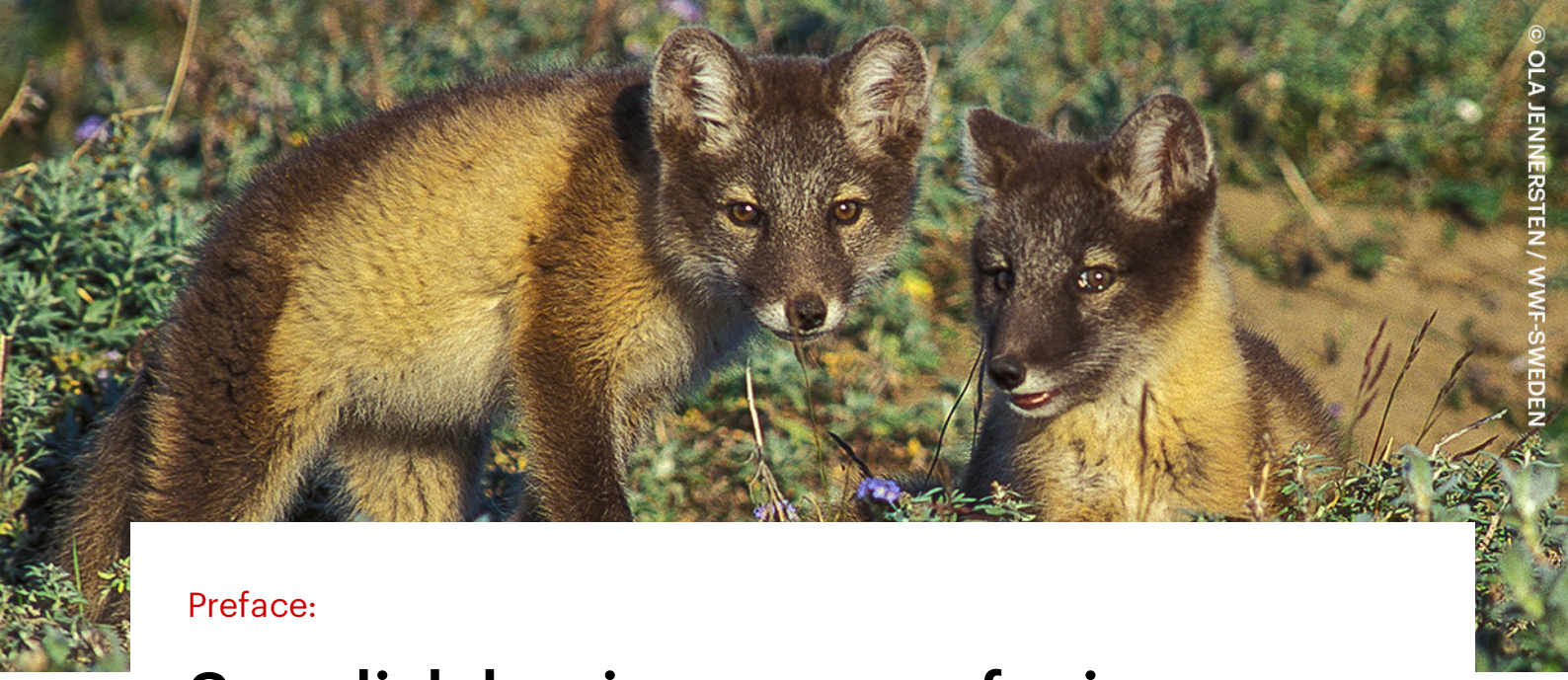
Swedish businesses & the biodiversity crisis

Opportunities & risks associated with biodiversity loss

WWF

BAIN & COMPANY



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Preface:

Swedish businesses are facing a biodiversity crisis

The focus on businesses' impact on the environment and climate has increased rapidly over the past decade. However, when it comes to biodiversity and nature loss, businesses' awareness of the magnitude of their impact as well as the extent of action taken remains limited.

According to the World Economic Forum, the biodiversity crisis ranks as one of the top global risks to the economy over the next 10 years and, if the current trajectory continues, it is estimated to put over half of the world's GDP at risk.

To help businesses get a head start on tackling the biodiversity crisis, WWF and Bain & Company have compiled an overview of the latest knowledge on biodiversity and nature loss which carries significant relevance for all Swedish businesses, regardless of size.

