may mean higher rates of tree growth leading to higher carbon sequestration. But more frequent droughts would increase the risk of trees being lost to wildfires. More droughts would affect species growing in lighter and shallower soils, such as those found in southern UK, and influence the yields of tree species relied on for timber production, such as Sitka spruce, Scots pine and Pedunculate oak.

Such complexity requires careful management, sound land use, and resilience and biosecurity policies if the trees planted now are to be resilient enough to play their full part in climate mitigation over their lifetime.

Smarter land use

In its 2019 Net Zero report, the UK Climate Change Committee (CCC) proposed a "Further ambition" scenario of increasing UK woodland cover from 13% to 17% by 2050. In its 2018 land use report, the CCC's "Stretch scenario" pushed that to 19%, which would equate to about 1.5 billion new trees.

A smart land-use strategy will help avoid these trees being planted in a random and counter-productive way. It would inform good decisions about how all types of land use will now contribute to climate, nature and other aims, as well as inform what types of trees should be planted. The UK government has promised in its food strategy that it will publish a [land-use framework for England](#) in 2023, although the scope of this is as yet unclear.



UK land use has mainly been a matter of ownership, economics and productivity, which has helped drive the diminution of nature, reduced soil quality and resulted in a general lack of resilience to changing climate. Indeed, the CCC says:

“The current approach to land use is not sustainable. If land continues to be used as it has been in the past, it will not be able to support future demand for settlements or maintain current per capita food production; nor will we be prepared for the warming climate... There is now an opportunity to define a better land strategy that responds fully to the challenge of climate change...”

“A future land strategy that delivers the UK’s climate goals whilst balancing other pressures will require fundamental changes to how land is used. Incremental changes will not deliver climate goals, but bold decisions can ensure land continues to supply essential goods and services and plays a bigger role in meeting climate objectives...”

Looking at farmland, the CCC has identified that improved farming practices, such as better soil and livestock management, could deliver carbon-emission reductions of up to 9 MtCO₂e (million tonnes of CO₂ equivalent) by 2050 compared with 2016 levels, although agriculture would remain a high-emitting sector. The committee says higher emission savings of 35-80% (20-40 MtCO₂e) could be achieved by releasing agricultural land for other uses, such as woodland creation and agroforestry “while maintaining current per capita food production.”

Not just carbon

The UK needs many more trees for carbon sequestration. But carbon sequestration alone cannot determine which species are planted. Fast-growing Paulownia trees may have a place – particularly in displacing imports of timber products from countries such as Russia, China, and Brazil – but trees are also needed for nature. And the location of tree planting needs to be managed, so as not to increase our dependency on food imports.

There is a real danger that the rush for carbon sequestration, particularly for the carbon offsets market, and a free market for land will harm our countryside, rural livelihoods (see Section 7), and the opportunity for nature restoration. Tree planting and woodland creation need a strategic approach.



4 Trees for health

The COVID-19 pandemic reinforced the importance of green space for human health and wellbeing. Previously, numerous studies described the health benefits of accessing green space and more research has been published since the emergence of the pandemic. Friends of the Earth's report, [England's green space gap](#), documents much of this research.

Green space isn't just about trees, but trees are an important part of green space, offering valuable health benefits for humans and helping wildlife thrive.



[Public Health England](#) has stated that:

“Evidence shows that living in a greener environment can promote and protect good health, and aid in recovery from illness and help with managing poor health. People who have greater exposure to green space have a range of more favourable physiological outcomes. Greener environments are also associated with better mental health and wellbeing outcomes including reduced levels of depression, anxiety, and fatigue, and enhanced quality of life for both children and adults ... Disadvantaged groups appear to gain a larger health benefit and have reduced socioeconomic-related inequalities in health when living in greener communities, so green space and a greener urban environment can also be used as an important tool in the drive to build a fairer society.”



According to [recent research by government agency Forest Research](#), visits to the UK's woodlands boost mental health and are estimated to save £185 million a year in treatment costs. Forest Research also says the presence of street trees reduces the cost of antidepressants to treat mental health by £16 million a year.

Trees and green space are clearly good for our physical and mental health – as individuals and as communities.

Deprivation

Green space

There is very little green space in many urban neighbourhoods.

In 2020, Friends of the Earth used government data on public green spaces, garden sizes and the location of open access lands (such as moors in the uplands) to identify areas in England that are most green space-deprived (data was not available for the other nations in the UK). We ranked neighbourhoods from A to E. The most green space-deprived areas (rated E) had tiny gardens (if any) and less than 9 square metres of public green space per capita.

[Our analysis](#) identified 1,108 E-rated neighbourhoods in England. These are home to 9.6 million people (an average of 8,664 per neighbourhood).

It also revealed that people of colour are twice as likely to live in a green space-deprived neighbourhood as white people. There was also a correlation between poverty and green space deprivation, although not as strong as for race.

Tree cover

Provisional research for Friends of the Earth by mapping experts TerraSulis – using new LiDAR data (light detection and ranging data collected from aircraft using sensors that detect the reflections of a pulsed laser beam) – has for the first time enabled us to identify tree cover across England with a resolution of 1 square metre, for the 95% of England where the LiDAR data has been published to date. Using this, we can identify tree cover in small neighbourhood areas (average 1,500 people) and identify those neighbourhoods that are most deprived of trees.

