Beyond risk and return

The role of finance in preserving and fostering biodiversity

Triodos Bank white paper

Triodos Bank

Content

Foreword

The existential threat of the current pace of biodiversity loss cannot be underestimated. If this pace continues, the point of no return comes closer and closer. Triodos Bank is acutely aware of this. We see it as our duty, as a financial institution and as individuals, to urgently preserve and restore nature and biodiversity. Given the complexity of natural ecosystems, there is no single solution to the problem. We need to address the issue from a systemic perspective, targeting various direct and indirect drivers of biodiversity loss and carrying out a strategy for an all-encompassing regenerative economy.

The financial sector plays a key role in shaping business and the economy, and therefore in restoring biodiversity. It must reconsider its practices and priorities to play a constructive role in the economy, ensuring that its activities foster economic and societal progress without undermining the environmental foundations of our livelihoods, and contributing to environmental regeneration wherever possible.

In this paper, we explain our approach, which is based on the belief that human activity cannot be separated from the environment in which we live and operate. It is also our call to action to save our planet's biodiversity now. Our lives and those of future generations depend on it. We hope you join us!

Jeroen Rijpkema
Chair of the Executive Board

Executive summary

Biodiversity globally is decreasing at an alarming pace. The current rate of extinction is tens to hundreds of times higher than the average over the past 10 million years – and it is accelerating. Human activity is the main driver of biodiversity loss, causing and exploiting natural terrestrial, freshwater, and marine ecosystems.

What drives biodiversity loss
The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) concluded that there are five main drivers of biodiversity loss, which are estimated to have caused more than 90% of nature loss in the past 50 years:
1. Land/sea use change
2. Direct exploitation of organisms
3. Climate change
4. Pollution
5. Invasive alien species

These direct drivers are in turn largely determined by human activities. Societal values and behaviours, such as production and consumption patterns, human population dynamics and trends, trade, technological innovations, and local and global governance, largely determine the direction of change that our economic activities imprint on nature. It is paramount to acknowledge such indirect drivers to understand the human-induced root causes of biodiversity loss that are ascribed to our socio-economic order and systems, and on which we therefore can and must act to preserve and restore biodiversity.

As individuals and society, we are an integral part of broad, natural ecosystems. We are strongly dependent on these systems for our survival and wellbeing, benefitting from what are often called 'ecosystem services', such as soil formation, the provision of food and timber, air quality and climate regulation, the regulation of water supply and quality as well as the cultural and aesthetic value of certain plants and species. Yet the value provided by healthy and balanced ecosystems is largely overlooked in economic processes and policy making. The ecosystems services framework more formally conceptualises our dependency on nature and provides a useful way to support decision-makers, such as international institutions, regulators, and businesses, to consider the impact and dependency of economic activity on nature in a more conscious way.

Finance and biodiversity
Financial services are too often large indirect drivers of biodiversity loss, through the financing and promotion of activities that rely on deforestation, resource extraction and exploitation, generating pollution and deep changes in land and marine ecosystems. At the same time, the deterioration of biodiversity and ecosystems also translates into risks for businesses that are directly or indirectly exposed to environmental changes, and therefore for the financial sector.

Organisations - including financial institutions – are beginning to understand the need to assess and disclose both how environmental issues may impact their immediate financial performance (outside-in risk), but also how they (positively or negatively) impact nature (inside-out impact). However, reducing the harm of economic activity on nature, and beyond that, directing financing and investment activities towards nature-positive solutions is not an easy task.

This is fundamentally a valuation problem. Difficulties in measuring biodiversity's role in ecosystem resilience mean that it is in turn hard to establish its monetary value for the economy as a whole. In mainstream economics, natural capital is indeed considered as an externality, meaning that the (accounting) value of natural capital is not included in market prices. But even where natural capital can be accounted for (some valuation tools are, in fact, available), any estimate of natural capital value is likely to provide only a partial picture. For the financial sector, it is therefore difficult to take the full value of natural capital into account. The mis- or non-pricing of natural capital makes it harder to create business cases for nature restoration and other regenerative practices that generate positive impacts. Moreover, biodiversity-related activities and nature restoration do not immediately produce financial returns under current market conditions, and this is one of the key drivers in financial decision-making.

It is therefore imperative to activate systems and processes that allow the incorporation of non-financial value in decision-making and weighing up the pros and cons of decisions not only from a profit or risk point of view, but also in terms of social and environmental value creation.
However, the most important precondition is intentionality. Financial institutions need to demonstrate that they are willing to rethink their practices and priorities to truly play a constructive role for long-term collective wellbeing.

Investment strategies for a regenerative economy
Making the financial sector work for good requires a profound rethinking of economic and financial mechanisms, the extractive paradigm that is by far the foundation of our current economy.

We currently see three levels on which financial institutions should operate to foster positive environmental impacts in relation to biodiversity.

1. Stop funding the most harmful activities (do no significant harm): diligent application of strict sustainability criteria and mechanisms by all major financial institutions would already trigger a remarkable shift in the financial sector and the economy at large towards more environmentally conscious financing and investment decision-making.
2. Foster direct solutions (direct contribution): a logical (and necessary) next step is to focus on the greener, more environmentally conscious alternatives to existing products and practices. These alternatives should focus on substitution, reduction, regeneration, and rebalancing. In addition, direct nature restoration, including nature-based solutions, is increasingly becoming an option for investors.
3. Addressing the deep causes of biodiversity loss (indirect contribution): all efforts have a limited chance to survive the proof of time if we do not address the underlying mechanisms that encourage an extractive use of resources and a detrimental relationship with nature. While addressing this is a prerogative of policy makers, private actors and financial institutions also must play a role.

The order in which they are presented is not random: redirecting financial flows away from harmful activities is essential to start seriously concentrating on any next step.

Triodos Bank's approach to biodiversity
Our approach is based on the belief that human and economic activity cannot be separated from the environment in which we live and operate, and, more fundamentally, that we people are one with nature. From a business perspective, we are also convinced that in the long term, the most successful businesses will be those that achieve a good balance between their social, environmental, and economic performance. Biodiversity is embedded in our decision-making processes. We address the key drivers of biodiversity loss by carefully selecting the sectors and companies we finance and invest in and by working to improve industry standards on biodiversity. This relates to three main areas of our financing and investing processes:

- Do no harm: we aim to reduce negative effects on biodiversity by excluding, based on our strict minimum standards, particularly harmful sectors, companies, and practices.
- Positive impact and solutions: we pay particular attention to positively evaluate businesses that develop or adopt solutions to the problem of environmental degradation and that contribute to environmental regeneration. Such characteristics of companies are given positive weight in financing and investment decision-making.
- Engagement and collaboration: we engage with companies and entities in portfolio to mitigate negative impacts and foster positive practices linked to biodiversity. In addition, Triodos Bank has founded and supports several industry-wide initiatives that seek to improve practices for the measurement of biodiversity-related impacts within the financial sector.

Dealing with the many different, complex causes of biodiversity loss – whether to reduce or to reverse biodiversity loss – requires cross sectoral thinking and broad approaches. Triodos Bank historically focuses on sustainable food and agriculture and renewable energy. Sustainable buildings are also a long-standing area of attention, especially as mortgages represent a substantial share of our financing portfolio.

Our food and energy systems, as well as the spaces we inhabit, are areas of our economy where a deep transition to more environmentally and socially sustainable practices is urgently needed. We incorporate direct biodiversity-related concerns in financing and investment activities in these areas, and at the same time seek to address indirect drivers of biodiversity loss whenever possible, fostering both established and innovative solutions for an all-round, more sustainable economy.

Call to action
The financial sector should not only look at biodiversity loss as a financial risk or at nature restoration as a new 'asset class', where financial instruments can be used to reap more profits.

Most economic activities result in biodiversity loss. We see it as a task for financial institutions to avoid the serious biodiversity losses and ecosystem damage and to reduce the harmful effects of the activities they finance. Additionally, we believe financial institutions should actively and intentionally seek to direct money to businesses and solutions that can counteract the existential threats that humanity is facing. Indeed, intentionality is key: finance can and should use its immense power to foster nature regeneration, and positive change, putting impact first. Positive societal and environmental impact, when achieved, should not be treated as a positive externality of financing activities. It is time to turn things around in finance: financial value derived from impactful economic activities is the true positive externality.

1. Introduction

> "We are eroding the very foundations of our livelihoods, food security, health, economies and quality of life worldwide."
>
> Chair Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Sir Robert Watson[1]

Ecosystems at risk

The ongoing loss of biodiversity was ranked as one of the top-three global risks in the next 10 years in the 2022 World Economic Forum Global Risks Report (GRR).[2] Human economic activity, from agriculture to broader resource exploitation and pollution, is the leading driver. The importance of biodiversity and its vital role in maintaining healthy, functioning, self-regulating ecosystems is often overlooked.[3] This has further been emphasised by the alarming report from the IPCC indicating that human activities are responsible for climate change.[4]

Biodiversity loss is one of the most urgent and complex systemic risks we face; human activity has been the driving force in the estimated 68% decline of global animal populations since 1970.[5] Biodiversity loss cannot be reduced to the extinction of certain species. In the longer run, the loss of diversity, including genetic diversity, poses a serious risk to global food security by undermining the resilience and impairing the functioning of ecosystems.

Triodos Bank's vision: People living well on a thriving planet

Triodos Bank's mission is to make money work for positive social, environmental and cultural change. To make sure our influence in these areas is positive, we only invest in sustainable enterprises. We aim to build just and inclusive societies, where people can enjoy good health and wellbeing, where they have access to opportunities and where they can pursue their aspirations. To achieve this, we only use the 'real' money entrusted to us by savers and investors.

The current pace of biodiversity loss is unquestionably an existential threat. We therefore need to redefine what matters most; revalue the way we live, cooperate, and communicate; and redesign our economy.[6] Our activities are deeply rooted in the belief that we humans are part of a bigger system, and that we are at one with nature. To achieve wellbeing for all, we need to rethink and embrace our individual and collective connection with nature. All considerations around building a sustainable economy and the success of this effort depend on establishing this awareness. Our pledge to biodiversity, both as a longstanding tradition of Triodos Bank and now as part of our commitment to reach net zero by 2035, starts from this premise.

Integrating the protection and stimulation of biodiversity into our investment and financing activities is vital to everything we do. We consider the impact on nature and biodiversity, and we aim to avoid negative impact as much as possible. This is also mirrored in our portfolios, i.e. through our proven financing of food and farming activities that are based on sustainable agriculture principles, renewable energy and the exclusion of harmful investments such as fossil fuels. Through our own activities as a bank and impact investor, we aim to serve as a catalyst in the transition to an economy where planet and people come first. The financial sector plays a key role in achieving this.

The clock is ticking, but the increasing awareness and willingness to change the way we think, live and work give reason to hope we may succeed in turning the tide.

