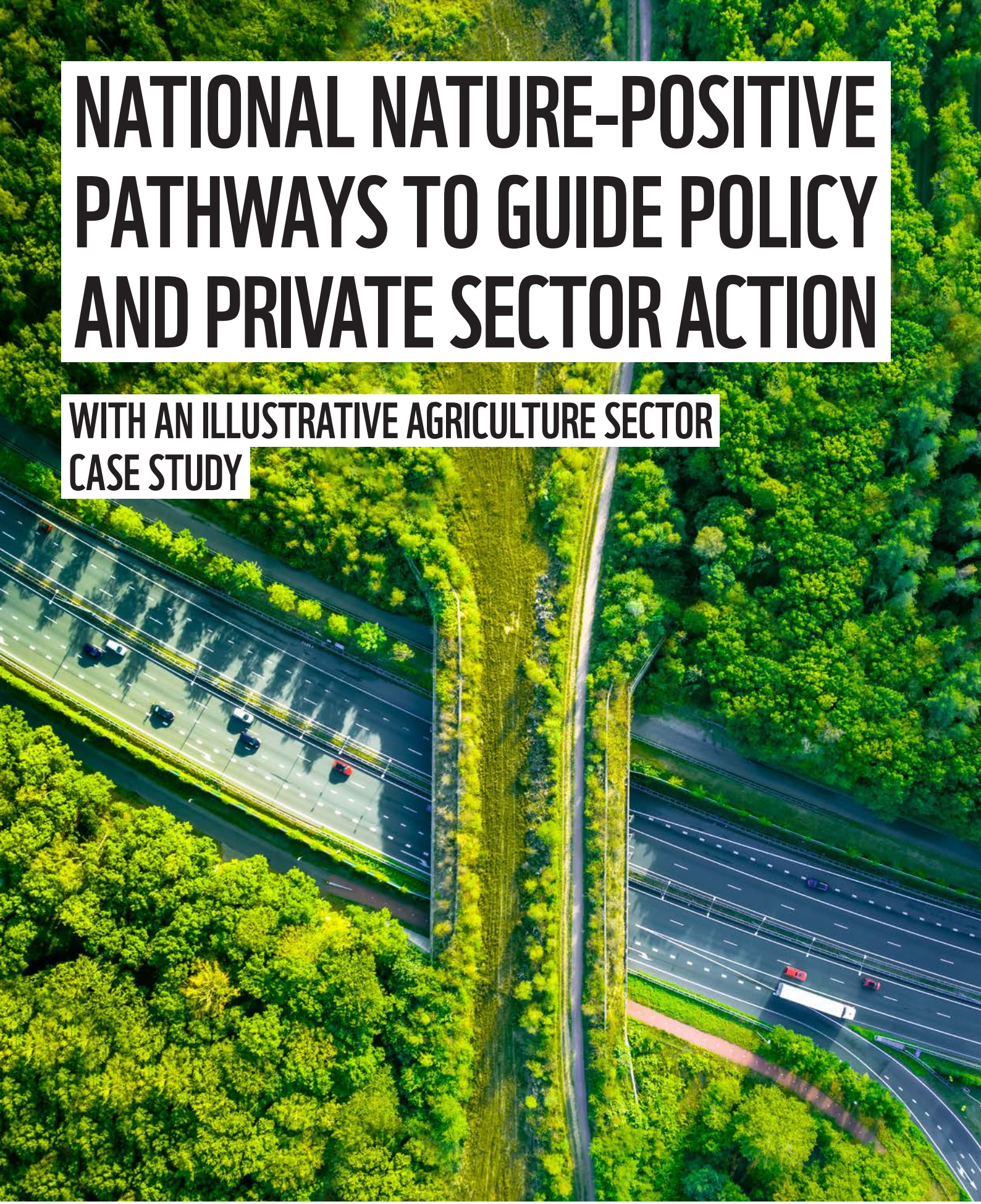
NATIONAL NATURE-POSITIVE PATHWAYS TO GUIDE POLICY AND PRIVATE SECTOR ACTION

WITH AN ILLUSTRATIVE AGRICULTURE SECTOR CASE STUDY



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Acting on climate change to build a better tomorrow

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FOREWORD

Our society, economy and financial systems are embedded in nature. Our economic growth and prosperity depend on a healthy and functioning natural world, which provides our food, water and other resources, as well as protection from extreme temperatures, weather events and diseases.

Nature is also crucial to the delivery of a net-zero future. Nature loss is a key driver of climate change: agriculture, forestry and other land use accounts for 23% of global greenhouse gas emissions.[1] Climate change is now one of the fastest-growing drivers of biodiversity loss.

The science is clear: nature is in freefall globally, and biodiversity is declining faster than at any time in human history. Most of the vital ecosystem services on which business and society depend are in decline. The UK is one of the most nature-depleted countries in the world – average populations of species have declined by 19% since 1970 alone.[2] To reverse this trend and build a prosperous, resilient and sustainable future, we need a holistic transition to a net-zero and nature-positive economy.

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The transition to a net-zero and nature-positive economy represents one of the biggest commercial opportunities of the 21st century, both globally and in the UK. The World Economic Forum estimates that a nature-positive transition could generate opportunities worth around US$10 trillion in annual business value globally by 2030.[3] However, to unlock these opportunities there needs to be greater clarity from policymakers on how businesses and financial institutions can contribute towards national climate and nature ambitions and targets.

This report responds to the need for greater clarity among businesses and financial institutions by proposing the development of nature-positive pathways for different economic sectors. These would articulate how the sectors are expected to transition in a way that aligns with the targets and goals of the UK's National Biodiversity Strategy and Action Plan (NBSAP) and the Global Biodiversity Framework (GBF), the landmark agreement signed by almost 200 countries in December 2022.

Sectoral pathways have been critical to accelerating UK progress on net zero and can play the same role in supporting a nature-positive transition. The policy clarity that such pathways can provide can **drive** private investment and enable businesses and financial institutions to embed nature-related considerations into their activities. It can also support the UK government's ability to work closely with the private sector to realise the opportunities that the transition could bring. Given the climate-nature nexus, it is vital that nature-positive sectoral pathways are developed and integrated with the existing sector-wide net-zero pathways. This can be achieved, in part, by considering the synergies and trade-offs between objectives and actions to deliver a net-zero and nature-positive future.

In this report, WWF and Aviva outline the case for developing these pathways, and why they are essential if we are to deliver the urgent change we need to see.

EXECUTIVE SUMMARY

CONTEXT

There is now widespread recognition that in addition to delivering net zero, we need to transition towards a 'nature-positive' economy – one that halts and reverses nature loss. As well as facing a climate crisis, current and future generations are threatened by another environmental emergency: the catastrophic decline of nature and biodiversity. The economic costs and risks associated with nature loss are significant and growing, and they have the potential to impede economic growth[4] and undermine the viability of individual businesses[5] – especially those that display high dependencies on nature.[6] In addition to averting nature-related risks, the transition to a nature-positive economy can unlock opportunities for investment, innovation and economic growth. Nature-positive models have the potential to create annual business opportunities globally worth US$10 trillion by 2030.[7]

Nature loss is driven to a significant extent by economic activities that contribute to the five direct drivers of biodiversity and ecosystem change: land and sea use change; direct exploitation of nature; climate change; pollution; and invasive alien species.[8] **We urgently need to transition to a nature-positive economy**, in a just and equitable manner. This will involve moving away from economic activities that damage and destroy nature towards more nature-friendly patterns of production and consumption, as well as restoring and protecting nature more effectively.

This nature-positive transition needs to take place alongside the net-zero transition that is already under way. **Indeed, given the strong interlinkages between the two, we need them to be integrated**.

Whereas major components of the net-zero transition have been defined, there is still insufficient clarity on what is needed to deliver a nature-positive transition.

The Global Biodiversity Framework (GBF), adopted by 196 countries in 2022, commits countries to "take urgent action to halt and reverse biodiversity loss" by 2030. Its globally agreed framework of targets can be taken as nature-positive goals. While signatories to the GBF are developing their National Biodiversity Strategy and Action Plans (NBSAPs), it is unclear how each economic sector can align with each country's NBSAP and by extension with the GBF. The targets of the GBF need to be broken down to a sectoral level that businesses and financial institutions can easily put into operation. We need to see more granularity on what the transition should look like at the national and sectoral level, to support and guide private sector action and the design of a supportive policy framework.

