GREEN FUTURES SOLUTIONS

POWERED BY

University of Exeter

# NATURE POSITIVE ACTIONS

Biodiversity

"We ARE nature. Without the natural world, we wouldn't exist."

**Alasdair Moore**
Head of Gardens and Estate,
The Lost Gardens of Heligan

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# THE BUSINESS CASE FOR BIODIVERSITY

**Professor Kevin J. Gaston**
Chair in Biodiversity & Conservation,
University of Exeter



## We are all utterly dependent on biodiversity.

It sustains our economies and livelihoods, and it plays a vital role in our quality of life.

Biodiversity provides the key natural resources (e.g. food, water, energy and materials) and underpins the key functions (e.g. oxygen production, pollination and coastal protection) that all life depends upon.

It also plays an essential role in mitigating climate change, with around half of our greenhouse-gas emissions absorbed by terrestrial and marine ecosystems.

The overexploitation of natural resources, land- and sea-use change, pollution, the spread of invasive species and fossil-fuel-driven climate change have caused steep losses in biodiversity across much of the globe.

Today, the UK has one of the most depleted biotas (sets of naturally occurring organisms) in the world, with the loss of biodiversity continuing across land and sea.

## BIODIVERSITY & BUSINESS

# Business is also utterly dependent on biodiversity.

Nature is critical to the global economy and every single business relies on biodiversity to some extent – whether directly or indirectly.

For some industries, the connection between biodiversity and business is obvious – sectors like agri-food, fisheries, construction, packaging and pharmaceuticals explicitly rely on natural resources, ecosystems and species within their business models.

For other industries, dependencies on nature can be more ‘hidden’ within supply chains, operations and real-estate assets.

## STRATEGIC RISK

**Ignoring biodiversity poses strategic risks that no business can afford.**

1. **First, there are serious operational and financial risks. Biodiversity loss does not just threaten the viability of our planet, it also threatens the viability of entire business models. What happens to businesses that depend on natural resources when those natural resources are too scarce?**
2. **Second, nature loss poses reputational and legal risks, as direct and indirect negative impact of businesses on biodiversity trigger increased scrutiny and pressure from governments, stakeholders and consumers.**
3. **Third, there are dire market risks, as nature loss threatens to fuel severe social, political and economic instability and market disruption across the globe.**

According to the World Economic Forum, business leaders rate ‘biodiversity loss and ecosystems collapse’ as one of the top three global risks in terms of likely severity of impact over the next 10 years.[1]

[1] World Economic Forum, The Global Risks Report 2024 (19th Edition), accessed 11 December 2024: www3.weforum.org/docs/WEF_The_Global_Risks_Report_2024.pdf

## STRATEGIC OPPORTUNITY

Companies working to protect biodiversity stand to make themselves more sustainable, more financially viable and more resilient to the effects of climate change. Staying ahead of the regulatory curve by taking steps to protect biodiversity now will help businesses avoid progressively heftier risks, penalties and costs associated with biodiversity degradation.

Making biodiversity protection a core business and environmental strategy will help attract engaged investors, partners, employees and customers.

Nature-based solutions

# A GUIDE TO NATURE-BASED SOLUTIONS

## (and How to Find Them)

**Rebecca Hunt**
Nature-based Solutions Officer for the National Landscapes Association. Becs works with the UK's National Landscapes (formerly Areas of Outstanding Natural Beauty) on preparing for and engaging with the green finance and Nature markets space.

/rebeccahunt1



Harnessing the ingenuity of Nature in a way that will safeguard people, business and the environment for the long term.

**KEY TAKEWAYS:**

Nature degradation threatens at least

12%

**OF THE UK'S GDP,** WITH THE POTENTIAL TO REDUCE UK BANK PORTFOLIO VALUES BY 4-5% AT BEST.

**BY RESTORING NATURE USING ITS OWN SYSTEMS AND RESOURCES, WE CAN ENGINEER TANGIBLE SOCIAL AND ECONOMIC BENEFITS THAT PROTECT BUSINESSES FOR THE FUTURE.**

Minimal input can produce multi-faceted, stackable benefits, demonstrating unprecedented ROI potential.

**THERE'S NO WAY TO MAKE A QUICK BUCK FROM NATURE RIGHT NOW.**

But there are high-integrity projects available that can help you to protect the resilience of your business, its staff, consumers and suppliers for an uncertain climate future.

Nature-based solutions

# Can we make money and restore the environment at the same time?

It's the existential question of the moment, and one that is bringing a passionate, desperate and diverse community together across the UK to puzzle and test and solve together – as quickly as possible.



**Without Nature, business cannot exist. Healthy, balanced ecosystems provide rich natural resources and, until now, we never quantified their impact on civilisation as we know it.**

**HERE'S JUST A SNAPSHOT:**
Nature degradation threatens at least 12% of the UK's GDP – larger than the 2008 global financial crisis or the COVID-19 pandemic[1].

Sectors like agriculture, manufacturing and utilities that rely on water quality and supply, climate regulation and pollution are expected to be the hardest hit, in turn reducing the portfolio value of UK banks by around 4-5% (a very conservative guess according to the Green Finance Institute).

These numbers don't take into account what could happen if we hit climate tipping points and trigger a snowball effect.

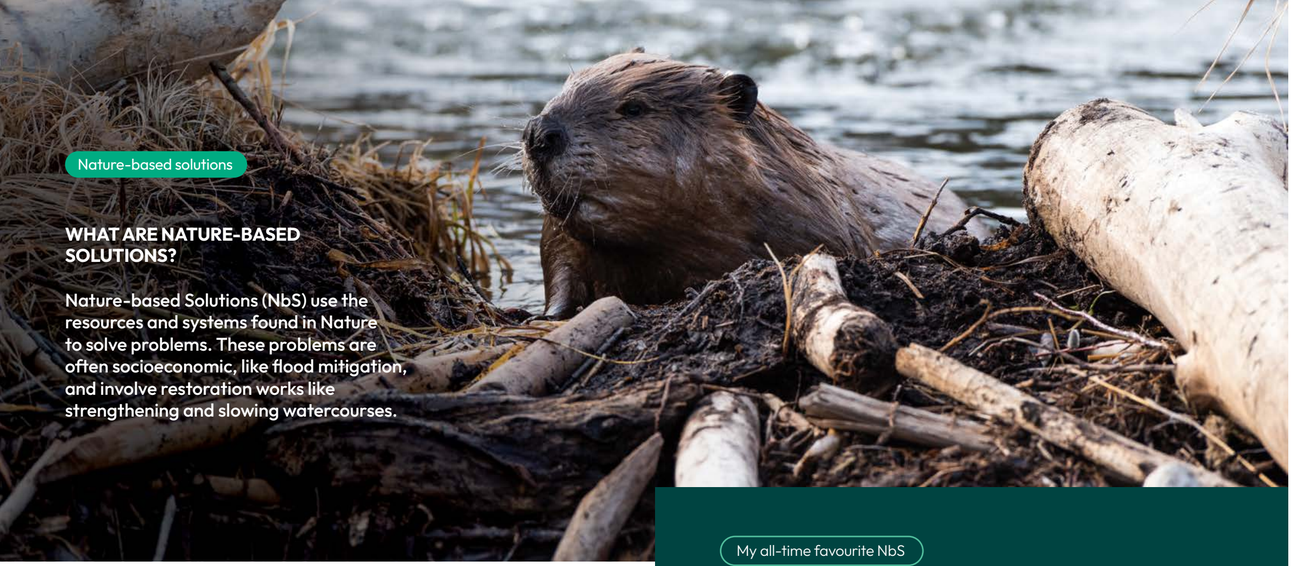
[1] https://hive.greenfinanceinstitute.com/gfihive/insight/assessing-the-materiality-of-nature-related-financial-risks-for-the-uk/

So ok, you get it. Things aren't looking too good where business and Nature are concerned - that's probably why you're reading this guide.

The most regulated and mainstream solution we currently have in play is the carbon market. Carbon credits exist well within our comfort zones; they're quantifiable, verifiable, and they can be slotted into nice boxes on spreadsheets. Suddenly, environmental impact can be reconciled by your accountant.

The thing is, carbon isn't Nature – businesses do more than simply emit carbon. Every business needs natural resources and a stable climate to survive, and these things come from wild, chaotic landscapes. Like the roots of an ancient oak tree, Nature is tangled, interconnected, co-dependent, disorganised, dynamic and alive. And that ain't balance-sheet friendly.