In this paper, we shed light on the two-way relationship between biodiversity and the financial sector in this crisis as well as the associated impacts and risks. In addition, we illustrate the impact of our investments and the initiatives we support to be able to measure the direct impact of our investments on biodiversity. Finally, we provide case studies to demonstrate how we either avoid the most negative impact or strive to create a more positive relationship with nature through biodiversity-enhancing activities.

2. Biodiversity in critical decline: understanding biodiversity loss

Before we dive into the role that finance should play, we first need to understand what the causes and the consequences of biodiversity loss are. In this chapter, we explore what has been driving biodiversity loss and how this represents a threat for balanced ecosystems, the (undervalued) services that nature provides and ultimately our wellbeing.

The rate of global change in nature during the past 50 years is unprecedented in human history. Extinction has always been a feature of life on Earth, however the domination of global ecosystems by humans has caused a sharp rise in the rate of extinctions only seen in previous mass extinction events. The current rate of extinction is tens to hundreds of times higher than the average over the past 10 million years – and it is accelerating. Human activity is also the main driver of biodiversity loss.

By 2030, it is estimated that the world's biodiversity will have been further reduced to 63% of its original potential, compared to 68% now. According to the latest update by the Stockholm Resilience Centre, we have now crossed four of nine planetary boundaries: climate change; loss of biosphere integrity (previously loss of biodiversity); land-system change; and altered biogeochemical cycles. A recent paper [7] concluded that we are also already operating outside of the novel entities' boundary (i.e. chemical pollution), and new research has estimated that freshwater use has been exceeded in its 'green water' part, the one that relates to rainfall, soil moisture and evaporation systems.[8] Scientists and researchers predict that if the current rates of nature destruction continue at the business-as-usual rate, some ecosystems may cross irreversible tipping points, with far-reaching economic and societal impacts.[9]

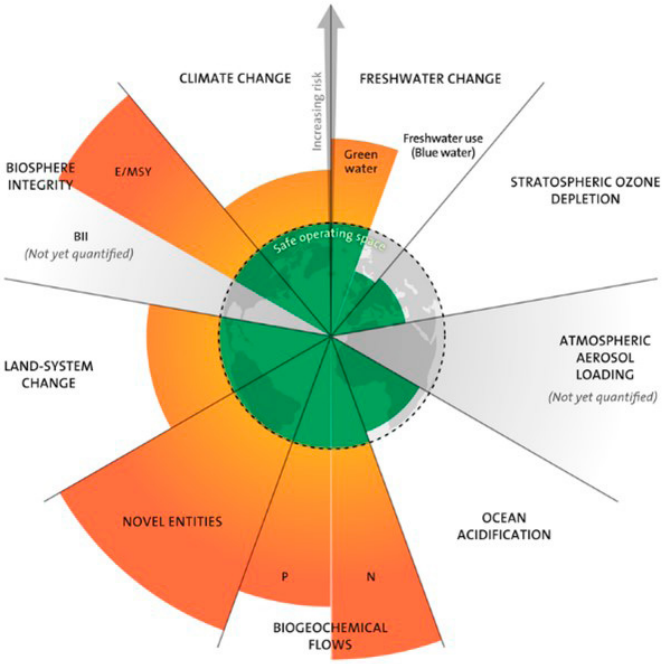


Figure 1 Updated Planetary Boundaries. Figure from Wang-Erlandsson et al, 2022. Original from Rockström et al, 2009)

What is Biodiversity?

Biodiversity literally means the diversity of life. The word is the shortened form of two words 'biological and diversity'. It refers to the variety of life that can be found on Earth (plants, animals, fungi, and micro-organisms) as well as to the communities that they form and the habitats in which they live.[10]

Biodiversity is defined by the UN Convention on Biological Diversity (CBD) 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 a part; this includes diversity within species, between species and of ecosystems."[11]

While biodiversity loss goes beyond the number of extinct species, this is an indication of the incidence of human activities on nature. The significant impact of humanity on the planet's climate and ecosystems in recent years is often referred to as the Anthropocene. The Anthropocene epoch is an unofficial* unit of geologic time, used to describe the most recent period in Earth's history. Through humanity's global, dominant influence in this period, human activities have caused and exploited natural terrestrial, freshwater, and marine ecosystems.

2.1 Direct and indirect drivers of biodiversity loss

Biodiversity globally is decreasing at an alarming pace. In order to know how to halt and reverse this trend, we first need insight into what is driving it. In an extensive report, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) [12] concluded that there are five main drivers of biodiversity loss:

* Officially, the current epoch is called the Holocene, which began 11,700 years ago after the last major ice age.

1. Changes in land and sea use
2. Direct exploitation of organisms
3. Climate change
4. Pollution
5. Invasive alien species

It has been estimated that these five direct drivers have caused more than 90% of nature loss in the past 50 years.

1. Changes in land and sea use
Land and sea use change counts for 30% of biodiversity loss, creating the biggest single source of pressure on biodiversity loss worldwide. For terrestrial ecosystems, this encompasses a range of activities including deforestation, agriculture and commercial forestry, mining, urbanisation and infrastructure development.

2. Direct exploitation of organisms
In marine ecosystems, the direct exploitation of fishing accounts for most of the biodiversity loss. 93% of fish stocks today are extracted at or beyond maximum biologically sustainable levels. Today, industrial fishing has a global footprint four times larger than agriculture.[13]

Factory farming is an example of direct exploitation of organisms in land ecosystems. The extremely crowded breeding conditions not only cause intense suffering to sentient beings, but it also allows the transfer of pathogens from animal to human risking new zoonotic diseases. Simultaneously, livestock farmed for human consumption represents a large proportion of animals on Earth, leading to a decrease in the natural harmonious balance between species.[14]

3. Climate change
Climate change – the rapid and global shift in temperature and weather patterns – has a growing and irreversible impact on ecosystems and is one of the main drivers of biodiversity loss. Biodiversity loss and climate change are interconnected in many ways. Healthy and balanced marine and terrestrial ecosystems contribute to limiting climate change by absorbing approximately 60% of the world's carbon emissions [15]; at the same time, biodiversity is negatively affected by the increasing intensity and frequency of climate catastrophes. Plant and animal species are not able to adapt fast enough to the changing climate. Changes in ecosystem functioning, ocean acidification, an increase in wildfires and rising temperatures threaten one in six species globally as well as contribute to the worsening of the other drivers.[16]

The effect of climate change can be felt in both terrestrial and marine ecosystems. Oceans are among our largest carbon sinks. Rising atmospheric CO_2 concentrations leading to higher ocean temperatures and ocean acidification are expected to have profound effects upon marine ecosystems, particularly coral reefs, and marine communities near the seafloor.

4. Pollution
Pollution in the form of contamination of water, air and soil is another driver that causes significant damage to ecosystems and biodiversity. These include hazardous substances in the form of solids, liquids or gases that can harm people, other living organisms or entire ecosystems. Pollution runs through all types of ecosystems and comes in many forms including fertiliser runoff from agriculture, industrial waste and plastic pollution.

5. Invasive alien species
The fifth and last direct driver of biodiversity loss identified by the IPBES is the invasion of alien species of animals, plants, fungi and micro-organisms. The global economy, with increased transport of goods and travelling, has facilitated the movement of live species over long distances and beyond natural boundaries. Invasive alien species can have devastating impacts on native biota, causing the decline or even extinction of native species.[17]

Indirect drivers
These five direct drivers (natural and anthropogenic) unequivocally influence biodiversity and ecosystem processes (also referred to as 'pressures'). But direct drivers are in turn largely determined by human activities. Societal values and behaviours, such as production and consumption patterns, human population dynamics and trends, trade, technological innovations and local and global governance, largely determine the direction of change that our economic activities imprint on nature. It is paramount to acknowledge such indirect drivers to understand the human-induced root causes of biodiversity loss that are ascribed to our socio-economic order and systems, and on which we therefore can and must act.

The IPBES report provides valuable insight into the economic system to which financial institutions direct funding. The report highlights the role of inequalities (in income and consumption, but also in political stability and governance) which can play a role in priority-setting in relation to nature exploitation and conservation. Values, which differ widely across social groups, are also at the core of our individual and collective relation with nature.

2.2 Taken for granted: ecosystem services

As individuals and society, we are integrated in broad, natural ecosystems. We are strongly dependent on these systems for our survival and wellbeing. Yet the value provided by healthy and balanced ecosystems is largely overlooked in economic processes and policy making.

Our dependency on nature was more formally conceptualised in the early 2000s through the term 'ecosystem services'. Ecosystem services are defined as the benefits natural systems provide to humans[18] and include soil formation, the provision of food and fibre, air quality and climate regulation, the regulation of water supply and quality as well as the cultural and aesthetic value of certain plants and species.[19]

Ecosystem services are generally classified as provisioning, regulating, supporting and cultural services. This helps to structure information but clearly does not reflect the inherent complexity of the way an ecosystem functions. This can be seen when taking a simple example of a fish: a fish not only represents a protein source (provisioning of food service) but also contributes to the marine nutrient cycle. At the same time, small-scale fishing has a strong cultural dimension related to harvesting techniques, preparation, and symbolism as well as fishers' way of life.[20]

Provisioning services
Include the provision of materials and energy such as food, fresh water and fibres, and genetic resources.

Regulating and supporting services
Contribute to regulating ecosystem processes such as purifying water and decomposing waste. Usually taking place beyond our view, most of these services are not fully replaceable, and some are irreplaceable.

Cultural services
Include all non-material benefits a varied ecosystem provides to individuals and communities. Examples of cultural services provided by nature are space for outdoor leisure and recreation, aesthetic inspiration and spiritual and religious significance to specific flora and fauna. In general, cultural ecosystem services are mostly intangible and difficult to measure, but they are extremely intuitive to understand and perceive for all individuals.

While the value of provisioning services for timber and fish is tangible and visible, in other cases, ecosystem services are more strongly perceived when they are lacking. For example, ecosystem protection against extreme storms such as cyclones starts being appreciated only once the mangroves have been degraded. Loss of natural coastal defences (such as mangroves, salt marshes and coral reefs) increases vulnerability to sea level rise and storms.

Biodiversity clearly has a value beyond its effects on our biosphere's ability to produce goods and services.[21] Because we often fail to recognise this, our exploitation of nature results in massive environmental destruction. It is therefore essential to acknowledge that even if the services of nature and the diversity of different ecosystems are not always visible to us, the loss of biodiversity not only affects the functioning of natural ecosystems but also threatens human wellbeing.[22] We heavily influence biodiversity loss through our production and consumption patterns with subsequent environmental implications, as explained in the following sections. Thinking in terms of ecosystem services does not necessarily mean putting a price on such services, but it helps to connect the dots between our economic decisions, our overall wellbeing, and the wellbeing of our planet.

Ecosystem services: a shared concept?

The concept of ecosystem services was introduced with the primary intention to formally describe the contribution of nature to human wellbeing, and to highlight how this is too often overlooked and undervalued in economic thinking and policy making. The document that popularised this term, the UN's Millennium Ecosystem Assessment, went beyond the definition of ecosystem services, to propose ways to incorporate this thinking into decision-making processes.