SOLUTION

To address this problem, this report demonstrates why the UK government should directly develop, or commission the development of, national sectoral pathways to deliver the nature-positive goals for the UK set out in the GBF. National Nature-Positive Sectoral Pathways are national strategies that will guide policymakers and the private sector on how different economic sectors should contribute towards the GBF targets and the country's NBSAP – by 2030 and beyond. These should be integrated with existing sectoral pathways to net zero, and explicitly consider the trade-offs between objectives to set out how the UK will transition to a nature-positive, net-zero economy.

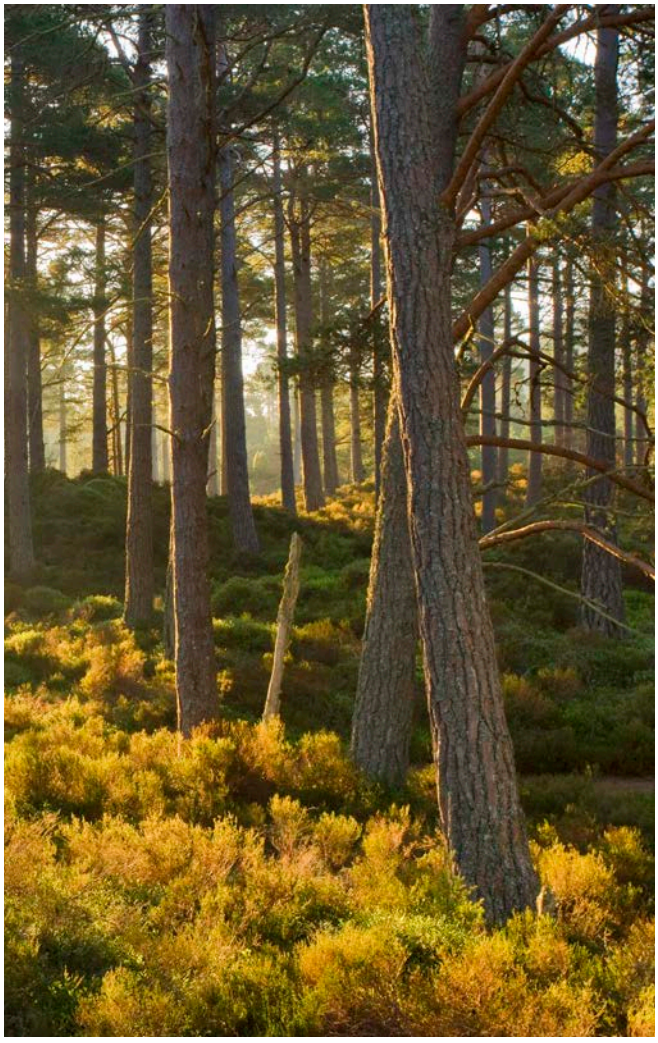
Sectoral pathways have been critical to accelerating UK progress on climate change and can play the same role in supporting the nature-positive transition. The Path to Net Zero, developed by the Climate Change Committee alongside its Sixth Carbon Budget report, outlines, quantifies and sequences the actions each sector must take to deliver the emissions reductions necessary to contribute to the UK's net-zero target.

Similarly, the UK government should endorse the development of a clear set of national nature-positive pathways, moving beyond voluntary private sector action. A government-endorsed process, based on science and involving the private sector, should provide a national vision and define the transition required in each sector to deliver the UK NBSAP, and by extension the GBF. The process could be led through a multistakeholder private-public collaboration that includes representatives from government, academia, civil society and the private sector.

Sector-specific nature-positive pathways are necessary for a number of reasons:

- Targeted policies provide incentives for action and drive the transition. Sectoral pathways help to both inform policy development and increase policy coherence across sectors, while providing greater clarity to the private sector on the expected direction of travel and policy levers that will be used.
- The long-term vision will help catalyse private investment by pointing to the commercial opportunities the transition is likely to generate, and encouraging private sector research and development, innovation and investment. This is expected to provide investors with greater confidence to invest, reducing pressure on constrained public finances.
- Certain key decisions and actions can or should only be taken at the national, regional or landscape level, and/or by relevant authorities with public interest objectives. This applies in cases where the interests of different stakeholders or sectors need to be taken into account to ensure a just transition, or where wider societal goals need to be considered when making choices.
- An overarching framework will ensure the required actions across the whole economy add up to sufficient change to deliver the national nature-positive goals the government has committed to. Mapping the desired trajectory of the transition over time and linking the current state of nature to the target future state will enable milestones to be set and progress to be monitored against them. This will facilitate adjustments or remedial action where progress is falling behind.
- Sectoral pathways can deliver the required transition in the most cost-effective and socially beneficial ways, by looking at how particular targets could be met by different sectors and comparing the relative costs and benefits (see Table 1).
- Integrated pathways will help explicitly assess and manage trade-offs and capitalise on synergies across sectors and across nature-positive goals, as well as across net-zero targets. Not all actions for nature and climate across sectors are mutually beneficial,[9] so integrated decision making is required to deliver both goals and to ensure progress on one does not undermine the other.

In this report, we discuss the rationale and business case for developing national nature-positive pathways. We also present an illustrative nature-positive pathway for the agriculture sector in the UK, which showcases the transition that a sector needs to undergo to align with GBF targets. The agriculture sector displays high nature-related dependencies and impacts, so its need to transition to nature-friendly practices is critical.



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THE RATIONALE FOR NATURE-POSITIVE PATHWAYS

CONTEXT

There is now widespread evidence and recognition that we need to transition towards a 'nature-positive' economy – one that halts and reverses nature loss – as well as delivering net zero. Alongside climate change, the planet is in the midst of another environmental emergency threatening the wellbeing of current and future generations: the catastrophic decline of nature and biodiversity. As WWF's *Living Planet Report 2022* shows, global wildlife populations have plummeted 69% on average since 1970,[10] driven by humanity's impacts on the natural world and the unsustainable management of our planet's resources.

The UK is no exception to this: decades of intensive land and sea use now leave the UK in the top 10% of the most nature-depleted countries globally,[11] with populations and distributions of plants, invertebrates and birds having declined significantly since 1970.[12] Today, 2% of species are extinct in Great Britain and a further 16% are threatened with extinction.[13] This biodiversity loss is an indicator of the declining state of nature across the UK and the vulnerable state of our air, rivers, seas, soils, peatlands and forests.

The economic costs and risks associated with nature loss are significant and growing. The Network of Central Banks and Supervisors for Greening the Financial System (NGFS) has stated that nature-related risks could have significant macroeconomic and financial implications and that their "mitigation requires urgent 'transformative changes' in our socioeconomic and financial systems".[14] Internal analysis by the Bank of England found that "over half of UK GDP and nearly three-quarters of the stock of UK lending exhibits dependence on ecosystem services."[15] The link between nature-related risks and economic and financial stability is further reinforced by a study led by the Green Finance Institute, which finds that the deterioration of the natural environment in the UK and globally could slow economic growth and result in UK GDP being 6-12% lower than it would have been otherwise by the 2030s.[16] **At an individual company level, sector dependencies on nature can expose companies to material financial risks**. Already there are numerous reported cases of businesses being affected adversely by nature-related risks, both physical and transition risks, in multiple sectors and geographies.[17]

Nature-negative economic activities contribute to five direct drivers of nature loss: changes in land and sea use; direct exploitation of nature; climate change; pollution; and invasive alien species.[18] **We urgently need to transition to a nature-positive economy**, in a just and equitable manner. This involves moving away from economic activities that damage and destroy nature towards more nature-friendly patterns of production and consumption, as well as restoring and protecting nature more effectively. The nature-positive transition needs to take place alongside the net-zero transition that is already being defined and implemented. Indeed, given the strong interlinkages between the two, we need them to be integrated.

RELEVANT POLICY FRAMEWORKS AND INITIATIVES

Whereas major components of the net-zero transition have been defined, there is still insufficient clarity on what is needed to deliver a nature-positive transition. The architecture to support the net-zero transition includes a clear global goal and Nationally Determined Contributions setting out actions at the national level through the Paris Agreement; and the publication of sectoral transition pathways at both global and national levels.[19] At a global level, net-zero pathways have been produced by the International Energy Agency, while at the national level the Climate Change Committee (CCC) has published the Path to Net Zero and sectoral pathways alongside its Sixth Carbon Budgets. We should aim to replicate this

architecture for nature-positive goals to give nature the same status and structures, and enable the integration of the nature and climate agendas.