**So let's get to the good part - the solutions, based on Nature, which can turn the tide on this negative compounding interest that nobody wanted.**
Here, I'll be talking about what Nature-based Solutions (NbS) are with my all-time favourite example, how you can make money with Nature, where to start when looking for NbS projects to fund, a handy checklist to help you choose a credible supplier, and a quick blood-pressure check on the UK sector today.



Nature-based solutions

## WHAT ARE NATURE-BASED SOLUTIONS?

Nature-based Solutions (NbS) use the resources and systems found in Nature to solve problems. These problems are often socioeconomic, like flood mitigation, and involve restoration works like strengthening and slowing watercourses.

## THERE ARE TWO PARTICULARLY COOL THINGS ABOUT NBS:

1. They usually offer a suite of benefits in addition to solving the problem they originally set out to address, and;

2. They don't involve inventing or manufacturing anything new.



My all-time favourite NbS

Up until the 12th and 13th centuries, Britain was home to the beaver. These furry, toothy, paddle-tailed chainsaws build dams to protect themselves from predators.

**To the untrained eye, beaver wetlands look like disaster zones; gnawed trees barely standing, messy floating woody debris and streams backed up and spilling over the edge of the leaky dams. To a conservationist, this is nirvana.**

**Far from a disaster, it's ecosystem engineering. Though deadwood is usually removed to make streams and rivers look neat and tidy, and to clear floodwater from farmland as quickly as possible, it actually traps silt and pollutants, it provides spawning spots for fish and it's critical insect habitat. This fishy insect haven attracts rare and threatened bird species to the area.**

Water is stored and slowed, keeping it back from flooding towns and villages, and boosting fish populations. The leaky dams filter the water, improving its quality naturally. More carbon is sequestered in a beaver wetland than the trees would typically have achieved alone before being felled for the dam. Beavers are a multi-faceted NbS, and more projects are happening throughout the UK as a result.

NbS are nothing new as a concept, but the phrase has garnered particular interest over the last decade or so thanks to the growing pressure on grey infrastructure, and the realisation that something man-made isn't always the most efficient answer. In fact, keeping things balanced is kind of the name of the Nature game – it's better at this than we are.

A chiffchaff hunting for insects that breed on the beaver pond

The novel prevalence of the term "NbS" reflects the raised awareness of our interdependencies on the natural environment and the risks of continued degradation. It has also triggered new regulations and frameworks that help businesses to integrate Nature into their decision-making.

Nature-based solutions

## HOW CAN NATURE MAKE MONEY?

**It's easier to make the case for Nature saving us a heap of cash. If Network Rail invests in flood mitigation around the Hele crossing, they can avoid the millions of pounds in delays and damages that happen each year. Insurance companies have started to take notice of these kinds of investments for obvious reasons.**

But future savings are not quite as seductive as hard cash. For an industry that isn't connected to the land already, like farming or tourism, there's no way, at this moment in time, to make a quick buck with Nature. The only way of getting around this currently is to pay for the development of a carbon project which will yield sellable credits later on. There are no guarantees in this, and it takes years to make a return, but you do have government-endorsed regulations and frameworks to guide you.

For SMEs that may not have the capacity or interest in exploring these avenues, the greatest opportunity for them right now is in building supply-chain resilience for the future. Right now, Nature is unlikely to offer you another significant income stream but it will certainly protect those that you already have. Like it or not, most (if not all) elements of your business will rely on natural resources.

By understanding what your Nature risks, impacts and opportunities are, you can make informed decisions about the future of your business. You can also be a part of the early-adopters movement and demonstrate to your staff, ever more eco-discerning customers and suppliers that you intend to be on the right side of history.

Find out more: **tnfd.global**



## HOW TO CHOOSE A UK-BASED NBS PROJECT

**First up, the type of project that you should be looking for, and where, will depend on your motive for funding it.**

Here are the three most common reasons a business might want to fund Nature, along with the general format these take and my personal recommendations for where to look for projects.

**You want to fund Nature restoration to offset the negative impacts of your business on the environment.**

If you want to measure and verify your impact and then offset it, then carbon credits are the most legitimate way to do this at the moment.

The UK carbon markets and codes are developed by high-integrity organisations and the two currently in operation (woodland and peatland) are endorsed by the government. If you don't need to measure and indepedently verify your offsetting, then opt for the next option opposite.

Recommended outlet: **Revere.eco**

Recommended outlet: **Earthly.org**

**You want to fund Nature restoration because it's the right thing to do and/or helps you to meet your CSR/ESG obligations.**

If you have the budget to fund Nature restoration in a donation-style model, there are plenty of high-integrity projects across the country that you can kickstart.

Platforms now exist to enable businesses to browse a range of options on offer, or start conversations with experienced conservationists about designing one to suit the interests and needs of their business. Here are some recommended outlets:

**ProjectsforNature.com**

**YourNaturalPartner.org.uk**

**You want to invest in Nature restoration projects that will offer a financial return in the future.**

This model is very much under development and currently consists of a blend of other Nature funding models. For example, you could fund the development of a carbon credit project in order to sell the units later. You might fund a habitat bank that can sell Biodiversity Net Gain units in a few years. Financial institutions can see the tangible return potential of Nature and are working on making it an asset class like any other investable entity as we speak.

In a developing market, this is unquestionably the most complicated mechanism to establish so, while they wait for greater clarity and more regulations, businesses and environmental organisations are partnering up to find creative solutions together.

**greenfinanceinstitute.com**

**ecosystemsknowledge.net**

**edie.net**

Nature-based solutions

## YOUR NBS PROJECT CHECKLIST

**Use these simple pointers to ensure that you fund a high-integrity Nature project.**

1

**Partner with a credible organisation**
If you are entering the space for the first time, it's probably best to stick to an established environmental partner like National Landscapes, National Parks, The Wildlife Trusts and similar. These organisations will have decades of experience delivering Nature projects and many with corporate partners.

2

**Ask for their ethical credentials**
Many NGOs are developing their own ethical charters in order to demonstrate their credibility and standards to a potential commercial partner. Our charter at the National Landscapes Association details our standards on both the supplier and buyer side of a project so that new partnerships are built on transparency.

3

**Perform some due diligence**
Do some research on a project and organisation. The depth that you go into here will probably depend on how much money you're offering and the level of risk you want to mitigate. Smaller-scale, donation-style models will require a lighter touch than long-term, large-scale investments, for example.

4

**Discuss MRV early in the conversations**
Monitoring, reporting and verification (MRV) is an important part of Nature projects and helps to ensure that they are science-based, credible and resilient. Talk about the outcomes you want to fund early, how these should be measured, and how any external risks might be mitigated. For example, planting a monoculture tree species will not only compromise environmental outcomes but it will be susceptible to disease and possibly extreme weather. If you're not sure, ask for recommendations from the experts. It's important that both sides are flexible so that both Nature and business goals are met.

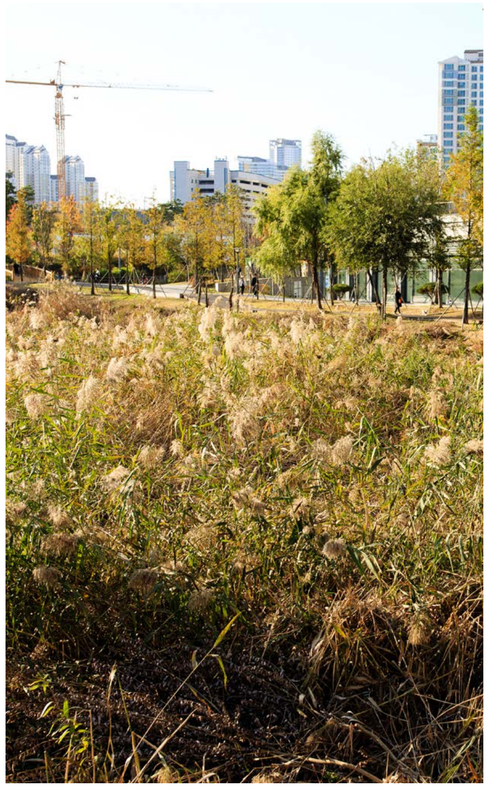
5

**Be firm but flexible**
The losses in Nature are real, so the gains must be too if we are to mitigate further risk and alleviate some of the damage already done. Be firm in this outcome, but be flexible in how it is achieved. Conservationists are the experts when it comes to maximising gains in Nature. Tree planting looks and sounds nice, but it's not right for every landscape. Allow them to guide you and change your mind.