The concept and its use have attracted criticism, however. The most often heard comment is that it is an anthropocentric concept, that frames nature as instrumental for human wellbeing, and that attaching a monetary value to nature (economic valuation) has potential detrimental consequences in terms of nature commodification (here is an overview of the main critiques and counterarguments).

We believe that the ecosystem services framework provides a useful way to support decision-makers, such as international institutions, regulators and businesses, to consider the impact and dependency of economic activity on nature in a more conscious way. Given the enormous destructive potential of economic activity for nature and biodiversity, we believe it is important to find accessible, shared frameworks that can guide us in translating environmental concerns into actionable initiatives. However, some of the criticisms of the concept are worth taking seriously, for example economic valuation and the risk that measuring and comparing 'goods and services' provided by nature can lead to establishing new mechanisms that might ultimately undermine the very reason for which they were introduced (to safeguard and enhance ecosystem resilience). We therefore recognise the potential of this framework, but acknowledge the risks attached to it by questioning prevailing narratives and seeking ways to mitigate such risks.

3. Finance and biodiversity

Economic activities pose serious pressures on the natural environment. In this context, financial services are indirect drivers of biodiversity loss through financing and promoting activities that incentivise deforestation, resource extraction and exploitation, generating pollution and deep changes in land and marine ecosystems. The cumulative negative effects of financing activities on biodiversity across the years cannot be accurately estimated. Methods to incorporate nature-related considerations into financial decision-making are often hampered by difficulties in establishing ways to value biodiversity and assess the harm caused to nature.

Biodiversity loss directly impacts the economy. It threatens the health of ecosystems that provide services to the economy, such as animal pollination of food crops, natural water treatment and fertile soil. Businesses are partly dependent on ecosystem services for their production processes. As such, the decline in biodiversity and ecosystem services also translates into risks for businesses and therefore to the financial sector.

Organisations (including financial institutions) started understanding the need to assess and disclose both how environmental issues may impact their immediate financial performance (outside-in risk), but also how they (positively or negatively) impact nature (inside-out impact).[23]

This awareness should contribute to address the widespread misalignment between business decision-making and broad societal value. However, we believe that change cannot be driven solely by risk-related concerns: businesses, including financial institutions, need to become more intentional in assessing and directing their impacts, not least towards nature.

3.1 Incorporating biodiversity in finance: what is the problem?

The call to incorporate biodiversity-related considerations into financial decision-making is broadly understood now more than ever. But there are reasons why this has not been done yet. Reducing the harm of economic activity on nature, and beyond that, converting financing and investment activities into nature-positive investing is clearly not easy. This is due to structural conditions that make the financial system currently unfit for the purpose. Some of these conditions have to do with the sector itself, others with the characteristics of nature-related financial risks and impacts.[24] In this section, we list some of the most challenging aspects that have kept finance and biodiversity apart.

Measuring biodiversity and natural capital

The fact that biodiversity is defined as the diversity of life on Earth does not mean that a simple headcount of species will be sufficient for measuring and characterising biodiversity. The Dasgupta report summarised that what matters in measuring biodiversity's role in ecosystem resilience (and hence its value for the economy) is not only linked to genetic diversity but also requires an understanding of which aspects of such diversity contribute to an ecosystems' productivity. Several indexes have been developed, taking into account different sets of indicators, such as the Biodiversity Intactness Index (also taken as a proxy in the calculation of the biodiversity-related planetary boundary), the IUCN Red List Index and the Living Planet Index. While these indexes can be rendered operational and can contribute to understanding and monitoring various aspects of biodiversity, it is likely that any such mix of indicators will only deliver a partial picture of the relevance and status of biodiversity.

To broaden the scope of attention from biodiversity to nature in general in the standard economic discourse, the term natural capital has often been adopted to refer to the stock of natural assets providing a flow of ecosystem services to humans. In turn, biodiversity hugely influences the quality and efficiency of these flows. However, compared to produced capital goods, such as machinery, buildings and infrastructure, the intrinsic value and the value provided by natural capital assets like healthy soils and groundwater flows is largely invisible. It often cannot be fully grasped due to the complexity and interconnectedness of natural elements and nature-related phenomena. The Dasgupta report attests that attempts in natural capital accounting have been made, both for national economies and the global economy, as well as for productive sectors.

Pricing of externalities

Economists often characterise the social worth of much natural capital as an externality, meaning that the (accounting) value of natural capital is not included in market prices. This mispricing is partly linked to a lack of comprehensive systems of taxes and subsidies, but also to a more fundamental misunderstanding that natural assets are only there to be exploited. Even where natural capital can somehow be accounted for, a key issue, as explained above, is that any estimate of natural capital value is likely to be only partial.

For the financial sector, it is therefore difficult to take the full value of natural capital into account. Nature is difficult to price for many reasons. For example, ecosystems can be very complex, uncertain, and bound to a local context. Consequently, untangling the effects of drivers on the quality and abundance of ecosystem services can be a daunting challenge. Ecosystem services are treated as positive externalities, which in practice means that they are under-priced or even free*. As a result, many products and services enjoy implicit services from nature that are not accounted for in current business models. Moreover, given the high degree of uncertainty and imprecision of biodiversity-related considerations, investors often ask for gaps in standardised biodiversity data to be filled before they may decide to move capital away from current exploitative practices. The mispricing (or non-pricing) of natural capital makes it harder to create business cases for nature restoration and other regenerative practices to generate positive impacts.

Return expectations

Investors and financial institutions in general traditionally base (part of) their decisions on risk considerations and, importantly, expectations on financial returns. The primary difficulty related to financing biodiversity-related activities and nature restoration is that they do not immediately produce financial returns under current market conditions.[25] This is an obvious but key issue for financial institutions, whose traditional role is to act as custodians of financial assets for depositors and generate financial returns for investors. As mentioned, from a business and investment point of view, natural capital has long been a source from which to extract value rather than an asset to nurture and replenish. Because the (accounting) value of natural capital is currently not translated into market prices, biodiversity restoration generally does not constitute a sufficient repayment for investors.

Even when systems to generate returns have been envisioned, more profitable conservation projects (for example in agroforestry) often take a long time to generate revenue streams, which may impact their attractiveness. In other cases, the size of projects often does not meet the risk-return requirements of investors. For all these reasons, investing in nature restoration has therefore traditionally been neglected by financial institutions, apart from donations or grants.

Indirect drivers, social trade-offs, and prioritisation

Perhaps the biggest challenge to a deep integration of biodiversity in financial decision-making is the capacity and willingness to go beyond the observation of activities that directly impact biodiversity. As the IPBES report highlights, deeper drivers are at play that are about the design of our socio-economic systems and the mechanisms that guide both the functioning of our economies as well as our financial decision-making. These drivers are extremely difficult to detangle and might even require addressing the very fundamentals of our system, such as competition dynamics and our economy's dependency on (production) growth.

* In natural resource economics, public goods.

At the same time, decision makers are also often confronted with social-environmental trade-offs. For example, financing agricultural activities in some emerging markets might pose certain dilemmas: as farmers struggle to make ends meet and seek ways to increase productivity of their land, this be detrimental to biodiversity. In other situations, where there is a lack of land available and developments are needed, such as new power plants, conservation of natural habitats might be at risk.

While systemically addressing these fundamental issues is not a prerogative of single financial institutions, it must be said that it is possible for businesses and single entities, including financial institutions, to operate based on a set of declared values and to prioritise choices accordingly. This means activating systems and processes that allow the incorporation of such values in decision-making and weighing up the pros and cons of decisions not only from a profit or risk point of view, but also in terms of social and environmental value creation.

3.2 Dependence of the financial sector on biodiversity: outside-in risks

Financial institutions have an impact on biodiversity while at the same time they are exposed to the financial risks associated with biodiversity loss. Institutions engaging in investment activities are traditionally expected to allocate their funds to assets that provide the highest (monetary) value. If nature is undervalued and nature-related risk is underestimated, credit and investments will be allocated inefficiently to lower valuable assets with higher nature-related risks. A flawed understanding of these risks could lead to an accumulation of threat to financial institutions. The World Economic Forum (WEF) estimated that USD 44 trillion of economic value generation - about half of global GDP - is highly or moderately dependent on nature.[26] This suggests that continuing decline of biodiversity is a high risk to the stability of the financial system.

Regulators are becoming increasingly aware of this. In June 2020, the Dutch Central Bank, in cooperation with the PBL Netherlands Environmental Assessment Agency, published a report outlining the exposure of Dutch banks, insurance companies and pension funds, to companies that have a high or very high dependence on one or more ecosystem services. The report highlights how, by financing companies which are dependent on or produce negative impacts on ecosystem services, directly or indirectly, financial institutions are exposed to physical, transitional, and reputational risks.[27]

Physical risks
Physical risks stem from the five drivers of biodiversity loss mentioned in section 2.1. Biodiversity loss and the subsequent reduction or loss of ecosystem services jeopardise the business continuity of companies dependent on these services.

Transition risks
Biodiversity loss is becoming an increasingly prominent issue on national and international policy agendas. Over the next few years, new international agreements are likely to be sought under the UN Convention on Biological Diversity (CBD) to increase the extent of protected areas worldwide. Likewise, during COP26, topics such as deforestation of tropical rainforest have attracted broad attention. New and stricter biodiversity-related regulations are likely to be introduced, possibly resulting in transition risks and stranded assets, which can link to regulatory risks for investors.[28]

Reputational risks
Financial institutions also run reputational risks through the involvement in controversial activities, either their own, or their clients'. Clients and financiers may withdraw from companies if these neglect the risk their environmental externalities may have for their (client's) reputation.

The time horizon of materialisation of nature-related financial risks and benefits is beyond the investment horizon used by most actors in the financial sector. Because of this near-sightedness, financial institutions have only recently begun to ascribe financial risks to nature-related disruptions. At the same time, damaged ecosystems can collapse very quickly once tipping points have been reached, and therefore risks can materialise in very sudden and catastrophic ways. This makes it even more relevant, although complicated, to forecast and estimate the influence of nature-related events on financial assets.

What is being done?
From the point of view of financial institutions, it is now more important than ever to identify the extent to which their activities are exposed to biodiversity-related risks, to build the capacity to analyse and manage the risks associated with biodiversity loss and to steer away from transactions that will increase or accelerate such risks.[29]

Financial institutes have gained increased access to tools and data to map material nature-related financial risks in recent years. Tools like ENCORE[30], Materiality Mapping from the Sustainability Accounting Standards Board (SASB), and the forthcoming guide from the Taskforce on Nature-related Financial Disclosures (TNFD) can all help financial institutes to uncover dependencies on natural capital and the physical risks to lose the associated ecosystem services. Similarly, tools like the Biodiversity Footprint for Financial

Institutes (BFFI)[31] and the Global Biodiversity Score (GBS)[32] can help financial institutes uncover their negative biodiversity impacts and associated transition and reputational risks. Initiatives like the Spatial Finance Initiative can help further the much-needed location-based analysis of natural capital with satellite imagery. A recent review of tools by the Cambridge Institute for Sustainability Leadership argues that "nature-related risk assessments are possible" with current data, tools and stress-testing exercises.[33] If there is a willingness and intentionality to tackle biodiversity risks, a lack of data or understanding should no longer be a reason for starting to act.