Although there has been less clarity on nature-positive goals so far, there is an emerging architecture which includes voluntary initiatives, global agreements, corporate disclosures and national strategies.

The Nature Positive Initiative – a group of organisations working together to foster alignment and shared understanding of the concept of nature positive – has advocated for a global nature-positive goal, to "halt and reverse nature loss by 2030 on a 2020 baseline, and achieve full recovery by 2050."[20] To put this more simply, it means ensuring more nature in the world in 2030 than in 2020 and continued recovery after that.[21] This concept is illustrated in Figure 1 and the Nature Positive Initiative is now working on developing metrics and approaches to measure progress against it.

An updated framework of global goals for nature was adopted by 196 countries at the 15th Conference of the Parties (COP15) to the Convention on Biological Diversity (CBD) in December 2022. The Kunming-Montreal Global Biodiversity Framework (GBF) commits countries to "take urgent action to halt and reverse biodiversity loss" by 2030. While the previous set of goals, the Aichi Targets, were not met, the new GBF has the potential to be a gamechanger, as for the first time it includes targets to align financial flows with the goals, as well as a goal for businesses and financial institutions to assess, disclose and reduce their negative impacts on nature. In order words, it sets an intention to transition the economy to achieve the agreed goals. The GBF constitutes a globally agreed framework of targets which can effectively be taken as nature-positive goals, and with which the financial and private sectors are expected to align their activities – in the same way as the private sector is expected to align with climate goals under the UNFCCC.

These global goals must be put into operation by each signatory country through National Biodiversity Strategy and Action Plans (NBSAPs). These NBSAPs should start to guide private sector expectations and action to facilitate alignment with the goals of the GBF. However, to date, NBSAPs have not been particularly clear on the economic transition that is required, given that this is a new component of the agreement.[23],[24] This means that, while private sector alignment with the GBF is required (Target 14) and private financial institutions need to mobilise significant resources (Target 19), the goals have not yet been adapted to a level that businesses and financial institutions can easily put into operation. More granularity is needed on what the transition should look like at the national and sectoral level, to support and guide private sector action and the design of a supportive policy framework.

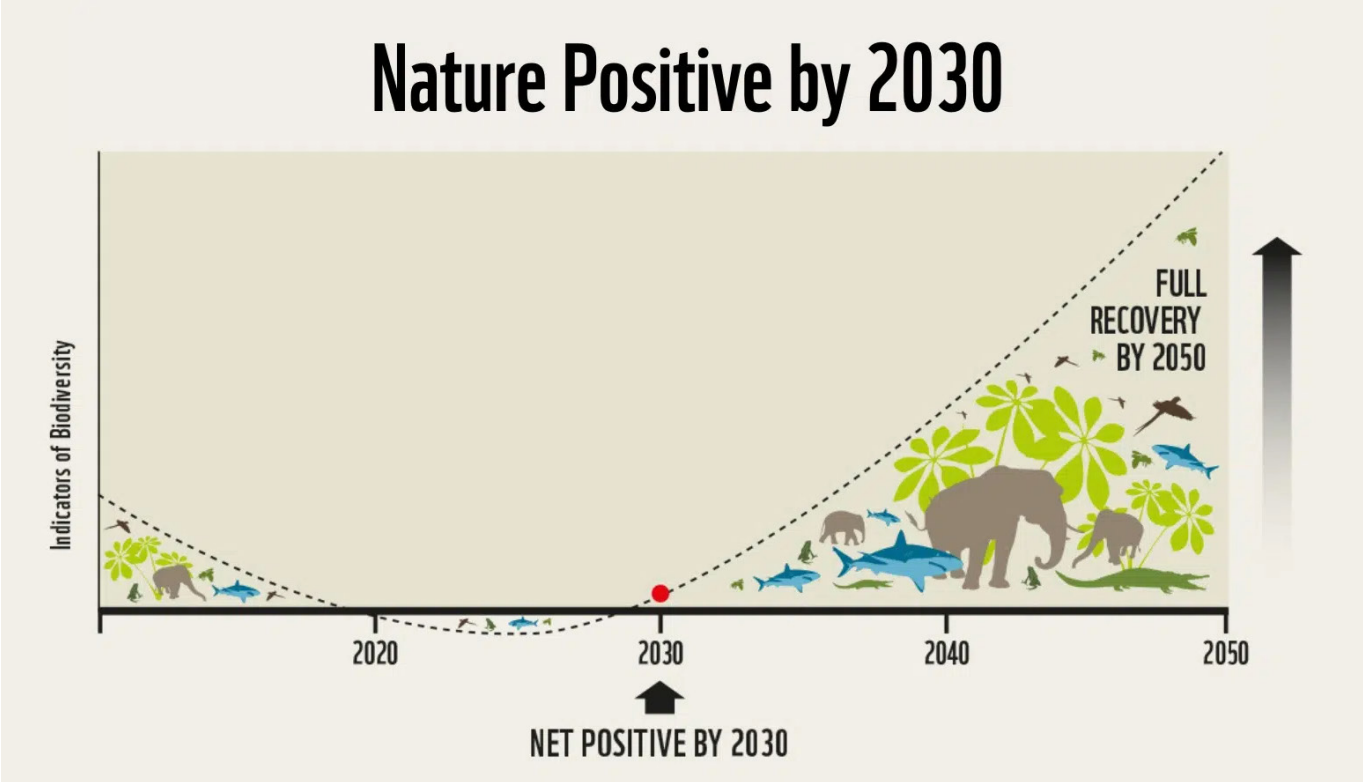

Figure 1: *The Nature Positive Initiative's Illustration (Global Goal for Nature)*[22]

THE NEED FOR SECTOR-SPECIFIC GUIDANCE

Sectoral pathways have been critical to accelerating UK progress on climate change and can play the same role in supporting the nature-positive transition. The Path to Net Zero, developed by the Climate Change Committee (CCC) alongside the Sixth Carbon Budget report, outlines, quantifies and sequences the actions each sector of the economy must take to deliver the emissions reductions necessary to achieve the UK's net-zero target. The sectoral breakdown of climate targets provided in the Sixth Carbon Budget has been referenced in multiple policy documents and government publications across different departments. Importantly, the government's Carbon Budget Delivery Plan (March 2023) provides proposals and policies for each sector, mimicking the structure of the CCC's Sixth Carbon Budget. The *Powering Up Britain* report, the *Biomass Strategy* (2023) and the *Independent Review of Net Zero* (Skidmore Review) also clearly reference the recommendations of the Sixth Carbon Budget for different economic sectors. It is important to note that the net-zero policy framework still requires further development, alongside accelerated delivery, if the UK is to meet its legally binding net-zero target. The CCC's 2024 Progress Report urged the new government to act fast to hit the country's commitments, as currently only a third of the emissions reductions required to achieve the UK's 2030 target covered by credible plans.[25] It is essential that the government produces a credible revised net-zero strategy and an enabling policy framework to guide investment and innovation.[26] Nevertheless, net-zero sectoral pathways represent an important step in the transition to a net-zero economy by providing clarity on the direction of travel and by defining the role of each sector.

The same is now required to unlock progress for nature: to identify the specific actions and changes in impact required in key economic sectors to deliver on agreed nature goals. The UK needs to develop national nature-positive sectoral pathways ('nature-positive pathways') to replicate the success of the net-zero sectoral pathways. Importantly, nature-positive and net-zero pathways should be aligned and integrated.

DEFINING NATURE-POSITIVE PATHWAYS

Nature-positive pathways are sets of plans or strategies, developed through a government-endorsed process, which provide guidance to both policymakers and the private sector about **how different economic sectors should contribute to achieving the targets of the GBF and the country's NBSAP** – by 2030 and beyond. This would help policymakers, the financial sector and business to understand what they need to do to align with the goals of the GBF, and what the nature-positive transition will look like at the national level. Specifically, the GBF consists of 23 targets for urgent action by 2030. These include targets on pollution reduction, nature protection and restoration, and resource mobilisation. While NBSAPs should provide a detailed plan on how each government will align with the targets of the GBF, nature-positive pathways will explain how each economic sector is expected to align with a country's NBSAP, and by extension contribute to each GBF target.