*A word on "Nature"
Throughout this article, I refer to Nature as a proper noun. Though grammatically incorrect, it is my belief that how we refer to Nature is part of the problem and that we should assign it the same reverence as the Earth, countries and people. What's in a capital letter? Life, energy, personhood – respect. Worlds are built and destroyed with words – they matter.

And so does Nature.





The latest developments in the UK Nature markets space. Things are changing fast, but here's a blood-pressure check at the time of writing:

The existing carbon codes are being updated and strengthened so that more complex habitats can be accurately valued and measured (e.g. different kinds of peatland in various conditions).

More carbon codes are in development including soil, saltmarsh and hedgerows.

Additional frameworks are building on those that exist to boost their biodiversity and NbS outcomes, e.g. Wilder Carbon and the Biodiversity Net Gain metric.

The finance sector is working on making Nature a tradeable asset class.

New AI interventions are helping conservationists to map landscapes in finer detail and provide more context for making robust NbS decisions.

Regional aggregators like Nature North and Nature South West are helping smaller suppliers to access larger opportunities backed by credible and established organisations.

More daring NbS projects are setting ambitious and impressive precedents to challenge and disrupt the sector (like wild beaver release programmes).

Recommended news outlets:

**greenfinanceinstitute.com** **ecosystemsknowledge.net** **edie.net**

TNFD

# A CHANGING LANDSCAPE:

## TNFD and why businesses need to adapt

**Talwyn Whetter**
Green Futures Solutions,
University of Exeter

**Business relies on healthy biodiversity. We see this most clearly in sectors like agriculture and pharmaceuticals, which are dependent on nature to provide the resources they rely on. But every organisation depends on nature to some extent.**



**As biodiversity continues to decline, we will soon find ourselves in a situation where raw materials become unavailable, supply chains are affected and food insecurity becomes a serious issue. The risks are tangible.**

Organisations are ill-prepared for the near-term challenges they will increasingly face regarding biodiversity loss – including unpreparedness for future regulation or facing bad press and backlash from customers.

Understandably, governments, people and organisations are interested in finding solutions that allow business to support and protect biodiversity.

### TASKFORCE FOR NATURE-RELATED FINANCIAL DISCLOSURE (TNFD)

The Taskforce for Nature-related Financial Disclosure (TNFD) is a framework that requires businesses to measure and disclose their impacts and dependencies on nature and manage their risks in terms of biodiversity loss.

Businesses may be able to relate TNFD to the Taskforce on Climate-related Financial Disclosure, which is a similar initiative. But TNFD specifically focuses on biodiversity and natural resources.

TNFD is becoming relevant for UK businesses because it will soon become mandatory for larger organisations to report against it, and this will filter down to smaller businesses in their supply chains.

Meeting these standards is going to become important for businesses in terms of risk mitigation and regulation.

### CREATING POSITIVE IMPACT

Organisations can do a couple of things to start embedding nature-positive practices within their businesses. The first is to measure your business's impact on nature and the impact of your supply chains. This might not be immediately obvious, but you can start by looking at things like water use, land use and waste.

Second, consider the wider impact that your organisation could have on nature and biodiversity. So, rather than investing in a nature-positive project on site, a more impactful investment might be doing something within your local community, around flood mitigation or nature restoration, for example.

Taking a holistic view of your business will help you understand how you can maximise the return on your investment in nature.

The University of Exeter has more of the top 100 climate scientists than any other city or university in the world, and we have over 1,500 researchers working on climate and nature-related research. The Green Futures Solutions team is well placed to bring incredible, practical research into businesses to help you meet your biodiversity- and climate-related challenges.

Floods and Biodiversity

# COMBATING FLOOD AND BIODIVERSITY LOSS

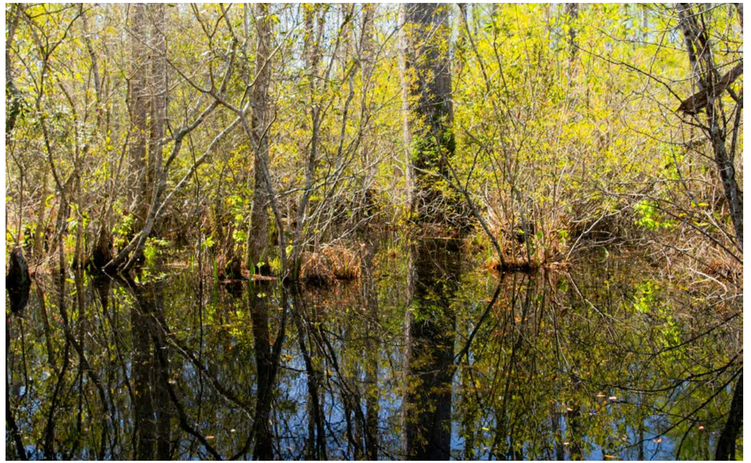
**Martina Egedusevic**
Environment, Economics and Policy Institute, University of Exeter.



**Natural capital assessment is used by governments, businesses and different organisations to assess the value of nature into their activities.**

For example, when a company needs a water supply, or a clean water supply, they might look into how to supply water from wetlands or natural sources, rather than invest into other, potentially very expensive options. This is what we mean by assessing the value in nature. So basically, we're thinking and working in favour with nature rather than against it.

This approach can be used in other ways too, such as flood prevention. If we think of flood protection as an example, we might think about a very big concrete structure, a dam or something similar, but it doesn't always have to be like that.



We can also provide flood protection using a forest wetland, in turn improving the soil, permeability and other different nature features that are actually more adaptable for the area we want to assess.

This can also lead to economic value becoming higher because we are assessing co-benefits as well. We retain open areas for the public, and people can use it for recreation, wellbeing and for other economic activities.

So Nature-based Solutions can be seen as solutions inspired by nature where we actually use different natural features like forests, wetlands and soil improvement and work in harmony with nature rather than against it.

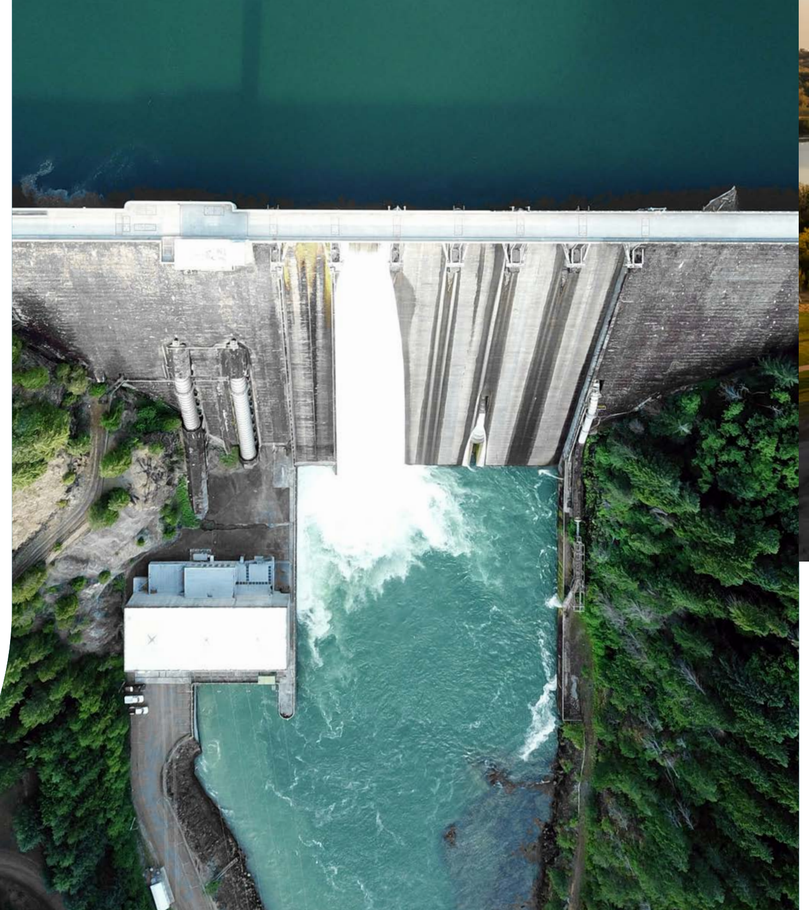
We can use these solutions to help tackle and mitigate some of the effects of climate change.