In terms of regulatory pressure, the EU Sustainability Financial Disclosure Regulation (SFDR) has recently paved the way for monitoring the (negative) impact of financial activities on biodiversity, introducing mandatory reporting of "Activities negatively affecting biodiversity-sensitive areas" among selected Principal Adverse Impact indicators. At the same time, the Commission is working on introducing further details related to biodiversity in the upcoming (although delayed) EU Taxonomy. This, together with national and supranational initiatives to preserve and strengthen biodiversity, creates pressure (and opportunities) for financial institutions to embrace the challenge.

Additionally, policy makers in several regions, and particularly in Europe, are beginning to take steps to facilitate the transition towards a more sustainable economy. One of the measures undertaken is to penalise companies and activities that contribute to environmental deterioration, which would also have consequences for the institutions financing such activities.

3.3 Redirecting the impact of finance on nature: inside-out impact

The financial sector can make use of various instruments to manage risk and build up resilience. But while a risk perspective can certainly provide a good basis for action in relation to biodiversity and controlling our demands on ecosystems, we believe this alone is not sufficient to ensure that financial flows are actively redirected to activities with positive impact on the environment. With a total of over EUR 4,000 billion in lending and investment, the financial system also has the (financial) resources to make a positive contribution to achieving sustainable prosperity while maintaining and possibly fostering biodiversity.[34] As we have seen, fostering biodiversity can have positive spill-over effects for businesses, the economy and ultimately the financial system itself, through reduced environment-related risks. However, this requires both awareness of the negative impact that investments and financial activities have on nature, as well as innovative solutions that overcome the limits of traditional financial thinking and really strive for positive impact.

In addition to all data and management tools that might be needed for the task, we believe that no progress is possible without intentionality: financial institutions need to demonstrate that they are willing to rethink their practices and priorities to truly play a constructive role for long-term collective wellbeing.

Triodos Bank's take on risk and impact

The stability of the financial system is of the utmost importance for a healthy global economy, and failures of the financial system have enormous repercussions on both societal and environmental wellbeing. We therefore welcome and support regulatory efforts and other initiatives that stimulate financial institutions to assess and address the risks posed by nature degradation and climate change on the stability of the financial system.

As an impact investor and values-driven bank, we strongly believe that responsible financial institutions and regulators aiming to align financial flows with global environmental and social objectives (such as, but not limited to, the SDGs) should focus more on the effects of economic and financial activities on nature and landscapes (and hence on individual and societal wellbeing), rather than on mitigating the increasing financial risks as a result of biodiversity loss. Individual and collective wellbeing should be the focal point of decision-making and economic thinking, not the stability of our financial system.

We therefore advocate a fundamental shift in the definition of fiduciary duty of financial institutions, moving away from narrow to broad stakeholder value and re-establishing the role of finance as an intermediary for broad societal wellbeing.

The UN CBD has published a short Financial Sector Guide[35] that lays out key actions for the financial sector to prevent further degradation and contribute to positive biodiversity outcomes. These are inspired by the Finance for Biodiversity Pledge, and are summarised in five steps for financial institutions:

1. Collaborate, share knowledge and join initiatives for biodiversity
2. Adapt investment strategies and engage with companies
3. Assess impact and dependencies
4. Set targets (in line with global goals and the CBD post-2020 Global Biodiversity Framework)
5. Report publicly on positive and negative contributions to biodiversity (by 2025)

Impact metrics, data gathering and sharing best practices on biodiversity are clearly key aspects on which financial institutions are called to work on, and a lot is being done in the international arena to make progress on these aspects, from efforts led by the Taskforce for Nature-related Financial Disclosures (TNFD) to regulatory pressure (SFDR regulation and EU taxonomy), to initiatives like the Platform for Biodiversity Accounting Financials (PBAF).[36] Additionally, investors are increasingly appreciating the power of engagement to push companies to transition to more sustainable practices and business models.

There is only limited guidance available, however, on investment strategies to halt biodiversity loss and contribute to positive biodiversity outcomes, such as nature restoration and regeneration. The line between negative impact reduction and positive impact generation is a blurred one: one can easily appreciate how improving practices for reducing or mitigating biodiversity loss can be considered as positive impact, as long as progress is made. But we should not get fooled by promises of improvement: reduced biodiversity loss is still a loss, and environmental damage is unlikely to be halted through business-as-usual strategies with a touch of green.

3.4 Investment strategies for a regenerative economy

Making the financial sector work for good requires a massive rethinking of economic and financial mechanisms. This is particularly true when we look at our relationship with nature, and the extractive paradigm that is by far the foundation of our current economy. But if we free ourselves from prejudice and built-in axioms, the financial means are there, and we 'only' need to decide how to use them.

We currently see three levels on which financial institutions should operate to foster positive environmental impacts, specifically in relation to biodiversity:

1. Stop funding the most harmful activities (do no significant harm)
2. Foster direct solutions (direct contribution)
3. Addressing the deep causes of biodiversity loss (indirect contribution)

The order in which they are presented is not random: redirecting financial flows away from harmful activities is essential to start seriously concentrating on any next step. On the other hand, stopping harmful activities requires finding suitable and better alternatives to rebalance the impact of human activity on nature. Moreover, massive investments are needed, especially in the Global South, to unlock finance for biodiversity and fill in the funding gap for nature conservation and restoration. Finally, all efforts have a limited chance to survive the proof of time if we do not address the underlying mechanisms that encourage an extractive use of resources and a detrimental relationship with nature. While addressing this is a prerogative of policy makers, private actors and financial institutions also must play a role.

Stop funding the most harmful activities

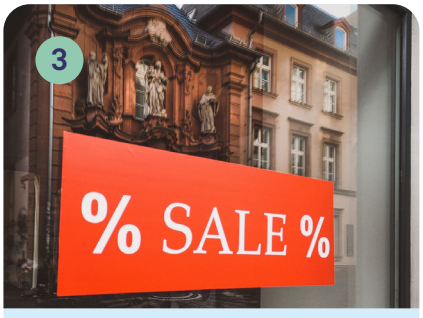
The 'do no significant harm' paradigm is an extremely valuable one, and if achieved it represents an ambitious shift in practices for a financial sector and an economy that are free riding on the services provided by nature. Reducing negative biodiversity impacts requires understanding, monitoring and steering activities that relate to the key drivers of biodiversity loss and redirecting financial flows away from damaging activities. While understanding the detail of the impact of economic activities on nature and biodiversity can be a complex endeavour, there are activities that are

Stop funding the most harmful activities

- Do no significant harm

Foster direct solutions

- Promote positive practices
- Directly invest for nature and biodiversity restoration



Addressing the deep causes of biodiversity loss

- True pricing
- Tax and debt justice

Figure 2 Strategies for halting and reversing biodiversity loss

already recognised as particularly harmful, such as burning fossil fuels or initiating activities in protected natural areas. Financial institutions must make important choices in financing and investment selection. Regarding ongoing activities there is the choice between divestment or active engagement with investees to improve practices and increase accountability.

Diligent application of strict sustainability criteria and mechanisms by all major financial institutions would already trigger a remarkable shift in the financial sector and the economy at large towards more environmentally conscious financing and investment decision-making.

Foster direct solutions and nature restoration
In addition to deviating investments away from harmful industries and practices, a logical (and necessary) next step is to focus on the greener, more environmentally conscious alternatives to existing ones. These alternatives should focus on:

- **Substitution:** fulfilling the same needs through environmentally friendly practices. One clear example of this is to foster the transition from fossil-based to renewable energy generation, addressing the climate driver of biodiversity loss.
- **Reduction:** limiting both the negative impacts of current activities on the environment wherever possible, as well as the overall amount of extractive and harmful economic activity needed to satisfy people's needs. In general, improving environmental performance of existing production is key, for example by introducing circularity principles or halting overproduction.
- **Regeneration:** adopting virtuous practices to live and produce while respecting nature's cycles and supporting its intrinsic regenerative power. An example is to incentivise regenerative agricultural practices, which can help reversing damage related to change in land use.
- **Rebalancing:** supporting activities that focus on better balance in the ecosystem that serves all people, for example through reducing financial flows towards the meat and dairy industry and supporting plant-based alternatives.

These considerations need to be made an active part of investment decision-making. The key aspect of such an approach is intentionality, something that is at the heart of values-based banking and impact investing. It cannot be derived from purely financially focused strategic thinking.

In addition, direct **nature restoration** is also increasingly an option for investors. Direct biodiversity restoration has long been seen as the prerogative of government-led initiatives or private foundations and philanthropists. However, given recent advancements in understanding biodiversity-related risks for the financial sector, taking action to foster biodiversity restoration might spark new interest in private actors as well, including financial institutions. The widespread commitments from companies and financial institutions alike to offset their carbon emissions through nature-positive solutions also offer opportunities in this direction.

A role for private capital in conservation

In its 2020 report Bankable Nature Solutions [37], the World Wildlife Fund estimated the annual investment gap in conservation activities to be about USD 300-400 billion, as opposed to the current annual investment of USD 52 billion. According to the report, private investors are estimated to be able to close about half of this investment gap by funding profitable activities. These are different to the traditional conservation projects as investors are attracted by activities that can either generate revenue or lead to cost savings, recover project costs and finally produce a return on investment. The private sector can either act autonomously or be mobilised through blended finance strategies, creating synergies between public and philanthropic money, as well as between development funding and private capital.

Pragmatic solutions: Payment for Ecosystem Services
From the point of view of project developers, individuals and organisations seeking to advance nature restoration, attracting funding is facilitated by the possibility to estimate the carbon sequestration potential of landscape restoration, which can be interesting for investors who are looking for carbon-off-setting activities. This specific practice falls under the broader umbrella of Payment for Ecosystem Services (PES), which has been defined as voluntary transactions between service users and service providers that are conditional on agreed rules of natural resource management for generating ecosystem services.[38] The OECD is currently collecting data on these instruments and has collected some examples of large PES programmes in place in multiple countries.[39] Providers of restoration services are required to put a monetary value to these services and enter in a purchase agreement with funding partners. The model is not free from controversy (see text box below), as some experts and watchdogs warn that it can lead to nature commodification. Whatever one's position on this solution, it is essential that specific conditions related to biodiversity are included in contractual agreements, to ensure that restoration complies with relevant standards on diversity of living organisms being re-introduced. In addition to honouring the commitment to biodiversity, such arrangements contribute to increasing the resilience and long-term success of the intervention.

Payment for Ecosystem Services: risk of nature commodification?

In the PES model, ecosystem services are included in a contractual agreement between a service user, which can be a company as well as a public entity, and a services provider, which is another entity that performs nature restoration services.

