

Tree and woodland conservation • Issue 34



WOODLAND  
TRUST

# Wood Wise

## Nature-positive economy



Focusing  
action for  
nature and  
society

The  
multifaceted  
values of  
nature

The role  
of law and  
finance

Nature positive  
and the UK  
forestry  
sector

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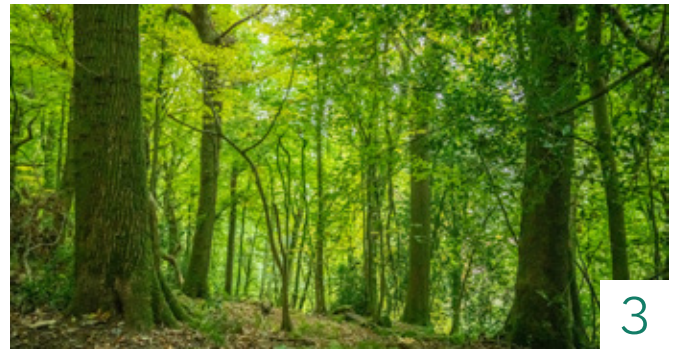
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# Nature positive: a new narrative

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**‘Nature positive’ is a new narrative in response to the increasing magnitude of the global nature crisis<sup>1</sup>, which is just as serious in the UK<sup>2</sup>. It reflects the need for urgent action at every level to not just ‘do less harm’, but reverse biodiversity loss and restore healthy, resilient ecosystems as the very life-support systems on which society – and our economy<sup>3</sup> – depends. We won’t bend the curve on nature loss unless our economic and financial decision-making, and ultimately how we produce and consume, is reimagined to better respect nature<sup>4</sup>.**

The language, ‘nature positive’, is hopeful and engaging – but what does it really mean for how we engage with the natural world? ‘Nature’ – the phenomena of the living world including plants, animals and the landscape – is enormously complex and dynamic. It is inherently local but works across multiple scales, and there is much we don’t know. Attempts to define or measure nature positive are always going to be based on proxies, limited understanding and information, and will involve trade-offs depending on how we answer: nature positive for what, and according to whom? Standards and regulation will play a crucial role in shaping how decision-making responds to these tricky issues.

A precondition for nature positive must be protecting remaining habitats and biodiversity and stopping irreversible and unnecessary harm. This means always protecting irreplaceable habitats like ancient trees and woods. Then, decision making must follow the **mitigation hierarchy**, which first seeks to avoid harm, and the **precautionary principle**, which respects that there’s much we don’t know. The best strategy is to build landscape resilience by enhancing biodiversity and species abundance and creating ecological connectivity<sup>5</sup> and complexity<sup>6</sup> from local- to landscape-scale<sup>7</sup>, all while restoring natural processes. Collaborating across landscapes also helps to maximise multiple benefits like resilience to drought, flooding and heat stress, while safeguarding and building carbon stores. Harm shouldn’t simply be exported elsewhere, either – reversing global biodiversity loss means a total reduction of ecological harm and an increase of restoration – across business value chains, sectors, landscapes and ultimately the biosphere.

This edition of Wood Wise explores some of these issues. **Ruth Waters** highlights the importance of the ecosystem approach in focusing on healthy, functioning ecosystems, and takes us through the fast-evolving global and UK policy space. **Jasper Kenter** outlines multiple ways to think about, and value, nature. **James Cameron** discusses the role of law and institutions in setting the parameters towards a nature-positive future, and **Zelda Bentham** provides a perspective from the financial services sector. **Sam Sinclair** explores emerging business drivers and sets out some important realities to help business strategies truly deliver for nature while respecting people. **Vicki Hird** explores the role of agroforestry in a nature-positive food system. **Eleanor Tew** and colleagues reflect on what a nature-positive forestry sector might look like.

Nature positive is being increasingly adopted by policymakers, businesses and other organisations. While undefined and unregulated, it clearly carries risks of greenwashing. But, if underpinned by science and the right regulatory framework, it could be the transformative catalyst needed to help restore nature and secure a healthy, liveable world for all.

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# Evidence-led approach for nature recovery to support the economy

Ruth Waters

MARK HORNINGOLD/WTML

Dr Ruth Waters is director of evidence at Natural England leading on science strategy and monitoring. She is a strong advocate for inter-disciplinary application of science in uncertain real-world settings. Ruth was the lead scientist in the team supporting Prof Sir Partha Dasgupta on the independent review of *The Economics of Biodiversity* in HM Treasury.



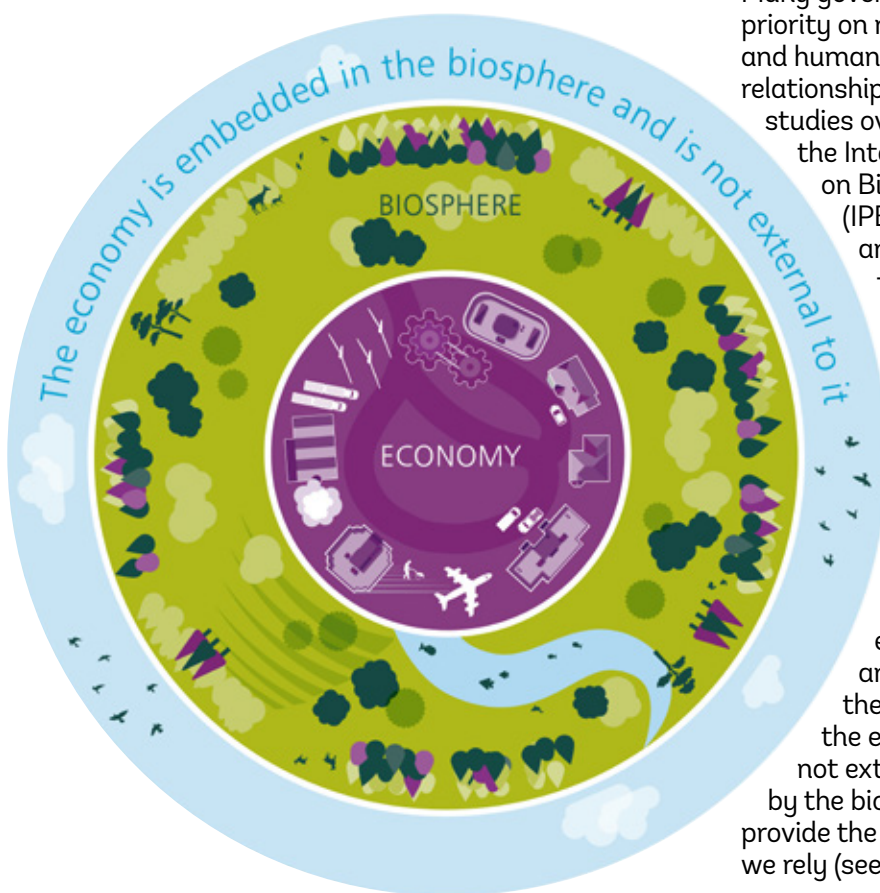
**Ecosystems can be considered the foundational units in our earth system. Our economy entirely relies on healthy functioning ecosystems and biodiversity, yet many governments around the world still undervalue nature. The recent 15th Conference of the Parties to the United Nations Convention on Biological Diversity (COP 15) drew international attention to the need to protect and restore earth’s biodiversity. Evidence strongly supports this need, but we urgently require policies and action.**

When ecosystems are intact and have their full complement of biodiversity, they are more resilient to change, are adaptable and more productive – both in terms of their own regenerative properties but also in terms of the ecosystem goods and services they provide for humanity. Loss of species reduces their productivity and resilience and increases the chance of exceeding tipping points, where the ecosystems move from biodiverse systems to poorer, less productive systems. Once tipping points have been exceeded it is very difficult for ecosystems to recover. The Amazon may be reaching a tipping point, which is a major concern as it will have serious consequences for the water cycle and climate change on a global scale<sup>1,2</sup>.

### Nature and the economy

Many governments around the world place a low priority on nature, yet it is essential for the economy and human wellbeing. Increasing awareness of these relationships has led to a number of important studies over the years, as well as initiatives such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), which aims to support conservation and sustainable use of biodiversity.

The most recent and comprehensive study of the relationship between nature and the economy is the Dasgupta Review (hereafter ‘the Review’), commissioned by the UK’s Chancellor to review the economics of biodiversity globally<sup>3</sup>. The Review is particularly important because it calls for a fundamental change in the way we undertake mainstream economics. Importantly, it is grounded in ecology and earth sciences, explicitly setting nature and its associated biodiversity as core to the framework. The Review describes how the economy is embedded in nature and is not external to it, meaning it is, in effect, limited by the biosphere and the ability of ecosystems to provide the goods and ecosystem services on which we rely (see Figure 1).



**Figure 1.** The economy is embedded in the biosphere and is not external to it. Source: Dasgupta (2021)<sup>3</sup>

For some of us, this might feel like stating the obvious, but mainstream economics doesn't recognise nature as a limit and doesn't consider nature much at all. As a result, nature is often invisible in decisions. Kenneth Boulding<sup>4</sup> described how mainstream economics treats nature as if we were a cowboy on the frontier with seemingly endless resources available, whereas we need to consider nature as a spaceman in a spaceship where all the resources need to be recycled in a closed system.