Table 2 below shows that 3,161 neighbourhoods have less than 5% tree cover, 12,105 below 10%, and 24,474 below 20%.

Natural England recommends 20% as the minimum tree cover in green infrastructure standards it is currently developing – only 17% of neighbourhoods meet this standard currently. Reaching the 20% level of tree cover across England would require significantly increased tree planting that is not properly accounted for in the government's draft 2050 tree cover target for England.



Table 2. Levels of tree cover in neighbourhoods in England

Tree cover	Number of neighbourhoods
> 30%	1,422
20 – 30%	3,529
10 – 20%	12,369
5 – 10%	8,944
< 5%	3,161

The research also shows a wide disparity of tree cover in neighbourhoods that Defra has identified as similar in nature (Table 3).

Table 3. Tree cover differences in similar areas

Neighbourhood type	Minimum % tree cover (average bottom 10%)	Average % tree cover	Maximum % tree cover (average top 10%)
Rural town and fringe	2.3	12.8	33.0
Rural town and fringe in a sparse setting	2.0	10.1	21.5
Rural village and dispersed	2.9	13.4	34.1
Rural village and dispersed in a sparse setting	2.0	10.4	22.3
Urban city and town	2.9	13.1	31.5
Urban city and town in a sparse setting	1.0	7.2	20.7
Urban major conurbation	3.0	12.9	29.8
Urban minor conurbation	3.0	12.5	29.8

Trees and climate extremes

Climate change due to past carbon emissions is already locked in (predominately from burning of fossil fuels) and extreme heat and flooding will increasingly be a feature of UK weather. While reducing carbon emissions must be our top priority, we must also adapt to the heating that is happening now and will increase.

The University of Manchester is carrying out research for Friends of the Earth to identify which neighbourhoods in England are most likely to be impacted by flooding and extreme heat, and which are most vulnerable according to demographic factors. The researchers have carried out similar research in Scotland and will do the same for Wales and Northern Ireland.



An important role in climate adaptation

Trees can help us cope with rising temperatures –they provide shading, cooling the air in an urban environment through the water that evaporates from their leaves. They reflect more sunlight than tarmac. Trees also absorb and store less heat than urban materials and therefore help cities cool down more during the night. Forest Research has produced [a case study on Camden in London](#), which indicates that current green spaces (and associated trees) only provide cooling for 59% of the borough and more green spaces and trees are needed to cool other areas. But to achieve this extra cooling, space will have to be reallocated from car use (eg, car parks and street parking) to green space and tree planting. Development is causing competing pressures too. Existing green space needs protecting from new housing targets that the government has set councils.

Although this won't eliminate the need for additional measures to address extreme heat – such as household ventilation and cooled community centres for at-risk groups – the use of green (and blue infrastructure) is cost effective, as well as bringing other benefits for mental health and wellbeing.

Trees also have an important role in flood alleviation, particularly tree planting and rewilding upstream in river catchments. For example, in Yorkshire tree planting has reduced flooding in Hebden Bridge and Pickering. The Environment Agency has published [case studies of natural flood management in action](#), with some featuring tree planting.

Trees and noise

Noise pollution is rarely discussed as an important environmental health issue. Yet the World Health Organisation has described noise as the second biggest environmental contributor to the burden of disease in Europe, after ambient air pollution. The UK Net Zero Strategy says that over half the UK population is exposed to daytime noise levels above recommended limits. Most noise pollution over legal levels comes from road traffic.

By acting as a physical buffer to noise, vegetation in parks and green spaces, along busy roads, and in neighbourhoods and streets, can counteract noise that can cause sleep deprivation, stress and associated health impacts. The Office of National Statistics has made a conservative estimate that [vegetation reducing noise in urban areas saves over £15 million in avoided loss of quality-of-life years](#).

Forest Research says that planting “[noise buffers](#)” composed of trees and shrubs can reduce noise by 5-10 decibels for every 30 m width of woodland, especially sharp tones, and this reduces audible noise by approximately 50%. It provides advice on how to use vegetation to reduce the impacts of noise pollution.

Trees and air pollution

Air pollution is a serious problem across the UK. It is the biggest current environmental threat to health in the UK, with between 28,000 and 36,000 early deaths a year attributed to long-term exposure. Research has shown that people in poorer areas, young people and people of colour are disproportionately affected.

Some air-quality problems can be alleviated by having more and better planting of trees and other vegetation. But the role of trees should not be overstated. The government's [Air Quality Expert Group](#) has said that potential to improve air quality with more and better planting of trees and vegetation is modest. Reducing pollution at source, for example through clean



air zones and encouraging motorists onto public transport, cycling and walking, will be the mainstays of solving this health challenge. Trees can play a useful supplementary role.



5 The role of agroforestry

Agroforestry is a relatively new term for the use of trees and/or shrubs on cropland and grassland to generate benefits such as increased nutrients, carbon storage, shelter for livestock and income from sales of fruit, nuts or wood.

The term may be new, but the practice is not. Traditionally, woodland pasture was a common land-use practice in the UK. But the widespread move to intensive farming, with enlarged fields of single crops tended with heavy machinery, saw widespread removal or reduction of trees, hedgerows and other natural features.