Floods and Biodiversity

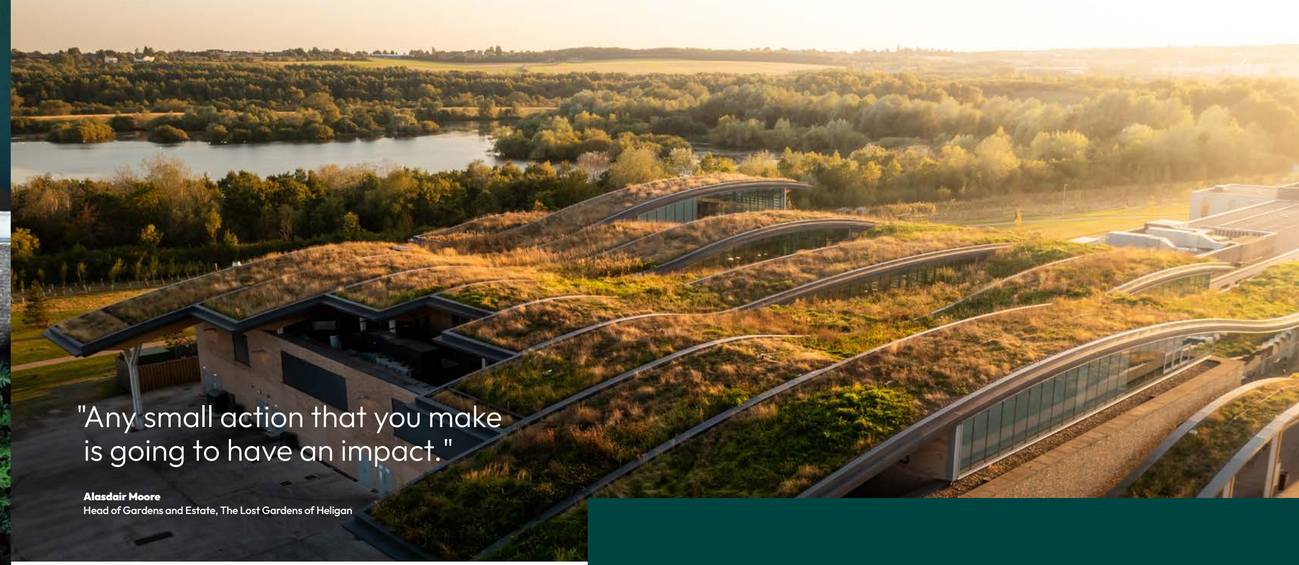
Climate change is likely to lead to more floods and more droughts at the same time in different regions of the world, and the use of natural capital can help. For instance, natural solutions can potentially slow down flood waters, giving areas further downstream time to adapt, and communities the chance to be better prepared.

Following on from this, after flooding, natural areas can create small pools that allow biodiversity and ecology to survive when droughts occur.

As mentioned, there are also economic benefits to this type of approach. When we invest in or build, for example, dams, there are often excessive costs to maintain the structures. Generally speaking, the costs associated with maintaining a natural solution are much lower. There may be costs (such as pest control in a forest) but that's often much less expensive than the repair and maintenance of engineered structures.








**So those expensive things that we invest when we build, for example, dams to maintain that them in a place we don't have those with nature based solutions. Of course someone needs to look after a forest looking like, is there any pests or anything else? But that's way less expensive than than other solutions we have like through hard engineering.**

There are also steps that businesses and individuals can take to embrace more natural solutions. As examples, businesses can install rainwater harvesting systems to both store and reuse this resource. This can cause delays in water entering drainage systems and, in turn, reduce flooding. It can also save money on water bills when used for things such as flushing toilets.

Other options might include green roof space to improve biodiversity and ecology and act as both insulation and cooling, or even simple things like onsite composting of organic waste.

Business and Biodiversity

# UNDERSTANDING YOUR IMPACT ON BIODIVERSITY

**Marcus Winter**
Impact and Partnership Development Manager - Biodiversity, University of Exeter

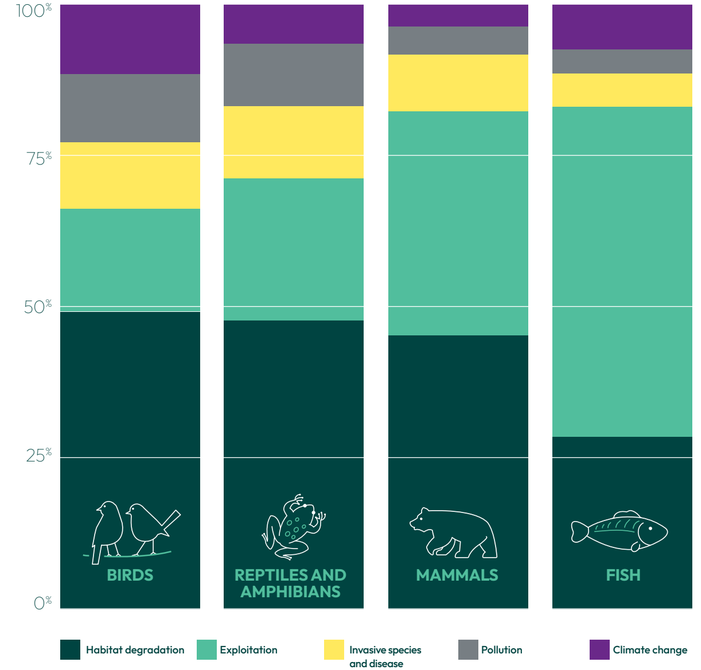
**Biodiversity generally faces five threats, as identified by The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). These are: pollution, habitat loss (changes in land and sea use), climate change, invasive species & disease and overconsumption/direct exploitation.**

To prevent catastrophic ecosystems collapse, organisations need to understand which of their activities have the greatest impacts on biodiversity. They need to disclose and mitigate those impacts where practicable. And they need to protect and improve biodiversity moving forward.

Many business activities play a significant role in exacerbating some or all five of these threats.

**Note:** A sample of 3,789 populations evaluated by the Living Planet Index
**Source:** WWF, Living Planet Report 2018

## KEY DRIVERS OF HABITAT LOSS:



# REDUCING YOUR BUSINESS'S NEGATIVE IMPACT ON BIODIVERSITY

**Businesses play a significant role in biodiversity loss through land use, pollution, supply chains and resource consumption. To prevent further ecological harm, companies should focus on assessing, reducing and mitigating their impacts whilst adopting more sustainable practices.**



## ASSESS YOUR IMPACT

Some businesses are undertaking comprehensive assessments of their impact on biodiversity loss using data on multiple factors, such as the construction of buildings, use of materials, transport services, utility bills, purchased goods and services, consumption of food and beverages and waste disposal.

Each of these sectors can be generally associated with five general environmental impacts: the use of land and water, pollution of water and air and greenhouse-gas emissions.

**It is important to acknowledge that these impacts may be a combination of direct or indirect impacts which can happen upstream or downstream.**

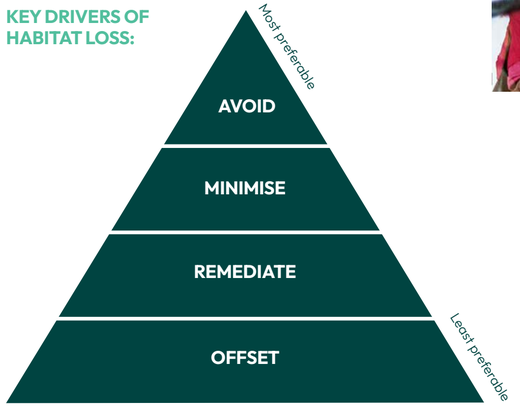
**INDIRECT (UPSTREAM):** Amazon rainforest deforestation, oil spills during its extraction, heavy metal contamination from factories, animal exploitation.

**INDIRECT (DOWNSTREAM):** How your customers use your product, end of life of product i.e. is it landfilled or recycled?

## AVOID, MINIMISE, REMEDIATE, OFFSET

**Once an impact has been identified, businesses can become more nature-positive by following the hierarchy of avoid, minimise, remediate or offset.**

## KEY DRIVERS OF HABITAT LOSS:





**For example, a small cafe chain could avoid the sale of meat and dairy and implement a zero-waste policy.**

They could **minimise** their purchase of ingredients by reducing food waste and minimise the use of harmful cleaning products that they use.

They could **remediate** they ecology of any land owned by the business, even by taking small steps such as installing some wildflowers in hanging baskets or a small pond if they have space.

Lastly, once all other actions have taken place, they could **offset** any biodiversity impacts that can't be reduced or avoided, for example, by supporting a nearby restoration project.



## MAKE SUPPLY CHAINS ACCOUNTABLE

For many organisations, from universities to businesses such as garment manufacturers, the majority of biodiversity impact lies in the procurement of commodities and products rather than other factors more directly under their control. These impacts are often not immediately obvious, because they are often hidden somewhere else.