### Findings from the Dasgupta Review

The Dasgupta Review describes the inequality in supply and demand of nature that has led to its global deterioration. On the one hand we have our 'stock' of nature and its ability to regenerate, and on the other we have the demand on nature which relates to the amount we consume, how many of us there are, how efficiently we use the resources, and the waste we return. The Review found that for decades demand has far outstripped supply. Estimates by the Global Footprint Network suggest that the ratio of demand to supply has increased from 0.9 in the late 1960s to 1.75 in 2022<sup>5</sup>. That is, currently 1.75 earths are needed to meet humanity's aggregate demands on a sustainable basis. Hence the decline in biodiversity that we are sadly too familiar with.

Urgent action is clearly needed to address this inequality. 12 areas for action are recommended (see Figure 2).

1. **Conserve and restore natural assets.**
2. **Empower citizens to make informed choices and implement change.**
3. **Adopt inclusive wealth as our measure of success.**
4. **Improve access to community-based family planning and reproductive health.**
5. **Effective institutions involving all levels of society – from local to global.**
6. **Improve efficiency of extraction from nature and produce less waste.**
7. **Improve our productivity measures by ensuring they account for nature.**
8. **Fair and sustainable consumption, production and supply chains.**
9. **Improve decision-making through natural capital accounting.**
10. **Better management of land and sea to benefit both nature and people.**
11. **A global financial system that supports nature.**
12. **Reform education and economics to reflect the role of nature.**

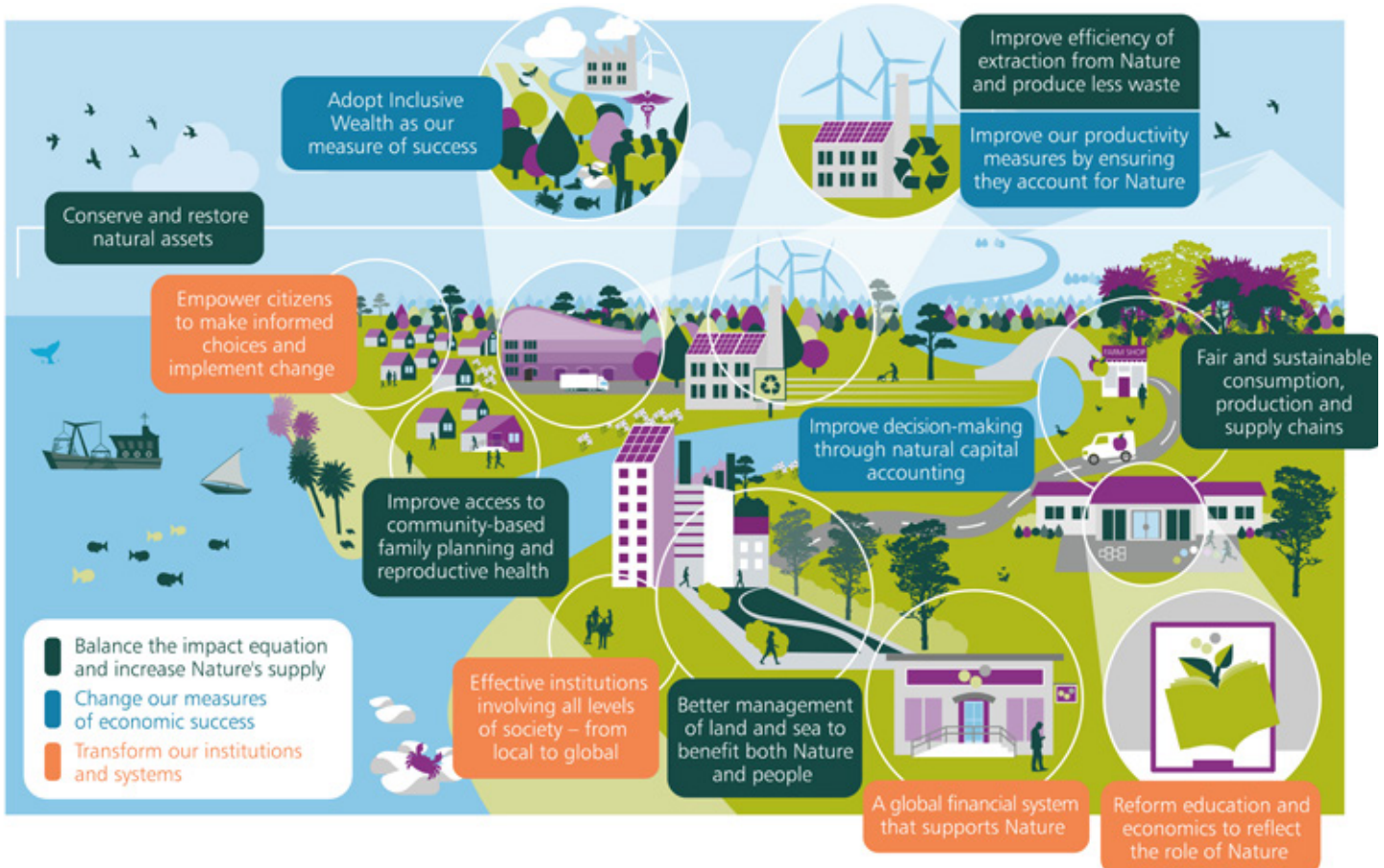


Figure 2. Summary of the recommendations identified in the Dasgupta Review. Source: Dasgupta (2021)<sup>3</sup>



On average, every US \$1 million invested in nature-based solutions creates around 10 times the number of jobs as fossil fuels.

The lack of robust data makes it difficult for governments, businesses and financial institutions to consider nature when making decisions. Consequently, in England there is an ambitious three-year programme of work to undertake both a terrestrial and marine Natural Capital and Ecosystem Assessment (NCEA) to provide baseline data on the quantity and quality of our ecosystems and some of the benefits they provide. This data will be freely publicly available, with early results already online: for example, the Living England probability map which shows the extent and distribution of England's habitats<sup>6</sup>.

A key recommendation from the Review is to significantly increase biodiverse, healthy, functioning ecosystems. At the recent COP 15, an agreement was made to ensure that, by 2030, at least 30% of terrestrial, fresh water and marine areas are effectively conserved and managed to enhance biodiversity, ecosystem functions, services, integrity and connectivity. But how feasible is this?

A recent study looked at the costs and benefits of expanding protected areas on the conservation, agriculture, forestry and fisheries sectors. It found that the benefits of protecting 30% of the land and ocean would exceed the costs and provide better financial outcomes and higher non-monetary benefits than the existing protected area network<sup>7</sup>. Furthermore, modelling has found that by undertaking conservation actions, as well as making changes such as reducing food waste and eating

a more plant-based diet, it is possible to reverse the global biodiversity declines caused by land use change while still providing the food required for the growing human population<sup>8</sup>. But we need to act quickly. Work by Vivid Economics and the Natural History Museum showed that delaying action to safeguard the biodiversity we currently have by just 10 years, even at today's depleted levels, would double the costs required to incentivise large-scale reforestation. Not only that, but the scale of the change required would be so large as to be infeasible<sup>9</sup>.

### The UK's commitments

The UK has committed to protecting 30% of land and sea by 2030. Currently, the Marine Protected Area network covers 35.9% of UK seas, while 27.8% of the UK's terrestrial area (including fresh waters) is within some type of national protected area. Only 10.6% of this, however, is within Sites/Areas of Special Scientific Interest (SSSIs/ASSIs), which are primarily protected and managed for nature<sup>10</sup>. The UK Governments are in the process of deciding which terrestrial protected areas and Other Effective Conservation Measures (OECMs) should count towards the 30% target.

Protected areas are just one mechanism to conserve our stock of biodiverse nature – restoration is required too. Within England, the Environment Act has set out several targets to improve the natural environment. This includes targets around increasing species abundance, reducing species extinction risk,

and the restoration or creation of 500,000 hectares of wildlife-rich habitats outside of protected areas by 2042. Alongside other targets related to water and air, there is also a specific target to increase tree canopy and woodland cover from 14.1% to 16.5% of total land area in England by 2050<sup>11</sup>. The Environmental Improvement Plan 2023 sets out more details about the various mechanisms to recover nature.

Healthy, functioning ecosystems won't just help us meet these targets. Compared to other sectors in the economy, investing in nature may also have higher employment returns. For example, a study found that, on average, for every US\$1 million invested in nature-based solutions, close to 40 jobs are created, which is equivalent to around 10 times the job creation rate of investment in fossil fuels<sup>12</sup>.

Many actions required to address climate change can also deliver for nature, particularly through nature-based solutions. For example, a global study that looked at carbon uptake for four restoration scenarios for predominantly tropical forests found that natural forests were six times better than agroforestry and 40 times better than plantations at storing carbon<sup>13</sup>. And there is evidence that forests with a diversity of planting and age structure are more productive and resilient<sup>14,15</sup>.

### What this means for woods and trees

For the UK to maximise the benefits from these important habitats, we need to proactively think about the management of our existing woods and trees, and the types of new woods we are creating. We need to improve the condition of existing woods, ensuring they are managed in ways that boost both carbon storage and nature recovery. We must create the right mix of diverse, multi-functional woodlands – including high quality native woodlands and productive plantations in the right place – that support nature and deliver a range of products and ecosystem services. A move to a nature-positive world by 2030 where we are reversing the declines in biodiversity is not only good for nature and those of us that value and enjoy it, but also for the economy which depends on thriving nature.