Purpose of this report:

Present the facts to enable businesses to increase the pace and scale up their work on biodiversity

1.
Provide an overview of the status of biodiversity relevant in a Swedish business context

2.
Summarize opportunities and risks related to biodiversity

3.
Outline potential next steps for Swedish businesses across key industry sectors

This report presents insights on the state of biodiversity efforts among Sweden's largest businesses along with the most recent research on biodiversity. To gain an understanding of Swedish companies' awareness, ambitions, and strategies related to biodiversity, WWF and Bain & Company have conducted a survey among the largest Swedish businesses. In addition, 13 in-depth and cross-sector interviews were held with executives from the largest Swedish companies to gather more nuanced perspectives and understand the surveyed topics in more detail. The resulting insights inform the conclusions and recommendations in this report, together with relevant examples of biodiversity actions from the Swedish business environment.

When reading through the report, it is our hope you will agree that the evidence is clear. Nature's decline around the world will pose momentous difficulties and costs to Swedish businesses in the coming years. It might very well exceed the challenges and costs we all face with the climate crisis right now. However, there is also good news. Significant business opportunities lie ahead, if – and only if – Swedish businesses take on the challenge now.

This report provides you with facts – but not necessarily all the answers. Its purpose is to educate on the topic and the importance of biodiversity and help establish the connections between biodiversity and other environmental issues like climate change. Building this understanding serves as an important foundation for reversing the ongoing loss of nature and reaching the targets set at COP15 in December 2022. Businesses must take a holistic perspective on biodiversity, understanding that a two-pronged approach is required – that is, both radically reducing the negative pressures as well as restoring nature and increasing biodiversity in working landscapes. Additionally, businesses play an important role in advocating for regulations that will support the large-scale transformation toward a nature-positive society – with a nature-positive business community. We know that Swedish businesses, society, welfare, and, not least, the planet depend on it.

Gustaf Lind
Secretary General WWF Sweden

Johan Lundgren
Advisory Partner, Bain & Company

Executive summary:

Businesses must act now to address the biodiversity crisis and capture opportunities

The biodiversity crisis in Sweden and around the globe is real. Businesses play a pivotal role in changing the perilous trajectory and must now step up to the task. While market shifts and new regulation are underway to help induce the much-needed change, Swedish businesses can already turn their concern into action. Several existing tools, frameworks, and tangible actions can help overcome the immense biodiversity challenge ahead of us. Now is the time to act.

Biodiversity, the very foundation of life on Earth, is in crisis. Wild animal populations are rapidly declining, and the stability of ecosystems is under significant pressure both in Sweden and globally. If this trend is not reversed, declining biodiversity is likely to cause the loss of significant human and economic values, impacting our quality of life and effectively putting more than half of global GDP at risk.

All Swedish businesses, big or small, play a role in the biodiversity crisis because all Swedish businesses impact nature. Every single business is also dependent on the natural resources and ecosystem services nature provides. The survey and interviews carried out for this report clearly show that large Swedish businesses recognize that biodiversity loss poses a significant threat to their operations. Still, many fail to recognize the extent of their own impact and have yet to set tangible goals or take concrete action. This needs to change.

Reversing biodiversity loss takes transformative change. We cannot afford to make only small, incremental changes – we need a fundamental shift in how we think and act in our interactions with nature. While most of the issues connected to negative biodiversity pressures are well known to businesses through their ongoing environmental work, there is a need to radically increase efforts related to, for example, reducing pollution and tackling climate change. This not only involves reducing the negative impact we have on biodiversity today, but also taking action to restore and enhance biodiversity.

Business activities drive much of the human impact on nature, meaning that businesses obviously also have an important role to play in driving the necessary transition. But businesses cannot solve every single problem on their own. To enable the move toward a sustainable future, we need holistic action on a societal level. In this scenario, ambitious business efforts are supported by equally ambitious and clear regulation and incentives. Fortunately, there are signs that this change is underway, with a long list of regulation in the works on both national and international levels and ambitious international targets agreed on at COP15. For businesses, this means that now is the time to start reducing their impact on biodiversity. Those who fail to act will be unprepared when inevitable market shifts and new regulation are put in place.

