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 08000 321 893

 ifa@edentreeim.com

 edentreeim.com

Nature Under Threat

A Thematic Engagement



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Foreword Mike Barry

I welcome this report by EdenTree Investment Management because our natural world is in dire trouble.

As the United Nations Environmental Programme (UNEP) clearly shows we are experiencing a dangerous and dramatic decline in the abundance of 'Life on Earth' with human activity being the biggest and most notable cause.

Why is this happening? We are using the equivalent of 1.6 Planet Earths to maintain our current rate of consumption – essentially ecosystems cannot replenish themselves at the rate required. UNEP suggests that around one million of the known eight million species of plants and animals are threatened with extinction, with around 75% of the Earth's land mass altered in some way by human intervention. Our global food system, lavish, unsustainable, non-regenerative is the principal cause of biodiversity loss, and so I am pleased to see the EdenTree team focus on this as part of their thematic engagement with investee companies. Agriculture is assessed as accounting for close to 70% of the projected loss of terrestrial biodiversity – and this is happening now.

Whilst this is a devastating reality for the flourishing of Earth's biodiversity, there is an often unseen, invisible economic implication for humanity. Around 3.2 billion people are already affected by land degradation, and more than half a trillion dollars in annual crop production is at risk from the projected decline in pollinators. Land clearance and the use of invasive chemicals is heightening climate change impacts. The interconnected world of biodiversity and human existence is recognised from the WEF Global Risks Report to the UN Sustainable Development Goals (SDGs) where declines in natural abundance place at risk 35 out of 44 targets of the SDGs relating to poverty, hunger, health, water, climate, oceans and land.

This report suggests that biodiversity is still a hugely complex topic, with many companies still struggling to fully assess their impact on the natural world. The best companies are pressing forward; knowing that the metrics are imperfect they nevertheless prefer to do something,

rather than nothing. This report provides some much-needed positivity around the best solutions proactively entered into by the best companies from 'rewilding' hedgerow management in the UK to Just Transition farming in Ghana; but it also shows the gulf that remains in healing our natural world deficit.

I hope too that EdenTree will follow up this research with observations into our degraded marine environment where close to 90% of ocean stocks are close to exhaustion or depleted. Commendably EdenTree notes this is something they want to explore as, with a few notable exceptions, it was absent from conversations with companies and appears to be only at the very early stages of corporate thinking.

Investors have a vital role to play in leading and nudging the narrative forward; all actors with an interest in our common home must come together to act now or face the devastating consequences of irreversible species loss.

Mike Barry
Sustainable Business Champion and Strategic Advisor



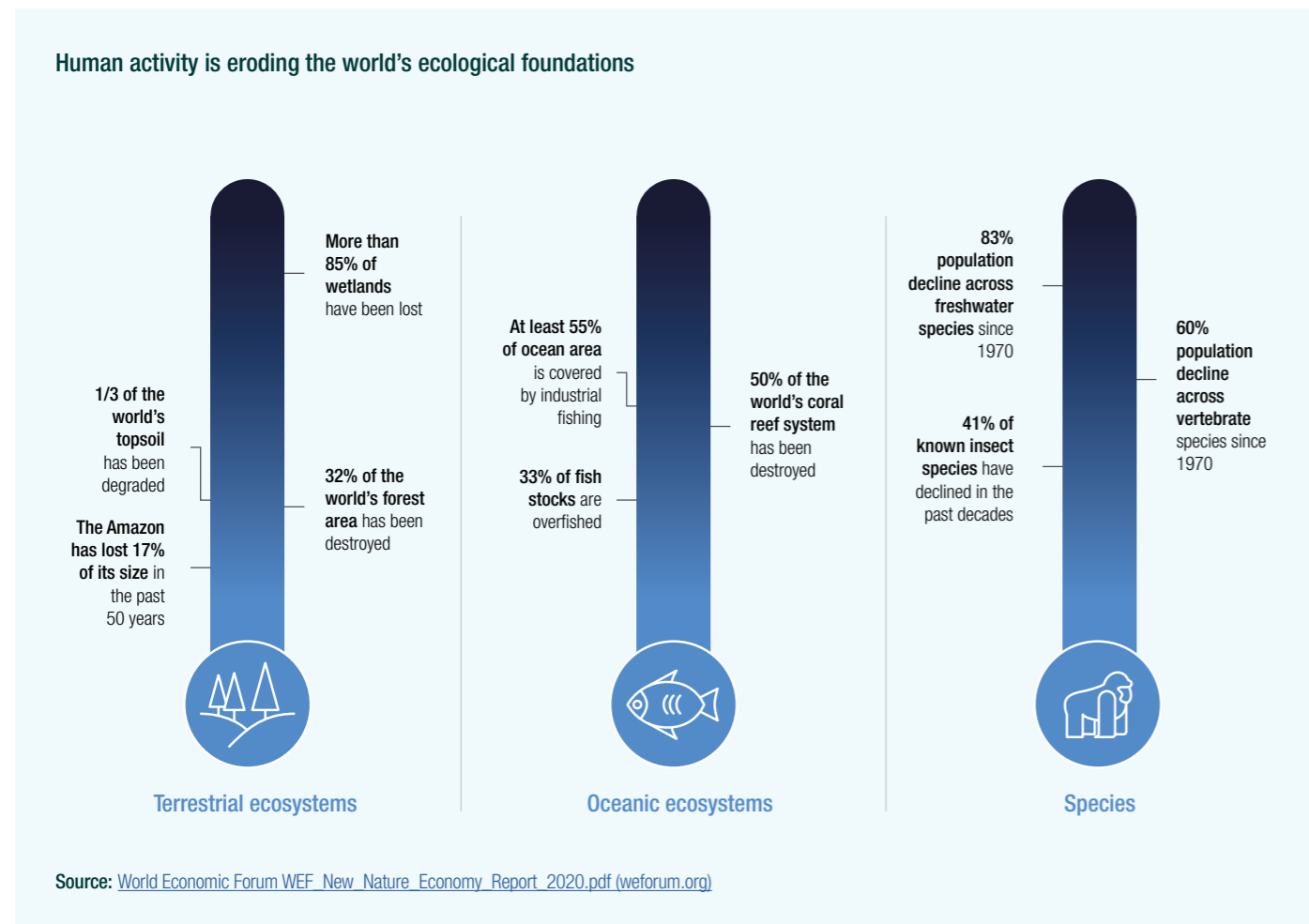
What is biodiversity?

Biodiversity is defined by the United Nations Convention on Biological Diversity as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems”.

Put simply, biodiversity refers to every living thing, including humans, animals, plants and bacteria, and how they work together in ecosystems to maintain, balance and support life. Like the species that inhabit them, these ecosystems are incredibly diverse in nature, with varying characteristics from the type of soil, prevailing climate, water abundance, and geology. Biodiversity supports everything in nature that we need to survive; it provides us with food, clean water, and medicine, and regulates climate, natural hazards, and the dispersal of seeds, pests and diseases.

Known as ecosystem services, these benefits are critical to life as we know it and the current rate of biodiversity loss puts them in serious jeopardy.