As is explained in the next section, nature-positive pathways provide the private sector with necessary clarity on the direction of travel of domestic policy and guidance on alignment with the national NBSAP. However, they are just one part of the wider policy framework that is needed to effectively mobilise private and public resources towards a transition to a nature-positive net-zero economy. Once developed, nature-positive pathways are expected to facilitate the process of developing suitable policies, regulations, incentives and industrial strategies to enable this transition.

The development of nature-positive pathways can build on the valuable work already undertaken by a consortium of organisations including Business for Nature, the World Economic Forum and the World Business Council for Sustainable Development (WBCSD), who have developed a series of 'Sector Actions Towards a Nature-Positive Future' for 12 key economic sectors.[27] Together with the *Nature Strategy Handbook*,[28] created by Business for Nature and PwC, the sector actions help businesses to assess their relationship with nature and prioritise their actions, and provide a valuable foundation of sector-specific analysis that can be built upon. However, voluntary action by the private sector can only take the transition so far; an enabling policy and regulatory environment is also required.

In the next section, we explain the specific benefits that nature-positive pathways are expected to deliver to the public and private sectors. Following this, we present an illustrative example of a nature-positive pathway for the UK agriculture sector.

THE BUSINESS CASE FOR NATIONAL NATURE-POSITIVE PATHWAYS

The development of nature-positive pathways through a government-endorsed process would signal the UK government's commitment to deliver the nature-positive transition and help create a more coherent policy framework across sectors. This would in turn provide the private sector with confidence to invest in both research and development to drive innovation and new commercial opportunities that will be unlocked through the transition.

Box 1

'An increasing number of companies understand that by taking action on nature now, they can transform nature-related risks[29] – physical, reputational or regulatory – into commercial opportunities.[30] Shifting to nature-positive models could create annual business opportunities worth US$10 trillion by 2030.[31] Given its wide-ranging impacts on nature, but also through its potential for investment, collaboration and innovation, business must drive the urgent shift to a nature-positive, net-zero and equitable economy. On average, nature-positive actions could also provide a combined value opportunity of nearly US$700 billion annually through reduced operating costs[32] for businesses.'

Business for Biodiversity

Supporting the development of an enabling policy framework that will drive and incentivise the transition

Nature-positive pathways would provide the vision and plan needed for the development of an effective policy framework to drive the nature-positive transition. By defining and clarifying the contributions of each sector towards the GBF targets, nature-positive pathways will help link public spending and policy decisions to the environmental targets that the UK government has already committed to. The experience of tackling climate change illustrates the importance of this. Recognition of the crucial role of renewable energy in achieving the net-zero target resulted in the development of a series of policy instruments to support its commercialisation and deployment. The Renewables Obligation, succeeded by the Contracts for Difference scheme, contributed to the growth of offshore wind generation capacity in the UK. Between 2008 and 2022, the cost of offshore wind fell from approximately £170/MWh to £37/MWh (based on 2012 prices).[33] These instruments enabled the growth of a range of low carbon generation sources in the UK, from which offshore wind has emerged as the primary technology.

Similarly, the transition to a nature-positive economy relies on the deployment of new technologies and processes, which will require government incentives to promote uptake at scale in the required timeline but can be expected to result in innovation and cost reductions over time. For example, the nature-positive pathway for the agriculture sector below requires a significant reduction in external inputs such as fertilisers, pesticides and water. Some of the solutions are already known but have not yet been deployed at scale: for example, precision farming, nature-friendly farming, and circularity need to be scaled rapidly to achieve the targets of the GBF. Other solutions are less known and are still in the discovery stage. To develop the technologies needed, upskill producers, decrease costs and encourage widespread adoption, an enabling policy framework will be needed.

Box 2: Indicative opportunities for businesses in the agriculture sector transitioning to a more nature-friendly system

The transition to a nature-friendly farming system goes hand in hand with the adoption of new technologies and processes that can improve efficiency, productivity and waste management, while supporting nature and climate goals.[34] The deployment of these solutions relies on the creation of new financing models (preferential loans, improved contracts, price premiums, insurance products) and markets (for deforestation- and conversion-free products, regenerative agriculture, nature-based solutions, biodiversity net gain). It will also require education and training of farmers and land owners. Below is an indicative list of possible solutions, which are at different stages of development and deployment:

Nature-based solutions. Farms can promote nature-based solutions to improve water quality and availability, to mitigate the impacts of flooding and extreme weather events, and to increase biodiversity, soil health, and productivity.

Nature-friendly practices. Depending on the type of farm such practices could include rotational and increased grazing, reducing imported feed and other inputs, improving soil health through efficient use of waste and manures, using diverse swards, reducing overgrazing, and introducing trees and hedges.

Monitoring, reporting and verification (MRV) technologies. This approach uses data to better understand the land, and deploys technology to support more accurate application of fertilisers and water inputs:

- Precision application techniques for fertiliser can boost productivity while reducing nature impacts.
- Undertaking routine soil testing analysis can help to identify the optimal use of land for crops and grazing and forecast potential yields.
- Soil testing across fields and plant tissue analysis can also help to identify the specific nutrient profile of different sites, leading to precise insight on chemical input needs.
- Using data analytics can help identify profitability per farm section, in turn helping to identify areas best suited for alternative uses, such as wildflower strips, cover crops and agroforestry.

Livestock farmers can apply solutions such as automated feed systems, GPS technology for monitoring movement during grazing, and automated cleaning for improved disease control.

Greenhouse technology. This can extend the growing season and enhance yields for fruit and vegetable crops.

Productive and resilient crops and breeds. Selecting productive and resilient options across all livestock and crops can further contribute to productivity gains.

Bio-based substitutes to fertilisers and crop protection agri-chemicals. These are biodegradable, do not bioaccumulate in the food chain, and pose a lower risk to the environment. They can reduce pollution in those cases when fertilisers and crop protection are necessary.

Vertical farming. Beyond traditional farms, emerging technologies and innovations such as vertical farming may allow further prospective productivity gains. However, it is important to note that many of these technologies are still in the nascent stage, with cost and scalability still a challenge, so further progress is required to deliver meaningful change.[35]

Innovative investment and insurance products. These can also help to manage nature- and climate-related risks and impacts. Financial institutions are increasingly expected to manage the scope 3 impacts of their investments, while the agri-food sector needs to meet environmental regulations and the rising consumer demand for food products that support animal welfare and do not degrade nature. The push from the finance sector and the pull from the agri-food sector are expected to create demand for new financing products. Such products will have a different structure, timeline and performance indicators from conventional products, to reward nature and climate benefits, to reduce the risk that farmers undertake, and to account for longer-term benefits.

PROVIDING CLARITY TO BUSINESSES AND FINANCIAL INSTITUTIONS

National, government-endorsed nature-positive pathways would provide long-term clarity and a clear vision for the future, which are conducive to unlocking private investment. This provides several advantages:

1. **Incentivising long-term investment and realising commercial opportunities.** Consistency and long-term clarity are prerequisites to the allocation of capital by investors. The benefits of investments into nature and climate accrue over time and will be enjoyed by future generations. To support these investments, the government needs to provide a long-term vision of how the economy will transform and what that will look like in different sectors. This will give confidence to the private sector that it can receive a satisfactory return on investment in more nature-friendly technologies and business models that align with the transition over a prolonged period of time. A long-term vision encourages businesses to invest in research and development into new technologies, services and processes that will support the transition, as they can better anticipate the solutions that will be needed and that are likely to receive policy support from the government.

2. **Clarifying regulatory risk.** The nature-positive transition is just getting started, and there is a growing amount of regulation around nature impacts that will affect both the financial sector and the real economy. The lack of nature-positive pathways is a transition risk as there is a lack of understanding on what is expected of the private sector to align with GBF targets. An improved understanding of the trajectory of the transition and of likely policy developments will enable businesses to better anticipate and manage future policy changes and associated regulatory risks, and minimise costs. It will also help them to use the framework developed by the Taskforce on Nature-related Financial Disclosures (TNFD) to disclose on these regulatory risks, develop management plans, and invest in adapting their businesses for the future, for example by including nature goals in their transition plans.

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3. **Aligning with the goals of the GBF and supporting target-setting, disclosure and reporting.** Nature-positive pathways will support businesses to align with national and global environmental targets. The Science-Based Targets Network (SBTN), which is developing tools and guidance to help businesses set targets for nature, highlights that alignment with existing policy frameworks is a key priority for setting business-level science-based targets.