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# Nature positive: a multiple values approach

**Jasper Kenter, Mike Christie and  
Hywel Griffiths**

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**Prof Mike Christie is a professor of Environmental and Ecological Economics at Aberystwyth University Business School and co-chair of the IPBES Values Assessment.**



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**With the increasing policy importance of concepts like ecosystem services, natural capital, green infrastructure, nature-based solutions, net zero and nature positive, the way we manage woodlands has become increasingly focused on their diverse and multifaceted values. At the COP 15 meeting in December 2022, the Convention on Biological Diversity recognised these multiple values, emphasising their importance in achieving ambitious global targets to bend the curve on biodiversity loss by 2030. In this article, we draw on the findings of the IPBES Values Assessment to consider how nature’s diverse values can be integrated into decisions.**

Economics has played an important role in recognising the values people place on nature and how these values can be integrated into decisions. However, the monetisation of nature has also led to concerns that its intrinsic and relational aspects will be lost. Many people experience emotional, cultural and spiritual connections to places that are hard to fully express in monetary terms. And while economics traditionally considers the values of individuals, many of the values that people express in relation to nature are not for themselves, but for the communities and society in which they live. These collective shared values often relate to the landscapes and treescapes that people inhabit and visit.

To recognise this diversity of values across ecological, economic, social and cultural dimensions, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) recently published its first ‘Assessment report on the diverse values and valuation of nature’ (hereafter ‘Values Assessment’). Led by around 300 world-leading experts, the Values Assessment collates and analyses evidence from more than 13,000 sources. These sources span scientific disciplines

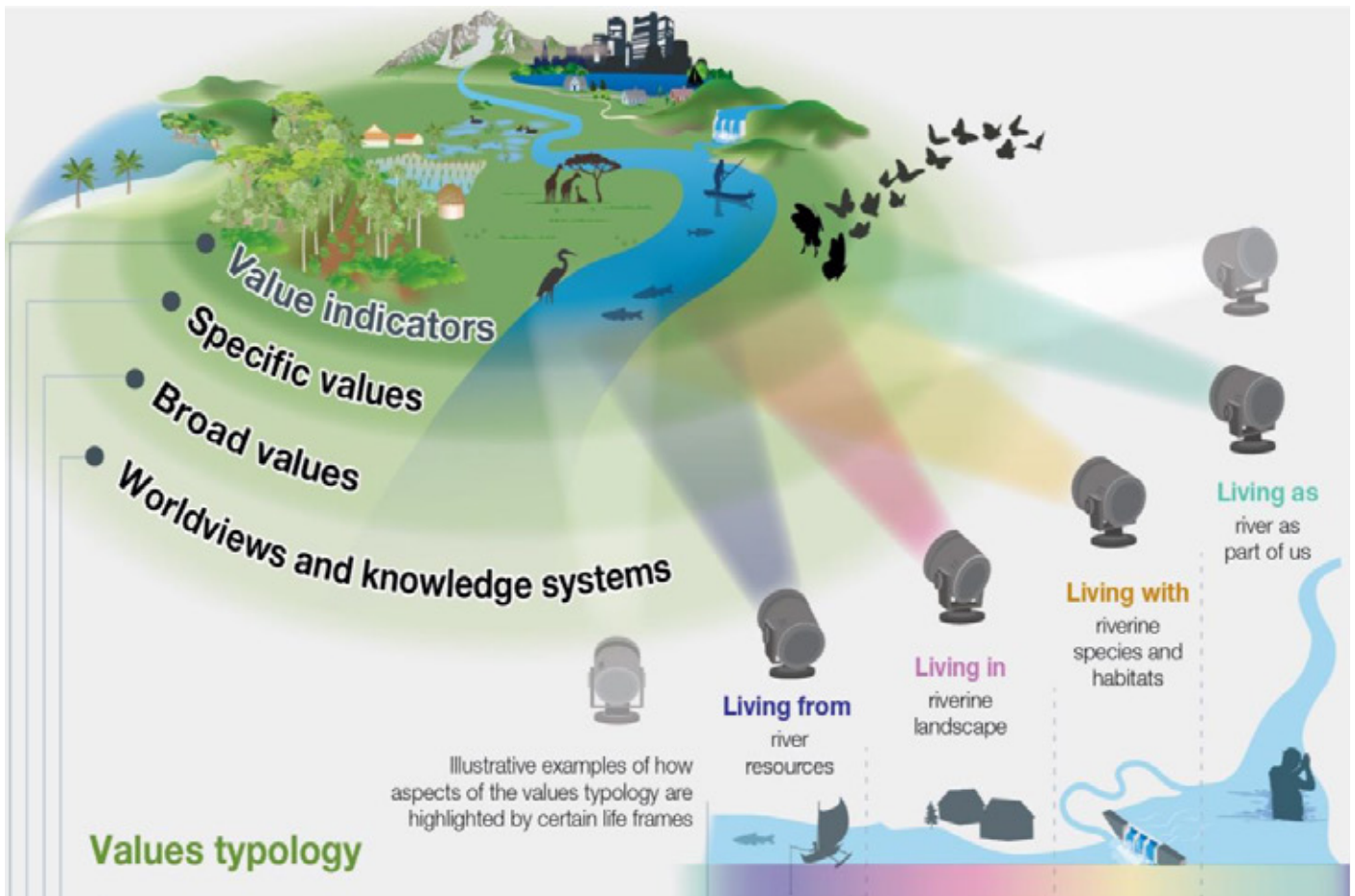


Figure 1. The IPBES typology of nature's values. Source: IPBES (2022)<sup>1</sup>

and indigenous and local knowledge, to consider how values could be conceptualised, assessed and integrated into decisions.

A key product of the IPBES Values Assessment is its typology of nature's values (Figure 1). The typology recognises that people relate to and express these values in a multitude of different ways, often influenced by their worldviews and knowledge systems.

People express broad values, including principles like honesty and fairness, and a wide range of life goals such as harmony with nature, meaningful friendships, wealth, and health. These broad values are often shared by communities (including 'communities of practice', such as groups of users of the environment), and cultures and society at large.

People also express specific values of nature, including instrumental values (in other words, a means to a desired human end, such as the provision of ecosystem services), relational values (which reflect the importance of meaningful relationships with nature, for example: in terms of place identity or cultural heritage), and intrinsic values (independent of humans as valuers). To integrate these values into decisions, they can be assessed using biophysical, monetary or socio-cultural indicators.

### The four Life Frames

To help capture the many diverse values of nature, the Values Assessment organised them around four basic ways that nature matters to people, called Life Frames<sup>1,2</sup>. Firstly, we live *from* the natural world through, for example, food and energy – this reflects how the environment matters as a resource: a means to our sustenance, livelihoods and prosperity. Secondly, we live *in* nature – this points to the world as a place that is the setting of our life events: where we live, work, play and relax. Here nature contributes to our personal and collective histories and place identity. Thirdly, we live *with* nature – this points to nature or non-humans as important others who coexist alongside us, acknowledging that we are one species alongside the larger biotic community living on this planet. Finally, we live *as* nature, which points to the more-than-human world as ourselves – individually and collectively – where it is hard to clearly separate between people and nature. For example, this is expressed in notions and experiences of kinship and oneness, where we directly feel like part of the web of life or experience the land, sea or other species as part of us.

The IPBES typology of nature's values is useful as it can help to better understand and interpret what is meant by 'nature positive'. What we



Wild Ken Farm in Norfolk is an example of regenerative farming.

consider as nature positive will depend on what values and frames are emphasised. For example, from a living *from* nature perspective, this could mean emphasising broad values like prosperity, efficiency and sustainable use, realised through instrumental values associated with natural capital and ecosystem services. Living *with* nature could consider nature positive in terms of improvements in biodiversity, halting extinctions, and maintaining ecological functions and life-support systems, and emphasising intrinsic values associated with the broad value of protecting nature. Living *in* nature may highlight broad values that aim for continuity of place and heritage, and positive relational and instrumental benefits for culture and health. Living *as* nature may consider interventions that contribute to harmony with other species and the land as nature positive, prioritising relational and intrinsic values and the broad values of oneness and reciprocity.

If we only interpret nature positive in a technical, analytical way (as biodiversity net gain, for example) we will tend to focus on a narrow set of values and thus risk excluding ways of relating to nature. In the past, such approaches have led to significant community backlashes, such as against plans to sell off large parts of the English forest estate in 2012. Furthermore, what is nature positive for one social

group may not be for another, so there are important justice dimensions that need to be considered in valuation. These come in terms of distributional justice (who is affected and how), procedural justice (who is included in decisions and how), and epistemic justice (what knowledge is considered salient and legitimate).

### Eliciting diverse values

To be well-informed, equitable and transparent, the policies and decisions that we make must take multiple values of nature into account. However, not all the ways that people value the world are necessarily pre-formed in their minds, nor easily articulated. They may be implicitly expressed in their daily lives, embodied in people's practices and activities, or are sometimes almost entirely unformed when dealing with challenging and potentially unfamiliar environmental questions. Values often become clearer when people get together to discuss (or 'deliberate') what matters to them, and taking them into account early in the decision-making process produces outcomes that are more likely to be accepted by society.

New approaches are needed for recognising diverse values that are often hidden yet frequently emerge in conflicts and challenges to contentious decisions. Conventional (e)valuation often fails to reach out to

these values. This is because conventional (e)valuations assume that the adding up of individual values can represent those shared across whole groups within society. Furthermore, not all types of values can be boiled down to a single value indicator, be that in monetary terms or expressed in other ways. This is because different types of values are not directly comparable – for example, it is often not possible to compare values that are associated with the different Life Frames outlined above.

A multiple values approach to decision making can help overcome the limitations of conventional approaches to policy appraisal. Such an approach would involve examining the range of values expressed by different stakeholders, which often requires the use of a mix of monetary, non-monetary and hybrid approaches. These will often include deliberation to learn about the values expressed by different groups in society, so these can be incorporated into decisions. For example, the UK National Ecosystem Assessment follow on (NEAFO) found clear evidence of how deliberative mixed-method approaches elicited a more inclusive suite of values than conventional approaches. It also found evidence of clear differences between individual and shared values across multiple empirical studies<sup>3</sup>.