One of the most significant effects of humans on the natural world has been to considerably speed up the extinction process for many species. Today, over 1.2 million plant and animal species are facing the threat of extinction, with species disappearing at a rate 10 to 1,000 times faster than the normal ‘background’ rate of extinction.¹



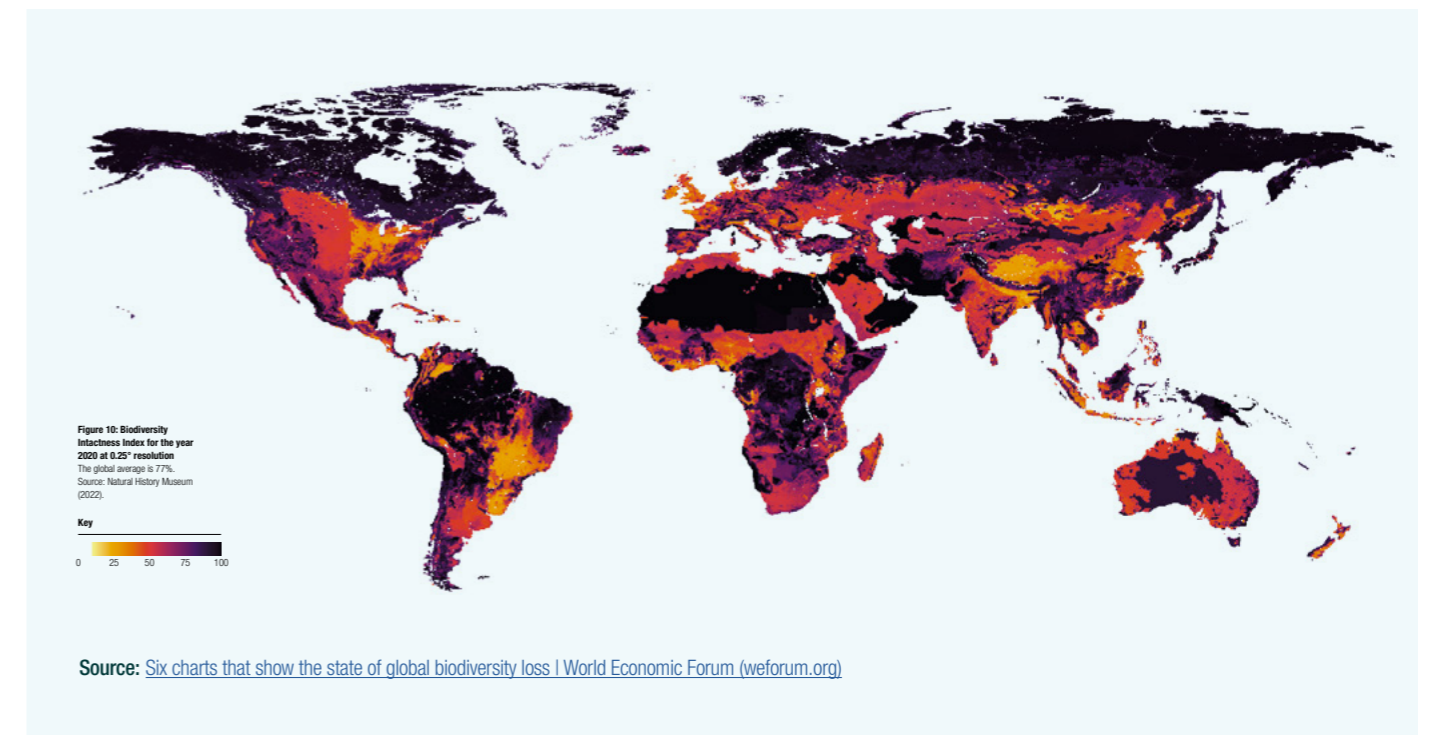
¹ <https://www.ipbes.net/global-assessment>

Biodiversity loss has been most pronounced on islands and in specific locations around the Tropics where distinctive species often evolve in isolation from the rest of the world. The limited habitats that species have on islands makes them exceptionally vulnerable and, in these regions, the introduction of alien species along with hunting and the clearing of vegetation by humans accounts for 80% of all known extinctions. Between 1996 and 2008, 60% of global biodiversity loss for bird and mammal species occurred in just seven countries and territories, including Indonesia, Malaysia and Hawaii.²

In the past 20 years, extinctions have also become more common in continental regions. Typically, this occurs in areas where large human populations are concentrated, such as southeast China and the Western Ghats of India.

According to the World Wildlife Fund's 2020 Living Planet Report, Latin America and the Caribbean have suffered notably high losses of amphibians, reptiles and fish due to a combination of threats including disease, habitat loss and over-exploitation.

The map below displays the Biodiversity Intactness Index (BII) for 2020. It shows the percentage of the original number of species that remain and their abundance in any given area. The darkest shades indicate regions where the biodiversity intactness is at 90-100%, and the area remains a resilient and functioning ecosystem. At the lighter end of the spectrum, the orange and yellow-shaded areas indicate a biodiversity intactness level of less than 30% which means the biodiversity has been depleted and the ecosystem could be at risk of collapse.








Biodiversity loss is one of the most severe threats that humanity has faced. The situation is so grave that some scientists are claiming that we have entered the ‘sixth mass extinction event’ – the first ever to be driven primarily by human activity. To avert this crisis, society must urgently address the key causes of ecosystem damage.

² [Where is most biodiversity loss happening and why? | Royal Society](https://royalsocietypublishing.org/doi/10.1098/rsos.200202)

Drivers of biodiversity Loss

The International Panel for Biodiversity and Ecosystem Services (IPBES) have identified five direct drivers of global biodiversity loss: changes in land and sea use; direct exploitation of organisms; climate change; pollution; and the invasion of alien species.³ To date, land-use change is the driver with the largest relative impact on terrestrial and freshwater ecosystems, while the exploitation of fish and seafood has had the largest impact in the oceans. The latter three – climate change, pollution and invasive alien species – have had a lower impact to date but all are accelerating.

Driver of Nature Loss	Impact on Nature
Land and sea use change 	75% of the land-based environment and 66% of the marine environment has been significantly altered by human actions. This includes the conversion of land such as forests and wetlands for urban and agricultural uses, and the shift to intensive agriculture.
Natural resource use and exploitation 	The most overexploited species include marine fish, invertebrates, trees, tropical vertebrates hunted for bushmeat and species harvested for the medicinal and pet trade. The most pronounced effects have been in the oceans, where the overexploitation of marine habitats has led to significant declines in commercially valuable species.
Climate change 	Changes in climate and weather patterns cause species migration, higher ocean temperatures, and ocean acidification which is expected to have a profound effect on marine ecosystems, particularly coral reefs. There are indications that climate change-induced temperature rise may threaten as many as one in six species at the global level.
Pollution 	Globally, nitrogen deposition in the atmosphere is one of the most serious threats to the integrity of biodiversity. Typically deposited through the use of fossil fuels and fertilizers, nitrogen can impede decomposition and slow microbial growth. It can also have a devastating effect on freshwater and marine habitats, causing eutrophication and acidification of aquatic ecosystems that create 'dead' zones that can support no life.
Invasive alien species 	Invasive alien species are animals, plants, fungi and microorganisms that have entered and established themselves in an environment outside of their natural habitat. The introduction of alien species can severely disrupt the ecological functioning of natural systems, with invasive species often out-competing local and indigenous species for limited natural resources.