   Nature-positive pathways with a clear timeline and milestones can guide businesses towards alignment with GBF targets. Nature target-setting guidance has been developed for a wide range of sectors, including the SBTN guidance for businesses,[36] the Principles for Responsible Banking guidance for the banking sector,[37] and the Finance for Biodiversity framework for asset managers and asset owners.[38] However, it remains unclear how each sector is required to align with the targets of the GBF. Without clarity on how they are expected to contribute, it will be challenging for businesses to disclose meaningful science-based targets and transition plans that are aligned with the GBF.

   SBTN and other relevant frameworks fill an important gap by providing business with guidance on setting science-based targets for specific biomes – and they help businesses understand how they should incorporate national regulation into their assessments, when that regulation is available.

   When the SBTN framework is fully developed, national nature-positive sectoral pathways will still be necessary to guide policy action, allocate responsibility to each sector, and address trade-offs and synergies, as previously discussed.

   The Nature Working Group of the Transition Plan Taskforce (TPT) flagged that sectoral strategies, such as nature-positive pathways, are crucial to enable businesses and financial institutions to incorporate nature into their transition plans, which they may be required to publish in future.[39] Governments have an important role to play in providing guidance to align corporate action with their NBSAPs, and nature-positive pathways are an important first step.

4. **Aligning nature and climate transition pathways.** Integrating nature-positive and net-zero pathways will provide a more coherent framework for businesses to navigate the twin crises of climate change and nature loss and to develop transition plans that address both simultaneously. Currently, businesses are asked to respond to two connected crises using two separate sets of frameworks. On the one hand we have a Net Zero Strategy, the Taskforce on Climate-related Financial Disclosure, the Science-Based Targets initiative and climate transition plans, while on the other we have the GBF, TNFD and SBTN. Developing integrated nature-positive, net-zero pathways will provide an opportunity to link the two agendas in a more coherent and efficient way, and to provide a unified approach for addressing them within the UK jurisdictional context.

ILLUSTRATIVE NATURE-POSITIVE PATHWAY FOR THE AGRICULTURE SECTOR IN THE UK

Agriculture is one of the sectors with the largest impacts and dependencies on nature. Globally around a third of greenhouse gas emissions come from the way we produce, distribute and consume food.[40] The food system is the largest driver of water use, biodiversity loss and soil degradation. In the UK alone, these impacts add £42 billion of hidden environmental costs to society each year, or more than £2 of costs for every £1 of value created.[41]

WBCSD's *Roadmap to Nature Positive* for the agri-food system, focusing on row crops,[42] demonstrates how the system's negative impacts on nature degrade the ecosystem services the system depends on. It also shows how this further increases its negative impacts and undermines its sustainability. Conventional row crop production practices including monoculture, tillage and intensive agrochemical use can have negative impacts on soil quality, erosion control, climate regulation and water flow maintenance. This causes yield loss that drives businesses to clear more land and further intensify production to mitigate their loses. Conventional row crop production also causes significant greenhouse gas emissions; water use; air, soil and water pollution; biodiversity loss; and impacts on farmer livelihoods. It generates significant physical risks to businesses, as previously freely available ecosystem services now need to be supplemented with external inputs and irrigation, which raises operational costs, while the loss and variability of crop yields increase uncertainty. Although it focuses on row crops, the principles and findings of this research are useful across different agriculture production systems.

The analysis in the WBCSD roadmap is largely applicable to the agriculture sector in the UK, which we will explore in this section. Agriculture is the UK's largest land user, occupying some 71% of the total land area, and relies on ecosystems and their services to produce crops, food and other agricultural outputs. In 2020, the estimated annual value of the ecosystem services provided by nature for agriculture in England alone amounted to £5.4 billion,[43] highlighting the importance of preserving nature for the long-term sustainability of the sector itself.

At the heart of the sector are the farmers, landowners and local communities who are stewards of the countryside and have cared for these lands for centuries. However, due to the impacts of rapid industrialisation and intensification of agriculture incentivised by government policy and subsidy, dependence on volatile and fossil-fuel-based inputs, and the increasing threats from climate change, the future sustainability of the sector is at risk.

UK consumption of imported agricultural and forest products also drives the degradation of the natural environment internationally. Notably, the equivalent of 88% of the total UK land area was required to supply the UK's demand for just seven imported agricultural and forest commodities over a two-year period.[44] Although the environmental impacts of UK imports are significant, addressing these requires a different suite of policy levers and international equity considerations. **The analysis here focuses on the impacts of the agriculture sector domestically.** WWF-UK's *Core Environmental Standards* report discusses how the UK can support a global transition to sustainable agriculture.[45]

Table 1: List of key steps for the development of nature-positive sectoral pathways. This is based in part on our work to develop an illustrative agriculture sector pathway, and is not prescriptive or final, but could act as a starting point for the future creation of sectoral pathways.

1. Define the boundaries of economic sectors and the scope of individual pathways	Use a sector classification framework to categorise sectors and define the economic activities that fall within each sector. In the illustrative pathway for the agriculture sector, we use the UK Standard Industrial Classification (SIC) 2007 framework.
2. Set nature-positive ambition	Adopt the definition used by the Nature Positive Initiative in the Global Goal For Nature, defining nature positive as halting and reversing the current decline in nature by 2030, increasing the stock of natural capital against a 2020 baseline and reaching full ecosystem recovery by 2050. For the purposes of the illustrative pathway for the agriculture sector, we take this definition to mean successfully delivering the targets and goals of the GBF, recognising this as the high watermark of international nature ambition. As scientific understanding of the nature-positive transition improves, it is possible this definition would have to be updated.
3. Assess sectoral impacts on nature at a national level	Understand how the economic activities of each sector affect nature, and assess the extent of the impacts. We use the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) five direct drivers of biodiversity and ecosystem change to categorise the nature impacts of the economic activities included. We identify the impacts of the agriculture sector in the UK following the methodology developed by WBCSD in its Roadmap to Nature Positive.[46]
4. Identify GBF targets that are most relevant to each sector	Review national and international legislation and identify the targets that are directly relevant to each sector. In the illustrative example we review the GBF targets, which can deliver on the nature-positive ambition, as identified in step 2. As each GBF target is directly relevant to more than one economic sector it is necessary to map all the targets that apply to each sector. Consideration also needs to be given to how much each sector should contribute to the delivery of each target, as compared with other sectors – to ensure that between them sufficient change is delivered for that target to be met at the national level. The development of nature-positive pathways should also include identifying metrics and indicators to assess progress against the relevant targets over time for each sector.
5. Identify interlinkages across sectors	Explore synergies and trade-offs between sectors to develop pathways covering multiple sectors. This would also involve quantifying the optimal contribution of each sector to relevant GBF targets based on its impact on nature, abatement cost, and availability of alternative approaches or substitute technologies. The process of identifying interlinkages across sectors should be performed in an iterative way with step 4, in calculating the optimal contribution of each sector to deliver GBF targets.
6. Identify the sectoral levers required to deliver nature positive and construct a pathway	Identify levers to address the impacts of each sector on nature and deliver the contribution to aligning with each of the GBF targets that have been assigned to that sector in step 4. The levers can be identified through a combination of literature reviews, quantitative modelling, academic research, and expert interviews. We did not use modelling for the development of the illustrative pathway, as many of the assumptions that would underpin the model should be agreed on through a multi-stakeholder process.
7. Integrate nature-positive pathways with existing net-zero pathways	Identify potential synergies and overlaps between nature-positive pathways and existing net-zero pathways and integrate the two to provide an efficient and coherent framework for private sector action that delivers both goals.

For the development of the illustrative pathway of the agriculture sector in the UK we have broadly followed the key steps identified in Table 1. These steps aim to serve as a conversation starter for the future development of nature-positive pathways and should be developed further through a multi-stakeholder process.

NATURE IMPACTS

Historical land conversion. Over generations, the conversion of nature-rich ecosystems to agricultural land has reduced the quantity and quality of ecosystems. Historical examples include the conversion of wild grasslands or the draining of peatlands, two of the UK's most important spaces for endangered wildlife which also provide ecosystem services such as freshwater filtration and carbon sequestration. The main driver of land use for agriculture is meat and dairy production. As identified by the National Food Strategy, 85% of the farmland that feeds the UK (both domestically and abroad via imports) is used for livestock, either for grazing or to grow feed for livestock.