### Testing new approaches

New projects that are building on work by NEAFO and IPBES to explore better integration of the multiple values of woodlands include the Navigate and Branching Out projects. Navigate, funded under the UKRI Economics of Biodiversity programme, is exploring how economics can be expanded to better recognise diverse values of nature by using the Life Frames as a tool to uncover intrinsic, relational, broad and shared values. Navigate will explore these through a number of woodland case studies, including the Woodland Trust reforestation project in Brynau and Preswylfa, near Neath, south Wales (see box on page 13). Other woodland case studies are from Tanzania and Finland. Branching Out is also using the IPBES framework to explore the social and cultural values of urban treescapes with case studies in York, Milton Keynes and Cardiff. Both projects are using innovative new approaches to citizen deliberation, combined with approaches like storytelling, to help integrate more diverse values into decisions. New approaches like Deliberative Integrated Valuation can combine some of the advantages of generating economic evidence and more deliberative and qualitative approaches, while citizen panels give people the chance to debate multiple visions of nature-positive futures.

Integrating multiple values into decisions does not mean that decision makers necessarily have to add a new set of procedures to what they already do. In many cases, existing methods and indicators can be adapted and integrated into decision-making



PETER DENCH/WTML

processes, so that what is already being done can be done better. For example, Branching Out is mapping existing indicators for urban treescapes to each of the four Life Frames.

### When to take a multiple values approach

Clearly, there is a trade-off between the resources needed to assess values and the breadth of values considered. It is ultimately a judgement call as to when more pluralistic (e.g. relational and shared) values should be considered explicitly in decision making, for example, through participatory and deliberative methods. However, as a rule of thumb, there is added value to taking a multiple values approach in cases where:

- the issues or ecosystem services under consideration are complex
- there is a lot of uncertainty
- the values are likely to be subtle and implicit
- the issues or evidence are contested
- there are many different stakeholders.

Recognition of more diverse values is essential for sustainability transformation. An important conclusion from the Values Assessment is that dominant values associated with materialism, individualism and economic growth are poorly aligned with sustainability, whereas broad values associated with community and justice were more supportive of sustainability transformation. This provides an important impetus for assessing policies regarding the degree to which the values they embed are sustainability-aligned. Taking a more pluralistic and relational perspective of nature – where the importance of nature is considered in terms of the meaningful relations we have with it and within our communities – instead of just as a conflict between economic growth and intrinsic values, could provide an important way to support such broad value shifts.

## The Navigate project

Brynau and Preswylfa is a Woodland Trust site located on the eastern slopes of the lower Neath valley, bordering the Gnoll Country Park and overlooking the town of Neath and Swansea Bay. Previously a patchwork of ancient woodland and agricultural land, the hillside has now been planted with a mixture of native trees. Prior to planting in 2021, a team of researchers from Aberystwyth University, funded by the Woodland Trust, monitored the following: climatic variables (like temperature, precipitation and windspeed) using an automated weather station; soil temperature and moisture; stream flow in the small streams that drain the hillside; both above- and below-ground carbon in established woodland areas

and current pasture; and stream habitat quality. In the medium to long term, this baseline data will help us understand how woodland restoration impacts microclimate, hydrological processes, carbon flux and habitats.

Over the coming two years, the Navigate project will use deliberative valuation methods to understand how communities, including regular walkers around the site, visitors and volunteers, benefit from the woodland, interact with the new woodland as it grows, and value it in both monetary and non-monetary terms. As such, Brynau and Preswylfa offer an important opportunity to study diverse values and Life Frames.



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### Further reading

- Demystifying Shared and Social Values: [valuing-nature.net/demystifying-shared-and-social-values](https://valuing-nature.net/demystifying-shared-and-social-values)
- Navigate project: [navigate.aber.ac.uk](https://navigate.aber.ac.uk)
- Branching Out project: [valueoftrees.co.uk](https://valueoftrees.co.uk)

# Natural capital in theory and in practice: the role of law and institutions

## James Cameron

**Natural capital – the stock of natural assets, such as forests, that provide benefits to people – is, in part, a measurement of natural endowment, and a way of valuing nature. Of course, you can value nature aesthetically, spiritually and culturally. Indeed, you may prefer to wonder at and enjoy nature without thinking about its economic value. At the same time, failure to register the economic value of nature in our decision-making in society – in government, boardroom or household – means that natural systems, species and ecosystem services are undervalued in a literal sense. Other economic values take priority. So, how might we assert and apply natural capital approaches in an effective way so that we take decisions that value nature?**

It has become accepted wisdom that we are confronted with twin interrelated crises of our own making: climate change and biodiversity loss. We face a painful paradox, having used our ingenuity and power to become a dominant species that can affect our own living environment to such an extent that we are now at risk from the very systems that support our survival and prosperity. The brilliant inventions of fire, exploitation of fossil fuels for energy, and the industrial potency that allowed our dominion over nature, now present us with the absolute necessity to phase out the use of fossil fuels to power our economy. We must also recognise our part in nature and our connectedness with all living things, and acknowledge our vulnerability to system collapse in the atmosphere and biosphere.

The concept of natural capital has solid philosophical origins in the teachings of Aristotle, in economic theory connecting scarce resources, externalities and public goods. Most recently, it was examined in work commissioned by the UK Treasury headed by Professor Sir Partha Dasgupta of the University of

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Cambridge<sup>1</sup>. The principle also underlays the work undertaken at Yale by Professor Esty, which compared the environmental performance of the world's nations using indicators that were tracked annually and ranked, and where the baseline included a form of environmental inheritance from which progress or decline could be measured<sup>2</sup>. This is particularly clear in forested land or within a definition of natural habitats.

More recently, the concept of 'nature positive' gained traction in the lead up to COP 15 (which agreed the Global Biodiversity Framework), and is increasingly being adopted by NGOs, governments and businesses. While lacking agreed definitions or approaches, it generally emphasises economic activity that is overall restorative to the natural world and contributing towards ambitions to reverse the global loss of biodiversity, and is underpinned by natural capital approaches.

## The role of law

Using the concept of natural capital in an effective way, so that we take decisions that value nature, begins with law. Specifically, constitutional law; the law that expresses our best hopes for ourselves. Professor Philip Allott calls this our "will to perfection".

Most modern constitutions have a clause relating the natural environment and our duty to respect it. In the UK, we lack a written constitution, though we do make general, fundamental laws that govern our rights and duties, and we ratify treaties on Human Rights and several on climate and biodiversity. We also have framework laws like the Climate Change Act and Environment Act(s). A constitutional principle recognising that we are part of nature, that we owe a duty to honour and respect all living things, and that our economy will be based on natural capital, would combine ancient wisdom and modern sensibility. Of course, it would be a general principle, and no less legal for it, but it would need more specific rules to be applied in practice.



Sheffield City Council's 'Grey to Green' strategy brings colour and sustainability to the city.

Natural capital should be built into the law and institutional disciplines of national accounting and budgeting. It should feature in our regular Finance Acts, guide our Budgetary Responsibility institutions, and reshape our benchmarks of economic progress. GDP is a useful metric for comparison up to a point, and that point is obvious in respect of the decline in natural capital upon which our economic prosperity depends. An economy without pollinators is dead. It is natural to want to keep score, to compare and to incentivise, but it makes no sense to have no metric to engage those competitive instincts which relates to the essential requirement to have a healthy environment capable of supporting life.

### The role of finance

We need to think about nature when making decisions about infrastructure and its financing. All infrastructure, including the built environment, needs to factor in climate change and nature. Where something is built, how it is built and what economic consequences follow requires process to guide and check, and that process should be governed by principles and rules that ensure that what we build is fit for the real world we are in and the world we want.

Grey infrastructure should be greened, and green infrastructure can help the grey. The consequences of climate change such as floods, droughts, heat islands and rapid rainfall run-off from hard surfaces, together with the loss of species, habitats, and open spaces for health, education and recreation, are all relevant factors in the financing of infrastructure. We have a new Infrastructure Bank in the UK and I have argued that it should have a commitment to natural capital in its constitution to guide its lending. This new institution could and should make itself a leader in enhancing natural capital as well as mitigating risk by investing in regenerative agriculture and rewilding. That strategy would build sustainable prosperity for the nation.

Natural capital will need the practice of finance to change. It needs new professional standards, improved training and education, new performance incentives and reporting requirements. The Taskforce on Nature-related Financial Disclosures (TNFD) will help – for the first time, listed companies will have to report on the effect of their economic activity on nature. They will have to run scenarios associated with the behaviour of natural systems and this will lead to new metrics and benchmarks that boards will have to pay attention to. There are even suggestions that nature should be represented on boards via a board position.

### Data informing decisions

Today, thanks to remarkable advances in data capture, aggregation, visualisation and communication, metrics are available that provide detail for decision makers responsible for enhancing natural capital. We have satellite observation from low orbit, inexpensive and accurate sensors, drone observation and eDNA. We can take a general principle and make it actionable. We can guide, direct, inspire and hold to account, including in a court of law.

We can restore, regenerate and revive natural systems for our own benefit and utility, in hard-headed economic terms, and at the same time nourish our souls by valuing those species other than ourselves whose existence we threaten with our way of life. That is an ideal worth striving for.