From the point of view of a responsible investor, it is important to question whether such a scheme could lead to unintended, medium to long-term negative consequences. There is concern that the PES approach could lead to nature commodification, fostering a neoliberalist approach to conservation that can end up creating new power structures. While this particular risk is high and should not be neglected, environmental professionals also point to the risk of not integrating environmental value in economic and business thinking. In this sense, the PES can be seen as a 'necessary evil'[40], being currently the most practicable way to channel large amounts of private money towards conservation and restoration projects. However, responsible businesses and investors need to stay alert to the possible negative effects of PES and implement all the necessary measures to ensure a responsible design and implementation of this model.

Addressing systemic causes of biodiversity loss
Addressing the key drivers of biodiversity loss and fostering nature conservation represents the most apparent way of tackling the problem. However, economic dynamics that are detrimental to the environment are the result of deeply rooted systemic issues. A report[41] from an experts panel on resource mobilisation commissioned by the Convention on Biological Diversity has highlighted how it is also essential to address the underlying political, economic and cultural drivers of biodiversity loss. Filling the funding gap is just a partial solution that doesn't necessarily foster deep changes in the way we relate to nature.

A 2021 report[42] from Chatham House supported by the UN Environment Programme (UNEP) explains how our food system is the main driver of biodiversity loss and points out how policies and economic structures aimed at producing more at ever lower costs are largely to blame. This is a fundamental mechanism ingrained in our economies and policymaking, as well as in mainstream economic thinking, which must be addressed. A key aspect of this paradigm is that smallholder farmers have no incentive to devote time, energy and resources to environmental preservation, as they have no control on the prices set for the products they produce. This is the result of:

1. power dynamics that disproportionally favour large players and retailers over direct producers;
2. a lack of robust regulatory regimes that integrate ecosystem services in the pricing of agricultural commodities;
3. financial speculation on natural commodities.

While there are clear links between agricultural systems and biodiversity, similar considerations on power structures, incentives, pricing, and speculation can be made for a broad range of economic activities.

Public investment remains a fundamental driver of systemic transformation, not least in relation to the management of the commons, and it is key to drive initiatives in nature restoration and conservation: as such it is essential to remove the obstacles to public investment in these areas. International tax policy reforms and considerations on debt conditionalities have been recognised[43] to represent some of the key barriers to effective biodiversity policies.

In this sense, efforts from private financial institutions to advocate and steer activities in a direction of tax and debt justice, as well as to foster fair pricing and power balances in agrobusiness also matter to tackle the deep causes of biodiversity loss. Private actors must be aware of these fundamental links, include these considerations in investment decisions and clearly state their position in relation to these matters, both to companies and to policy makers.

4. Biodiversity at Triodos Bank

At Triodos Bank we have always acknowledged the importance of biodiversity. We firmly believe that biodiversity is the foundation of life on Earth: people are part of nature, and we depend on it for our wellbeing and survival. Biodiversity is a pillar of our core beliefs and an integral part of our comprehensive impact strategy.

Our approach is based on the belief that human and economic activity cannot be separated from the environment in which we live and operate. From a business perspective, we are also convinced that in the long term, the most successful businesses will be those that achieve a good balance between their social, environmental and economic performance. We are committed to reducing the negative impact of economic activity, while at the same time seeking opportunities to finance and invest in nature-positive solutions. This way we incorporate nature's value and foster ways of living, producing, and consuming that are in harmony with nature.

4.1 Triodos Bank's approach to biodiversity

Biodiversity is embedded in our decision-making processes. We address the key drivers of biodiversity loss by carefully selecting the sectors and companies we finance and invest in and by working to improve industry standards on biodiversity. This relates to three main areas of our financing and investing processes:

- **Do no harm:** all economic activity, including all investments, has some negative effects on biodiversity. We seek to reduce such negative effects by excluding particularly harmful sectors, companies and practices.
- **Positive impact and solutions:** we pay particular attention to positively evaluate businesses that develop or adopt solutions to the problem of environmental degradation and that contribute to environmental regeneration. Such characteristics of companies are given positive weight in financing and investment decision-making.
- **Engagement and collaboration:** we engage with companies and entities in portfolio to mitigate negative impacts and foster positive practices linked to biodiversity. In addition, Triodos Bank supports several industry-wide initiatives that seek to improve practices for the measurement of biodiversity-related impacts within the financial sector.

While we generally focus on the positive impact money can generate in our banking and investing activities, in the case of biodiversity we start from the consideration that to date most economic activity has a net negative impact on the environment. Our first aim is therefore to avoid and reduce harm.

4.1.1 Exclusion of harmful activities

In all our financing and investment activities we aim to avoid negative impact on biodiversity as much as possible. Based on our minimum standards for financing and investments, we exclude businesses involved in deforestation, environmental pollution and

pesticide production. If companies are active in sectors with a high risk of damage to biodiversity, we require additional policies or certifications, and we exclude companies linked to major controversies related to our minimum standards. We require companies that produce and distribute potentially harmful products to formally acknowledge the risks, to have programmes to reduce and manage their negative impact and to report on their results. For our government bond investments, we expect countries to follow the UN Convention on Biological Diversity and related documents such as the Bonn Guidelines, the Nagoya Protocol and the Cartagena Protocol.

The general objective of our minimum standards (MS) is to ensure that we do not finance businesses offering products or adopting practices that clash with our vision and beliefs. In our approach, minimum standards are therefore not applied with the objective of avoiding ESG risk. However, they do contribute to limiting the ESG risk exposure of our financing and investment portfolios by filtering out activities more exposed to ESG risk, including biodiversity-related risks.

Figure 3 below provides an overview of the main exclusionary criteria we apply throughout our organisation, and their relationship with the five main drivers of biodiversity loss.

We also have minimum standards linked to **animal welfare**: while poor animal treatment is not, strictly speaking, a driver of biodiversity loss, upholding animal welfare is a key aspect of addressing our relationship with nature. We therefore have minimum standards in relation to fur and specialty leather, as well as on (intensive) factory farming and animal testing.

While our minimum standards are not explicitly linked to specific drivers of biodiversity loss, they cover aspects related to multiple drivers. Most of the time the same activity is related to multiple consequences on ecosystems, for example deforestation, which touches upon the topics of land use (changing the nature of the affected area), direct exploitation (when forests are not properly managed) and climate change (by affecting CO_2 absorption capacity). Our standards are constantly updated to stay relevant and to incorporate new knowledge and awareness in sustainability. See the Appendix for a more detailed overview of the relevant minimum standards.

4.1.2 Positive impact: transitioning to a more sustainable economy

As we have seen in the previous chapters, biodiversity loss has many different, complex causes. Global trends and their environmental and social effects cannot

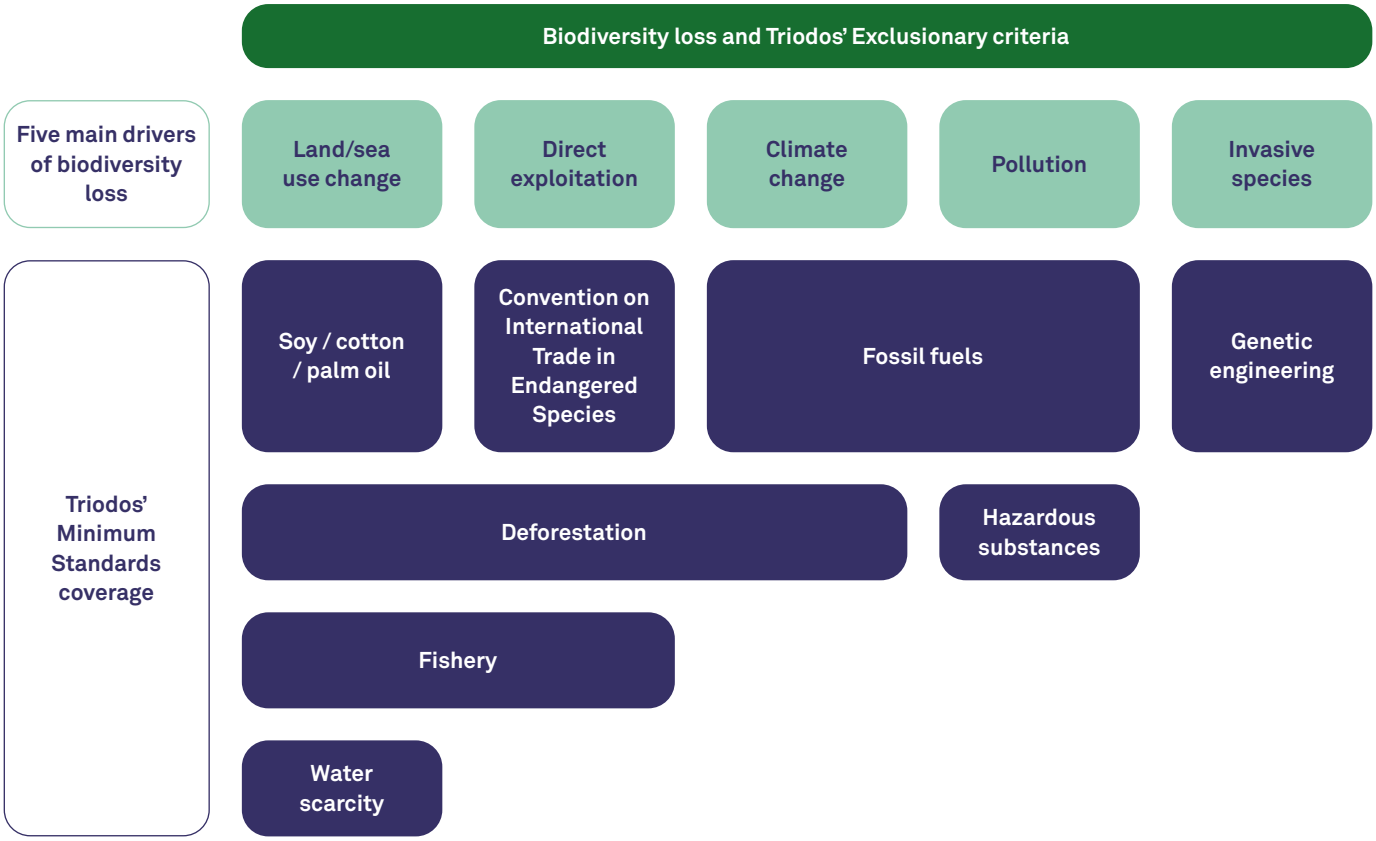


Figure 3 Five main drivers of biodiversity loss and Triodos Bank's minimum standards. Minimum standards are a set of criteria that businesses have to meet in order to receive financings or be approved for investment. This leads to exclusion from financing and investment.

be separated. Dealing with it – whether to reduce or to reverse biodiversity loss – requires cross sectoral thinking and broad approaches.

Triodos Bank historically focuses on sustainable food and agriculture and renewable energy. Sustainable buildings are also a long-standing area of attention, especially as mortgages represent a substantial share of our financing portfolio. Our food and energysystems, as well as the spaces we inhabit, are areas of our economy where a deep transition to more environmentally and socially sustainable practices is desperately needed. We incorporate direct biodiversity-related concerns in financing and investment activities in these areas, and at the same time seek to address indirect drivers of biodiversity loss whenever possible, fostering both established and innovative solutions for an all-round, more sustainable economy.