Agroforestry includes hedgerows, shelter belts, trees and woodland grazing. Trees can be grown within fields, not just round their edges, among arable crops like wheat, barley (silvoarable), and alongside vegetable production. They can also be grown within grazing land for sheep, cows, and other livestock (silvopasture).



Photo credit Peter Aspin



Photo credit Stephen Briggs

Benefits of agroforestry

Incorporating trees through agroforestry has been identified as a high-impact option for climate mitigation through land use. It increases carbon storage, with research showing increases ranging between 0.09 and 7.29 tonnes of carbon per hectare.

It also provides valuable climate adaptation functions, improvements to soil health and a host of additional ecosystem services. Trees reduce crop-damaging wind speeds, and they reduce evapotranspiration and drought stress in crops. By providing shelter for livestock, they allow for extended outside grazing in winter months, and create valuable shade in increasingly hot summers. These benefits make our food systems more resilient in a changing climate.

Agroforestry also reduces soil erosion by wind and water, is an aid in flood prevention, and helps prevent run-off of nitrates and slurry into water courses. It can provide fodder for livestock, which improves diets, and fodder from some tree species can reduce methane emissions in ruminants.



A PhD study on evaluating the effects of agroforestry versus arable systems on functional biodiversity and associated ecosystem services demonstrated significantly higher plant and insect diversity in areas where it was practised (Thomas Staton, 2021). There were more wild pollinators and a significantly higher diversity in ground predators and parasitoids that can reduce arable pests. This suggests agroforestry not only directly benefits wildlife, but can also indirectly benefit nature by reducing the need for pesticides. Other studies have also shown benefits for soil organisms and soil health.

A strong advocate for agroforestry is Stephen Briggs, a farmer who has converted almost 50% of his 112-hectare Cambridgeshire farm to agroforestry and is aiming for more. He says all farmers could easily plant trees on up to 20% of farmland.

Stephen's original motivation for tree planting was to combat severe soil erosion on his flat fenlands farm. He has planted 13 varieties of apples for eating and juicing. His trees are grown in rows with wildflower pollen and nectar strips beneath, wide enough apart so his combine harvester can go down the middle to harvest his wheat crop. While there has been a slight decrease in cereal production, it is outweighed by the more profitable apple crop. Scientific research suggests that agroforestry can be more profitable for farmers, which is echoed by Stephen Briggs's experience.

Agroforestry and land productivity

Faced with a growing global demand for agricultural and forest commodities, there is an urgent need to enhance land productivity with genuinely sustainable regenerative farming practices. A growing body of evidence demonstrates that agroforestry not only delivers the numerous ecosystem services and benefits mentioned above but can also increase the productive capacity of the land.

Analysis of hundreds of studies into agroforestry incorporated into pasture farming showed land productivity improved by 42–55% compared to pasture or forest alone. A recent study of 5 European agroforestry systems integrating arable crops, livestock and biomass trees found productivity gains of 36–100% compared to monocultures.

Agroforestry can also increase farm income. A comparison of 3 silvoarable farms in the UK has found diversified production increases farm income, and a study of 3 farms in Europe found the same if all the environmental benefits are considered as a package. In other words, if farming is to be rewarded for “public goods”, as is government policy, then farming with agroforestry is more profitable than farming without.

Government policy and agroforestry

The current use of agroforestry in the UK is low, although the CCC and the government want to see it increase. The CCC has recommended agroforestry on at least 10% of arable land and grassland by 2050 for the following benefits:

“In addition to sequestering carbon in the biomass and soil, other benefits include non-CO2 savings from reduced fertiliser use due to the recycling of nutrients that arises from leaf litter and the rooting system. Growing trees on farms can also improve water quality from reduced nitrate leaching into water courses, improve soil structure and fertility from litter fall and enhance biodiversity. For example, establishing rows of trees between alleys of arable crops can provide wildlife corridors. Trees also provide shade from the sun and shelter from the wind for grazing livestock, which could improve productivity and animal welfare.”



The UK government has not adopted the CCC's target. Instead, it is encouraging and incentivising farmers and landowners to plant more trees, including through agroforestry. The government's 2021 [England Trees Action Plan](#) said:

“As well as improving production potential and environmental outcomes, agroforestry bridges agriculture and traditional forestry and can provide additional income to farmers from both agricultural goods and forestry products, adding a new dimension to the conventional farm business model.”

The government also included agroforestry within its suggested target for increasing tree cover in England from the current very low level of 14.5% to a still low level of 17.5% by 2050. It has however opened the door to future increases in the target, saying that:

“Agroforestry offers unique benefits to people and nature, allowing continued food production and creating new sources of income for land-managers, while also mitigating climate change and contributing to nature recovery. Recognising the importance of these benefits, the government is launching an agroforestry standard through the Sustainable Farming Incentive in 2024. We will review the ambition of the woodland cover target after the launch of the Sustainable Farming Incentive agroforestry standard, with a view to raising the target if this is deliverable and in line with expert advice.”

In Scotland, the [Farming for 1.5°](#) inquiry has suggested the Scottish government should set a target of 6,000 hectares a year for agroforestry creation and create a ringfenced budget for agroforestry with a dedicated 10-year programme to drive it. This recommendation is supported by Scotland's Nature Friendly Farming Network. Future financial support for agroforestry in England will be available via the Environmental Land Management scheme. However, the detail is still uncertain and this won't be available until 2024.