- 1 Dasgupta, P. (2021). *The Economics of Biodiversity: The Dasgupta Review*. London: HM Treasury. [gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review](https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review).
- 2 Wolf, M. J., Emerson, J. W., Esty, D. C., de Sherbinin, A., Wendling, Z. A., et al. (2022). *2022 Environmental Performance Index*. New Haven, CT: Yale Center for Environmental Law & Policy. [epi.yale.edu](https://epi.yale.edu)

# How can financial services contribute to a nature-positive future?

Zelda Bentham has been Group Head of Sustainability at Aviva for 10 years, but has been with the organisation for over 30 years, previously as Head of Environment and Climate Change for more than 20 years.



## Zelda Bentham

**Tackling climate change and biodiversity loss – as well as simply being the right thing to do – is fundamental to the survival of businesses like Aviva. It may come as a surprise that addressing these issues would matter so much to a business like ours. But the simple truth is that it does, on many levels.**

We are all painfully aware of the impacts of climate change. Floods, wildfires and storms are becoming more frequent, powerful and widespread. Once the storm has passed, it is companies like Aviva, as an insurer, that help repair the damage. As these events increase in frequency, so does the cost of repairing them. If this vicious cycle continues, it could make

some businesses, industries or regions uninsurable. What is less obvious is the slow onset impacts of climate change that can lead to irreversible environmental change, such as sea level rise, extreme temperatures and drought.

In the context of financial services, as a pension provider we must consider the climate- and nature-related risks and opportunities that impact our investments, pension customers and their retirement incomes<sup>1</sup>. Considering the risks that climate change and nature loss present to financial services, the sector is well positioned to drive transformational change in financial flows towards a nature-positive future. Aviva has been at the forefront of change in this industry for some time – we were the first major



Floods are becoming more frequent and widespread, driven by the impacts of climate change.

MARK TAYLOR/NATURE.COM





Aviva is helping to fund peatland restoration at Smithills Estate, which includes rewetting the peat using leaky dams.

insurer to be operationally carbon neutral in 2006, and we have a target to be net zero by 2040.

But it's not only about carbon – biodiversity is just as crucial. As part of our commitment to this, we developed a company-wide biodiversity policy in 2021 with a set of principles to guide our decision-making. This covers underwriting, pension and investment activities and the operation of the business itself. The impacts were shared in our first annual biodiversity report, treating biodiversity the same as we treat climate or financial reporting. Furthermore, during 2022, we carried out a risk assessment of our investments, underwriting and operations to identify and prioritise key areas of biodiversity impact and dependency.

### Taking action on direct commodity-driven deforestation

In November 2021, Aviva was one of 30 investors globally to sign a commitment to use their best efforts to eliminate agricultural commodity-driven deforestation from its portfolios by 2025. This new investor working group focuses on the implementation of the Financial Sector Commitment Letter on Eliminating Commodity-Driven Deforestation, known as the Financial Sector Deforestation Action (FSDA). The FSDA has identified priority companies and financial institutions to engage with on deforestation risk, using Global Canopy's Forest 500 list<sup>2</sup>.

We went on to conduct a formal assessment of our portfolios for deforestation risk so we could prioritise taking action on direct commodity-driven deforestation as part of our investments. This research demonstrated that around a quarter of Aviva's corporate holdings have exposure to deforestation risk: half through financial institutions, the other half as a result of the corporate's own business activities or their supply chains<sup>3</sup>. Our next step to address this is to lead on engagements with five companies and five banks as part of the FSDA initiative which we are a member of, as well as supporting additional engagements alongside other investors. Our expectations for these companies have been made public in our Biodiversity Report 2022<sup>4</sup>.

### Addressing wider nature-related risks

Many other industrial activities present a risk to nature and biodiversity, including alternative protein production, plastics, hazardous chemicals and the lack of consideration for the circular economy. Our influencing work does not stop at deforestation – we are working to make changes in these areas too, engaging on over 100 occasions with companies on water treatment and conservation, hazardous chemicals and sustainable protein.

On top of this engagement work, we have used our position as investors – both for ourselves and on behalf of our customers, whose money we look after – to vote for proposals requesting companies to abstain from operating in or using materials taken from areas that are environmentally sensitive, such as UNESCO World Heritage Sites. Last year we supported 19 resolutions at companies' Annual General Meetings (AGM) to make management in high impact sectors assess, report on, and reduce their impacts and dependencies on nature, and we voted against 75 management resolutions at the worst performing forest risk commodity companies' AGMs.

As well as investing and voting, we are helping our customers support a nature-positive economy in a number of ways. This can be through our Accident Repair Centres, Solus, which offers customers the option to plant a tree instead of taking a courtesy car while theirs is being repaired, or through developing an ESG (Environmental, Social and Governance) profiler tool. This tool enables an assessment of a client's holdings against six key ESG preferences including climate change and deforestation<sup>5</sup>.

### The role of regulation

While Aviva drives change in how we do business and what we offer our customers, driving change across our industry and more widely presents a different type of challenge. The nature of the challenge does not mean it cannot be done, and when it works it can deliver significant impact. In December last year, during the build up to the biennial United Nations Biodiversity Summit, COP 15, in Montreal, Aviva



Snaizholme is a unique and complex habitat restoration and nature recovery project led by the Woodland Trust.

called for clarity on the financial sector’s role in the goals and targets set as part of the creation of the Global Biodiversity Framework (GBF). We called for international policy makers to bring nature into financial decision making in a structured and similar way to the approach on climate<sup>3</sup>. Our calls were listened to, and the final agreement includes targets to align financial flows with the GBF, paving the way for a reduction in harm to nature caused by financial services activity. Time will tell how impactful this is, but having finance included in the document will be key to seeing action from the wider industry.

### Funding nature-based solutions

Alongside our strategy to address nature risks across our business, we are also supporting the transition to a nature-positive economy by directly supporting nature-based solutions. When we announced our Climate Action Plan in 2021, we committed £100m of funding to nature-based solutions in our core markets and we are delivering on this. Our most recent announcement from this fund was our partnership with the Woodland Trust – launched with a donation of £10 million to support their Woodland Carbon Scheme. The scheme will deliver carbon removal and biodiversity improvements through woodland creation and peatland restoration at a

number of Woodland Trust sites, including three ‘hero’ sites that are close to Aviva offices.

One of these is Green Farm in Norfolk, where our contribution will help transform the landscape into a mosaic of broadleaf woodland, wood pasture, grassland and hedgerows, as well as preserve the curiously named pingo ponds which are only found in Norfolk. Another is Snaizholme, an incredibly bold project in the Yorkshire Dales to create one of England’s biggest new native woodlands, and thirdly, the Smithills Estate in Lancashire, which I was lucky enough to visit recently and learn about the dunnock and their unique mating behaviour. Here the Woodland Trust will rewet the peat bogs that lie across the highest points of the estate to remove carbon from the atmosphere and help to prevent the spread of wildfires.

What appealed to us about the Woodland Trust’s projects was the philosophy of putting the ‘right tree in the right place’, which is key to building a resilient landscape. Focusing only on efficiently removing carbon from the atmosphere would mean you lose wider co-benefits, including biodiversity enhancement. By working with partners who establish native habitat with a long-term view, we can ensure that the benefits of a nature resilient UK are felt for years to come.



- 1 The Pensions Regulator (October 2021) Much still to be done to adapt pensions to climate change, report warns: [thepensionsregulator.gov.uk/en/media-hub/press-releases/2021-press-releases/much-still-to-be-done-to-adapt-pensions-to-climate-change](https://thepensionsregulator.gov.uk/en/media-hub/press-releases/2021-press-releases/much-still-to-be-done-to-adapt-pensions-to-climate-change)
- 2 Forest 500 website: [forest500.org](https://forest500.org)
- 3 Aviva (December 2022) Aviva calls for financial sector to play a bigger and clearer role in preventing biodiversity loss: [aviva.com/newsroom/news-releases/2022/12/aviva-calls-for-financial-sector-to-play-a-bigger-and-clearer-role-in-preventing-biodiversity-loss](https://aviva.com/newsroom/news-releases/2022/12/aviva-calls-for-financial-sector-to-play-a-bigger-and-clearer-role-in-preventing-biodiversity-loss)
- 4 Aviva (2022) It takes Aviva: Biodiversity Report 2022 [static.aviva.io/content/dam/aviva-corporate/documents/socialpurpose/pdfs/biodiversity-report-2022.pdf](https://static.aviva.io/content/dam/aviva-corporate/documents/socialpurpose/pdfs/biodiversity-report-2022.pdf)
- 5 Aviva (November 2021) Aviva launches ESG Profiling tool on Adviser Platform: [aviva.com/newsroom/news-releases/2021/11/aviva-launches-esg-profiling-tool-on-adviser-platform](https://aviva.com/newsroom/news-releases/2021/11/aviva-launches-esg-profiling-tool-on-adviser-platform)



The dunnock is one of the species that will benefit from the project at Smithills.

# The role of business in a nature-positive economy

Sam Sinclair

**Public interest in the biodiversity crisis has grown rapidly in recent years, particularly in the last 18 months. This increased awareness has led to a realisation among businesses that they need to do more, not just on ethical grounds but because of the risks that biodiversity loss poses to their businesses. Whereas previously, the framing of the relationships that businesses have with nature tended to focus primarily on impacts, it has now shifted to recognise their dependency upon biodiversity, and the risks associated with ecological decline.**

This growing movement is being referred to as nature positive. While there is currently no single definition of nature positive, the Cambridge Institute for Sustainability Leadership describes it as a world where nature (species and ecosystems) is being restored and is regenerating rather than declining. They also describe a nature-positive economy as one in which businesses, governments and others take action at scale to minimise and remove the drivers fuelling the degradation of nature, to actively improve the state of nature itself and to boost nature's contribution to society.