Intensive farming practices. Intensive farming practices in the UK contribute directly to three drivers of biodiversity loss, as defined by IPBES: unsustainable natural resource use, pollution, and climate change (the impact of the sector on global warming has been addressed in previous publications[47] [48]). Agriculture is one of the most water-intensive sectors[49] and periodically places considerable stress on water resources in the UK. Together with forestry and aquaculture, agriculture uses 14% of total water abstracted in England and Wales. Industrial agriculture uses unsustainable levels of other resources, such as energy and animal feed inputs, exerting further pressure on biodiversity. Pollution of soil, water and air is driven by the widespread use of chemical inputs for agriculture (fertilisers, insecticides, pesticides, herbicides and antimicrobials) and management of animal waste. For instance, excess pesticide use presents a pollution risk on an estimated three-quarters of UK agricultural land.[50] On land, nitrogen has been found to impede decomposition and slow microbial growth.[51]

GBF TARGETS

Addressing the above nature impacts is crucial for meeting the UK's commitments under the GBF. The most relevant GBF targets are:

Targets 1-3, commonly referred to as the '30x30' targets, under which the UK has committed to conserving 30% of land and sea and ensuring 30% of degraded ecosystems are under effective restoration by 2030.

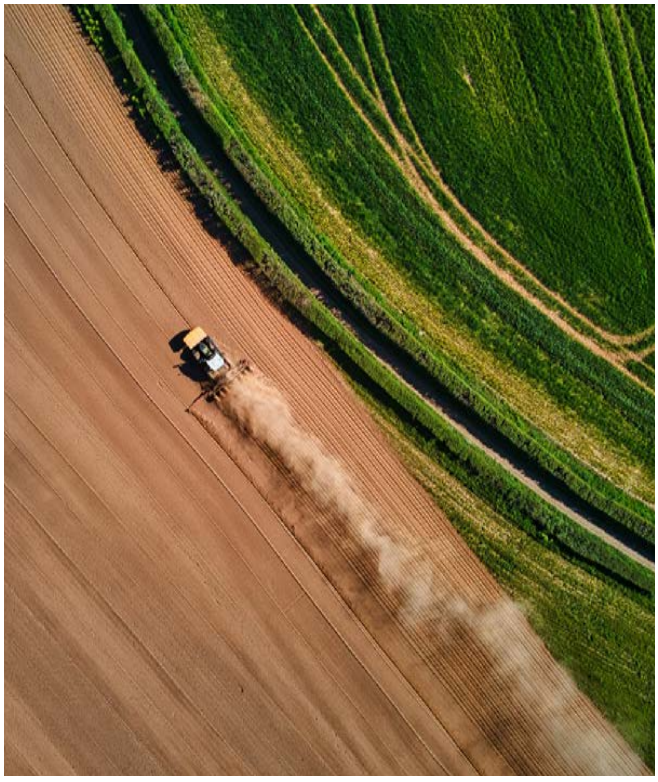
Target 7, which aims to reduce pollution risks and impacts from all sources by 2030, including halving the loss of excess nutrients to the environment.

Target 10, on ensuring land under agriculture is managed sustainably, including through a substantial increase in biodiversity-friendly practices.

Target 16, on halving food waste. Within the UK context this will require a systemic reduction across the entire food system, as only 25% of food wasted in the UK is attributed to primary production within the agricultural sector.[52]

Target 18, to identify by 2025 (and eliminate, phase out or reform) incentives, including subsidies, that are harmful for biodiversity.

While cross-sector actions are required, the agriculture sector can make an important contribution to meeting these targets.



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LEVERS FOR ACHIEVING GBF TARGETS

With this context in mind, a nature-positive pathway for agriculture could comprise two broad sets of levers. It requires both action for nature at the level of the individual farm and transformation beyond the agriculture sector alone.

Creating space for nature's recovery both on and off farmland. This can be facilitated by agricultural productivity improvements, shifting patterns of demand, waste reduction and imports that meet high environmental standards.

1. **GBF Targets 1-3:** conserving 30% of land and sea and restoring 30% of degraded lands by 2030 clearly points to the need to create space for nature. In addition, the CCC's balanced pathway to net zero requires approximately 21% of UK agricultural land (15% of total UK land) to be transformed or used to deliver carbon sequestration. This includes restoring peatlands and forests as well as transitioning agricultural practices to more regenerative approaches. By ensuring nature is a key consideration in these transformations, significant progress can be made towards the 30% land conservation target outlined in the GBF – while simultaneously making progress towards net zero and supporting a just transition in the farming sector.

    a. All farm types and sub-sectors (such as arable crops, livestock, and dairy) will have a unique transition story and set of circumstances and considerations. Decisions about which areas of land should be managed for nature recovery against those for agricultural production should be made in active collaboration with farmers, landowners and local communities. Opportunities for multifunctional land use should be prioritised. There is significant scope to deliver benefits for food, climate and nature through even modest changes in land use: as the National Food Strategy highlights, the bottom 20% of UK agricultural land by productivity today produces just 3% of the UK's total calories and has significant overlap with those areas identified as being critical to nature recovery.

    b. Additional space can be created for nature by shifting diets and production patterns. Dairy and meat products provide only 32% of calories consumed in the UK and less than half (48%) of protein, but – by contrast – livestock and their feed take up 85% of the UK's agricultural land.[53] This will require action beyond the agriculture sector itself; clarity on this as an objective in a nature-positive pathway would facilitate more coordinated action and help businesses and farmers to prepare, adapt and transition as needed.

    c. Around 46% of all food consumed in the UK and a large share of animal feed are imported,[54] and this figure could increase further in the short term if creating space for nature in the UK leads to drops in production. To avoid causing environmental damage elsewhere in the world and unfairly undercutting domestic producers, and to support a nature-positive pathway globally, these imports would need to adhere to a set of core environmental standards.[55] This would ensure that both imported and domestically produced food meets equivalent environmental standards set in UK law. This again demonstrates the case for coordinated policy action.

    d. Productivity improvements in the agriculture sector have the potential to reduce pressure on land, by improving yields to help meet nutritional needs while simultaneously making space for nature. This opens up investment opportunities in productivity-enhancing technologies and production methods that could improve the efficiency and competitiveness of UK production, while also helping to reduce inputs.

2. **GBF Target 16: halve food waste.** While an estimated 25% of food waste occurs on farms, particularly in fruit picking, the majority of food waste in the UK occurs downstream. Half comes from households, with the remainder split between the processing, retail and hospitality sectors. Reducing food waste across the supply chain decreases the output required to meet nutritional needs in the UK, sparing more land. Major retailers including Tesco and Waitrose are arguing that mandatory food waste reporting across the supply chain is critical to meeting nature and climate targets. This again points to coordinated action beyond the agriculture sector itself and highlights investment opportunities in waste management and reduction technologies.

Minimising the potential negative nature impacts – and maximising positive nature impacts – of ongoing agricultural practices. This includes, for example, adopting agroecological farming practices, or using data analysis to identify less profitable sections of a farm that could be suitable for alternative uses, such as wildflower strips. Investment, policy and advice should promote a 'whole farm' approach to enable farmers to support nature through food production, so nature can thrive in the middle of fields as well as at the margins.

1. **GBF Target 7:** pollution risks and impacts. There is a wide range of sustainable practices that farms can adopt both to mitigate their negative impacts and to increase the positive impacts. For example, soil testing across fields and plant tissue analysis can help to identify the specific nutrient profile of different sites, leading to precise insight on chemical and nutritional input needs. This can help avoid excessive use of chemical or artificial fertilisers and crop protection. Currently, there is a wide range of established guidelines on precision agriculture practices, including 4R nutrient stewardship,[56] and integrated pest management (IPM)[57] that the sector can implement. Where fertiliser and crop protection are needed, farms can potentially adopt biological substitutes. Farms can also promote nature-based solutions to protect river systems and improve water quality and availability. For instance, in arable landscapes, hedgerows and field margins can capture pollution from fertiliser runoff, on top of any soil erosion, carbon storage and biodiversity benefits.[58] At a wider landscape level, some organic manure could be better moved from areas with excess nutrients to areas that are nutrient poor to avoid pollution and support food production. Investment in alternatives to nitrogen-based feed, including soya, can reduce use further.