The UK could learn from the French government's strategy. France has adopted a target of 50% of French farmers using agroforestry by 2025, as part of its Agroforestry Plan. The plan aims to build knowledge, improve regulation, improve financial support, develop agroforestry advisory services and training, promote the value of agroforestry products through the development of supply chains, and promote agroforestry through international advocacy.

The potential for agroforestry

The Committee on Climate Change (CCC) suggests there should be [up to 900,000 hectares of agroforestry and new hedgerows](#). This is many times the growth envisaged in the government's draft trees target, which is only 175,000 hectares of agroforestry. The Woodland Trust says it will be publishing research in 2022 identifying what it thinks the potential is. Agroforestry, alongside other agroecological agriculture practices, clearly has an important role in reversing farming's impact on biodiversity decline. The development of a national Nature Recovery Network and 50 Local Nature Recovery Strategies for England is an important opportunity to promote wider agroforestry uptake.

What needs to happen

There is some concern and opposition to woodland creation and rewilding, on the grounds that it could take up land previously used purely for food and crop production. Agroforestry allows for increased tree planting while land continues in food production, thus making it a more acceptable option for many farmers and landowners.



Defra's [2017 draft Agroforestry Review](#) reported growing levels of interest in agroforestry amongst UK farmers and a [recent survey](#) of 224 arable farmers in the south-east and east of England found 60% would consider agroforestry. However, there's traditionally been low uptake of agroforestry in the UK due to a historical separation of forestry and farming, and agricultural policy and payments inhibiting tree planting on farmland. Tenancies very often restrict or prohibit tree planting, and short tenancies are a disincentive to the long-term investment in trees and agroforestry. We need greater flexibility in tenancy agreements to allow for the exploration of new crops and ways of working through innovation, collaboration, and new and novel partnerships

Lack of knowledge and advice for farmers is [a very significant barrier](#), as are the upfront capital and ongoing maintenance costs, and the lack of appropriate funding. The Woodland Trust's agroforestry support scheme – which is accompanied by an advisor – is already oversubscribed for 2022/2023. Feedback from farmers supports the assumption that the combination of face-to-face advice and supply of trees and tree protection would give them the confidence to try agroforestry.

Current government policy is not enough to drive the uptake of agroforestry needed for climate, soil, nature, and water pollution reasons. There is a clear need to develop skills and knowledge among farmers – and this needs to be supported by much-increased institutional capacity. A pilot scheme for agroforestry is currently underway, but this must be accompanied by advice – ideally as a component of Environmental Land Management schemes (ELMs) – and farmer-led research into whole-farm systems should be supported. Early innovation should be encouraged, and learnings shared widely.

Below are some of the measures needed:

- Most farmers are currently holding off planting until the government decides what payments to give. We can't afford a hiatus and need to start now. We welcome the England Woodland Creation Offer, but this is not compatible with most types of agroforestry. Farmers need financial support for experimenting with agroforestry ahead of the ELM payment system.
- Small scale grants should be awarded for experimental tree planting, to help farmers to get trees in the ground in the next planting season and to kick-start the process of learning about design, planting, and maintenance. Such a scheme would need to be a simple process, with minimal restrictions, rewarding rather than penalising early adoption when the new ELM payment system is up and running.
- The current payment system is far too complex. It needs to be simplified and provided by a single source, with appropriate safeguards.
- Current payment options are restrictive, lack clarity and act as barriers to innovation, like new tree crops. Tree planting options should be more flexible. There should also be flexibility within the Woodland Carbon Code to include lower density (non-statutory) woodland within carbon markets, or creation of an agroforestry carbon code.
- The future funding of farming through ELMs should incentivise and reward farmers for introducing agroforestry practices. And it should reward them for maintaining and enhancing existing agroforestry, trees, woodland and hedgerows. As part of this system, the government should set a clear ambition for agroforestry and hedgerows. ELMs should adopt whole-farm planning that assesses the woody assets already on-farm and supports their integration into the farming system.



- Business plan advice needs to be readily available to farmers, so they can diversify their farming and markets with confidence. In addition, capacity building and knowledge transfer is needed, so they can learn from each other on their journey to be tree farmers as well as crop and livestock farmers. Farmer-led multi-year research into agroforestry and other whole-farm approaches should be supported.



6 Trees for timber, pulp and paper

The UK is the second largest net importer of wood products in the world – with much of that from countries that have been identified as “high risk” for biodiversity protection and human rights.

Our environmental responsibilities do not finish at our borders and there is a pressing need for the UK to reduce its negative impacts on biodiversity overseas. Part of this involves introducing due diligence legislation, so that businesses eliminate deforestation driven by their supply chains – legislation that needs to be much stronger than [current government plans](#). And part involves much greater homegrown production of timber and other wood products. The RSPB and WWF have both called for the UK to halve its overall global environmental footprint, which includes a range of commodities, including timber, by 2030.

Friends of the Earth believes a Timber Sector Deal – similar to the [Offshore Wind Sector Deal](#) – that is negotiated between the UK government, devolved nations, farmers, foresters, conservationists and skills bodies is needed, to enable a very substantial increase in timber production while benefiting wildlife and farming communities. Sector deals are particularly important for growth industries that require significant upfront investment, receive government financial support, and require participation and support from multiple sectors.