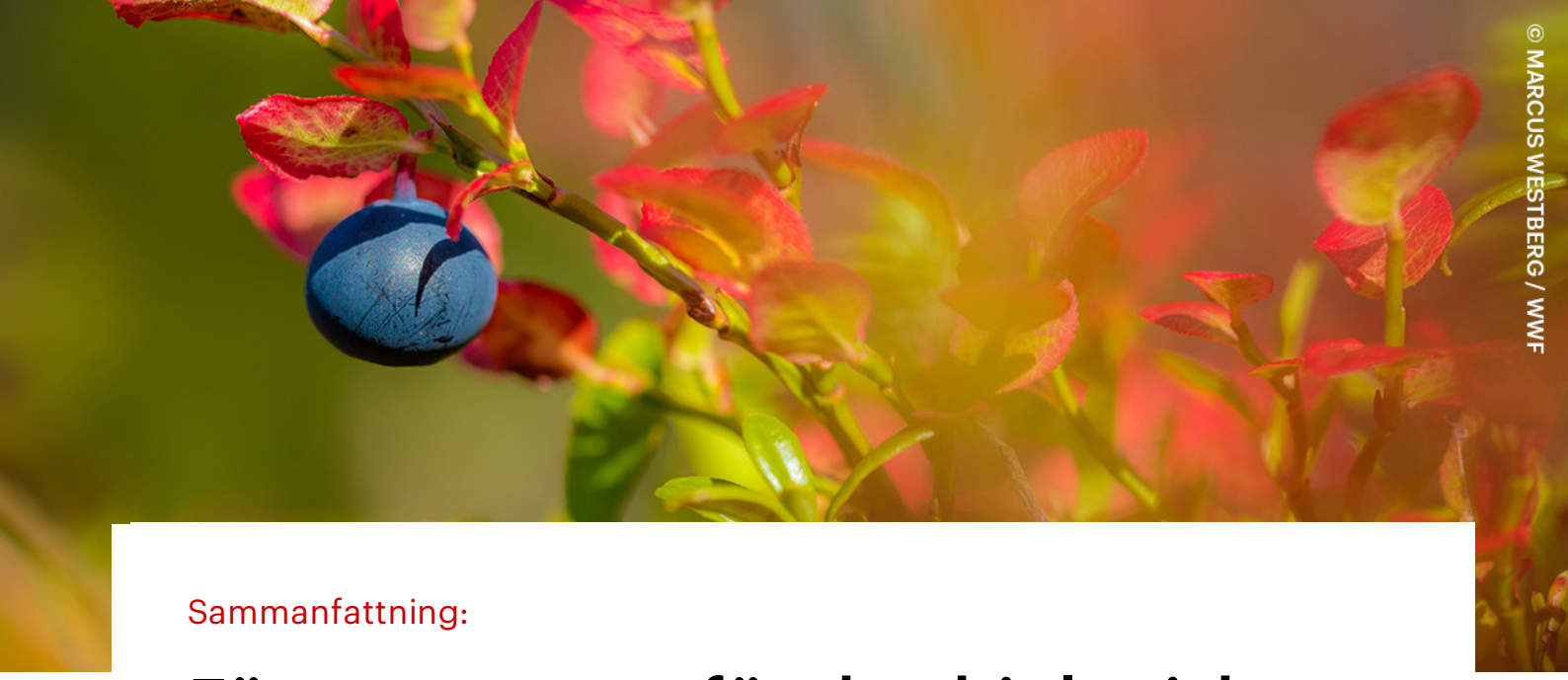
The necessary transformative change may not happen overnight, but the businesses that get moving today will most likely benefit significantly. Being an early mover will put businesses in an attractive position by giving them an opportunity to tap into the potential of nature-positive business models, currently estimated to provide opportunities worth over $10 trillion per year by 2030. Additional benefits of immediate action include business improvements within current and future operations, access to finance, and risk mitigation. Many of the actions needed to combat biodiversity loss will also help in addressing the closely related and equally urgent issue of climate change, providing additional synergies for those who choose to act today.

Interviews with Swedish businesses indicate that addressing biodiversity impact is perceived as a challenging task, despite the potentially significant benefits. Fortunately, there are many tangible actions businesses can take today. Tools and frameworks such as the WWF Biodiversity Risk Filter, Science Based Targets for Nature (SBTN), and Task Force on Nature-related Financial Disclosures (TNFD) are available to help companies assess their current impact on biodiversity and come up with a strategy toward a more nature-friendly business, but there are also other, straightforward actions that can be taken today to start moving in the right direction. These include, for example, moving toward sourcing of more sustainable, certified materials and educating consumers to make better choices. At the same time, businesses should also keep the long-term perspective in mind and collaborate across the value chain, with innovative small and medium-sized enterprises and start-ups, and with the rest of civil society to develop measures, understand regulation, and find new opportunities to operate in biodiversity-friendly ways.