Food and agriculture
Agriculture is a key driver of global environmental changes. Modern farming systems based on monoculture, the use of pesticides and chemical fertilisers and intensive farming lead to high greenhouse gas emissions, severe soil degradation (over 50% of global arable land is degraded) and substantial biodiversity loss. They threaten the very ecosystems they depend on and are a symptom of a degraded relation of man with nature.

We therefore actively foster the transition to sustainable food and agricultural systems. All our financing and investment activities in this sector are directed at stimulating
1. more environmentally sustainable approaches in agriculture;
2. environmentally sustainable consumption patterns;
3. responsible pricing in food value chains.

Agriculture must work with nature rather than against it. At the same time, a balanced and resilient food system should promote healthy diets and deliver fair pay for farmers and workers in the value chain. This will require a thorough redesign, a renewed connection between consumers and the food they eat and a revaluation of our food and ecosystems. This holistic view is further explained in the Triodos Bank's vision paper 'Towards ecologically and socially resilient food and agriculture systems' and forms the base of our financing and investment strategy.

Conversion loans for new organic farmers (Triodos Bank Netherlands and Triodos IM)

Traditional farming methods use large machinery, pesticides and fertilisers and this can severely affect the biodiversity of the land, water and soil. Monocultures such as maize also significantly affect soil quality.

Triodos Groenfonds provides loans to farmers in the Netherlands who want to make the transition to organic farming or who are looking for financing for an organic project.

Paul Kortekaas, Triodos Bank's Agriculture Team Manager, explains the importance of supporting farmers who want to switch to more sustainable farming methods: "Organic farmers commonly use a rotation system, whereby the same crops are not grown in the same soil every year. This immediately provides enormous benefits for biodiversity, creating a healthy soil teeming with life, where plants can take root properly and deeply, and which also allows water to drain during heavy rainfall or be retained during drought." Read the full interview here.

Triodos Groenfonds was established in 1990 and is the oldest green investment fund in the Netherlands. The fund focuses on renewable energy, organic farming, nature and landscape development and sustainable construction.

Financing sustainable food and agriculture

Triodos Bank	Lending to farmers and businesses that operate based on sustainability principles in food value chains across Europe.
Triodos Investment Management: • Triodos Groenfonds • Triodos Food Transition Europe Fund • Hivos-Triodos Fund • Triodos Impact Equity and Bond funds	Dedicated investment funds providing capital through loans or equity, covering the entire agricultural value chain.
Triodos Regenerative Money Centre	Supporting innovative projects and initiatives that help shifting an extractive agricultural system into a regenerative system that is community-focused and economically viable.

Catalytic investments challenging the status quo: Aardpeer (Triodos Regenerative Money Centre)

In collaboration with Stichting BD Grondbeheer, Stichting Herenboeren and Stichting Wij.land, Triodos Regenerative Money Centre launched Aardpeer, a movement that aims to accelerate the transition to nature-based agriculture, starting with the foundation of it all: land and soil. The initiative is aimed at fostering sustainable and regenerative agriculture while tackling issues related to cost and ownership of land in the Netherlands.

Aardpeer issues bonds with the aim to acquire and safeguard agricultural land and soil vitality for future generations, preserving this land for sustainable farming practices. The land acquired is owned by a foundation which leases the land to (mainly young) farmers. The lease amount is based on the productive capacity of the land when farmed sustainably. Aardpeer thereby strives to pull agricultural land out of the speculative market, leasing it out at a fair rent to sustainable farmers.

More details on the initiative can be found on their website (Dutch only).

Triodos Regenerative Money Centre supports initiatives that challenge and deviate from the status quo, with the aim to regenerate society and the planet. Using donations (also called gift money) the Centre makes catalytic investments. These give ground-breaking plans the chance to grow without the need for immediate financial return.

Energy and climate

Climate change is a big threat to biodiversity. At the same time, fostering biodiversity and natural resources is essential to lower the amount of carbon dioxide in the atmosphere, given that greenhouse gas emissions are the leading cause of climate change.

The increase in global demand for energy, concerns over energy security and the impact of global climate change have become ever-more urgent issues. Our ecosystems are at risk: shifting modes of energy production and controlling energy consumption is essential to decarbonise the economy and counter climate change. Since the 1980s, Triodos Bank has invested in renewable energy solutions from generation to storage, fostering an energy transition away from fossil fuels, as laid out in our vision Towards a low carbon economy.

Net zero

At Triodos Bank, we have set for ourselves the ambitious target to be a net zero company by 2035 at the latest. Our ambition is that the greenhouse gas emissions of all Triodos Bank's loans and funds' investments will be greatly reduced, using a science-based targets approach. The remaining emissions will be balanced or 'in-set' by investing considerably in nature projects that remove greenhouse gases from the air.

As part of this ambition, Triodos IM wants all its investments (listed, private debt and equity) to reduce carbon intensity to achieve net zero in 2035, and to seek opportunities for investing in nature-based solutions that provide carbon sequestration alongside multiple positive impacts.

We see biodiversity not as a goal on its own, but as an integral part of our net zero strategy. 'Growing our natural resources' has been designated as the second pillar of our AsOneToZero ambition, with biodiversity playing a key role in nature restoration and conservation.

"The climate emergency is increasingly affecting people's lives and impacting nature: wildfires, heat waves, heavy flooding, the loss of biodiversity."

Jeroen Rijpkema
Chair of the Executive Board at Triodos Bank

Financing energy and climate

Triodos Bank	Financing initiatives that use mature technologies, such as wind energy and solar power. We also extend impact by working with more diverse ownership structures such as community renewable energy schemes and community-owned wind farms.
Triodos Investment Management • Triodos Groenfonds • Triodos Energy Transition Europe Fund • Triodos Emerging Markets Renewable Energy Fund • Triodos Impact Equity and Bond funds	Wide array of investments in renewable energy-related projects and companies, including energy generation, energy storage and energy efficiency.

Solar power and biodiversity go hand in hand (Triodos Bank Netherlands)

Solar Park Vierverlaten in the Dutch province Groningen produces an increase in various insects, as shown by an initial ecological study. When the cooperative solar park was completed in 2017, specific measures were taken to increase biodiversity and natural values. The layout of Vierverlaten with solar panels on uprights - alternating in height and not too close together - and its management ensure an optimal living environment. Thanks in part to the many grasshoppers, bees, and butterflies, such as the hay bug and the butterfly, this insect paradise is also food for many other animals and plants. As a result, rarer bird species such as the kestrel and buzzard and large groups of house sparrows can now also be found in the area. The solar park produces almost 2,300 MWh of energy annually with 7,777 solar panels. That is good for more than 800 households.

Renewable power in Nicaragua (Triodos IM)

San Martin in Nicaragua is a so-called run-of-the-river plant and is a typical small-scale hydro project: a dam of around 18 meters high captures water into a small lake. While maintaining an ecological flow in the original riverbed, water gets deviated through a buried 'penstock' (steel pipe) to the turbine house three kilometres further downstream (and 82 meters lower), where it passes through the turbines and back into the riverbed. The energy it produces is a direct substitution for imported heavy fuel which is utilised in outdated plants; the project is the equivalent of 2,000 tons of oil-equivalent per annum. Read the full article.

Sustainable housing and real estate

The construction sector contributes heavily to air and groundwater pollution and is responsible for a large share of natural resource extraction. In addition, it generates a massive amount of waste that goes in large part directly to landfill. Buildings consume 40% of all

energy that is produced in the EU and contribute a similar proportion of Europe's carbon dioxide emissions. Moreover, existing stocks of buildings are rarely well-integrated in the surrounding living environment, with consequences for ecosystem balance as well as for individual and collective health and wellbeing. It is therefore essential to improve the energy efficiency of existing buildings, as well as develop and implement more sustainable building methods and more environmentally conscious design. Making buildings more sustainable also has a positive influence on the surrounding living environment, as well as along value chains.

Environmentally conscious social living: Tivoli GreenCity Brussels – (Triodos Bank Belgium)

Tivoli GreenCity is a mixed-use neighbourhood in Brussels (Belgium) consisting of 271 affordable apartments, 126 social housing apartments, two child day care centres for 62 children and units for local shops and services. All buildings use passive energy solutions and 30% of them are zero energy houses. There is a water treatment system is in place which makes it possible to have 0% wastewater.

Biodiversity is a fundamental element of the neighbourhood. In public and private spaces, more than 20 specific biotopes have been placed at ground level, on the facades and on the roofs of buildings. The five inner gardens are conceived as evolutionary laboratories of biodiversity, managed by the residents.

Triodos Bank provided a home loan for more than 25 buyers in Tivoli GreenCity and is involved as a partner in the cohousing project.

Financing sustainable housing and real estate

Triodos Bank	Financing new building developments for properties to the highest sustainability standards. Financing renovation or redevelopment of existing properties to improve energy efficiency. Sustainability mortgages to private individuals.
Triodos Investment Management • Triodos Groenfonds • Triodos Impact Equities and Bond funds	Financing sustainable real estate in the Netherlands, while our listed funds also actively seek opportunities for investment in companies that contribute to solutions for sustainable housing, which can include elements of biodiversity preservation or restoration.

Building better (and greener): Sekisui House (Triodos IM)

A zero-energy house is a house that consumes less energy than it produces. Sekisui House is the global leader in making prefabricated zero energy houses. Through the efficient use of materials and building houses with zero energy consumption, Sekisui House avoids large negative impact on biodiversity.

Through its 'Gohon no Ki' (Five Trees) programme Sekisui House also contributes to fostering biodiversity. This programme aims to restore native species of trees and plants. Trees and plants are procured through a network of local tree growers and are selected depending on the region in Japan where the garden is located; overall, the selected trees and plants cover 45% of the woody species that grow naturally in Japan. So far, Sekisui House has planted 17 million trees across Japan since 2001. The gardens, mostly planted in urban areas, have a positive impact on biodiversity as the native species improve local ecosystems and bees, birds and butterflies benefit from the trees planted in these gardens.

Looking ahead to nature-positive solutions
In addition to our long-standing efforts in advancing organic farming, renewable energy and sustainable real estate, we are actively looking for opportunities to invest for a net positive impact on biodiversity, such as through nature restoration or rewilding projects.

- Restoration refers to activities that specifically aim to return an area to its original (pre-disturbance) ecological condition prior to some anthropogenic impact.
- Rewilding refers to activities aimed at returning a land (or marine) area to its natural uncultivated state. The term is used especially with reference to the reintroduction of wild animal species that have been driven out or exterminated in a certain area.

Still a small part of our activities, we aim to further develop and expand them in the coming years, in line with our net zero ambition.