Despite this, throughout the supply chain there are businesses or people having a direct impact on biodiversity. Businesses need to understand these biodiversity impacts to reduce them and mitigate them going forward.

## ASSESS YOUR SUPPLY CHAIN

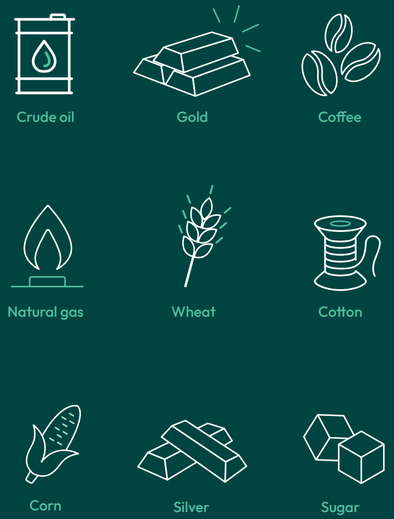
**Science-based targets for nature have screening tools and high-impact commodity lists which can help you to assess your supply chain.**

These various tools can help you understand which commodities should be focused on initially, which will generally have the highest ecological impact and which commodities will likely be more readily traceable (to a specific origin that will have its own specific local impacts) and which will not.

For example, avocados and gold have a traceability score of 1 and 2, so should be relatively easy to trace back through the supply chain, whilst petroleum and dairy products both have a traceability score of 5, so are deemed derivative and embedded commodities, and tracing them upstream may be of lower priority.

Even for the seemingly humble former product – avocados - specific impacts are often significant, including land use change, resource use, water scarcity and soil and freshwater pollution.

### TOP-TRADED HIGH-IMPACT COMMODITIES:






**Some aspects of your supply chain may be more straightforward to assess and improve.**

The following actions provide a simple way to reduce negative impacts on biodiversity:

- Look for suppliers with environmentally friendly certifications (eg FSC for timber, RSPO for palm oil).
- Prioritise fresh, seasonal and organic produce.
- Avoid single-use items and excessive packaging.
- Do due diligence when researching your suppliers, the jurisdictions they operate from within and any environmental policies they may have.
- Consider circular economy models (eg recycled materials, local sources of waste that could be used, closed-loop systems).


Businesses should not only assess their supply chains, and improve their sourcing accordingly, but they should also look to influence their supply chains by asking questions, engaging with them on issues and seeking to collaborate on finding solutions.

Don't be afraid to ask suppliers what they are doing to protect, enhance and restore habitats – you may not be the first person to have reached out!

Business and Biodiversity

# REDUCE BIODIVERSITY PRESSURES ON SITE

Business operations exert numerous direct pressures on biodiversity, including construction and pollution.

## CONSTRUCTION

Biodiversity Net Gain (BNG) incentivises organisations to reduce their impact by avoiding destruction of habitats for construction works. BNG requires a 10% biodiversity uplift where it is applicable to building works.

But your company could go further. Even if BNG isn't applicable to minor works you may have planned, you could consider applying BNG principles voluntarily. Or you could ensure that BNG uplift exceeds the minimum 10% requirement with a higher percentage of uplift (e.g. 20%).

BNG normally prioritises nearby offsetting, which is sometimes critiqued as neglecting further-afield offsetting projects that may bring greater benefits. The nuance of offsetting and BNG is outside the scope of this section and expertise from an ecological consultancy should be sought where applicable.



## POLLUTION

**Identified by IPBES, yet frequently overlooked, are the pressures posed by pollution toward biodiversity. This may be in the form of air pollution, water pollution, litter, noise pollution, plastic pollution, soil contamination, radioactive contamination, thermal pollution or light pollution.**

To reduce pollution impacts on biodiversity, avoid using harmful herbicides and insecticides. Where practicable, avoid artificial fertiliser to encourage native plant diversity (fertiliser will encourage certain dominant grasses).

For other forms of pollution, you can take a common-sense approach. Consider the timing and level of light and noise pollution you emit.

**Noise pollution** on land (and at sea) can cause injury, strandings and, at its extreme, death, with breeding birds and dolphins being particularly susceptible.

**Excessive night-time light** affects nocturnal species, causing reduced feeding and breeding in bats and having obvious adverse impacts on species such as moths and glow-worms.

**Plastic pollution** is widely acknowledged as an issue disrupting the look and feel of landscapes where prevalent, but it's also well documented to cause entanglement and lead to malnutrition, injury and death in animal populations.

Plastic can concentrate up the food chain in a process called bio-accumulation, poisoning marine mammals, birds, predatory fish species and in turn, research is suggesting, us!

Business and Biodiversity

# CREATING POSITIVE IMPACTS ON BIODIVERSITY

As well as reducing harm and mitigating negative impacts on biodiversity, businesses can do a great deal to protect and restore nature.

## TAKE STOCK OF WHAT'S AROUND YOU

**It's important to engage with and understand the nature that exists on your doorstep.**

Consider assessing the ecology of your sites using a qualified ecological consultant who will conduct a biodiversity audit identifying rare species or problem species, identify priority areas for habitat enhancement, identify changes that could be implemented on site and help develop a plan for ecological restoration.

Alternatively, you can deep-dive into building your own understanding of the biodiversity around you and encourage visitors and staff to start paying attention to the area's wildlife and suggest improvements. At the very least their increased engagement will help raise awareness for environmental and ecological crises and show your commitment to the topic.

## GET STAFF AND CUSTOMERS INVOLVED

**Here are some actions your business could take to encourage staff and customers to get on board:**

Incorporate wildlife awareness into staff training and consider the use of apps to help with wildlife identification such as iNaturalist, Merlin Bird ID or ORKS (Online Recording Kernow and Scilly).

Undertake or organise a BioBlitz – a collaborative event where anyone, from specialists to the general public, records every species of plant, animal and fungus they can identify in a set time period.

Provide a whiteboard/chalkboard with recent wildlife sightings to promote awareness.

Put out camera traps if you have interesting animals visiting your area.

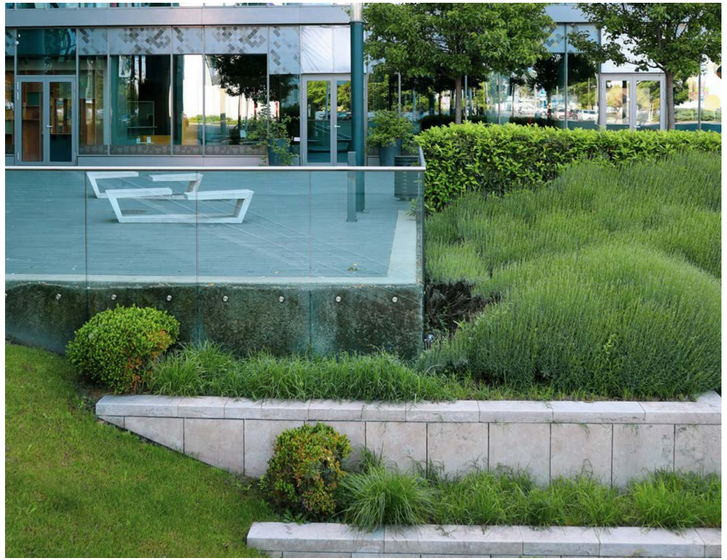
Search for other locally important species, such as rare flowers, champion trees or rare fungus.

## INCREASE THE SPACE FOR NATURE

**Once you understand which habitats you have around you (and which you don't), you might identify additional habitats that your business could create to benefit the local ecology.**

On a large scale this could look like restoring or remediating acres of land from brownfield land to natural habitat, but on a micro scale this could involve simple acts like adding planters to urban spaces or car parks.

These actions can have an outsized positive impact when they increase habitat connectivity, allowing species to move unhindered between different areas. This connectivity is critical for supporting wildlife populations, especially in fragmented landscapes where natural habitats are separated by urban development or agricultural land.



Increasing connectivity also improves ecosystem resilience, enabling species to adapt to climate change by moving to more suitable habitats as conditions shift. (We will look at some examples of habitat creation that provide wildlife corridors later in this section.)