Timber

According to an analysis by the RSPB and WWF, the UK’s overseas footprint for timber imports is 8.4 million hectares, equal to around a third of the size of the UK. Excluding imports for fuel pellets (see below) reduces this to 5.7 million hectares, roughly a quarter of the UK’s land area.

Forest Research publishes [statistics on quantities of imported timber product and their country of origin](#). These show that major sources for plywood imports include China (40%), Brazil (20%) and Russia (7%). These are all high-risk countries, as defined in the RSPB and WWF [Riskier Business report](#). Major sources of wood pellets for energy production include the United States (63%) and Canada (18%), which are medium-risk countries. The United States is also responsible for 14% of sawn hardwood imports and Russia for 6% of sawn softwood. Overall, the RSPB and WWF say that 18% of UK timber imports are from high-risk countries. The land footprint of these imports is around 1 million hectares.

Wood consumption has increased by around 20% over the past decade, according to [Forest Research statistics](#). The industry foresees growth continuing, because timber is a low-carbon construction material and innovation is driving timber products for other uses – such as paper to replace plastic bags, and timber to replace textiles and metals in some applications – all of which can also help significantly reduce carbon emissions.

There is clearly a pressing need for the UK to replace imports from high-risk countries – and broader security reasons to stop imports from Russia – and a good argument to reduce imports from medium-risk countries. This suggests planning for at least 1 million hectares of additional productive woodland in the UK, and likely much more if this woodland is created and managed in a nature-friendly way.



Pulp and paper

The average consumption of pulp and paper in the UK is around 145 kg per person per year, which is comparable to other western European countries, but significantly higher than the average in China (76 kg), Africa (7 kg) and globally (55 kg). UK consumption equates to around 9.9 million tonnes per year.

80% of paper and paperboard imports came from Europe in 2020, 7% from North America and 13% from elsewhere. Pulp was the most significant import in terms of biodiversity risk – a third, around 260,000 tonnes, came from Brazil. The UK's pulp and paper imports have reduced by around a quarter between 2017 and 2021, to 5 million tonnes. The UK also exported 1 million tonnes of pulp and paper in 2021.

One way the UK can reduce imports of pulp and paper, beyond managing more productive forest, is to utilise more domestic production. UK paper mills use 3 million tonnes of wastepaper and 70% of paper and board produced is recycled fibre. Yet 4.3 million tonnes of wastepaper was exported in 2021. Using this wastepaper in the UK could make a significant dent in UK imports.

Packaging accounts for more than 50% of paper and board consumption, and their use increased by 5% between 2014 and 2019, driven by online deliveries, a trend that has likely accelerated since then. A reduction in excess packaging could also reduce a reliance on imports.

There seems no good reason why imports of pulp and paper from high-risk countries could not be rapidly eliminated, without the need for more tree planting.



Wood pellets for energy

The UK is a major importer of wood pellets. In 2010, the UK imported 0.6 million tonnes. By 2020 it was 9.1 million tonnes. This huge growth has been driven by burning wood pellets in old coal-fired power stations, particularly Drax in Yorkshire.

63% of these pellets are from the United States, 18% from Canada and 10% from Latvia. The United States and Canada are both described as medium-risk countries, whereas Latvia is described as low risk. Conservationists in Latvia may not agree with this assessment and have



published a report documenting serious concerns with the impact of logging on their forests.

The use of wood pellets in coal-fired power stations is controversial, not only because of the evidence of harm to wildlife across the 3 major countries that export to the UK, but also because of the impact on climate change.

Drax claims that for every kilowatt hour (kWh) of electricity it produces, it releases around 124g of carbon dioxide, although this is disputed, with American research suggesting the true figure may be 4 times as much. For comparison, it is more than solar, which produces electricity at around 6g CO₂e per kWh, including the energy involved in manufacturing, construction and maintenance.

However, Drax's calculation ignores emissions from changes in carbon stored in forests. It argues that trees growing elsewhere capture an equivalent amount of CO₂. It says "the CO₂ emissions are absorbed by new forest growth" and the forest area where it gets its pellets from is growing. But this claim is contested by scientists and environmental groups near the forests. They say that Drax's activities are increasing harvesting and even with regrowth there is a less carbon stored than if the forest was left to grow undisturbed. The UK government's official wildlife watchdog Natural England says, "Left to natural processes, woodlands will go on taking up carbon for centuries, although the net rate of uptake declines. Even after trees reach maturity, they continue to take up carbon, new trees fill gaps and organic matter builds up in the soil and dead wood".

A report for the government says that burning sawmill residues or other types of wood that would otherwise be wasted, such as trees removed due to pests and disease, is better than burning gas for energy production. But it adds that burning stem wood (also called round wood) is worse than burning gas. Drax burns a lot of round wood, partly because there isn't enough genuine sawmill residue or waste wood to keep its furnaces burning, but also because of the chemical harm that burning only waste wood could do to its furnaces.