Nature-based solutions with solid governance: Wyre Natural Flood Management project (Triodos Bank UK)

The Wyre Natural Flood Management project is a great example of nature-based solutions for flood management financed through a combination of public and corporate funding and private financing. The project applies the use of natural flood solutions techniques, including leaky dams, bog and rewetted peat, on 70 hectares of the River Wyre catchment in Lancashire, UK. This will help reduce the frequency of flooding for several properties in nearby Churchtown. This area has experienced a one in 50-year flood event four times in the last 20 years, with a devastating impact on the local community and the economy. The project will also create new habitats for wildlife and help to mitigate climate change through the storage of greenhouse gases in the newly created wetlands and peatlands.

The initiative stems from a pioneering partnership between The Rivers Trust, Wyre Rivers Trust and Triodos Bank UK. The two trusts provide technical expertise on flood management and biodiversity enhancement, and Triodos Bank UK contributes to structuring a dedicated debt facility. Triodos Bank UK and its partners established The Wyre Catchment Community Interest Company as a not-for profit, independent entity. Its role is to ensure solid, reliable governance and control mechanisms for the project and reduce the governance risks associated with the Payment for Ecosystem Services model. The nature of the entity was chosen to ensure community focus and to control and protect the project's mission of providing a long-term, nature-positive solution to high risks of flooding while maintain and enhancing local wildlife.

Carbon credits with biodiversity push: Ecosystem Value Association (Triodos Regenerative Money Centre)

Ecosystem Value Association (EVA) is a coalition of German forestry partners (forest owners, NGO's, politicians etc) that is jointly developing a new carbon credits standard for smallholder forest owners, focusing on biodiversity and climate resilience. EVA offers certification as well as a digital marketplace to smallholder forest owners, enabling them to reforest in a biodiverse, locally embedded and climate adapted manner.

Nature restoration through bond investment: NRW Bank and the renaturation of the Emscher (Triodos IM)

The renaturation of the Emscher is an example of a positive driver for structural change, bringing important natural and recreational areas to a region that was once characterised by mining and heavy industry. For more than a century, the Emscher river, which runs through the heavily populated Ruhr area in Germany, was used as an open sewer system, with devastating effects on the landscape and natural environment. The river gradually turned into an artificial system of open sewers and canals and the natural fluvial biodiversity seriously decreased, with many species disappearing completely. The Emscher also lost its natural ability to retain rainwater, causing regular flooding.

In the early 1990s, with the closure of mining activities in the area, the region decided to finally invest in underground sewage and restore the area's natural equilibrium. Today, the proceeds of a green bond issued by North-Rhine Westphalia state bank (NRW.BANK) are used for the renaturation of the Emscher. Several milestones have been reached since the project began: flora and fauna have returned in the area and newly created retention basins have prevented renewed flooding.

Triodos Euro Bond Impact Fund invests in the NRW.BANK Green Bond. As well as the renaturation of the Emscher (16% of the total bond proceeds), other projects financed through this bond fall into different categories, such as energy efficiency, onshore wind and solar and clean transportation.

4.1.3 Engage and collaborate

As a responsible financial institution, we integrate stewardship into every aspect of the banking or investment management process to promote sustainable value creation for all our stakeholders, through engagement, voting and advocacy. We engage with companies and institutions to drive positive change.

Company engagement on biodiversity and climate
We engage with portfolio companies of our listed equity and bond funds about the sustainable sourcing of wood and palm oil. We require listed companies in relevant industries to be 100% FSC or FSC equivalent certified (wood), or 100% RSPO certified or RSPO equivalent (palm oil).
We engage with companies in portfolio that do not meet this standard yet to urge them to move to 100% in the short term.

In 2020, we started a climate change engagement programme to tackle the climate change driver of biodiversity loss. Through this programme, we are engaging with companies in portfolio requiring them to set science-based emissions targets in line with a 1.5˚ trajectory.

Engagement with regulators and standard setters
It is equally important to engage with regulators and policy makers, as the much-needed shift can only be made if these are onboard to set better rules and standards on a wider scale. Therefore, we remain attentive to regulatory developments and raise our voice whenever we think it's needed.

In September 2021, Triodos Bank signed a call, initiated by the WWF and directed to the European Commission, for EU legislation to address the issue of EU-driven deforestation and ecosystem conversion. Similarly in December 2021, we signed another call by the WWF for governments to support a global moratorium on deep seabed mining, applying precautionary principles to activities that can affect deep-sea ecosystems in unpredictable ways.

Financial industry initiatives
Our commitment to drive change within the financial sector is deeply ingrained in our twofold mission: *Change Finance to Finance Change*. Our 'Change Finance' mission is driven by our ambition to change the financial sector for the better, by showing that financial institutions can successfully operate by aiming for positive impact alongside a balanced risk return profile. In relation to biodiversity, our Change Finance agenda is aimed at setting up methodologies and standards to be better able to quantify and measure the impact on biodiversity and incorporate considerations on natural capital in decision-making.

Finance for Biodiversity Pledge
Triodos Bank is one of initiators of the Finance for Biodiversity Pledge, a commitment to protect and restore biodiversity through financing activities and investments. The Pledge has been initiated in the run-up of the Conference of the Parties (COP 15), where the global leaders should commit to taking ambitious action on restoring biodiversity.

Platform for Biodiversity Accounting Financials
To lead the way to more transparency on biodiversity impact within the financial sector, Triodos Bank, together with five other financial institutions, founded the Partnership for Biodiversity Accounting Financials (PBAF). The aim is to create a common methodology to measure and report on the financial sector's impact on biodiversity, specified as the impact on biodiversity from the financial sector's loans and investments (scope 3). As of May 2022, the partnership has 30 members, with a total of USD 6.8 trillion in assets under management.

5. Conclusion – call to action

> "The damage to biodiversity caused by our way of living is considerable. We are at a point where we should not only talk about reducing harm to biodiversity, but about regeneration."
>
> Triodos Bank

The issue of biodiversity loss is deeply entangled with our current extractive economic system where everything that has no price is exploited. It is time to acknowledge that the economic growth over the past 70 years may have been a down payment on future failure. The pace of our global impact on ecosystems has exceeded the biosphere's regenerative rate. The message is simple - we must act now:

- Funding of harmful activities or products such as industrial farming or fossil fuels must stop.
- Better solutions to present needs must be supported and rolled out.
- Key ecosystems must be protected.
- But beyond that, we must seriously rethink our individual and collective priorities, and re-programme our economies to serve our long-term needs and aspirations, not just our greed and momentary cravings.

Biodiversity loss is now recognised as a driver of financial risks and in turn financial institutions' funding and investing activities currently represent an indirect driver of biodiversity loss. While the awakening to the links between finance and biodiversity is putting new initiatives in motion, the focus is still too much on the industry's self-preservation, on understanding and controlling for environmental risks that can undermine financial capital.

The stability of the financial system is a key priority for the functioning of our societies – we have seen too well the individual and collective struggle financial crashes can create. However, it is an illusion to think that making financial stability a priority (by focusing on the management of environmental risks) will automatically improve how economic activities impact the environment and lead to money flowing towards environmental restoration and regeneration. It will, hopefully, lead to better decisions, but it might still not be enough.

This is why fundamental change in the financial industry is desperately needed. Financial institutions should not only look at biodiversity loss as a financial risk, or at opportunities for nature restoration as a new 'asset class' from which to derive more financial returns. The challenge for the financial sector is to truly re-establish the role of finance in supporting a healthy economy and societal wellbeing. And what the economy needs now is not more business, but better businesses.

It should be a task for financial institutions to avoid serious biodiversity losses and ecosystem damage and to reduce the harmful effects of the activities they finance. Investing in solutions that contribute to countering biodiversity loss can also open new opportunities for the financial sector. But let us get things straight: positive societal and environmental impact should not be treated as a positive externality of financing activities, a 'nice to have'. It is time to turn things around in our mindsets, and in finance: financial value derived from impactful economic activities is the true positive externality.

The financial industry contributes to directing money flows globally, by making and controlling transactions: this is an immense concentration of power. There are of course rules to which institutions must abide, but also a lot of freedom to decide what matters most – immediate profits or broader societal wellbeing – and how to balance priorities. Lack of knowledge or data is not an excuse anymore: to everyone in finance, let's put people and planet first!

Appendix – Triodos Bank Minimum Standards

Triodos Bank's exclusionary criteria apply to all Triodos entities and are translated into specific requirements for each entity to better adapt to the nature of the activities financed through the different financial instruments.

Below is an overview of the rationale and application of minimum standards that are related to biodiversity as they are applied in our investment activities, and particularly investing in listed instruments, as this is where we deal with larger, multi-layered businesses and where most of the negative impact originates from.

Soy, cotton and palm oil
Soil depletion, deforestation, pollution and high use of water, pesticides and fertiliser are risks associated with growing crops like cotton, palm oil and soy. These are particularly relevant for food products, personal products, retail and textiles and apparel, among others. We therefore exclude companies that use soy, cotton or palm oil in their products and cannot demonstrate to have sustainable farming or sourcing practices in place, or that they participate in relevant initiatives such as (but not limited to) the Better Cotton Initiative, the Roundtable of Sustainable Palm Oil and the Round Table on Responsible Soy.

Deforestation
Triodos Bank only finances or invests in companies that demonstrate awareness of deforestation as an issue, with sustainable forestry practices and responsible sourcing and use of forest products. Major activities and products involved in deforestation are food and especially beef production, palm oil and soy as well as wood products (for instance paper and building products). To ensure that we do not finance businesses involved in deforestation, we have minimum requirements for entities in these sectors to ensure sustainable management of forests along their supply chain, such as FSC certification (or equivalent). We also exclude companies that are involved in illegal deforestation or controversial logging activities in protected areas, including but not limited to the conversion of peatland and high carbon stock forests (HCS) for agricultural development. Moreover, we exclude companies that sell large amounts of beef originating from South America and do not have a policy on deforestation.

Fishery
Unsustainable fishing is a clear example of direct exploitation of nature, posing a threat to the maintenance of fish stocks and conservation of the marine environment for future generations. The marine ecosystem has been overfished far beyond a sustainable rate. For this reason, Triodos Bank only finances and invests in companies that foster sustainable fishery and aquaculture practices, such as ASC certified fisheries. We exclude companies that are involved in overfishing or controversial fishing techniques, and companies that process or sell fishery and aquaculture products and do not have sustainable fisheries and aquaculture programmes and policies in place and/or do not comply with international standards and agreements.

ICC CITES
Trade in live animals or products of endangered species is covered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The aim of this government agreement is to ensure that international trade in specimens of wild animals and plants does not threaten their survival (hence the link with direct exploitation). While the risk of trade in endangered species is not high for the industries we invest in, the topic is however relevant to various industries, such as retailing, personal products as well as various transport industries, among others.
To ensure the sustainable trade of wildlife species, we have set the requirement that companies that use plants and/or animals that are on the CITES list should have sourcing guidelines for such activities. Endangered fauna and flora should be given special attention as to where they are sourced (taken from the wild vs. farmed in a regulated environment).