2. **GBF Target 10:** sustainable management of land. Nature protection and agricultural production goals are not mutually exclusive – sustainable farming systems can support nature and biodiversity. The UK's landscapes have been shaped by farming, and biodiversity has evolved to thrive alongside it, yielding benefits such as natural pest control and pollination. At the same time, there is consistently strong evidence that agroecological farming, with high plant, soil and socio-cultural diversity, has a positive effect on yields and yield stability.[59],[60] A transition to an agroecological food system[61] could help the agriculture sector align with Target 10 of the GBF while making the food system more resilient. Such types of farming must be supported through wider frameworks on land use.

3. **GBF Target 18:** eliminate harmful subsidies. The UK is reforming government payment schemes to reward farmers for providing environmental benefits, replacing the previous subsidy system within the European Union. The Environmental Land Management schemes (ELMs) include the Sustainable Farming Incentive in England with tiered payments designed to encourage a mix of nature-friendly farming practices. ELMs also include the Countryside Stewardship programme, which includes measures targeted at improving the structure of farms, for example encouraging agroforestry and natural water flow management. There is also a range of support targeted at water and soil quality, primarily through reducing the use of chemical inputs, alongside wider biodiversity and climate change incentives. Although these are welcome measures, the government needs to expand support for farmers to incentivise the transition effectively, as well as derisking investment and support from the private sector. WWF has previously called for enhancements to the funding and structure of ELMs[62] to deliver a systemic and regenerative transition. Developing a nature-positive pathway could help assess how well existing policy frameworks support the required transition and identify where further action is needed.

Nature-positive strategies developed and implemented by businesses alone will not be sufficient to achieve the GBF. A national nature-positive pathway for agriculture, developed through a government-endorsed process, can enable the sector-wide transformation required as well as point towards actions at the level of the individual farm, reflecting the obvious interactions between the two. While a national pathway will not be able to give detailed recommendations on a farm-by-farm basis, it can demonstrate the overall direction of travel, and clarify or presage the policy levers that will be deployed.

We have focused on the agriculture sector as an illustrative case study as its impacts on nature in the UK are both significant in scale and well-researched. As such, there are already multiple policies in place around the sector's environmental impacts. This will not necessarily be the case for many other sectors, which could potentially benefit even more from this type of analysis and development of a sector-specific pathway to give clarity on what needs to change.

WHAT WOULD A NATURE-POSITIVE PATHWAY FOR THE AGRICULTURE SECTOR LOOK LIKE?

It is envisaged that national nature-positive pathways would adopt a similar format to the existing national net-zero pathways – indeed, this will be essential if the two are to be successfully integrated. They would therefore include:

- A list of the key changes needed to achieve the GBF targets relevant to the sector – reflecting the kind of analysis discussed above, but ideally at a more granular level.
- An indication of the timeframe for achieving those changes to enable delivery of the GBF targets by the deadlines specified in the framework, and intermediary milestones, along with relevant metrics.
- A description of the policies that already exist or will be introduced to support changes in the way the sector operates.

A conceptual representation of the illustrative agriculture sector pathway is shown in Figure 2 below. It demonstrates how the levers identified can be aggregated up to shift the sector away from a nature-negative trajectory and instead align it with nature-positive outcomes. Currently, the agriculture sector, and our economy as a whole, are gradually degrading nature, so the state of nature today is below 2020 levels (as illustrated by the business-as-usual curve). Unless the private and public sectors introduce urgent action to decrease negative impacts and accelerate activity that benefits nature, the state of nature will continue to deteriorate.

The levers identified in this report can help the sector avoid, reduce, restore, regenerate and transform its impacts, setting nature on a positive trajectory. Collectively, the set of levers forms the nature-positive pathway for the agriculture sector. If the levers are adopted in time across all key economic sectors, then the state of nature could be gradually restored above 2020 levels and the likelihood of meeting the nature-positive goal and the targets of the GBF will rise.

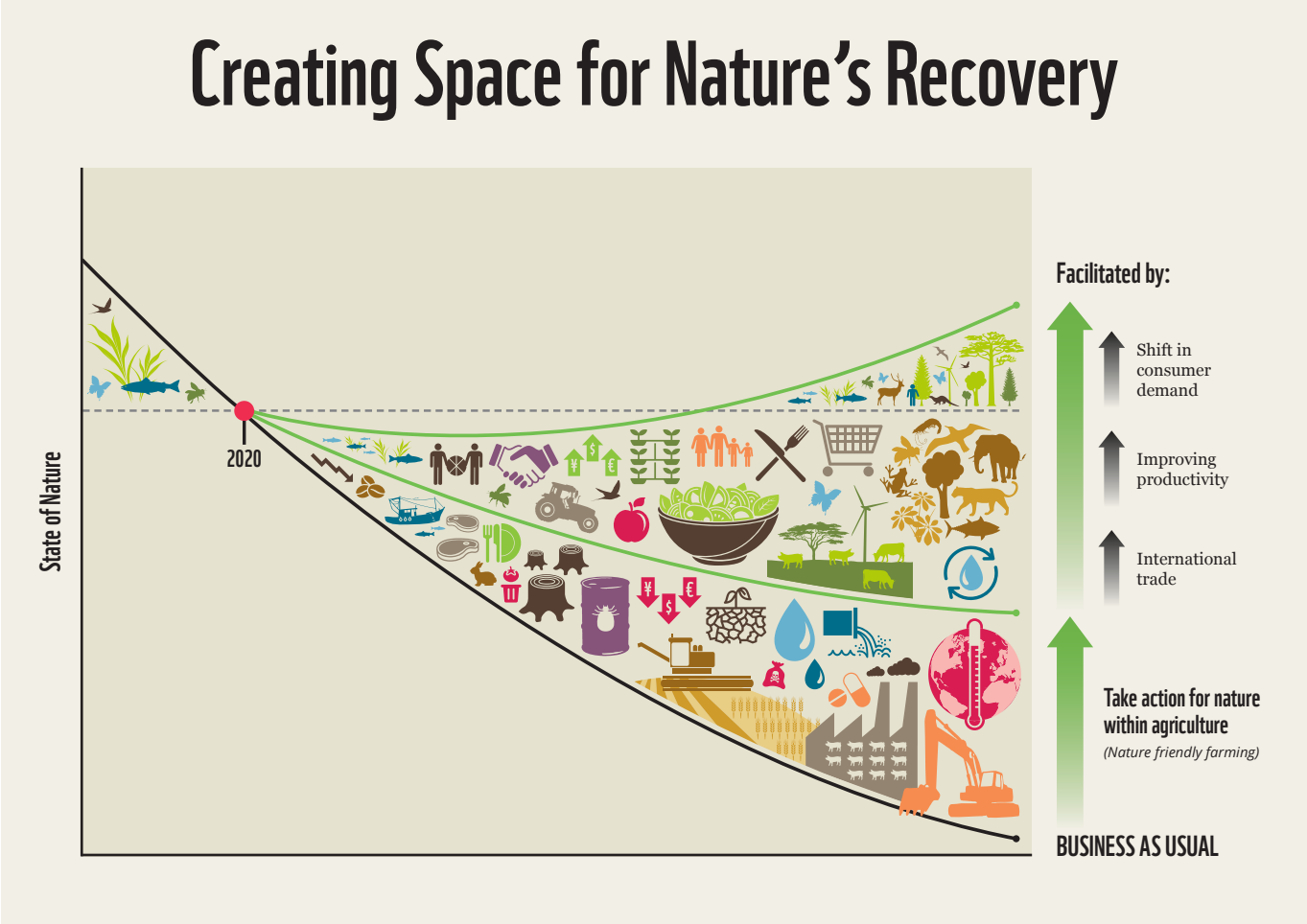

Figure 2: Illustrative nature-positive pathways for the UK agricultural sector

Importantly, nature-positive pathways illustrate the scale of the transition over time, linking the current state of nature to a future state, which enables intermediary milestones to be set. The development of nature-positive pathways should also include identifying relevant metrics and indicators to measure the state of nature and to assess progress.

The illustrative pathway is also represented in Figure 3 below. This shows the GBF targets the sector must contribute to by 2030, against a 2020 baseline, and the levers needed to align with the targets. The contribution required from the agriculture sector to a specific target could be more quantitatively specified here, based on an assessment of the feasibility and cost-effectiveness of using this lever in the agriculture sector compared to achieving the same goal through action in other sectors. An example of this kind of analysis is discussed in Box 3 below, which looks at alternative ways that nitrogen pollution may be reduced in the UK.