## HEDGEHOG HIGHWAYS...

**Some initiatives are specifically aimed at increasing habitat connectivity. The Hedgehog Street initiative, for instance, creates a network of hedgehog highways.**

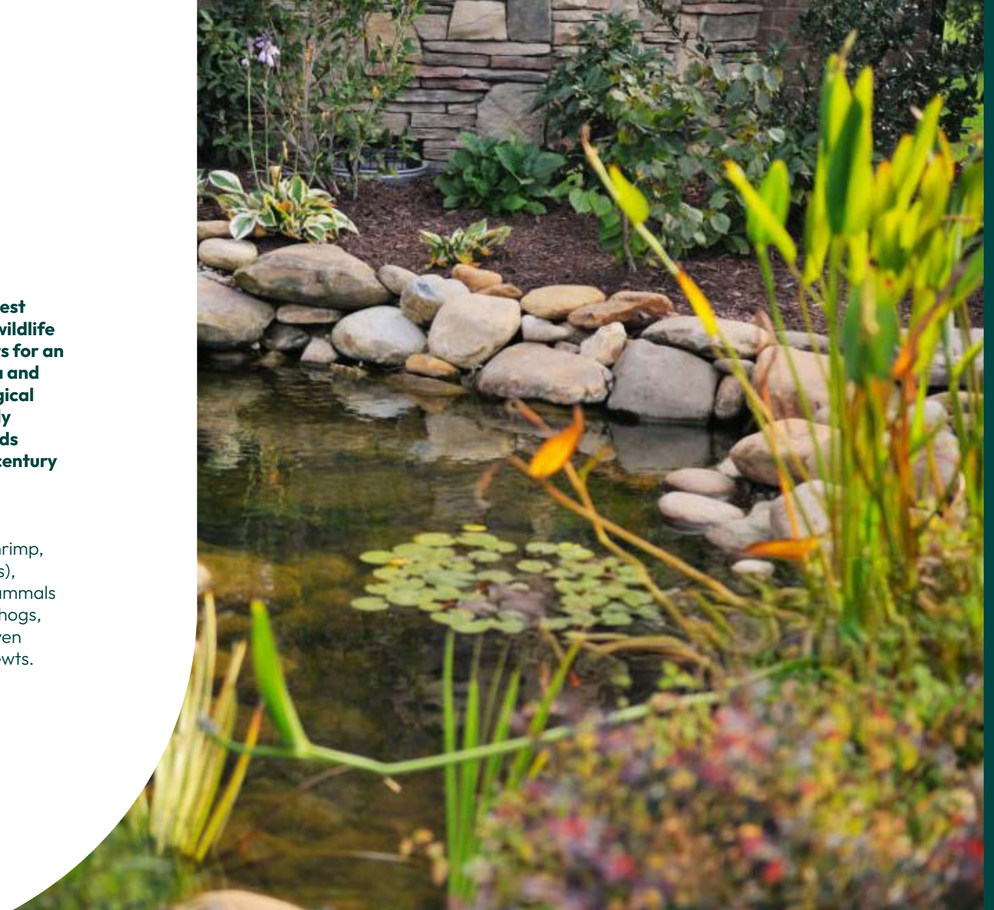
This can simply entail creating a 13cm-square hole in fencing (with your neighbours' permission), so that hedgehogs can easily scramble between banks, hedgerows and gardens, and encouraging neighbours to do the same.

Surprisingly, hedgehogs can travel up to two miles in one evening, but this can be significantly hindered by enclosures.

## INSTALL A POND ON SITE

**Ponds are one of the single best features for attracting new wildlife to a space, providing habitats for an abundance of specialist flora and fauna as well as wider ecological benefits. Despite this, roughly three-quarters of all UK ponds have been lost over the last century (ERCCIS, 2019).**

Ponds can be inhabited by invertebrates (snails, water shrimp, beetles and dragonfly nymphs), bathing birds and drinking mammals such as blackbirds and hedgehogs, and amphibians, including seven native species of frogs and newts.





**THE SIZE OF LINER YOU WILL NEED FOR YOUR POND IS AS FOLLOWS:** (length of pond + twice maximum depth) x (width of pond + twice maximum depth)

## WHAT SIZE IS BEST?

Ponds can range in size from the tiny (even utilising old, repurposed sinks) up to 2ha in size. Having a large pond is not as important as good design and management.

If considering installing a pond, identify the optimum size, keep the pond away from trees and shrubs (to minimise the amount of foliage that will need to be removed), and aim for 20% shading with sunny spots.

Note that rather than one large pond, it can be more beneficial to have a cluster or mosaic of smaller ponds, providing a variety of different habitats. No matter the size, please ensure creatures can easily get in and out by having at least one gently sloping edge.

## BUILDING YOUR POND

**To create a pond, you will need:**

- A suitable location
- A spirit level
- A pond liner and builders' sand (or some other vessel such as repurposed sink or plant pot ideally sunk flush with the ground)
- Some large rocks
- Patience for plants to become established or a variety of suitable pond plants
- A good spade
- Water (ideally rainwater – which will be most effective in autumn or winter)

**How to build a pond >**

## RECOMMENDED PLANTS FOR YOUR POND

**(if you can't wait for some to become naturally established):**

- Yellow iris (Iris pseudacorus)
- Meadowsweet (Filipendula ulmaria)
- Purple loosestrife (Lythrum salicaria)
- Rushes (Juncus spp)
- Sedges (Carex spp)
- Greater spearwort (Ranunculus lingua)
- Water mint (Mentha aquatica)
- Water forget-me-not (Myosotis scorpioides)

Business and Biodiversity

## PLANT TREES AND EXPAND OTHER HABITATS

Planting trees can bring numerous benefits both locally and to the world as a whole. These include:

- combatting climate change by absorbing carbon dioxide and releasing oxygen
- filtering pollutants out of the air
- storing and slowing water flow to prevent flooding
- enhancing wellbeing
- providing food, shelter and homes for insects, birds and mammals
- improving soil health and providing shade

It's particularly impactful to expand green corridors by planting native trees (e.g. oak, hazel and rowan).

Not all habitats are suitable for tree planting so please don't go ahead with tree planting unless you're sure it's appropriate for the location. Forest for Cornwall supports residents, businesses and communities in Cornwall to plant woodlands, orchards, hedgerows, parks and gardens. This support can come in the form of help and guidance as well as the provision of trees and saplings and other materials.




## PROTECT AND MAINTAIN HEDGEROWS

Hedgerows benefit biodiversity by creating better shelter, safer commuting routes and additional foraging for invertebrates, birds and mammals (including bats).

Maintain existing bushes and hedgerows and support their expansion by plugging with additional native species such as hawthorn, hazel, guelder rose and blackthorn.

## CREATE HABITATS FOR POLLINATORS

Support pollinators by installing new habitats such as wildflower meadows or putting together log-pile 'insect hotels' that, in turn, may attract birds and other predatory species.

If you would like to install a flowering meadow, buy ready-to-lay species-rich turf, which is easier than seeding and cultivating small patches.

When sowing wildflower seed mixes, it can be particularly beneficial to plug specific plant species, such as yellow rattle, which are parasitic on grass roots. This allows more species diversity to develop.

Consider becoming a wildflower donor or receptor site to help spread and protect important native species.

## ADOPT LAND MANAGEMENT APPROACHES

**Sometimes less is more!**
Consider no-mow months to let your grass grow on site. Allowing plants and grasses to grow promotes diverse wildflowers and vegetation which is in turn beneficial for pollinators. These benefits include providing habitats for small animals and insects and nesting sites for birds (such as skylarks), providing food and hunting grounds, and supporting pollinators.

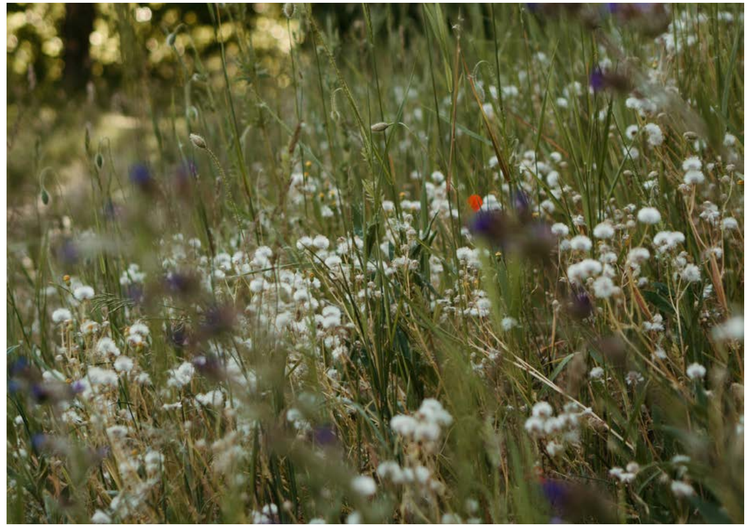


Leaving some windfall fruit and dead heads on plants can help retain seed stores that birds can peck out.