³ https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf

The impact of the global food sector

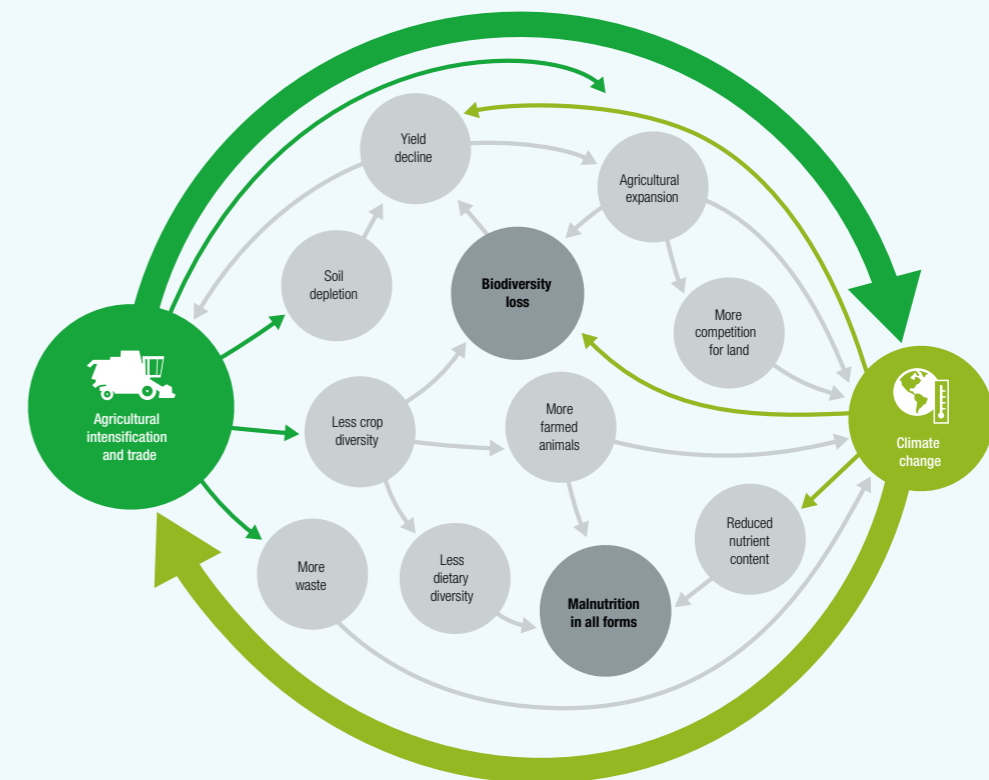
All five of the direct drivers of biodiversity loss can be connected to the global food industry. It is unsurprising, therefore, that the food sector is the single biggest cause of biodiversity loss worldwide. Estimates suggest that the food sector is responsible for 80% of global deforestation, 70% of terrestrial biodiversity loss and 50% of freshwater biodiversity loss. To understand why this is, we must delve into the structure of modern food systems.

In the last few decades, global food systems have been progressively shifting towards a “cheaper food paradigm”, where the intensification of agriculture has caused the cost of food production to fall, which in turn has lowered the price of food. The more prices fall, the more people consume, which then increases demand leading to further land clearance. The cheaper food paradigm creates a vicious cycle whereby the expansion of agricultural land and the intensification of farming is promoted to the detriment of biodiversity and the natural world.

There is no single channel through which agriculture and food production drives biodiversity loss; instead, it alters ecosystems in numerous and varied ways:

- Intensive agriculture creates monocultures which replace the heterogeneity of the natural environment
- Raising large animal herds creates manure that can leak harmful nutrients into soil and watercourses and alter their composition
- Ploughing can disturb the soil, exposing it to erosion by wind and water, and release carbon into the atmosphere
- Most agriculture also relies on inputs that can have spillover effects beyond the farmed area itself. Pesticides, for example, kill not only the identified target but also other insects in the vicinity, whilst fertilizers can leak downstream and damage marine ecosystems.

The 'cheaper food' paradigm



Source: https://www.chathamhouse.org/sites/default/files/2021-02/2021-02-03-food-system-biodiversity-loss-benton-et-al_0.pdf

The shift towards the ‘cheaper food paradigm’ was partially fuelled by the emergence of global food retailers. In many countries, a significant share of the food market now lies with a very small number of retailers, creating an imbalance of bargaining power within food supply chains. Retailers have more purchasing power to dictate what food is grown and how it is processed – if the emphasis is on cost rather than protecting the environment it can impact the sustainability of consumption and production.

To halt biodiversity loss, the food system requires urgent reform. Priorities include:

- Encouraging a shift towards more varied diets, as recommended by the EAT LANCET planetary health diet, due to the high impact that animal agriculture has on biodiversity, land use and the environment ⁴;

- Protecting and setting aside more land for nature, by preserving and restoring ecosystems;
- Avoiding the conversion of land for agricultural use, where possible and;
- Utilising regenerative agriculture, including limiting the use of inputs and replacing monocultures with polyculture farming practices.

It is critical for food companies to make this shift, not just for environmental reasons, but also because the industry, like many others, is significantly dependent on biodiversity for its economic output.

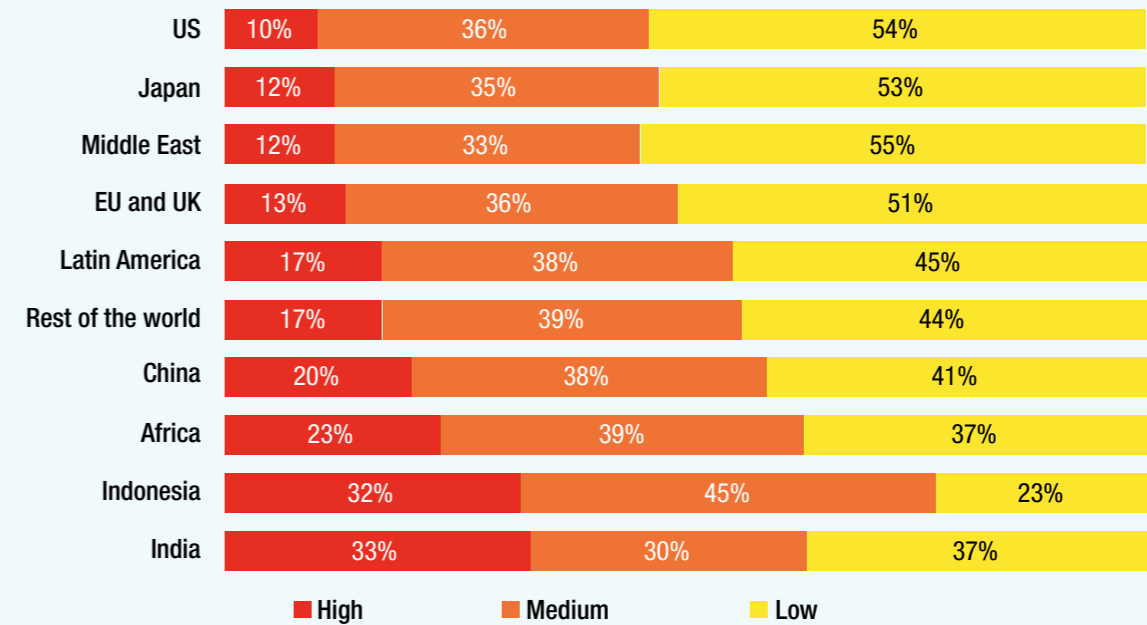


⁴ <https://eatforum.org/eat- lancet-commission>

Why does biodiversity matter?

The delicate interplay between species and ecosystems produces services that are vital to the functioning of society and the modern economy. Over half of the world’s GDP – around \$43tn – is dependent on ecosystem services, and it has been estimated that the decline in biodiversity already costs the global economy more than \$5tn a year.⁵

Distribution of nature dependency by market



Source: Bloomberg NEF

The World Economic Forum suggests that nature risks become material for businesses in three ways:

- 1. Dependency on nature:** when a business depends directly on nature for its operations, supply chain performance, physical security and business continuity
- 2. Fallout of business impacts on nature:** when the impacts of business activities on nature loss trigger negative consequences, such as losing customers or entire markets, legal action and regulatory changes that affect financial performance

- 3. Impacts of nature loss on society:** when nature loss causes disruption to society and the markets within which businesses operate, which can manifest as both physical and market risks

The food sector is a good example of how a company’s impact on nature can manifest as a financial risk. As a sector which relies directly on both the extraction of natural resources and the provision of ecosystem services, the economic implications of biodiversity loss could be enormous.