Comparing the cost of different approaches can help create an economically efficient transition pathway. This would also help to make explicit by how much each sector is expected to reduce pollution levels, and ensure that the plans add up on aggregate and deliver sufficient improvement to meet the targets of the GBF. It also means that the efficacy of the proposed approach could be assessed over time and the strategy adapted as needed.

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PATHWAY TO NATURE POSITIVE: AGRICULTURE

NATURE POSITIVE TARGETS	
T1-3	Place 30% of land under conservation for nature
T7	Halve nutrient and pesticide pollution
T16	Halve food waste
T18	Identify & eliminate nature-harming subsidies

2020 UK BASELINE		AGRICULTURE CONTRIBUTION	2030 UK OUTCOMES	
~5%	UK land under conservation	Ag. on 71% of land, will contribute most to 30x30	30%	UK land under conservation
5.5mg/l	Of nitrates in waterways	Ag. causes 60% of nitrates in England's freshwater	2.3mg/l	Of nitrates in waterways
12.8m	Tonnes of farm food waste	Ag. wastes 3.3m tonnes of food per year	6.4m	Tonnes of farm food waste
No gov. policy to identify nature harming subsidies		Majority of Ag. subsidies do not account for nature	£0	Spent on nature harmful subsidies

SECTOR LEVERS TO NATURE POSITIVE

2020 → 2030

- 1A **Reducing unsustainable demand** (food waste, diet change & imports)
- 1B **Increasing sustainable supply** (productivity improvement)
- 2 **Conserving land made spare via supply and demand change**
- 3 **Taking action for nature within agriculture sites** (regenerative agriculture)

Figure 3: Illustrative agriculture sector pathway, which shows the sector's potential contribution to the economy-wide GBF targets

Box 3: Allocating pollution reduction requirements across sectors

Multiple sectors, from chemicals and energy to tourism and financial services, contribute negatively to pollution.[63] Although the GBF sets a global pollution reduction target, it remains unclear how much pollution should be abated by each sector. This lack of clarity stalls progress on GBF targets as sectors cannot be held accountable for achieving global targets.

The example of nitrogen pollution illustrates the need for sectoral guidance that outlines the expected contribution of different sectors to the targets of the GBF. The majority of nitrogen pollution in UK waterways derives from agriculture (60%) and sewage (30%).[64] Excess nitrate levels in our water supply mean 81% of groundwaters protected for drinking fail to achieve a 'good' environmental status.[65]

Under Target 7 of the GBF, the UK has committed to reducing total nitrate pollution by 50% by 2030. That 50% reduction in nitrate pollution can potentially be achieved through reductions from both sectors, in differing combinations, as illustrated in Figure 4 below.

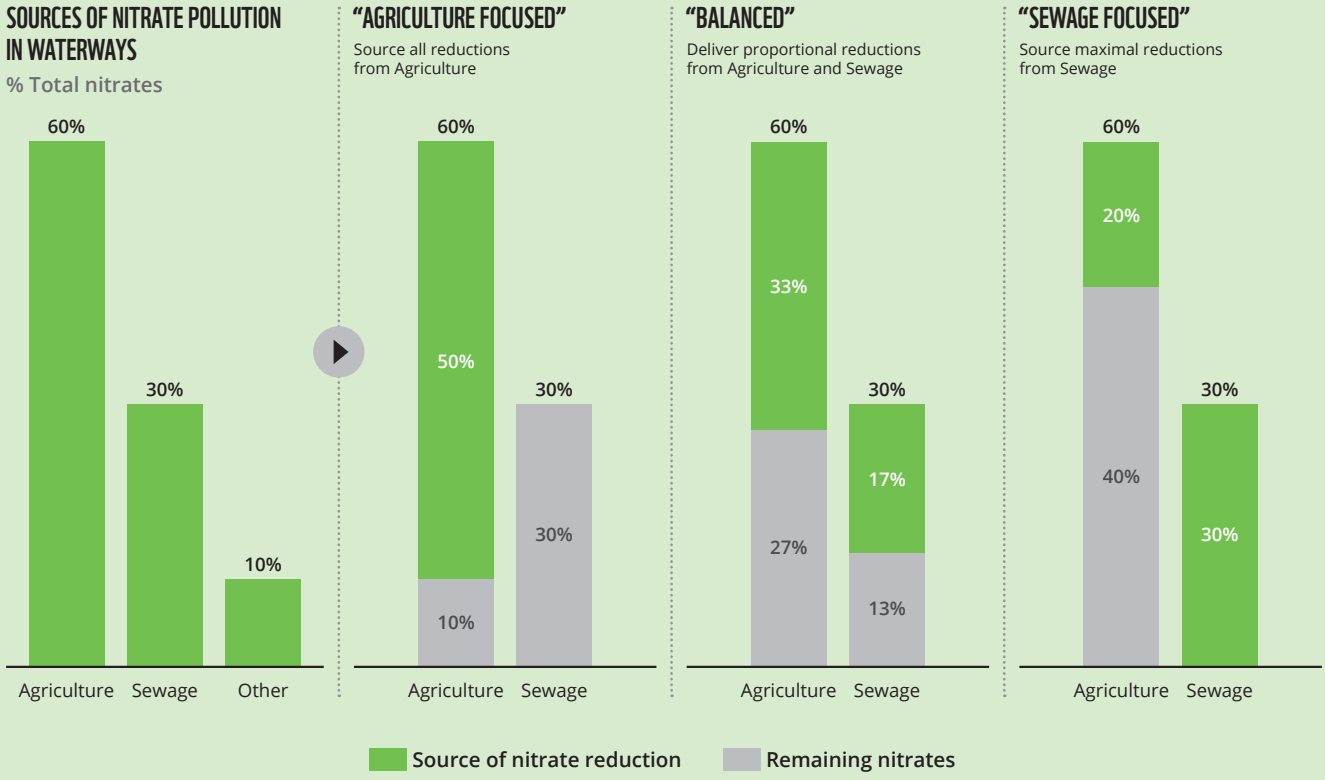

Figure 4: Illustrative scenarios to deliver GBF nitrate reduction targets

CONCLUSION

At the UN CBD COP15, nations committed to halting and reversing the global decline in nature and protecting our world for the future. By CBD COP16 in 2024, those same nations will need to update their NBSAPs to set out how they will deliver this. The UK has the potential to show true leadership by pioneering the use of sector pathways to chart the route to a nature-positive economy.

A clear set of sectoral pathways would enable businesses and financial institutions to better understand how they can align with and support the goals of the GBF. This would ensure the private sector is pulling in the same direction as the government, and would provide confidence to invest in the transition. The illustrative nature-positive pathway for the agriculture sector presented in this report, combined with the analysis by WBCSD, demonstrates broadly how the sector could address its impacts and align with the targets of the GBF.

The UK government will submit its NBSAP later this year, before CBD COP16. Following this, it should directly develop, or commission the development of, national nature-positive sectoral pathways outlining how different sectors can align with the NBSAP, and by extension with the GBF. These should be integrated with sectoral pathways to net zero, and should explicitly consider the trade-offs between objectives to set out how the UK will deliver a nature-positive, net-zero future.

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Continuing the approach of involving the private sector in the development of regulatory and policy frameworks in collaboration with the government, as exemplified by the Transition Plan Taskforce and Green Technical Advisory Group, a new multistakeholder group could be set up to develop nature-positive pathways. This model actively involves academia, civil society, businesses and financial institutions in the development of frameworks that are science-based, while being supported by the private sector. The development of nature-positive pathways should be guided by the following set of principles:

1. **Align with the ambition and timeframe of the targets of the GBF.**
2. **Integrate the existing net-zero pathways, as identified in this report.**
3. **Define the role of the private sector in aligning with the targets of the GBF.**
4. **Be driven by the latest scientific research on the climate and nature crises and the economic transitions that are required to avert them.**
5. **Be equitable and inclusive of the perspectives of local stakeholders and small businesses who require support and guidance to transition to a net-zero, nature-positive economy.**

As illustrated in this report, sectoral guidance is necessary to unlock private investment and private action. The transition to a nature-positive, net-zero economy provides one of the biggest opportunities for economic growth since the industrial revolution. As nations globally are competing to attract private investment, it will be those that provide long-term clarity, stability and ambitious, targeted incentives that will be able to capitalise on the transition.

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