Avoid using peat, which is common in some composts. Peat bogs are large carbon sinks that, when harvested, release large amounts of emissions. You could try creating your own compost instead!

If you have animals such as horses grazing paddocks, consider rotational approaches such as strip grazing (by utilising an electric fence), mob grazing and methods that ensure grass is only grazed for short periods.

This allows grass to grow back faster from root reserves, ensures less trampling and maintains good soil structure. This reduced compacting and enhanced soil structure can, in turn, prevent runoff, as less compacted soils have increased water-holding capacities, keeping our waterways and seas cleaner.



**Worried your 'wild' meadow garden might be deemed messy and unruly?**

Numerous studies have found that leaving the majority of plant species untouched but mowing the edges of meadows, or mowing strips within the meadow to create walkways, can provide numerous ecological benefits whilst still appearing 'maintained' and not messy. Adding a 'wildlife area' sign can also help show the method is intentional and can encourage others to engage in the site's ecology and repeat the same elsewhere.

## SPECIES REINTRODUCTION

**Species reintroduction is the deliberate release of a species back into the wild after it has become extinct or endangered. The goal is to establish a healthy, self-sustaining population that is sufficiently genetically diverse.**

Obviously, species reintroductions are not advisable for the majority of businesses and require specific land characteristics and technical know-how.

However, understanding the current state of reintroductions and the driving forces behind them is important and helps spread knowledge on such topics.

Species reintroduction is sometimes considered controversial but, in some instances, it is undoubtedly appropriate, and it has been carried out in various forms nationally.

Some recent species reintroductions from the UK include white storks, white-tailed eagles, ospreys, pine hoverflies, woolly willows, freshwater pearl mussels, vendaces and Eurasian beavers.



Other species being seriously considered for reintroduction include aurochs (Tauros cows), elk, Eurasian lynx, Eurasian wolves, European bison, European flat oysters and European Sturgeon.

Numerous sites around Cornwall have reintroduced beavers including Cabilla, the Seal Sanctuary, Woodland Valley Farm and Trewithen Estate.

Beavers are of particular interest because they are considered a keystone species of wetland habitats, meaning they benefit a wide range of other species from fish and frogs to insects and birds. They have the potential to reduce flooding by building dams and water channels, and in doing so can enhance water quality and slow water flow.

Whilst species reintroductions may not be feasible at your site, visiting such locations could provide an engaging and interesting staff day out, and you may be able to think of smaller, humbler introductions that could be achievable for you, such as creating pollinator-friendly gardens or composting systems.

## SPOTTING SIGNS OF BEAVERS ACTIVITIES AND PRESENCE

## DID YOU KNOW?

Did you know that beavers' teeth are orange? Why? They have a high iron content to make them strong enough to cut through wood

**Beaver dams and lodges:** beavers build dams to restrict water flow and create ponds of still, deep water. Within these ponds they construct lodges in which they live, safe from predators.

**Bark gnawing and tree felling:** beavers are nocturnal and hard to spot - but their presence is given away by the noise they make as they gnaw tree bark.

**Burrows:** beavers may not always live in lodges but, where possible, prefer to live in large burrows dug into the banks of rivers. These can extend for several metres and contain one or more chambers.

**Lodges:** a beaver lodge is built out of twigs, sticks, rocks and mud, and has an underwater entrance. Inside their lodge, beavers have a safe place to sleep, raise their babies, stay warm in winter and hide from predators.

**Slipways and paw prints:** you may spot a smooth, muddy passageway leading from the edge of the water to the undergrowth. These are made when beavers leave a river or pond to collect food.

## RARE SPECIES REINTRODUCTION

**Do any of these species or animals share your green space?**

# DID YOU KNOW?

House sparrows are much rarer than they used to be – since 1970, almost 30 million of these little birds have vanished from the UK.

**HOUSE SPARROW POPULATIONS HAVE DECLINED BY NEARLY**

71% SINCE 1977

We are lucky enough to have 18 species of bat in the UK, 17 of which are known to be breeding here - that's almost a quarter of our mammal species.

| | | |
|---|---|---|
| Alcathoe | Daubenton's | Natterer's |
| Barbastelle | Greater horseshoe | Noctule |
| Bechstein's | Grey long-eared | Serotine |
| Brandt's | Leisler's bat | Soprano pipistrelle |
| Brown long-eared | Lesser horsehoe | Whiskered bat |
| Common pipistrelle | Nathusius' pipistrelle | Greater mouse-eared |



Common frogs and toads prefer damp, sheltered habitats like ponds, wetlands, gardens and woodlands with plenty of vegetation and hiding spots. They rely on still or slow-moving water for breeding and need moist, shaded areas to prevent dehydration.

In the UK, common toad populations have experienced a significant decline of approximately 68% over the past 30 years, averaging a 2.26% annual decrease. This decline is particularly severe in south-east England. Factors contributing to this trend include habitat loss, pollution, climate change and increased mortality from road traffic.

Hazel dormice are only found in 17 counties in the UK, including Cornwall. Their range has shrunk significantly and they're now confined predominantly to southern England and Wales with a few scattered populations in the Midlands, Wales and Lake District.

Dormice tend to favour old coppice woodland but they're also found in scrubland, old hedgerows and sometimes conifer plantations.

**HAZEL DORMICE HAVE DECLINED BY**

70% SINCE 2000

Business and Biodiversity

# EMBEDDING BIODIVERSITY ACTION THROUGHOUT YOUR BUSINESS

**We've seen how businesses can avoid operational, financial and reputational risks by adopting ecologically responsible practices – whether through sustainable land management, reducing supply chain impacts or complying with emerging regulations.**

"Over the next 5-10 years, organisations are going to have to be reporting around their broader environmental impact, not just their emissions."

**Chris Phillips**
Impact & Partnership Development Manager,
Green Futures Solutions, University of Exeter



But biodiversity action shouldn't stop there. Beyond implementing changes to business-owned land and supply chains, embedding biodiversity into your company's culture, decision-making and communications is essential for long-term impact.

Truly integrating biodiversity means embedding it into policies, staff engagement, reporting frameworks and customer messaging – transforming it from a standalone sustainability initiative into a core business value.

This section explores how businesses can ensure biodiversity action is woven into every aspect of their operations and strategy.

## MAKE FINANCIAL DECISIONS WITH NATURE IN MIND

Businesses of all sizes can make financial decisions that help to protect and enhance biodiversity, for example, switching your business bank accounts to a green bank or choosing green pension funds for staff.

To help companies take nature into account in decision making, the Taskforce on Nature-related Financial Disclosures (TNFD) has developed the LEAP assessment process. The core audiences for this approach are financial report preparers and users (investors, creditors and insurers) as well as risk management and operations teams.

- **Locate** where assets, operations and related value chains are and which ecosystems they interface with
- **Evaluate** dependencies and impacts on environmental assets and ecosystem services, including the scope and scale of them
- **Assess** material risks to organisations, what mitigating actions should be considered and what nature-related opportunities exist
- **Prepare** to respond and report, by creating a strategy and corresponding targets and deciding what will be disclosed

Some businesses provide aspirational case studies for the protection of biodiversity and nature through placing an emphasis on the protection of ecology when making any business decision.


### FAITH IN NATURE

Faith in Nature have put Nature on the board of directors and changed the business's articles of associations to include, alongside promoting the success of the company, a long-term duty to Nature. This has given Nature a powerful 'voice', through the median of an environmental lawyer who can voice Nature's stance and perspective on all major business decisions.

### PATAGONIA

Similarly, the clothing brand Patagonia (to whom I admittedly have a painfully expensive allegiance thanks to their decades of activism and 'doing good') transferred 98% of the company's shares to a new environmental organisation called 'Holdfast Collective', which receives all profits that don't need to be reinvested.

## ENGAGE CUSTOMERS AND EMPLOYEES

**Your website is often the first opportunity to showcase how important wildlife is to you and your business, and it's an ideal place to engage your guests and potential customers in your sustainability initiatives.**

Make it personal to you!
I invite you to spend five minutes with your eyes shut, thinking about what biodiversity means to you, why (or whether) you feel it's important, and how you feel in nature. Is there anything from the topic of biodiversity you'd like to teach to others, or do you have any long-term aspirations, projects, goals or legacies relating to it?




**Here are some practical ways to use your website effectively:**

Offer access to your sustainability, environmental and biodiversity plan/policy online, highlighting your journey and future plans.