⁵ <https://www.weforum.org/press/2020/01/half-of-world-s-gdp-moderately-or-highly-dependent-on-nature-says-new-report/>

For instance, soil is fundamental to farming, and is maintained by a variety of natural processes. Microorganisms such as bacteria and fungi decompose plant residues which keep nutrient levels high below ground, whilst larger organisms such as earthworms and termites act as ecosystem engineers, controlling the structure of the soil matrix. Without these diverse species playing their roles, soils would fail to support crop growth.

Other species help to pollinate plants, purify water and keep fish and trees healthy. If nature were to lose its capacity to provide such services, yields would fall and the food sector would suffer significant losses. This is already visible in the coffee industry, where 60% of coffee varieties are at risk of extinction due to deforestation, disease, and climate change. If this were to happen it would significantly destabilise global coffee markets – a sector with a revenue of \$90,277m in 2022.⁶

Similarly, outbreaks of invasive pests and diseases threaten the survival of commercially important crop species with low genetic diversity. Just three staples – rice, wheat and maize – make up half the world’s food and already suffer annual losses of up to 16% of total production due to invasive species. An outbreak of Southern Corn Leaf Blight in the US in 1970 destroyed 15% of the maize crop in the US, at an estimated loss of \$1bn.⁷

The reputational and market risks associated with nature-degrading practices are also growing, particularly for businesses with exposure to commodities linked to deforestation. Deforestation risk can emerge as reputational risk as shifts in public perception have led to business commitments on zero-deforestation sourcing, and failure to comply with these ambitions could be met with intense public scrutiny. It can also create market risk – as seen in the palm oil sector in 2016, where two large Italian food retailers decided to phase out palm oil from all their product lines, triggering significant turbulence in the sector with “palm-oil free” branding becoming the subject of a legal and trade dispute. With up to \$941bn turnover in publicly listed companies dependent on the commodities most connected with forest loss (beef, soy, palm, oil, pulp and paper) both are becoming significant nature-related risks.⁸

There is no doubt, therefore, that biodiversity loss poses a huge threat to the economic stability of the food industry, and the wider economy. Companies must act quickly to implement strategies to manage their nature-related risks. However, due to the scale of the challenge, this alone will not be enough to halt and reverse biodiversity loss – we also need swift and ambitious government intervention.

⁶ [Coffee Shop Sales Statistics 2023: Key Insights And Trends • GITNEX](#)

⁷ https://www.ars.usda.gov/ARSUserFiles/60663500/Publications/Bruns/2017/Bruns_2017_Corn%20Leaf%20Blight.pdf

⁸ https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf

Global efforts to protect biodiversity

To protect biodiversity, transformational change at the local, regional and international level is required. There have been attempts worldwide to reform policy and regulation at varying levels of society, but largely these efforts have failed to invoke the desired effect.

The annual Biodiversity Conference of the Parties (COP)⁹ plays an important role in shaping the conventions and frameworks that guide action on biodiversity.

At COP10, in Aichi Japan, parties agreed and signed the ‘2011-2020 Strategic Plan for Biodiversity’, an overarching global framework for the conservation of nature, which included five strategic goals and 20 underlying targets. Having since surpassed the 2020 deadline, the Global Biodiversity Outlook Report looked at the Plan’s success and found that not a single target had been met. Despite progress in some areas, natural habitats continued to disappear, vast numbers of species are still threatened by extinction, and \$500bn of environmentally damaging government subsidies have not been ended.

In light of this, the top priority for COP15 – the most recent Biodiversity COP, held in November 2022 in Montréal, Canada – was for nations to address this failure and create a new Global Biodiversity Framework. This was achieved, with COP15 heralding the adoption of a new set of international goals for biodiversity called the Kunming-Montreal Global Biodiversity Framework (GBF). 188 governments, including the UK, have ratified the framework which sets out an ambitious pathway to reach the global vision of a world living in harmony with nature by 2050.

The Framework includes four strategic goals for 2050 and 23 underlying targets for 2030. The targets are designed to each address a different aspect of biodiversity loss, for example:

- Conserve of at least 30% of land and sea areas globally
- Restore of at least 30% of degraded freshwater, marine and terrestrial ecosystems
- Reduce the rate of introduction of invasive alien species by 50%
- Reduce nutrients lost to the environment by 50%
- Implement nature-based contributions to global climate change mitigation efforts of at least 10 gigatonnes of carbon dioxide equivalent per year

Countries are likely to use the Global Biodiversity Framework to guide policy and regulation at the national and sub-national level. There is evidence that this is already starting to emerge, with the EU recently announcing its new Biodiversity Strategy which feeds off the Global Framework and contains specific commitments and actions to be delivered by 2030. Key actions include establishing an EU-wide network of protected areas on land and at sea; launching an EU nature restoration plan, including the EU’s first ever nature restoration law; and introducing funding to enable the necessary change.

⁹ This is separate to the annual Climate Conference of the Parties



This is a positive step, but as shown through history, the ambition of a policy means very little if it is not matched by adequate enforcement. For example, anti-deforestation measures have been in place in the EU, Brazil and Indonesia for many years yet in 2018 Poland was fined by the European Court of Justice for illegal logging in the protected areas of the ancient Białowieża Forest. In Brazil, 17% of the amazon rainforest has already been lost to deforestation, and in Indonesia millions of hectares of untouched forest have been destroyed due to large-scale conversions. The lack of clear and strict enforcement prevented effective implementation.

Some of the challenges that surround enforcement of biodiversity laws include: a lack of coordinated engagement between the relevant authorities; the high cost of investing

in satellite imagery and remote sensing technologies, which are the best forms of biodiversity and forest monitoring; and internal government issues, such as limited budgets, insufficient training, corruption, and lobbying, all impacting the measures that are taken.

It is clear, therefore, that several barriers need to be removed before global biodiversity regulation can be truly effective. It also suggests that other parts of society cannot wait for the regulatory landscape to be perfect before taking action. With this in mind, several voluntary initiatives have been established in recent years, designed to improve corporates' ability to manage biodiversity risk without needing to wait for policy reform. A good example is the emergence of certification schemes as a solution to deforestation.

Spotlight: Voluntary Certification Schemes

Certification schemes set a range of social and environmental standards with which production of a commodity should comply. An area, product, farm, manufacturer or processor is certified by a scheme when it is assessed as meeting those standards. Certification is very popular with large food retailers as a way to claim that their sold produce is free from environmental harm.

There are numerous certification schemes that target different commodities. Some of the most popular schemes are: the Fairtrade and Rainforest Alliance, the Roundtable on Sustainable Palm Oil (RSPO), the Roundtable on Responsible Soy (RTRS), ProTerra, and the Forest Stewardship Council (FSC).