We note that the government is currently considering the role of biomass in energy generation, particularly fitted with carbon capture and storage to make the power plant carbon negative. But it is unclear whether this will be carbon negative in practice. To a very large extent it depends on any impact harvesting has on the size of the existing forest carbon store. Even if it were carbon negative, it would also be necessary to ensure sourcing the wood pellets did not harm wildlife. And sensibly, given that global sustainable timber supplies are limited and global demand is high and rising, it would also be necessary to use these pellets in the most efficient power plants possible, not inefficient converted coal-fired power stations like Drax.

The UK's import of wood pellets should be reduced substantially, by closing the power stations that burn them and replacing the electricity they produce with additional cleaner wind and solar power. If a strategy of negative emissions from biomass is deemed necessary, then the biomass should be homegrown from new wildlife-friendly plantations and used in a highly efficient power plant.

More productive forests that are nature friendly

As the UK forestry trade body Confor points out, historic poor practice casts a long shadow on the industry. The planting of 30,000 hectares of conifers in the Flow Country in the 1980s, spurred by tax breaks, damaged important bird habitats and released the carbon stored by the peatland where the trees were planted. Previous replacement of semi-ancient forests with conifers was said to lead to the formation of the Woodland Trust.



But we can't let previous poor practices hold the UK back from establishing productive forests now. There is a pressing need to eliminate imports of timber and timber products from high-risk countries and there is a growing global demand for timber. The UK must increase its productive forestry faster than ever before. And it must do so in harmony with nature and the communities who manage our land. At least 1 million hectares of new productive forests sounds a lot. And it is. But the UK has the land to do it, as well as land for more woodland for nature.

Availability of land

Friends of the Earth commissioned mapping experts [TerraSulis](#) to identify sites where woodland could be created in England without harming nature, damaging carbon-rich soils and without using good quality agricultural land (grades 1-3a). This mapping took a conservative approach and not only excluded designated habitats, but also grasslands that had not been ploughed for several years and which may be home to important plant life. The mapping [identified 1.3 million hectares of land in England](#) where woodland could be established. And it wasn't carried out for the other nations of the UK, so the potential woodland opportunity is greater than this. Forest Research has made a conservative estimate of [3.2 million hectares](#) that may be suitable for woodland creation, although this greater area also included urban green spaces that would not be suited for productive forest.

This land is not sitting idle. Much of it is used for livestock production. But for climate change and health reasons, livestock production, and the consumption of meat and dairy need scaling back. Scientists have suggested that [consumption might need to be reduced by three-quarters](#) in countries like the UK. The Eating Better Coalition, of which Friends of the Earth is a founder member, is calling for a 50% reduction by 2030. The CCC has recommended a 20% cut by 2030 and says that if its advice is followed, [3 million hectares could be available by 2035](#).

It seems clear that, if meat and dairy consumption is reduced and livestock numbers decrease, there is ample room to plant over a million hectares of productive forest, with plenty of space left for woodland creation and [rewilding](#) land that is primarily dedicated to wildlife. The management of this wildlife-focused woodland will also contribute to increasing domestic timber production, even though it is not its primary purpose.

Better productive woodland

The worst days of monoculture conifer forests are thankfully gone and must not be repeated. There is now a [UK Forestry Standard](#), first adopted in 1997, and all government-funded woodland creation must comply with it. A new version is due at the end of 2022. The current standards include:

- A maximum of 75% of land may be allocated to a single tree species.
- 10% of land must be open ground or ground managed for the conservation and enhancement of biodiversity as its primary objective.
- 10% of trees must be other than the dominant species and 5% must be native broadleaved trees or shrubs.

Another standard is the [UK Woodland Assurance Standard \(UKWAS\)](#), developed by the Woodland Trust and others. It builds upon and is stronger than the UK Forestry Standard. A new version is also under development. The standard requires consideration of landscape and culture when establishing new forestry, a preference for native species, and avoidance of pesticide use where practicable. 43% of UK woodland was UKWAS-certified in 2020, including 100% of woodlands in the public sector and 23% in the private sector.



Recent research has shown that new productive woodland can make a useful and larger contribution towards climate goals than new conservation woodland, while stressing both are important for the different environmental services they deliver.

Friends of the Earth believes that to gain public acceptance of the levels of new afforestation needed, it will be necessary for all future woodlands – whether privately or publicly owned – to comply with UKWAS. The process of developing these woodlands must involve working closely with and bringing benefit to the rural communities where they will be located. Community benefits should include, for example, training and apprenticeships for local people, increased access for recreation, and partnerships with farmers. As stated above, we particularly recommend the development of a negotiated Timber Sector Deal.



7

Changing land uses and a just transition

The UK government doesn't yet have a land-use strategy for England – although one is promised - and there is a confusing picture across the devolved nations, where strategies of differing scope and quality are in place but with no overall coherence. A coherent strategy is desperately needed, because land use will be under increasing pressure when security of supply of imports – from timber to food to energy – is fragile. It is needed because, as [the Institute for Government](#) has also said, post-Brexit agricultural reform requires the UK and devolved nations to consider what services are needed from agriculture and therefore how land should be used. And it is needed because the growing and dangerous enthusiasm for carbon offsets is already impacting the market for land and harming farming communities.