## **Rapid advancements in biodiversity sustainability**

This increased attention has developed at multiple scales across many different sectors simultaneously. At an international level, the Convention on Biological Diversity (CBD)'s COP 15 in Montreal in late 2022 brought together the nations of the world to create the Global Biodiversity Framework (GBF). The Framework included a specific target focused on supporting and encouraging the private sector to improve their biodiversity sustainability. This was not the only step forwards, however; the high-profile agreement is just one amongst a host of recent advancements which collectively represent a shift in attitudes towards biodiversity sustainability.

These initiatives, acts and frameworks represent a significant groundswell of momentum many years in the making. Collectively, they apply pressure on the private sector to consider and report on their biodiversity sustainability efforts.

While there has been significant progress, it is important to note that these nascent frameworks are still in the early stages of

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November 2021	The Environment Act passed into law in the UK, legislating for mandatory BNG for development projects (which comes into effect in November 2023) alongside a host of legally binding environmental targets for nature, water and air that will necessitate significant environmental improvement across multiple sectors.
October 2022	The Science Based Targets For Nature (SBTN) initiative released interim guidance to help the private sector understand and address their biodiversity impacts.
October 2022	The World Business Council for Sustainable Development (WBCSD) announced the launch of its Taskforce on Nature Related Financial Disclosures (TNFD) pilot program, intended to meet the growing expectation of the financial sector to disclose nature-related risks and opportunities.
December 2022	The World Benchmarking Alliance launched the Nature Benchmark, which ranks keystone companies on their efforts to protect the environment and biodiversity.
December 2022	COP 15 of the CBD adopted the Global Biodiversity Framework, which includes a target (15) specifically focused on increasing the extent to which businesses monitor, disclose and address their impacts on biodiversity.
January 2023	The Corporate Sustainability Reporting Directive (CSRD) came into force in the EU, requiring all companies with EU operations to disclose details of their sustainability, including their biodiversity impacts.

development. Biodiversity Net Gain (BNG) comes into force in England in November 2023, but it is still unclear exactly how that will operate; SBTN has been delayed in producing guidance; and there are limited details available as to how companies will report on supply chain biodiversity impacts under CSRD. Furthermore, with no centralised oversight or coordination, it is currently unclear how multiple international frameworks with overlapping remits relate to each other, and there is a risk of incoherence.

The coverage is also inconsistent across sectors, countries and impact drivers. For example, the housing sector in England will, appropriately, bear the costs of achieving BNG, yet the food and beverage sector is not currently expected to fully compensate for the pollution and soil degradation impacts caused by agricultural supply chains. So, although nature positive has rapidly gained traction as an international ambition that has wide support, it is important not to underestimate the work still required to put it into practice.



England's housing sector will have a responsibility to deliver Biodiversity Net Gain.

ANTHONY BROWN/ALAMY STOCK PHOTO

## The challenges of biodiversity sustainability

The biodiversity crisis is fundamentally different to other sustainability challenges – such as carbon or circularity – meaning that existing systems, frameworks and approaches cannot simply be adapted and repurposed to deliver nature positive. There are many reasons for this, but from a corporate perspective, there are five particularly important ones.

### 1 There is no fungible unit of biodiversity

There have been numerous attempts to develop some form of universal metric, however, the sheer complexity of biodiversity combined with the challenges of obtaining sufficiently robust and representative data mean that a counterpart to carbon dioxide equivalent is simply not possible. Furthermore, the climate goals of reducing emissions and reducing atmospheric greenhouse gases are clear and compatible, whereas for conservation, it is less obvious what exactly you should be focusing on. Increasing the overall abundance of species, maintaining diversity among species, and reducing the extinction risk of vulnerable species are worthy objectives, but they are not necessarily compatible in a given context and conservation trade-offs are common. Just as there is no unifying metric, there is no unifying goal.

### 2 Impacts and positive actions are context specific

The significance of an impact or action is entirely determined by the local context. For example, planting trees on degraded ex-arable land will most likely benefit biodiversity, whereas planting the same trees in the same region but in a wildflower meadow will most likely have a negative impact on biodiversity.

### 3 Understanding biodiversity impacts requires high supply chain transparency

Most organisations don't have visibility over their supply chains; they don't know where their materials come from and so struggle to properly understand their biodiversity impacts. While this is a challenge for carbon, it is far more significant for biodiversity, as the context-specific nature of impacts can lead to dramatically different consequences depending on how a given commodity is produced.

### 4 Positive actions are always local to someone

One of the main focuses of biodiversity conservation over the last few decades has been how to deal with the challenges and opportunities associated with stakeholders. Working collaboratively with individuals, communities and organisations can be challenging and must be approached with care. This need for sensitivity to the local context in action for biodiversity may be a barrier to organisations used to operating at scale.



Trees can transform degraded ex-arable land into a haven for wildlife.

## 5 Biodiversity provides tangible benefits

Biodiversity provides a broad host of services which are often critical to business operations. This means the private sector is likely to consider nature-positive efforts differently to other aspects of sustainability as there is clear potential for direct benefits to business, such as staff wellbeing, climate resilience and water purification.

These complicating factors make it hard for the private sector to understand how their organisations relate to biodiversity and how to work towards nature-positive outcomes. By contrast, while climate change is an extremely complex issue, calculating the carbon footprint (CO<sub>2</sub>e) of an international organisation is made easier by the fact that a ton of carbon produced in the UK is equivalent to a ton of carbon produced in Australia, and both can be mitigated through the removal or reduction of carbon emissions anywhere in the world. This allows the private sector to design, fund and deliver scalable solutions. In contrast, the local specificity of biodiversity means that effective solutions often require a more detailed, tailored approach, presenting a challenge to the rapid, large-scale transformation needed to achieve a nature-positive economy.

### The implications for decision making

Dealing with the unique challenges of the biodiversity crisis is entirely possible, but it requires a strategic approach to move beyond an accounting exercise and towards a robust, systemic response to the issue. To effectively contribute to a nature-positive society, a company will first need to understand where and how it is contributing to the drivers of biodiversity loss, then establish a holistic suite of interconnected actions which deliver meaningful outcomes for

biodiversity. In many cases this will likely be a major undertaking; large organisations with complex supply chains can have many interactions with nature across a wide range of countries, continents and biomes. In addition, developing and implementing such a strategy requires considerable coordination across multiple departments and locations, making it as much an issue of organisation and logistics as one of ambition and resourcing.

A key issue in such an undertaking is that of data. Biodiversity is inherently hard to measure. Its complexity can often mean that multiple forms of evidence are required to provide a robust understanding of its health. In addition, the chronic and prolonged underfunding of conservation means that species records are frequently incomplete. The clear, and very practical, lesson from conservation science is that before diving into the data, decision makers should start by clearly identifying the challenge that they are trying to address. This can

**To effectively contribute to a nature-positive society, a company will first need to understand where and how it is contributing to the drivers of biodiversity loss, then establish a holistic suite of interconnected actions which deliver meaningful outcomes for biodiversity.**

involve identifying clear objectives, defining success or setting targets. This clarity can help actors understand exactly what questions they are trying to answer, which in turn helps them navigate this complex data landscape effectively and avoid using data incorrectly. For example, the IUCN Red List of





Biodiversity's Biodiversity Net Gain Screening Tool predicts the likely impact of development anywhere in England<sup>1</sup>.

Threatened Species can be used by companies to identify where their activities may geographically coincide with sensitive biodiversity. However, this data is updated infrequently, and it is unlikely that the activities of a single business will change the status of a species, making it inappropriate for understanding whether their positive actions are making a difference.

A good example of data presenting a barrier to positive action is the upcoming requirement for developments to deliver 10% Biodiversity Net Gain in England. The mitigation hierarchy (a decision-making framework for BNG), recommends that developers first try to avoid impacts in the first instance, before moving onto other mitigation measures. Government bodies provide a large array of publicly available datasets, but there are discrepancies between these and uncertainties within the data, so they should therefore be interpreted by a skilled spatial ecologist or data analyst. This presents a major barrier to developers trying to avoid biodiversity impacts, as a desk review conducted by a consultant may be expensive and take weeks, when they may be trying to make rapid business decisions about potential sites.

To overcome this barrier, Biodiversify has created a Biodiversity Net Gain Screening Tool. It automates the process of conducting a desk-based review and predicts the likely biodiversity impact of development anywhere in England<sup>1</sup>. This tool considers data for 55 habitats and 11 categories of designated sites to estimate the baseline biodiversity units using Natural England's Biodiversity Metric. This removes the data barrier by allowing anyone planning a development project to understand the biodiversity implications instantly. The intention is that this will help businesses consider their impacts early in

the process, allowing them to follow the mitigation hierarchy more effectively and avoid impacting biodiversity.

### The potential for business in a nature-positive economy

The nature-positive debate is still evolving, so it is likely too early to tell what the role of business in a nature-positive economy will eventually be. In an ideal world, businesses will be identifying and addressing their impacts as well as restoring nature in a way that delivers outcomes for biodiversity, society and the private sector themselves. There is also the possibility for failure. For example, one proposed approach is to incentivise companies to purchase biodiversity credits to offset their supply chain impacts. While there will likely be a role for such credits, there is a risk that companies are then not incentivised to implement the systemic changes needed to achieve a nature-positive economy.

Nonetheless, there is currently an exciting window of opportunity for individuals and organisations wishing to contribute to defining the contribution made by the private sector. Frameworks such as SBTN and TNFD are still being trialled and businesses are still in the early stages of understanding what this means for them. It is critical that the conservation sector takes advantage of this opportunity to ensure that the evolving frameworks, initiatives and data solutions build upon the many decades of conservation science, theory and practice which exist. If the private sector attempts to reinvent the wheel without learning from the lessons of the past, the outcome is unlikely to be good for nature or society.