There are differences between the various certification schemes regarding their governance, quality of standard, and implementation, meaning some

companies may be able to obtain certification and make a claim of 'sustainability' while deforestation continues to occur. This is possible because most schemes only require a basic level of traceability and transparency, and tend not to publish maps of certified companies and areas, making it difficult for others independently to trace the source and ownership of commodities. Further, scheduled audit visits only present a snapshot of conditions at a given time and place, allowing companies to 'get ready' for the assessment. Certification bodies also tend to be paid directly by the clients they are auditing who can choose another certification body if they are not pleased with the results, creating financial dependence and a conflict of interest. Some unsustainable producers simply choose to avoid certifications entirely, continuing to find alternative markets for non-certified goods, a phenomenon called 'leakage'.¹⁰

This highlights that there is no easy fix to biodiversity. Regulations at the global, national or voluntary level all face their own weaknesses. Above all else, more action is needed if we are to achieve the ultimate goal of living in harmony with nature. We believe that investors have a big role to play in shaping this reform, particularly with interest around the subject reaching new heights in recent years.

¹⁰ <https://www.greenpeace.org/static/planet4-international-stateless/2021/04/b1e486be-greenpeace-international-report-destruction-certified-finaloptimised.pdf>

Investor interest gaining momentum

At EdenTree we have been aware of the salient and systemic risks associated with biodiversity loss for almost a decade. We first explored the investment case for nature within our award winning [Natural Capital Insight](#) in 2016, which laid the groundwork for our first dedicated [biodiversity engagement](#) in 2020. At the time we found that very few companies had a biodiversity policy in place and only a handful considered the topic to be a material risk to the business. The nascency reflects investor interest on the subject which had undeniably emerged by 2020 but was still developing.

Fast forward to 2023, and biodiversity has rapidly risen up the investor agenda. From being a topic that was largely overlooked, it is now one of the ESG buzzwords and there is clear appetite among investors to pursue greater action on the issue.

One of the most visible expressions of increased investor interest is the expansion of frameworks and coalitions addressing biodiversity loss. We expand below on three of the most influential initiatives.

Taskforce on Nature Related Financial Disclosures (TNFD)

The TNFD aims to develop and deliver a risk management and disclosure framework for organisations to report and act on evolving nature-related risks. The current draft standard includes four broad headings under which companies will be able

to disclose their management of nature-related risks: governance; strategy; risk and impact management; and metrics and targets. The Framework is currently in consultation but is expected to be published in September 2023, ready for market adoption.

Science Based Targets Network (SBTN)

The SBTN is a collaboration of international non-profit organisations working together to develop a methodology that companies can use to set science-based targets for nature. The SBTN defines science-based targets as "measurable, actionable, and time-bound objectives, based on the best available science, that allow actors to align with Earth's limits and societal

goals".¹¹ Such targets will strengthen companies' voluntary commitments by explicitly tying their ambitions to the Earth's limits. The SBTN methodology was released in May 2023 and is currently undergoing a pilot phase, after which all companies will be invited to submit targets for validation in Q1 2024.

¹¹ [Science-Based-Targets-for-Nature-Initial-Guidance-for-Business.pdf](https://www.sciencebasedtargets.org/science-based-targets-for-nature-initial-guidance-for-business.pdf) ([sciencebasedtargetsnetwork.org](https://www.sciencebasedtargets.org))

Sustainable Development Goals

Conserving biodiversity will be key for future economic development and has a central role to play in achieving the 17 UN Sustainable Development Goals for 2030. A closer look at the global goals reveals the importance of biodiversity.

An aspiration to end hunger and achieve food security is the second sustainable development goal. This includes the ambition to ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and help maintain

ecosystems. The purpose of the sixth goal is to ensure availability and sustainable management of water and sanitation for all.

Directly conserving biodiversity, both on land and beneath the oceans, is also covered by global goals and addressed under items 14 and 15. This includes strengthening the resilience of marine and coastal ecosystems, halting the loss of biodiversity and ultimately integrating ecosystem and biodiversity values into national and local planning and accounts.

Recognising that the global food system has been the primary driver of global biodiversity loss, and at the same time is entirely dependent on good ecological health for its output, we wanted to gain a greater understanding of how companies were managing this risk. As investors in a range of different food and agricultural companies, we were in a position to engage with the sector specifically on biodiversity and push for elevated action on the subject.



Our engagement with the sector

Between October 2022 and March 2023, we engaged with all of our holdings in the food and agriculture sector across our Funds, including: Unilever, Co-operative Group, Danone, Nestlé, Tate & Lyle, Carrefour, Sainsbury's, R.E.A Holdings,¹² Hotel Chocolat, Associated British Foods, John Lewis Partnership (Waitrose), Marks & Spencer, Wm Morrison, and Tesco. We held 1-2-1 meetings with 10 companies; Co-operative Group and Wm Morrison did not get back to us; and Tesco and Sainsbury's invited us to attend roundtable discussions on the topic. We had secondary follow-up meetings with both Unilever and Hotel Chocolat.

The objective of the engagement was threefold:

1. To understand the sector's challenges in tackling biodiversity
2. To identify, encourage and share examples of best practice
3. To push for greater action on biodiversity where necessary

As part of our conversations, we were particularly interested in learning more about:

- How companies define and understand biodiversity
- Whether companies conduct mapping of the flora and fauna present in their areas of operation
- How companies measure biodiversity loss or gain in their operations and supply chain
- Whether they collaborate with farmers and NGOs
- The impact of geographical location on company's ability to tackle biodiversity loss
- Whether the company has set any biodiversity-related targets
- The challenges surrounding biodiversity management
- Whether the company advocates for nature-positive policies with governments
- The role of investors in the biodiversity agenda

¹² Not held in the screened funds

Our findings

Understanding biodiversity is a challenge

One of the most common things we heard from companies is that biodiversity is an incredibly complex issue. The words “it’s complicated” featured in almost every discussion we had – and understandably so.

Unlike many other ESG topics which are arguably more singular in nature, biodiversity encompasses a whole range of different issues, including soil health, deforestation, water quality, manure runoff, climate change, changing diets, and monocultures. Understanding all these different issues and how they coalesce to create an overall impact on biodiversity is challenging. Some companies aren’t yet at the stage where they view biodiversity as a standalone issue, rather it forms an additional proxy for their work on water or pollution.

Climate change was frequently used to illustrate the relative difficulty, as it’s perceived by companies to be more straightforward to solve due to the clear objective to reduce the amount of CO₂ they emit. Biodiversity, however, can’t be distilled into one clear goal, which creates confusion around the best way to tackle it. The same can be said about measurement. When looking at climate change, companies can utilise established methodologies to measure their scope 1, 2 and 3 emissions. There is no equivalent for biodiversity, leaving companies unsure about what information to gather and how best to use it.

As a result, most companies we spoke to regarded themselves to be at the beginning of their journey on biodiversity. Akin to gathering a ‘baseline’ of data, companies’ focus is predominantly on trying to understand the full extent of their impact on the environment. Establishing a strategy to manage this impact will follow with time.

Interestingly, most of our conversations focused on the terrestrial side of biodiversity, and very rarely did companies mention fisheries as a risk. This could be due to the added complexity of trying to grasp the impact fisheries have on marine animals as a result of bycatch, and the difficulty in managing this risk as different laws apply in international waters.

Positively, most companies we spoke to were cognisant of the need to start their biodiversity journey. Echoing the sentiment of “don’t let perfection be the enemy of the good”, there was reasonably widespread acceptance that firms could not afford to wait for the data or methodologies to be perfect, as this will take too long. A clear sign of leadership amongst the companies we spoke to was a desire to press ahead and take small steps instead of using the immense complexity of the issue as an excuse for inaction.

Spotlight: WWF Better Baskets

Six UK supermarkets have partnered with the WWF to create the ‘Better Baskets Initiative’, which aims to halve the environmental impact of the average UK shopping basket by 2030. The initiative sets out a series of outcomes and measures across the areas of climate, deforestation, diets, agriculture, marine, food waste and packaging, that will allow retailers to address nature

impacts. Every retailer that signs up to the ambition is expected to take meaningful action and provide data to track progress. Though the initiative is not scientifically assured, in a world where the TNFD and SBTN are still emerging, it is a way for companies to start measuring their impact and to take action.