Establish yourselves as a wildlife-friendly business, explaining on-site practices such as allowing grass to grow longer, allowing hedges to grow wild and other eco-friendly initiatives.

Provide information about local environmental activities, such as beach cleans or wildlife-friendly events, in which visitors can participate.

Share links to resources like the Marine and Countryside Code to educate guests on how to responsibly interact with nature (especially for businesses in the hospitality sector).

Create downloadable wildlife spotters' guides, or BioBlitz events that can be joined, to encourage guests to look for local species and engage with the environment.

Highlight public-transport options or car-free activities to promote sustainable travel.

Share updates about eco-friendly practices, such as switching to green pensions, ethical banks or renewable energy providers, and explain how these choices positively impact the environment.

Promote spending time in the outdoors, such as by organising staff walks - which are great for physical and mental health, promoting environmentalism and enhancing team cohesion!

# QUICK AND EASY BIODIVERSITY ACTIONS

**If you are feeling inspired to take some positive biodiversity action straight away, here are some quick and easy steps you can take:**

## THINGS TO START DOING NOW:

- Consider your supply-chain impacts and prefer organic, seasonal and local products
- Leave an area of long grass
- Create hedgehog holes in any fencing (with permission from your neighbours)
- Feed and water the birds
- Create a log pile and/or grass compost heap
- Plant wildflowers
- Add your voice to Business for Nature, to call for governments to adopt policies now and reverse nature loss this decade
- Plant native, functional plants that produce nuts and berries instead of ornamental and non-native plants
- Start a bird sighting list for your grounds
- Get your employees to participate in annual wildlife surveys (e.g. RSPB garden bird watch)
- Install water butts, even if just for garden watering

## THINGS TO STOP DOING RIGHT AWAY:

- Stop using weedkiller, slug pellets and other poisons
- Stop tree and hedge management during the bird nesting season (April-September)
- Stop leaving unnecessary outdoor lights on that can affect nocturnal animals like bats
- Stop mowing the grass so often to leave time for plants like daisies to flower

Stop using excessive packaging or materials that cannot be disposed of easily

# HOW TO INCREASE YOUR BIODIVERSITY

### MATURE TREES
offer nesting sites, cosy hideaways and food in the form of fruit and leaves.

### EVERGREEN PLANTS:
Evergreen hedges and trees, like ivy and holly, provide year-round shelter and food for wildlife. Their dense foliage also supports insects, which in turn benefit pollinators and birds, contributing to a thriving, biodiverse ecosystem.

### NO CHEMICALS
They kill not only the species they're targeted at but everything else that comes into contact with them, i.e. the hedgehog that eats the slug that's eaten the slug pellets.

### BIRD NESTING BOXES
By attracting different species, nesting boxes enhance biodiversity, contribute to natural pest control and support ecosystem balance. They also compensate for habitat loss, offering crucial nesting sites in urban and deforested areas.

### PONDS
have the potential to support newts, frogs, toads, diving beetles, damselflies, dragonflies and some species of hoverfly larvae.

### PLANT SMALL TREES
Trees are a powerful weapon against global warming. A single tree can store carbon in its trunk and in the soil below.

### LONG GRASS
Leaving some areas of grass long and uncut will turn your lawn into a biodiversity hotspot. Beetles, caterpillars and slugs will hide away in the vegetation, creating a tasty buffet for the hedgehogs that eat them.

### WATER BUTTS
Rainwater butts reduce reliance on mains water and prevent runoff that can erode soil and pollute waterways. They support local wildlife, especially in dry periods, by providing a water source. Additionally, using rainwater for gardens encourages healthy plant growth, creating better habitats for pollinators and other beneficial species.

### COMPOST HEAP
Composting is a great way to cut down on waste and can become a whole ecosystem of worms, beetles, flies, woodlice, amphibians and even reptiles like slow worms and grass snakes.

### WILDFLOWERS
Planting wildflowers provide vital food and shelter resources for a wide variety of insects, which in turn provides food resources for birds, bats and hedgehogs.

Life-Cycle Assessment

# BIODIVERSITY LIFE-CYCLE ASSESSMENT

**Professor Xiaoyu Yan,**
Professor of Sustainable Energy Systems, University of Exeter

**Dr Xiaocheng (Sam) Hu,**
Impact Fellow, Green Futures Solutions, University of Exeter


Life-cycle assessment (or LCA) is a powerful tool that helps us understand, holistically, the environmental impacts of anything – be it a product, a process, a service, an organisation or even an entire country.

**It is a valuable tool for any organisation wanting to make more sustainable choices.**



## ADVANTAGES OF LCA

**LCA is data-driven and quantitative, using solid science to help inform sustainability decisions.**

**And it puts everything under a consistent framework, meaning organisations can use LCAs to compare very different things.**

**The ability to examine everything we make, every human activity, and every technology using the same LCA framework ensures that consistency.**

## MEASURING MORE THAN CARBON

LCA helps you consider the full environmental impact of your business operations beyond just measuring your carbon emissions. For instance, if we think about a food product like a packaged sandwich, LCA considers all the materials and inputs involved in making that packaged sandwich.

It considers the filling and where that has come from, the plastic packaging, the energy and water involved in making it, any emissions in the air and water and so on.

It is a cost-effective approach to analyse many different impact categories by using the same input data, including biodiversity, material scarcity, water consumption and ecosystem toxicity.

## MONITORING BIODIVERSITY IMPACT

**Any business wanting to understand their impact – and their dependency – on nature can use LCA to do that holistic analysis.**

LCA helps you to consider your impact on biodiversity through land-use change, water use or air pollution, for example. Life-cycle assessment helps businesses identify opportunities to improve their environmental performance relating to biodiversity, while also reducing the risks that those same businesses are exposed to in terms of biodiversity loss.

LCA experts from Green Futures Solutions are currently collaborating with climate scientists at the University of Exeter to build an even more robust framework to analyse specific biodiversity impacts.

This will support businesses to better understand how their materials are linked to deforestation, for example, or how their processes might be damaging certain ecosystems.

## STAYING AHEAD OF REGULATION

LCA can help your business stay ahead of future environmental legislation.

Carbon might be the most important category in the current regulatory landscape, but biodiversity is gaining importance.

The EU's Corporate Sustainability Reporting Directive (CSRD), for instance, asks businesses to record their biodiversity impact within their annual reports.

Similar legal frameworks will soon be adopted in other countries, including the UK.

Any organisations wanting to get ahead of this legislation can use an LCA to anticipate their potential impacts and dependencies on nature, reducing their risks to future regulatory requirements.

## ECONOMIC IMPACT

Lastly, life-cycle assessment helps organisations make better business decisions. In examining the impact of individual components within any product or service, it can also help businesses find the most cost-effective alternatives to those components.

Using LCA to look at where you can cut emissions, for instance, can also help you make cost reductions in the energy your organisation uses. Thus, LCA has economic as well as environmental impact.

# “Biodiversity not only sustains economies and livelihoods but is vital to combat climate change.”

**Professor Kevin J. Gaston**
Chair in Biodiversity & Conservation,
University of Exeter

Enhancing biodiversity is essential for building resilient ecosystems and ensuring a sustainable future.

This toolkit provides practical guidance, case studies and actionable strategies to help individuals, communities and organisations integrate biodiversity-friendly practices into their landscapes. From habitat creation and sustainable land management to monitoring and collaboration, each step contributes to a healthier environment.

As businesses face increasing expectations to report on their environmental impact, staying ahead of the curve is crucial. Future legislation will likely require more rigorous biodiversity reporting and accountability, making proactive action not only an ecological responsibility but also a strategic advantage. By embedding biodiversity considerations into operations now, businesses can demonstrate leadership, mitigate risks and align with emerging regulatory frameworks.

By adopting these principles, we can collectively make a positive impact on biodiversity, supporting wildlife, improving ecosystem services and fostering a more sustainable relationship with nature. Whether you are a landowner, policymaker or business leader, the actions outlined in this toolkit empower you to be part of the solution. The future of our natural world depends on the steps we take today.

This project was part funded by the UK Government through the UK Shared Prosperity Fund. Cornwall Council has been chosen by Government as a Lead Authority for the fund and is responsible for monitoring the progress of projects funded through the UK Shared Prosperity Fund in Cornwall and the Isles of Scilly.

# GREEN FUTURES SOLUTIONS

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To find out how the University of Exeter can support your organisation's climate and nature actions, please visit **greenfuturessolutions.com**

Let's work together

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