Fossil fuels and biomass
Triodos Bank does not finance or invest in companies involved in fossil fuels. The use of fossil fuels not only exacerbates climate change, but also leads to air and water pollution. We therefore completely exclude companies that are involved in the production of fossil fuels or provide services to fossil fuel-related activities from direct financing and investment. We also exclude companies that operate in energy-intensive or high emitting industries or activities, do not disclose the greenhouse gases they emit and do not have a sound programme with clear reduction targets for the reduction of greenhouse gases. High risk industries for involvement in fossil fuels are metals and mining and utilities. We require companies to have policies and implement programmes to reduce their climate change impact, to have clear targets for CO_2 emissions reduction, to report on progress and to find alternatives for products and services with a large carbon footprint.

While we foster the production of energy from sources that are alternative to fossil fuels, we also have criteria on energy production from biomass, where we only invest in biomass from waste streams (food waste or forest residues). Commercial services and supplies, utilities and renewable electricity are considered as high-risk industries. We exclude companies that produce biomass energy with feedstock that competes

with food production or comes from energy crops grown for the purpose or biomass energy or from genetically modified crops or with feedstock that has its origin in intensive farming.

Genetic engineering
Genetic engineering uses the genes of organisms for research and modification purposes. Genetic modification refers to the artificial manipulation of genes of organisms. This technology is used to increase agricultural crops' resistance to pesticides and herbicides. This facilitates the heavy use of pesticides and herbicides, which has a direct harmful effect on local biodiversity. The indirect negative effect is that this enables monoculture, which is harmful for soil and also decreases biodiversity. Genetically modified organisms that enter the environment may disrupt local ecosystems and biodiversity. In setting requirements for responsible use of genetic engineering, we distinguish between companies that develop, grow, use or process genetically modified micro-organisms, plants, animals and humans. High-risk industries for genetic engineering are food products and retail and pharmaceuticals, among others. We exclude companies that directly develop or grow genetically modified plants as well as companies that develop and use genetically modified animals for non-medical use. Companies using GMOs also need to have policies addressing the social added value of the GMO and demonstrate how environmental risks are minimised.

Water scarcity
Increasing (fresh) water scarcity is threatening life on Earth, and freshwater sources are often overexploited for industrial use. Textiles and apparel, food and beverages and utilities are considered as high-risk (among others). We therefore exclude companies that operate in water-intensive industries and do not undertake activities to reduce their fresh water use in all operations. Activities may include, but are not limited to, water scarcity impact assessments and water recycling. We also exclude companies that start new operations in areas where water scarcity is pre-existing, and operations would compete with the needs of communities. Additionally, we require targets for reduction of freshwater use, and we consider whether companies are active in areas of water stress.

Hazardous substances
Water, air, and soil pollution is another driver that produces significant damage to ecosystems and biodiversity. Triodos Bank invests in companies that demonstrate awareness for the dangers associated with the use of hazardous substances, and in companies that adopt, develop and promote less harmful alternatives. We therefore exclude companies that produce or sell pesticides from financing and investments as well as companies that produce or use substances that are on the POP-list (Persistent Organic Pollutants). Moreover, certain sectors are more likely to be involved in pollution, and we have set additional requirements for companies in the following sectors: construction and engineering, metals and mining, paper and forest products and food products. Listed companies in these sectors must have programmes on biodiversity impact reduction and report about the results of these programmes. Companies in the metals and mining sector must also be members of the International Council on Mining and Metals, in addition to meeting all other relevant standards (e.g. on deforestation, human rights and climate change).

Sources

1. UNESCO. (2019). Preserving biodiversity with solidarity. https://en.unesco.org/news/preserving-biodiversity-solidarity
2. https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf
3. Cardinale, B. J., et al. (2012). Biodiversity loss and its impact on humanity. *Nature, 486*(7401), 59-67.
4. IPCC, 2021 – Sixth Assessment Report (AR6). https://www.ipcc.ch/assessment-report/ar6/
5. World Wildlife Fund's (WWF) Living Planet Report 2020; https://worldwildlife.org/livingplanetreport2020
6. Triodos IM. (2020). https://www.triodos-im.com/press-releases/2020/press-release---reset-the-economy
7. Persson, L., Carney Almroth, B. M., Collins, C. D., Cornell, S., De Wit, C. A., Diamond, M. L., ... Hauschild, M. Z. (2022). Outside the safe operating space of the planetary boundary for novel entities. *Environmental Science & Technology, 56(*3).
8. https://www.stockholmresilience.org/research/research-news/2022-04-26-freshwater-boundary-exceeds-safe-limits.html
9. WEF - Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy. https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf
10. The Netherlands Environmental Assessment Agency (PBL) - Introduction to biodiversity. https://www.pbl.nl/en/en/topics/biodiversity/introduction-biodiversity
11. Convention on Biological Diversity (CBD). https://www.cbd.int/convention/articles/?a=cbd-02
12. IPBES. (2019). Global assessment report on biodiversity and ecosystem services. https://ipbes.net/global-assessment-report-biodiversity-ecosystem-services
13. IPBES. (2019). Global assessment report on biodiversity and ecosystem services. https://ipbes.net/global-assessment-report-biodiversity-ecosystem-services
14. Bar-On, Y. M., Phillips, R., & Milo, R. (2018). The biomass distribution on Earth. *Proceedings of the National Academy of Sciences, 115*(25), 6506-6511. https://www.pnas.org/content/115/25/6506
15. DNB & PBL. (2020). Indebted to nature: Exploring biodiversity risks for the Dutch financial sector. https://www.dnb.nl/media/4c3fqawd/indebted-to-nature.pdf
16. Citi GPS. (2021). Global Perspectives & Solutions – BIODIVERSITY: The Ecosystem at the Heart of Business.
17. Convention on Biological Diversity (CDA). Invasive Alien Species. https://www.cbd.int/undb/media/factsheets/undb-factsheet-ias-en.pdf
18. Millennium Ecosystem Assessment. (2005). Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC. http://www.millenniumassessment.org/documents/document.356.aspx.pdf
19. https://www.unepfi.org/fileadmin/documents/bloom_or_bust_report.pdf
20. Barker et al., (2010). Biodiversity, ecosystems and ecosystem services. Chapter 2. http://antarctica.teebweb.org/wp-content/uploads/2013/04/D0-Chapter-2-Biodiversity-ecosystems-and-ecosystem-services.pdf
21. Dasgupta, P. (2021). The Economics of Biodiversity: the Dasgupta Review. HM Treasury.
22. TNFD. (2021). Nature in Scope. A summary of the proposed scope, governance, work plan, communication and resourcing plan of the TNFD. https://tnfd.global/wp content/uploads/2021/07/TNFD-Nature-in-Scope-2.pdf
23. TNFD. (2021). Nature in Scope. A summary of the proposed scope, governance, work plan, communication and resourcing plan of the TNFD.
24. Dasgupta, P. (2021). The Economics of Biodiversity: the Dasgupta Review. HM Treasury.
25. Dasgupta, P. (2021). The Economics of Biodiversity: the Dasgupta Review. HM Treasury.
26. WEF - Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy. https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf
27. DNB & PBL. (2020). Indebted to nature: Exploring biodiversity risks for the Dutch financial sector. https://www.dnb.nl/media/4c3fqawd/indebted-to-nature.pdf
28. Suttor-Sorel, L. (2019). Making Finance Serve Nature. Finance Watch. DNB. (2021). Biodiversity Opportunities and Risks for the Financial Sector. https://www.dnb.nl/media/cy2p51gx/biodiversity-opportunities-risks-for-the-financial-sector.pdf
29. DNB & PBL. (2020). Indebted to nature: Exploring biodiversity risks for the Dutch financial sector. https://www.dnb.nl/media/4c3fqawd/indebted-to-nature.pdf
30. Exploring Natural Capital Opportunities, Risks and Exposures (ENCORE) is a comprehensive database that links 167 sectors to dependencies on 21 ecosystem services, developed by the Natural Capital Finance Alliance (NCFA).
31. Netherlands Enterprise Agency (2021). Biodiversity Footprint for Financial Institutes. https://www.government.nl/documents/reports/2021/07/29/biodiversity-footprint-for-financial-institutions
32. CDC Biodiversité (2018). Global Biodiversity Score. https://www.mission-economie-biodiversite.com/english#:~:text=The%20Global%20Biodiversity%20Score%20(GBS)%20is%20a%20corporate%20biodiversity%20footprint,a%20robust%20and%20synthetic%20way.
33. CISL (2022). Integrating nature: The case for action on nature-related financial risks. https://www.cisl.cam.ac.uk/resources/publications/integrating-nature-case-action-nature-related-financial-risks
34. DNB & PBL. (2020). Indebted to nature: Exploring biodiversity risks for the Dutch financial sector. https://www.dnb.nl/media/4c3fqawd/indebted-to-nature.pdf
35. CBD. (2021). Financial Sector Guide for the Convention on Biological Diversity. https://www.cbd.int/doc/c/fb30/ab6e/2ba026651408d804167b8540/cbd-financial-sector-guide-f2-en.pdf

36. The Biodiversity Footprint for Financial Institutes is also employed in the common ground paper (2020) of the Platform for Biodiversity Accounting Financial (PBAF), of which Triodos Bank is a founding member. https://www.pbafglobal.com/files/downloads/PBAF_commongroundpaper2020.pdf
37. WWF. (2020). Bankable Nature Solutions – Blueprints for Bankable Nature Solutions from across the globe to adapt to and mitigate climate change and to help our living planet thrive. https://d3bzkjkd62gi12.cloudfront.net/downloads/bankable_nature_solutions_blueprint__june_2020_.pdf
38. Wunder, S. (2015). Revisiting the concept of payments for environmental services. *Ecological economics, 117*, 234-243.
39. OECD. (2020). Tracking economic instruments and finance for biodiversity.
40. Martin-Ortega, J., Mesa-Jurado, M. A., Pineda-Vazquez, M., & Novo, P. (2019). Nature commodification: 'a necessary evil'? An analysis of the views of environmental professionals on ecosystem services-based approaches. *Ecosystem Services, 37*, 100926.
41. CBD. (2021) – Contribution to a Draft Resource Mobilization Component of the Post-2020 Biodiversity Framework as a Follow-up to the Current Strategy for Resource Mobilization: Third Report of the Panel of Experts on Resource Mobilization https://www.researchgate.net/publication/343230362_CONTRIBUTION_TO_A_DRAFT_RESOURCE_MOBILIZATION_COMPONENT_OF_THE_POST-2020_BIODIVERSITY_FRAMEWORK_AS_A_FOLLOW-UP_TO_THE_CURRENT_STRATEGY_FOR_RESOURCE_MOBILIZATION_THIRD_REPORT_OF_THE_PANEL_OF_EXPERTS_ON
42. Chatham House. (2021). Food System Impacts on Biodiversity Loss. https://www.unep.org/news-and-stories/press-release/our-global-food-system-primary-driver-biodiversity-loss
43. Dempsey, J., Irvine-Broque, A., Bigger, P. et al. (2021). Biodiversity targets will not be met without debt and tax justice. *Nature Ecology & Evolution, 6*. https://doi.org/10.1038/s41559-021-01619-5

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