The role of technology

Most of the companies we spoke to discussed the increasing importance of technology in helping to overcome some of the challenges around measurement. Technology can help with both data collection and data storage, making it easier for companies to start quantifying their impact on the natural environment.

Tesco were particularly optimistic about the potential of technology and gave examples of two projects they are currently trialling. The first was ChirrupAI, a project that places microphones in agricultural sites to track birdsong. The company view the quantum of birdsong as an indicator for both the frequency and health of birds, which in turn can be used as a proxy for the overall health of the farmland. Over time, the system can be used to track whether farmers’ actions are improving the local ecosystem or having a detrimental effect. The second project was AgriSound, which utilises detection technology to track and listen to insect movements. The system can identify whether the insects are pests or pollinators, and the relative frequency of each can indicate how biodiverse the local environment is.

Tate & Lyle were equally optimistic about the role of technology. They are using a programme called TruTerra, a platform that enables farmers to input an array of datapoints regarding their agricultural practices (including soil health, water use, agricultural inputs, erosion, cropping rotation, etc). Farmers can use the platform to run scenarios, exploring different combinations of agricultural and conservation practices to see what the outcome is. Where a higher yield is achieved, it helps to build a case for the adoption of more sustainable practices. The platform is also allowing Tate & Lyle to build up a large database with numerous datapoints, that in years to come will hopefully allow them to report on biodiversity impact and improvement.

Nestlé described their use of satellite imagery to measure the crop coverage and habitat erosion of their land. The technology provides data around the impact of agriculture and other activities on the health of the ecosystem which Nestlé can use to improve their practices and generate better outcomes. Waitrose and REA Holdings were among the other companies to emphasise the importance of technology as a way to manage biodiversity loss.

Frameworks: TNFD vs SBTN

All the companies we met were united in their support for frameworks such as the TNFD and SBTN. These standards were perceived by companies to be the solution to their current struggles around data and measurement and most were therefore waiting for the frameworks to be finalised before starting to fully measure their impact and set targets. When explaining this, companies were quick to stress the need for alignment. There was widespread agreement that whatever approach the TNFD and SBTN decide to take, it will become the gold standard for biodiversity management; similar to how the TCFD and SBTi have become the gold standard for climate risk management. Many companies, therefore, do not want to go through an entire process of mapping and measuring their impact just to find that it doesn’t meet the industry’s view of best practice.

Tesco is one such company; they spoke positively about both frameworks, referencing their involvement in the TNFD Working Group and their desire to set a SBT once the framework has been developed. For them, the standards present a solution to issues they face around transparency and scale. On the former, as the company does not have a vertically integrated supply chain, their ability to control and direct the actions of their suppliers is limited. They see the adoption of frameworks at scale as their best chance to assure standards of practice. Regarding the latter, Tesco said many of their farmers do currently measure biodiversity datapoints but there is no easy way to aggregate these metrics at company level. Tesco are reliant on the TNFD to make these metrics scalable.

All companies emphasised the need for coherence between the TNFD and SBTN. Given the recent explosion of different ESG standards and initiatives, companies already face a heavy reporting burden, and many felt it was impractical and unrealistic to expect them to report against two separate frameworks. Companies such as Carrefour and Unilever said, ideally, they would like the SBTN and TNFD to connect, so implementation of one could easily translate into the other. Unilever suggested this was an area where the investor voice could be valuable; pushing to rationalise frameworks to provide companies with a clear methodology to follow.

Supply chain mapping

It was clear from our conversations with companies that supply chain mapping remains a struggle. Many companies, including Tesco, spoke candidly about how despite technology innovations the traceability across agri-food chains is still very low. This is a major barrier to action on biodiversity as only once companies know which farmers are supplying their products, can they start acting to improve farming practices.

Due to their lack of direct control, many companies added that they desperately require partnerships to invoke the change that is needed. Tate & Lyle referenced an element of commerciality in relation to this. Companies must have flexibility over their sourcing; if they are restricted to one particular farm with high traceability and an event occurs that destroys the crop, the company would be financially disadvantaged if they could not source from an alternative area. In this respect, traceability cannot be limited to just a few regions, it needs to exist on a broader scale and all suppliers and growers need to participate. This is only possible by leveraging partnerships and by companies, investors and governments all working in unison.

Other companies, such as Carrefour and Sainsbury's explained that they currently use external mapping tools, including those produced by NGOs, to help with supply

chain traceability. However, there was no consensus on the best one to use, suggesting that a gold standard for supply chain mapping does not currently exist.

The supply chain size also played a role. It was evident that companies with smaller, more localised supply chains had better traceability and were able to address the challenges of biodiversity loss more easily than their larger, more global peers. For example, Carrefour said it was difficult for them to trace any commodity that had a global footprint, whereas Hotel Chocolat had better visibility as their main commodity, cocoa, is sourced from just two countries: Ghana and Côte d'Ivoire. Similarly, for Tate & Lyle, corn makes up 95% of their commodity base, and with most of it being sourced in the United States, they have a clearer understanding of how their supply chain is managed.

We did detect a sense of optimism from companies that transparency will improve in the future, and at that time, they will have a better idea of where commodities come from and can direct farming practices within those regions. However, it is not the current reality and as a result most companies felt that regenerative agricultural practices are the best hope we have at restoring biodiversity until supply chain transparency increases.

The emergence of regenerative agriculture

All the companies we spoke to were unanimous about the importance of regenerative agriculture and its potential to halt and reverse biodiversity loss within the food sector.

At its essence, regenerative agriculture is very simple: it is any form of farming which at the same time improves the environment. Many food companies have embraced it, seeing it not only as a way to manage biodiversity, but also as a key tool to reduce their scope 3 emissions. Tesco went one step further, stating that regenerative agriculture is not just about risk management but is also an opportunity for food companies to lead the way in restoring nature.

Associated British Foods highlighted their partnership with Jordans-Ryvita where there is a long-established emphasis on regenerative agriculture dating back to the 1980s. As part of this, they have striven to improve biodiversity at the margins of farmlands, mainly via hedgerows, field strips with pollinator friendly wild-flowers and crop-mixes. The company referred to this as "land thoughtfulness" and it has resulted in a significant increase in species numbers, especially of farmland birds. This suggests that regenerative agriculture

does not always require a large overhaul of traditional farming methods but can also entail smaller improvements such as making better use of land which is not conventionally productive, such as crop borders.

Several companies discussed the importance of reducing chemical inputs. REA Holdings said that one of their biggest emissions sources is inorganic fertiliser use and they intend to explore ways to enhance the natural fertility of their soils without man-made inputs, as a way to reduce their emissions and improve land quality. Nestle were similar, sharing that the use of natural fertilisers minimises the need for intrusive chemicals, which has a large impact on both emissions and soil contamination. A theme that emerged from these conversations was the inextricable connection between regenerative agriculture and climate change. It suggests that coupling biodiversity in the language of scope 3 emissions could be a useful bridge when encouraging better land use management, as any food company with a net zero target will fail to meet it if they do not manage their emissions associated with agriculture.



Geographical location matters

Another theme that dominated our discussions was the importance of geography and the impact it has over companies' ability to address biodiversity loss. This was due to a few different reasons.

First, companies don't have an equal presence in all countries. Their influence tends to be stronger in regions where they have more suppliers and therefore a stronger buying power. They also mentioned that rates of biodiversity loss are not the same in all countries, so there are some regions where they have to be more proactive than others.