The development of an effective land-use strategy requires engaging with issues across the policy agenda and resolving potentially conflicting policy aims. For example:

- How much of the food we eat should be homegrown? We're not going to be growing bananas in Kent, but some of the foods we import could be homegrown. Historically, increased food production through intensive farming has been at the expense of nature and the long-term quality of soil. If we are to produce more homegrown food, how should it be done? For example, can agroforestry help meet multiple goals better than the current dominant monoculture model?
- How much land do we need for livestock production? The average diet in the UK is unhealthy and contains too much meat and dairy, which impacts people's health and has a cost for the NHS. Healthier diets would free up large amounts of land for other uses. And greater integration of livestock into arable systems could enable



- diversification and reduce fertiliser demand.
- How much do we want to reduce imports of commodities that are driving global deforestation in biodiversity-rich areas and leading to human rights abuses? Academics rightly argue that it can't be credible to boast of boosting tree cover in the UK if our imports are driving deforestation overseas. Reducing these imports by half by 2030 through more homegrown timber and animal feed would require significant amounts of land.
- How much of our energy should come from biomass? Energy company Ecotricity argues that large swathes of Britain should be used to produce grass as a feedstock for green gas mills. Others want large quantities of short-rotation coppicing to feed biomass burners to produce electricity. Others, including Friends of the Earth, say we should harness the UK's vast renewable wind, solar and wave energy resources instead, and use land for other purposes and in a way that benefits rather than harms nature.
- How much land is needed for nature? Space for nature and land use for producing goods can co-exist (so-called land sharing) but some land should be dedicated for nature (so-called land sparing). Identifying the right mix has implications for all the above.

Friends of the Earth argues that land use needs to change. We believe the land used for livestock feed and farming should be dramatically reduced (accompanied by a shift to healthier diets and the raising of extensive livestock). There should be more space for nature alongside more nature-friendly farming, and a large amount of land should be used to reduce imports of environmentally-damaging commodities.

Whatever emerges in a shared UK land strategy or is included in new or existing land strategies for each nation will have a profound impact on the work and livelihoods of farmers, the custodians of our land. Developing a land-use strategy enables them and others to engage in debating the choices of how we use the land, and to develop a fair transition plan for those that may need to learn new skills, change the way they farm or leave the sector altogether. Right now, farmers are at the mercy of a volatile and un-strategic free market that is harmful to them, to rural culture and to UK security and sustainability.

Economic free-for-all

Regrettably, instead of a strategic approach to how we use our land, we are witnessing an economic free-for-all. Land is going to the highest bidders, which is compromising the ability to use land as a strategic resource for the benefit of everyone.

Right now the rush to grab land is being driven by attempts to gain credits from carbon offsetting. The offsetting market is booming. Offsetting can sometimes be the genuine effort of a business or individual trying to mitigate the impact of their residual carbon emissions (carbon emissions they can't get rid of). But mostly carbon offsetting is seen as a cheap way to carry on business as usual. Tree planting is a favoured way of offsetting, even though trees will only lock up carbon for a short period (usually decades) whereas fossil-fuel carbon emissions stay in the atmosphere for hundreds or thousands of years.

There are growing concerns that the rapid growth in land purchases for carbon offsetting is pushing up land prices and rents, and displacing local communities, while exacerbating an already highly financialised land market.

The situation is thought to be particularly acute in Scotland, which witnessed a 31% rise in



farmland prices in 2021, and a 60% rise for poor grazing and grass land targeted for forestry. Nearly half of all estates – predominantly in the Highlands – were sold to corporate bodies, investment funds or charitable trusts, with a rise in overseas buyers. The majority (64%) were sold “off market” – effectively secret deals.

Crofters in the Highlands and Islands are protected by legislation, but Community Land Scotland, an organisation committed to community land-ownership and social justice, has suggested that the drive to plant carbon-offsetting forests in the Highlands risks widening inequalities and effectively denies communities the opportunity to buy land.

As well as targeting land in Scotland, reports are emerging of private investment firms cold-calling farmers in Wales to buy up their land for tree planting for offsetting. This loss of land for farming directly impacts farmers, including tenant farmers. More land is needed for woodland creation but, in Friends of the Earth’s view, this should be done as part of a land strategy that is determined through democratic debate, with farmers having an important voice, rather than a market-driven economic free-for-all.

A fair transition in practice

Change is difficult in any sector. But agriculture has unique challenges. Around 40% of farms would be lossmaking even with government subsidy. The farming sector is ageing. The average age of farmers is 59, with 4 in 10 over 65 and many needing to continue farming beyond this age for financial reasons. While age is not automatically a barrier to innovation and change, the preponderance of older farmers could stifle opportunities for new entrants and new ideas. And farmers work on average 65 hours a week, with many working more than 100 hours, which limits their scope for experimentation and learning.

Yet farmers are facing unprecedented challenges:

- Brexit is being accompanied by a complete overhaul of how they are financially supported. It introduces hurdles for farming exports and new trade deals threaten to undercut domestic production.
- More extreme weather, in line with climate change forecasts, is making farming more challenging and unpredictable.
- The war in Ukraine has sent prices of energy and fertilisers soaring and is already impacting global food security.
- There is a near universal understanding that carbon emissions need to drop dramatically – with implications for methane emissions from livestock – and that nature needs to be restored. The government’s recently published food strategy failed to signal a shift to healthier diets with less meat and dairy, despite almost universal understanding that this is necessary for both health and environmental reasons.

Added to this, the UK needs to dramatically increase tree cover.