1 BNG Screening Tool website: [bngscreeningtool.com](https://bngscreeningtool.com)



# Trees on farms – a nature-positive revolution in farming

Vicki Hird is head of sustainable farming at Sustain, working on environment, food and farming issues and managing the farm team, policy, research and related campaigning.



## Vicki Hird

**Agroforestry – or ‘3D farming’ – is an exciting tool for UK farmers, with huge potential to deliver a nature-positive food and farming system for the UK. Making full use of the available sunlight, nutrients and moisture, growing upwards as well as at ground level can hugely increase productivity. This reinforces the essential idea that Sustain and its members promote – that we can grow food and accommodate nature in the same field, that it can make sense from a business as well as a wildlife perspective, and that diverse agroecological production is key.**

Turning the corner on a new countryside walk and seeing rows of fruit and nut-laden trees in a field also full of wheat, oats or barley must look remarkable. This is not a traditional view in UK fields. But it soon may be. In Cambridgeshire, walkers may have been lucky enough to witness such a sight, as farmer and soil scientist Stephen Briggs has introduced trees on his farm to stop his valuable soil from further erosion. He’s planted 4,500 fruit trees alongside wheat, barley and oats. As well as reaping soil and income benefits from his planting, Stephen has also built a farm shop, café and education centre to engage the public and further boost income.

Different types of agroforestry are being tried for different systems, including trees with livestock



Stephen Briggs started planting fruit trees on his organic farm in 2009.

TIM SCRIVENER/WTML



JONNY WALTON/WTML

Combining livestock and trees in silvopasture at The Lakes Free Range Egg Company.

(silvopasture) and trees within arable land (silvoarable). It can also include trees in hedgerows, buffer strips or smallholdings, forest farming (cultivation within a forest environment), or urban/peri-urban growing areas.

Revolutionary changes are required in the whole food system for it to become nature positive. Farmers need to sell their different products and be rewarded for these and the nature outcomes – current prices are far too low, so this must change. The supply chain needs to shift so it can be responsive to what those farmers need to produce and invest in the infrastructure to process the new products. Certain food traders are doing that already, but more are required to drive this change.

Markets should be encouraging farmers to adopt agroforestry and consumers need to be flexible in what they buy and eat – for instance, eating less cosmetically perfect and more diverse fruit. We also need to eat less and better meat and dairy, as meat requires a huge area of land in terms of grazing and feed crops (both in the UK and abroad e.g. via soya from cleared forests in the Amazon). Overall, we need a major shift in our relationship with nature, food and the land. That must inevitably involve addressing the huge waste of food that occurs each year – staggeringly, around a third of all food produced – as well as phasing out crops for biofuels and feeds for intensive livestock systems.

While the barriers to farmers adopting agroforestry are numerous, so are the benefits. When agroforestry is done well, it can deliver gains for the industry and gains for society as a whole.

### Gains for farmers

Agroforestry can optimise farming systems by incorporating trees right into them, significantly benefitting crops and livestock health and productivity, as well as farmer income. Trees improve grass growth and soil health, and positively affect crop or livestock yields. Trees also help protect against flooding and topsoil erosion. They increase farmland biodiversity and provide wildlife corridors, thereby reducing the fragmentation of habitats that has been so harmful to beneficial wildlife like insect pollinators and the predators of crop pests.

Agroforestry with livestock can greatly enhance animal welfare. The trees provide shelter – a critical service as temperatures rise and extremes become more frequent. They provide fodder, too, as ‘tree hay’ has been proven to enhance productivity. Studies have indicated that productivity can be increased using agroforestry, even up to 40%. Hens on land with 20% tree cover were found to have higher laying rates and shell density, meaning higher output, fewer seconds eggs and reduced losses<sup>1</sup>.

Trees can help reclaim eroded and degraded land, as they create stability and deliver water and nutrients



Agroforestry can provide new habitats for wildlife.

to lower down in the soil. Furthermore, the timing of leafing tends to be later in the year for trees than crops, so they use sunlight at different times of the year, effectively collecting more of the sun’s energy. Additional income can be generated by using trees for livestock fodder, biofuel or timber production, and for fruit and nuts which can provide fresh produce for possibly more local markets. Diversifying food systems – an inevitable result of agroforestry – should be an industry and government goal. It will help build resilience in a time of growing uncertainty around climate and food security. The current highly specialised farming which dominates UK farmland is not resilient to climate change or the risks from pests and diseases, with its ever-larger fields of monocultures of identical crops and genetically similar livestock feeding off monoculture ryegrass. It isn’t good for nutritional security or nature, it can be polluting, and it involves costly inputs like insecticides and fertilisers. Replacing monocultures with a more complex agroforestry system can make farming more resilient and sustainable, and will cycle nutrients far more effectively. With all the benefits described as well as more diverse outputs, supported by public and markets, the economic risks to the farmer will decrease significantly.

### Real gains for society

The evidence is clear – we urgently need to plant many thousands of trees across the UK to reach our climate net zero ambitions. The trees, as they grow, draw in and store carbon – a nature-based way to remove harmful emissions and help with adaptation. And each year the urgency grows.

But land is not infinite and the demands on land will only grow further. As the Royal Society recently noted<sup>2</sup>, we would be far better off doing more than one thing on land – as Sustain has always argued<sup>3</sup>, multifunctionality, such as that delivered by agroforestry, can be a huge strength. The Government’s Committee on Climate Change agrees



Farmer-to-farmer demonstration will be critical to the growth of agroforestry.

that agroforestry has a crucial role, estimating that it could result in carbon emission savings of 5.9 MtCO<sub>2</sub>e per year by 2050, which equates to 13% of the total current emissions from the agriculture sector<sup>4</sup>.

A global review of 53 studies looking at changes in soil organic carbon in different conversions showed that moving from agriculture to agroforestry increased soil organic carbon by an average of 34%<sup>5</sup>. Clearly, agroforestry should play a significant role in delivering the UK's tree targets.

Looking beyond climate and carbon, other major gains include controlling water runoff and soil erosion, alleviating flooding, and enhancing soil health through inputs of organic matter and nutrients.

### The challenges for agroforestry take-up

As with anything new in farming, there are significant challenges to overcome. Firstly, while we do have a UK farm industry that is starting to embrace change to tackle the huge problems ahead, agroforestry systems are still in the minority. Putting trees onto productive cropland feels like a step too far for many, given that it means changing what they have always done, tying up land and creating problems for machinery in fields, including potential hazards. Agroforestry is knowledge intensive, and the inertia is not helped by the lack of skills, the fear of lost revenue from the land, and the delay in any publicly funded goods incentives or income from the sale of tree products. Introducing trees into fields does require a culture shift and a willingness to learn new skills and to take risks, which is difficult.

Tackling this will require strong government support via creation and maintenance payments for tree planting and investment in the new markets and infrastructure needed. It also needs a new level of practical understanding and knowledge, but the training is just not there yet.

The Woodland Trust, Abacus Agriculture, Soil Association, FarmEd and many more are working to fill the huge skills gap by providing demonstrations and training, but more is needed to scale up agroforestry<sup>6</sup>. Government and the farming industry need to rapidly scale up access to case studies, training opportunities and demonstration farms across the country.

The significant capital and labour costs involved, especially in the establishment phase, can present financial barriers. Trees take time to grow, and management and maintenance costs need to be met. In the current financial climate, where farmers have ever-growing energy and labour costs and are being squeezed by low prices and harsh competition between buyers, this will be a challenge.

New research by Sustain shows that farmers gain minuscule profit from the food they produce. We looked at five everyday food stuffs – apples, cheese, beef burgers, carrots and bread – and found that, after intermediaries and retailers take their cut, farmers are sometimes left with far less than 1% of the profit<sup>7</sup>. This makes the risk of changing what you grow and investing in trees, which take time to deliver, a potentially very risky choice. Those risks must be reduced.

## Good news for agroforestry

Sustain, the Woodland Trust and many others have lobbied hard and successfully to get agroforestry included as a core element of the UK agri-environment offer. Agroforestry options were included in existing farm schemes but the new, revolutionary, post-Brexit farm policy programme now includes a commitment to a new agroforestry standard. So, farmers in 2024 will, we hope, be able to apply for support including capital grants to establish and manage agroforestry. This is extremely good news and recognises that the public benefits can be significant. The budget and payments must be adequate.

The growing support for agroforestry is hugely heartening – from farmers, agencies, charities and Defra. The collective understanding that it fills a systemic gap in the current farming toolbox and delivers multiple benefits is so good to see. Now this enthusiasm needs to be matched with effective and adequate support, so that those farmers, growers and agricultural workers can scale up. Support is also needed in terms of infrastructure, processing and the marketing of goods from agroforestry.

Lastly, we need consumers willing to buy the diverse products available from the new diverse systems – from fruit and nuts to woodland meat and wood products.

A whole new diverse, nature-rich landscape and food offer is ahead. Look out for it on your walks!

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Farmer's markets and other local trading offer good outlets for the diverse produce of agroforestry systems.

# What does a nature-positive forestry sector look like?

Eleanor Tew, Neil Riddle and Andrew Stringer

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**Nature positive means ‘bending the curve’ on biodiversity loss, so that nature is no longer in a continuing state of decline but instead recovering and increasing. For the UK forestry sector to become nature positive, there’s significant work to do. However, the rewards are not just for nature conservation. Biodiversity underpins healthy, functioning forests that deliver a range of benefits to society.**

Wild Ennerdale, Lake District. Forest wilding uses a range of innovative processes to restore biodiversity to forest landscapes.