Companies' visibility also tends to be better in their own country of operation. A few UK-based food retailers explained that when they source beef from the UK, they can attain good visibility and trace their products right through the supply chain back to the farm-level, whereas they found it more challenging in other regions. Similarly, several European companies said that vegetables in Europe are much easier for them to monitor and manage as their relationships with the farmers are more direct.

Further, actions often depend on the land use practices of the region. This was something we heard from Waitrose who work with farmers in both the UK and in Africa. In the UK, their work is focused on ecosystem

restoration and on reversing intensive agricultural trends. However, in Africa, these trends are not yet present, with most farming still carried out non-mechanically by small subsistence farmers. As a result, the action needed to improve biodiversity is very different, and focuses largely on working with farmers to prevent deforestation from occurring. The company's approach to tackling biodiversity loss is therefore very bespoke.

Finally, companies spoke about the differing role of governments, sometimes acting as an ally and other times as an obstacle. For example, companies discussed challenges in addressing deforestation in Brazil and Indonesia, referencing instances where local governments had encouraged deforestation in order to increase output and economic activity – this meant there was little incentive for farmers to act differently. All companies spoke of the need for government regulation in order to drive greater change at the local level, although they remained cognisant that given governments can change every four years, and possibly disregard conservation laws, there is a danger in relying on them too much to instigate the change that is needed.

Above everything else, the need for companies to work with farmers, regardless of the geographical location, was paramount.

Reliance on certifications and credits

It was common for our conversations with companies to drift into the topic of deforestation. It appears to be a subject which is better understood than other aspects of biodiversity, and therefore one where companies felt more comfortable discussing their approach.

Of the 12 companies we spoke to, nine had zero-deforestation policies in place. When asked how they

ensured compliance with this policy, almost all referenced their reliance on certification schemes, particularly for the commodities of palm oil, soy, cocoa, coffee and beef.

As highlighted earlier, due to problems around traceability, auditing, and leakage, certifications do not always guarantee that zero deforestation occurs. In our view, it often depends on the type of certification that is used.

Types of certifications

There are three levels to most certification schemes: 1) book and claim 2) mass balance 3) segregated.

Book and claim is the most basic level of certification. Under this scheme, the administrative record flow does not connect to the physical flow of a commodity. Once a commodity is produced, it is not tracked or kept apart from other non-certified commodities, and the environmental attributes are separated via a book & claim registry without needing the buyer and seller to be connected with a physical supply chain. So, a company can buy a RSPO 'book and claim' credit, but this doesn't guarantee that the specific commodities being sold by the company have come from deforestation-free sources.

Mass Balance is similar, but in this case the physical supply chain is monitored. It allows for the mixing of

certified and conventional products at any stage in the supply chain, provided that overall site quantities are controlled. So, there is no requirement for separate storage, transportation, handling or processing as long as the input is balanced with the output. This allows companies to make claims that '50% of a product is certified' however they won't know which products actually contain the certified commodities.

Segregated is the most robust level of certification. In this scheme, the certified product must be kept separate from non-certified sources. Detailed information is also added as the commodity moves along the supply chain, which helps companies to avoid human rights or labour abuses when sourcing. It equips companies with a high level of transparency and traceability.



Most of the companies we spoke to confirmed that they do allow book & claim within their deforestation-free policies. There are some advantages to using book & claim as it is cheaper and simpler to implement, and we are cognisant that it's far better for companies to claim some form of certification than none. In our view, best practice is for companies to start setting minimum standards for what percentage is sourced from each method, with the amount sourced from segregated custody chains increasing over time. We did observe a few instances of this, with some companies setting deadlines for their suppliers after which book & claim will no longer be accepted.

An example of best practice is Unilever's deforestation policy. The topic has been a priority for the company for

many years during which they've undertaken a detailed mapping exercise of their supply chain to gain confidence that their commodities are deforestation free. The company agreed with our view that not all certification standards are deforestation free and described how they wanted to gain more assurance. As a result, the company chose to use certification as the foundation for their policy but introduced several protocols that sit on top, in order to reach a much higher level of transparency. As part of this, for palm oil the company reduced the number of mills they source from to 500-600 from 1600-1800, to gain greater comfort there is no deforestation risk. For soy, they started to source from different countries where there was a higher degree of traceability, and for cocoa they started to work more closely with their farmers.

The importance of social context

A clear theme from our conversations was the inextricable connection between biodiversity and social issues, such as the cost of living, farmer welfare and the protection of livelihoods. Companies were aware of the practical and often harsh reality of farming and emphasised that efforts to improve biodiversity could not be divorced from this context. Quite simply, any changes must be beneficial to farmers as well as the environment. If something is not helping farmers to make a profit, then it's not a practical change they should adopt. Not only because this observes the principles of a Just Transition, but without clear benefits, farmers are unlikely to embrace any changes, which in turn reduces the environmental gain that can be delivered.

Several companies, including Tate & Lyle, Hotel Chocolat and Nestlé, spoke about how yield can be used to build the case for change. In this instance, it is not about dictating farmers' actions, but demonstrating to them how certain environmental improvements can have clear economic advantages. When translated into financial gain, it becomes much easier to persuade farmers to do more for conservation. Tate & Lyle gave the example of their sustainable stevia programme in Dongtai, Jiangsu Province, where they supported two farms to switch to more sustainable agricultural practices. In its first year, the

programme saw promising reductions in environmental impacts and visible improvements in the yield of the stevia leaf. The entire local community could see the difference compared to prior methods of farming, which encouraged additional farms to join the scheme. Tate & Lyle emphasised that the symbiotic relationship between biodiversity, yield and financial gain – and making sure this was understood by farmers – was fundamental to the scheme's success.

Tesco echoed this viewpoint, speaking about the need to work within a farmer's known economic system. The company have recently launched their Responsible Commodities Facility (RCF) which provides incentives for farmers not to deforest. This includes preferential lending rates on agricultural inputs in return for ensuring deforestation and conversion-free farming. When designing the facility, Tesco deliberately used market mechanisms known by farmers as opposed to creating something wholly different, as this could act as a deterrent to farmer participation. This reinforces the importance of grounding any biodiversity initiative in a farmer's lived reality. The likelihood of effecting change without doing so is significantly smaller.

Finally, Carrefour discussed how strengthening long-term relationships with farmers is a key means to achieving

favourable environmental outcomes. The company work closely with their farmers and when asking them to implement certain measures and perhaps take a risk, they work to ensure the remuneration is right. Often they will implement a long-term contract which gives visibility

on both sides, and equips farmers with the financial security they need to test environmental conditions of production. Carrefour believe that cooperation with farmers is one of their main levers for implementing a food transition.



Case study: What does sector leadership look like?

We saw several examples of excellence and good practice amongst the companies we spoke to. We particularly commend as one example of leadership the ‘Gentle Farming Charter’ launched by Hotel Chocolat. In 2021, the company brought the Charter to Ghana, offering it to all of their 2,500 farming partners in the country’s Eastern Region.

Context: cocoa farming in Ghana

Cocoa is a critical cash crop for West African farmers and is the chief agricultural export of Ghana. The country currently produces around 20% of the world’s cocoa, the second-largest exporter after Côte d’Ivoire, and in 2021/22, Ghana produced around approximately 689,000 tonnes of cocoa beans. Although an important export, cocoa production in the region has also fuelled a host of ethical problems, most notably child labour and deforestation.