The UK government has a draft target to increase tree cover in England from 14.5% to 17.5%. Friends of the Earth argues that we should aim to double tree cover, in large part to help reduce the deforestation our commodity consumption is having overseas.

However, our ambitions do not seek to pit farmer against forester. Like others, we believe agroforestry has an important role to play in delivering the climate and biodiversity benefits of trees, while also increasing farm productivity and sustainability. A large amount of tree growing



can and should be integrated within farming. There is widespread support for this approach within the growing progressive farming movement. A new [report by the Soil Association](#) supports this, saying:

“Our vision of regenerative forestry brings forestry and farming closer together... instead of the current artificial separation between the ways that land is managed to feed us and to provide timber and fibre, they must work together much more closely. Foresters need farmers and farmers need foresters.”

Measures to help farmers make the transition

The Institute for Public Policy Research has called for [a social contract between farmers and the government](#), which identifies how farming will be funded for the long term and in return how farmers will need to farm. Friends of the Earth supports this.

We also think that farmers should be supported to adapt and given the resources and time to do so. In particular, this requires farmer-to-farmer support, advice and training, which is likely to need funding and logistical support to thrive. The Nature Friendly Farming Network is an excellent example of how farmers can support each other, and these types of farmer-led initiatives should be encouraged. The formation of the [Tenancy Working Group](#) for the tenanted sector in England is an important step to ensure a just transition, in which tenant farmers are appropriately protected and rewarded for trees on farms. Large landowners, such as the National Trust, also have a responsibility to help farmers adapt.

Finance will be a barrier to many farmers seeking to change. The Food, Farming and Countryside Commission proposed the creation of [an Agroecology Development Bank](#) that would particularly help new entrants or tenant farmers to access finance. [The Landworkers' Alliance](#) has also recommended a fund for new entrants. These are welcome suggestions but will need progressing rapidly if they are to support the farmers that are in trouble right now. In the very short term, simple-to-access finance should be available to encourage agroforestry and trees on farms and to enable learning and expertise sharing.

Action is also urgently needed to prevent the land grabs driven by private equity and the offset market we are witnessing currently, as well as UK or devolved nation woodland-creation targets that aren't accompanied by just transition safeguards. [Scotland's Just Transition Commission](#) has argued that:

“part of ensuring a just transition must be about making sure the benefits of investment in carbon sequestration are felt as widely as possible. Without careful design and meaningful engagement there is a risk that benefits may flow mainly to large landowners and opportunities for community benefit will be missed.”

Several measures are available or have been suggested. For example:

- The establishment of land trusts, which are being promoted by the Soil Association, County Farms and Community Land Trusts.
- The Scottish Land Reform Act of 2003, which introduced the Community Right to Buy and gives local communities the first option to buy land when it is put up for sale. The Scottish government is promoting 6 principles for land rights and responsibilities, to create a framework that contributes to public interest and wellbeing, ensures high standards of land ownership, and improves transparency.
- The Scottish Land Commission has [suggested implementing a “public interest test” for large-scale acquisitions to control investor-led afforestation.](#)



However, with so many land sales conducted privately and “off market” it will also be necessary to bring in new controls. To regulate these sales and make it easier to use existing community rights to buy, [Community Land Scotland](#) is calling for a public-interest test on significant land transfers and current landholdings. It proposes a range of other [policies](#) to diversify land ownership, enable the public to benefit from the nation’s natural capital, and regulate carbon-credit certification to ensure carbon sequestration is genuinely additional.

But this issue of land grabs and how we best use our land begs the question, whose land it is anyway? As Guy Shrubsole lays out brilliantly in his book *Who Owns England*, much land ownership flows from historic gifts from kings to favoured subjects. One reason why a land strategy is needed is to take back control of land so that it is used for the public good, regardless of ownership. If the government regulates how land is used, following proper democratic debate, it can stop these damaging land grabs, which are preventing a just transition, and can help ensure land is used strategically and genuinely for the public good. By advocating the development of a Timber Sector Deal (Section 6) with the involvement of farmers and others, we are also seeking to ensure that farmers are fully involved in a strategic discussion on how we increase tree cover in the UK in a way that serves multiple purposes.

Conclusion

The British Isles were once dominated by trees. Up until the last ice age much of the UK was forested. Trees reappeared after the ice age and again covered much of the land until human intervention caused the next major deforestation. By the Middle Ages tree cover had reduced to around 15% of land area. Wars and the use of wood for construction and fuel further reduced this to around 4.7% by the early years of the 20th century.

Tree cover has somewhat recovered over the last century, but at 14.5% the UK remains one of the least forested countries in Europe, which has an average tree cover of 44%. Perhaps unsurprisingly, the UK is also among the [world’s most nature-depleted nations](#).

Consequently, the UK still has a voracious appetite for timber and timber products, with its increasing consumption causing significant deforestation, harm to biodiversity and carbon loss, as well as impacting many indigenous forest communities. As a nation we are unlikely to become self-sufficient in timber, but we can reduce our most egregious impacts by increasing UK production in harmony with nature.

Tree planting, done well, is popular and necessary. The 2019 UK Public Opinion of Forestry survey found that 88% of the UK public agree or strongly agree with the statement “a lot more trees should be planted” in response to the threat from climate change. The government must substantially increase its draft tree cover target for England.