Beavers are the archetypal ecosystem engineers.

Despite an increase in woodland area in recent decades, woodland species have continued to decline. For example, the UK woodland butterfly indicator has fallen by 50% since 1990. This is attributed to a plethora of pressures including lack of woodland management, fragmentation and overgrazing by deer<sup>1</sup>. Reversing these trends will be a significant challenge. However, success will translate into benefits across the sector. More biodiverse woodlands are more resilient to environmental change, they deliver a greater diversity and quantity of ecosystem services, and they are more productive. For example, trees grown in mixed species stands can ‘overyield’ – in other words, generate more timber volume than when species are grown in monocultures. Transitioning to a nature-positive forestry sector is essential – for wildlife, people and the economy. Here, we consider what a nature-positive forestry sector will look like, using examples from the nation’s forests to illustrate how Forestry England seeks to make a beneficial impact.

### Current policies

The conservation of biodiversity is an essential part of sustainable forest management. Forestry policies and strategies emphasise the importance of all treescapes for biodiversity. The Government’s ambitions for forestry, woodland and the wider environment are set out in the Environmental Improvement Plan for England<sup>2</sup>, published in January 2023. It updates and builds on the Government’s

25 Year Environment Plan, with an ambition to improve nature as its apex goal. The Environmental Improvement Plan incorporates new statutory targets to increase woodland cover and restore nature, as well as commitments to encourage productive planting to increase the supply of domestic timber.

The England Trees Action Plan 2021 to 2024<sup>3</sup> sets out more detailed plans to boost tree planting, woodland creation and management for wildlife as a contribution to net zero, and to provide a sustainable timber supply. The plan outlines more than 80 policy actions the Government is taking over this Parliament to help deliver these goals. There are complementary plans setting out the policy, protection and appropriate management of ancient woodland<sup>4</sup> and the conversion of forests to open habitat in England<sup>5</sup>.

Underpinning these policies and plans is the United Kingdom Forestry Standard<sup>6</sup>, which sets out the UK Government’s approach to ensuring that all forests are managed in a way that is sustainable, legal and enhances biodiversity. This is essential reading for any forest owner.

Different types of woodland – from ancient woodland to productive conifer plantations, and urban forests to extensive wooded landscapes – all have the potential to deliver biodiversity benefits. The Forestry Commission provides a range of advice and guidance to help foresters and land managers enhance the biodiversity value of their woodland, whatever their wider objectives.



## Delivering ‘nature positive’

To meet our nature-positive ambitions, we need a raft of approaches. These include protecting important sites and species through bespoke management, increasing connectivity through habitat networks, and using a range of management techniques that create transient and diverse woodland structures. However, it’s clear from the continuing decline in biodiversity that the status quo is not enough: we need to embrace innovation.

A combination of rewilding and forestry is one exciting new approach being trialled by Forestry England at scale. The former focuses on restoring natural processes and letting nature take the lead, the latter how we manage woodlands for a range of public benefits, including timber and recreation. Forestry England will establish 6,000 hectares of wild core areas: spaces to use innovative approaches to rebuilding biodiversity through restoring natural processes.

The simplest way to restore a natural process is to reinstate it. Our ecosystems are missing an abundance of natural processes that were once supplied by species no longer present in the UK. Carefully considered species reintroductions can be transformative in restoring a fully functioning

ecosystem – the key is to select species that have a disproportionately large impact on the ecosystem, known as ‘keystone species’ or ‘ecosystem engineers’. These include large herbivores, such as cattle or ponies, which create extensive disturbance across large areas.

A reintroduction has very different goals from traditional grazing, which uses much higher densities of livestock. The aim is not to manage habitats but to restore the processes. For example, where cattle have been reintroduced in Wild Ennerdale (as a surrogate for historical species such as aurochs), extensive disturbance to ground vegetation has facilitated natural regeneration and contributed to a 65% increase in bird species. Predators are another crucial guild missing from most forests. They naturally balance ecosystems by capping populations and altering prey behaviour. Candidates for predator reintroductions include white-tailed eagles, lynx, golden eagles, eagle owls, pine martens and wildcats. And of course, no discussion of reintroductions would be complete without mentioning beavers – the archetypal ecosystem engineer, whose reintroduction would probably have the greatest positive impact on forest biodiversity.

There are many natural processes that cannot easily be reinstated over short timescales, so replication



Beavers create diverse wet habitats through creating dams and felling trees.

ELEANOR TEW



Forestry England's forest nursery, Delamere, is the largest glasshouse in the UK.

through forest management is essential. These include restoring watercourses by encouraging them to meander, spread and create wetlands; delivering higher levels of deadwood with a diversity of types and sizes; and tree veteranisation techniques, to kickstart the natural processes that give rise to the features normally only found in old trees.

Prior to the end of the last Ice Age our habitats would have included Europe's native elephant, two species of forest rhinoceros, and European bison: mega-herbivores big enough to trample scrub and push down trees. Replicating these high-impact natural processes through ongoing forest management, perhaps alongside harvesting or thinning operations, can be an excellent way of creating much-needed habitat diversity.

While the more ambitious facets of forest wilding (such as species reintroductions) may not be appropriate everywhere, there is almost always scope to encourage more natural processes in all our treescapes. By establishing new wild core areas, Forestry England aims to demonstrate how wilder forests are also more productive and resilient, can co-exist alongside traditional production and recreational use, and deliver a greater range of benefits to society.

### Outside the forest

To be truly nature positive, the forestry sector must also consider its activities and impacts outside the forest. Progress can be limited or even negated if the resources, services and products that we use or produce have detrimental effects on nature. Forest nurseries, timber mills, manufacturers, recreation providers, and businesses that operate from our forests must also account for their operational impacts on biodiversity. This includes considering the resources that are used by the sector, even if they are not owned or produced by it, such as the generation of energy or manufacture of machinery. In short, a nature-positive forestry sector must take responsibility for the impacts of its entire value and supply chain.

This requires a holistic view of the whole economy. It might be possible to have a positive impact on biodiversity in a woodland by reducing the intensity of timber production. However, the UK is already the world's second largest net importer of timber. Offshoring timber production can have significant negative biodiversity impacts, particularly if we import wood products from countries with less stringent sustainability and conservation standards,

or where forestry operations have greater impacts on local biodiversity. A thriving, sustainable UK forest sector with increased timber production (thus minimising externalities) is an important component of being nature positive.

### How do we know if we're delivering?

Effective monitoring is essential. Our actions must be evidence based and we need to adapt our approaches in response to an ongoing review of our actions. There are a range of ways in which we can keep track of our progress, including exciting emerging techniques. Two of the most promising are environmental DNA metabarcoding and natural capital accounting.

#### eDNA

Environmental DNA metabarcoding (or eDNA for short) takes samples from the environment, such as soil, water or air. Contained within is DNA that has been shed by wildlife. Rather than just look for one species like great crested newt (barcoding), we can now look for all species (metabarcoding). eDNA is a highly cost-effective technique for biodiversity auditing, providing an instant snapshot of species presence with minimal fieldwork. It is especially effective at detecting hard-to-reach taxonomic groups, such as fungi and invertebrates, which would otherwise require extensive fieldwork, multiple survey techniques and considerable taxonomic expertise. For example, a small pilot study by Forestry England focusing on soil in our Yorkshire forests found over 200 invertebrate species and 2,000 fungi. eDNA has extraordinary potential to determine the current status of biodiversity, to detect change as we implement land management interventions, and to provide the evidence on which to make future decisions.

#### Natural capital accounting

Natural capital accounting is a valuable tool for monitoring the condition of the natural environment and the impacts of an organisation. Although it sounds complex, it is simply a way of capturing the state of our natural assets and estimating their value to organisations and wider society. Natural capital accounts detail the operational impacts and dependency of the organisation on the natural environment. This includes the direct impacts of the organisation itself on its own natural capital assets (such as land or forest), and can be extended to include the impacts of an organisation's wider value chain (such as suppliers or consumers) and natural capital assets not owned by the organisation (such as air, water or neighbouring land). It's a useful tool for assessing whether an organisation (or wider sector) is succeeding in being nature positive. The British Standards Institute (BSI) has recently published a Standard for natural capital accounting<sup>7</sup>, describing the process for creating a high-quality account that is consistent, rigorous and transparent.

Forestry England has been producing annual natural capital accounts since 2015 and, in 2023, was the first organisation to align a natural capital account to the new BSI Standard. As Forestry England are custodians of the nation's forests, the accounts are invaluable in monitoring and demonstrating that management is sustainable and the value to society is growing. An important feature of Forestry England's natural capital accounts is the asset register, which details the extent and condition of different environmental features. It is here that information about ecological communities is captured, so the trajectory of biodiversity can be monitored over time. Transparent reporting, and responding appropriately, is essential if the sector is to collectively become nature positive.

#### Delivering on many levels

A nature-positive forestry sector will deliver not just for wildlife but also for the climate, wider economy and people. We know that more biodiverse forests are also more resilient, adaptive and productive – they are not in conflict with traditional forest management objectives but are instead a prerequisite, particularly as the impacts of climate change, pests and diseases, and changing social pressures become more acute. However, to realise these benefits we need to be innovative, both in the management approaches we take and the ways in which we monitor progress. Crucially, a nature-positive forestry sector includes all types of woodland, recognising that different forests have different objectives which, as a whole, add up to a sustainably managed, thriving and valuable sector.

#### Acknowledgements

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