It is common for West African farmers to use children from the family to help with growing, harvesting and transporting cocoa beans. Much of this stems from the demand for cheap cocoa which pressurises producers to use children to keep their prices competitive. On

average, cocoa farmers earn less than \$2 per day, an income well below the poverty line. In 2018/9 the US Department of Labor found that 1.48m children were engaged in hazardous work on cocoa farms in Ghana and Côte d’Ivoire. This represents 43% of all children living in agricultural households in cocoa growing areas.

Deforestation is equally prominent. Cocoa farming can become threatened by aging plantations, poor farm management, soil degradation and pests. To increase production and meet demand, cocoa farmers often rely on the clearing of additional forest land to plant new cocoa trees rather than regenerating the same land. Between 2019 and 2022, studies found that Ghana lost 39,497 hectares of forest within cocoa-growing regions.

Through the ‘Gentle Farming Charter’, Hotel Chocolat aimed to address some of the complex ethical challenges associated with cocoa farming in Ghana. The Charter offers farmers an increased price for cocoa, as well as additional payments to support on-farm and pre-harvest activities that improve climate resilience and productivity. The increased price ensures that farmers will be able to achieve a living income for their family.

In return for the premium, Hotel Chocolat ask farmers to adhere to their Charter and:

- Increase the proportion of on-farm labour pre-harvest to sustainably improve crop health

- Ensure every child can participate fully in education, with no illegal child labour or modern slavery
- Prevent deforestation and replant shade trees to improve climate resilience

For the first point, Hotel Chocolat will pay for workers to go to farms and prune the cocoa leaves in the months before harvest. This helps farmers to grow cocoa more productively, as pruning maintains the health of the crop for future harvests.

For the last point, Hotel Chocolat encourage farmers to plant cocoa trees with regular spacing, as if you plant cocoa too closely together, the canopies overlap, which increases humidity and rates of fungal infection. In turn this increases

the need for fertilizers and pesticides. If you leave more space, not only is tree health improved (thereby reducing the need for chemical inputs), farmers can also plant indigenous shade trees in between. These are designed to tower over the cocoa trees and generate shade, which provides a habitat for pollinators and other wildlife, sequesters carbon, and ultimately creates a more varied, biodiverse ecosystem.

Not only do these actions protect the environment and enhance biodiversity, they also, critically, improve the cocoa yield. This benefits both the farmers (as they receive more money in return for the greater output) and Hotel Chocolat (as the greater output increases the revenue they can generate from sales).

Hotel Chocolat intend to monitor the farms on an annual basis, using an independent survey to ensure adherence to the Charter. If any issues are uncovered, they will work with their farmers to remediate.

In our view, the ‘Gentle Farming Charter’ is a compelling example of how biodiversity loss can be stemmed by recognising its contextual relationship with social issues. Through the Charter, Hotel Chocolat directly address one of the underlying reasons for some of the ethical problems in the region – low wages – and does so in a way that benefits everyone i.e., pay more, grow more, earn more.



What comes next: The role of investors

It is clear that investors have an important role to play in tackling the global biodiversity crisis. Engagement is a powerful tool for change, and investors can use their voice to lobby for greater action. Based on our conversations with companies, there are seven areas where we believe investors should focus their attention moving forward.

1. Investors should encourage companies to start managing their biodiversity risks now. Though it is a difficult topic, the world is in a 'nature crisis' and doing something is far superior to doing nothing. We have moved past the point where the complexity of the subject can be used as an excuse for inaction. As a starting point, investors can push for greater disclosure on the topic and share examples of best practice that have been developed despite the gaps in knowledge and data.
2. There is an urgent need for coherent metrics and methodologies that companies can use to measure their impact. The SBTN and TNFD will be pivotal in allowing this change, and investors should look to encourage coherence between the frameworks as this is likely to drive greater adoption. Once the frameworks are established, investors have a role to play in encouraging their uptake.
3. Investors should take care to ensure that companies are not over-reliant on certification schemes as their only means for ensuring zero-deforestation and preventing biodiversity loss. In conversations with companies, investors should emphasise segregated certification as best practice.
4. An avenue for improvement is via companies lobbying their own suppliers. Large companies can invoke change by setting deadlines for their top suppliers to adopt targets or to evidence carbon reductions. Investors should encourage this action in their conversations with corporates.
5. It may help to hold conversations through the language of scope 3 emissions. Almost all major food companies have set net zero targets. With the majority of their emissions coming from agriculture, more environmentally conscious farming is fundamental to companies meeting these targets. Investors can use momentum around net zero as a bridge for encouraging better biodiversity management.
6. Investors cannot divorce this topic from the practical reality of farming. We learnt from the companies we spoke to that biodiversity is most effectively addressed when linked to yield – if companies demonstrate to farmers that certain methods benefit them as well as the environment, they are more likely to be implemented.

7. The role of governments is critical. Companies were unanimous about the need for global coherence and the importance of subsidies to support farmers to implement regenerative agricultural techniques. It's therefore important for investors to use their voice in the policy debate as well as to encourage better corporate practice.

We intend to use these areas to guide our work moving forward. Future actions we expect to take include:

- Engaging further with our food sector holdings in future years, particularly around TNFD disclosure and SBTN uptake.
- Engaging with other holdings outside of the food sector on their response and management of biodiversity loss.
- Engaging in the policy debate to encourage stricter regulation and more subsidies to support regenerative agricultural practices.
- Starting to explore biodiversity loss within marine environments as this was very rarely mentioned by companies who tended to focus on biodiversity loss within terrestrial environments.



Conclusion

The world is facing a biodiversity crisis. Millions of plant and animal species are currently threatened with extinction, and the decline in wildlife populations is expected to worsen if we continue with business-as-usual scenarios.

This is of huge significance to investors as more than half the world's GDP is dependent on nature and its services, and the unprecedented loss of biodiversity places this value at risk. It is critical that institutional investors take action to halt this loss.

Our engagement with companies in the food sector – an industry that is both highly vulnerable to biodiversity loss and a major contributor to it – revealed a clear acknowledgment of the gravity of the nature crisis, but little consensus on how best to tackle the issue. Our main takeaways from the engagement are:

- Owing to the complexity of the subject, most companies regard themselves to be at the beginning of their journey on biodiversity and, not for lack of ambition, are still struggling to grasp the full extent of their impact on nature.
- Technology has the potential to help overcome some of the challenges around measurement and many companies are currently piloting projects designed to measure certain aspects of biodiversity loss.
- Frameworks such as the TNFD and SBTN are absolutely vital and are seen as the best way to assure high standards of practice.
- Full transparency across supply chains continues to allude most companies which makes tackling biodiversity loss significantly harder.
- Many companies believe that regenerative agricultural practices are the best hope we have at restoring biodiversity until supply chain transparency increases. There are several examples of regenerative agricultural methods being utilised by companies at the moment.
- Unlike climate change, biodiversity loss is not a one-size fits all approach. It varies considerably according to the geography and methods to manage it must be equally diverse.
- There is a need for government intervention and stricter regulation. This is currently lacking in most countries that are high-risk for biodiversity loss. However, it must be matched by equally strong enforcement.
- It is crucial to ensure that any work around biodiversity is grounded in the everyday lives of farmers. Without education and fair compensation, change will not happen.

Based on these findings we recommend seven areas where investors should use their influence to invoke positive change. Engaging with corporates and policymakers is vitally important and we intend to follow up this research with a series of next-step actions to maintain momentum around the subject.



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Associated British Foods

Carrefour

Danone

Hotel Chocolat

John Lewis Partnership (Waitrose)

Marks & Spencer

Nestlé

R.E.A Holdings

J Sainsbury

Tate & Lyle

Tesco

Unilever