While transformative change in our interactions with nature is inevitable and will impact all businesses, the good news is that businesses have faced the need for transformation many times before, driven by factors such as digitalization and climate change. As a result, we know that adapting successfully is possible. Seeing as we also know that there are many tangible things that can be done today, there is no longer any excuse to wait around for a perfect strategy, new measures, or mandatory regulation. Solving the biodiversity crisis will be a journey, but the most important thing right now is that businesses start their journey today.

Reader's guide

This report consists of six chapters and an appendix. Chapter 1 provides an overview of the status of biodiversity globally and in Sweden, how biodiversity relates to climate change, and why biodiversity is a relevant business concern. Chapter 2 explains how businesses impact biodiversity locally and globally through value chains, and how this differs between business sectors. Chapter 3 provides the rationale for businesses to act by describing risks associated with biodiversity loss and opportunities that arise from doing something about it. Chapter 4 describes the magnitude of change needed, outlines the areas that businesses can start working on today, and provides examples of how this can look in practice. Chapter 5 covers the perceived roadblocks Swedish businesses face in their biodiversity efforts and provides solutions for how these can be tackled. Chapter 6 gives examples of tools and frameworks that businesses can use to get started and underlines the importance of acting now. The appendix provides further details on relevant regulation.



Sammanfattning:

Företag - agera för den biologiska mångfalden och ta vara på möjligheterna

Situationen för den biologiska mångfalden i Sverige och runt om i världen är allvarlig. Företag spelar en avgörande roll i den negativa utvecklingen och måste nu agera. Förändringar i marknadsdynamik och nya regleringar kommer att tvinga fram ändrade beteenden, men redan nu kan svenska företag omsätta sin oro i handling. Flera befintliga verktyg och konkreta åtgärder kan hjälpa företag att ta itu med den enorma utmaningen vi står inför.

Den biologiska mångfalden, grunden för allt liv på jorden, är i kris. Populationerna av vilda arter minskar i skrämmande takt och ekosystemens stabilitet är hotad både i Sverige och globalt. Om vi inte vänder denna trend kommer den minskande biologiska mångfalden att leda till förlust av betydande mänskliga och ekonomiska värden. Detta påverkar människors livskvalitet samtidigt som vi riskerar att förlora mer än hälften av global BNP.

Alla svenska företag, stora som små, spelar en betydande roll i krisen för biologiska mångfald eftersom alla företag påverkar naturen. Varje enskilt företag är samtidigt beroende av de resurser och ekosystemtjänster som naturen tillhandahåller. Undersökningen och intervjuerna som genomförts för denna rapport visar tydligt att stora svenska företag förstår att förlusten av biologisk mångfald utgör ett betydande hot mot deras verksamhet. Ändå misslyckas många med att se omfattningen av sin egen påverkan och har ännu inte satt upp konkreta mål eller vidtagit konkreta åtgärder. Här måste en förändring ske.

Att vända trenden med förlust av biologisk mångfald kräver en transformativ förändring. Vi kan inte nöja oss med små, stegvisa förändringar – vi behöver en grundläggande förändring i hur vi tänker och agerar i vårt samspel med naturen. Detta är i grunden välkänt för företag som en del av pågående miljöarbete, men det finns fortsatt ett stort behov att radikalt öka insatserna för att till exempel minska föroreningar och hantera klimatförändringar. Det handlar inte bara om att minska

den negativa påverkan vi har på den biologiska mångfalden idag, utan också om att vidta åtgärder för att återställa och förbättra den biologiska mångfalden.

Aktiviteter relaterade till företagsverksamhet står för en stor del av den mänskliga påverkan på naturen, vilket innebär att företag självklart har en viktig roll för att driva den nödvändiga omställningen. Företag kan dock inte lösa alla problem på egen hand. För att möjliggöra utvecklingen mot en hållbar framtid behöver vi ta ett helhetsgrepp på samhällsnivå. Ambitiösa insatser av företag behöver kompletteras med lika ambitiösa och tydliga regleringar och incitament. Lyckligtvis finns det tecken på att detta kommer att ske, med en lång rad nya regelverk under utveckling på både nationell och internationell nivå och ambitiösa internationella mål satta vid COP15. För företag innebär detta att det nu är dags att vidta åtgärder för att minska den negativa påverkan och samtidigt verka för att stärka den biologiska mångfalden. Företag som inte agerar nu kommer att stå oförberedda när oundvikliga förändringar i marknadsdynamiken och nya regleringar införs.

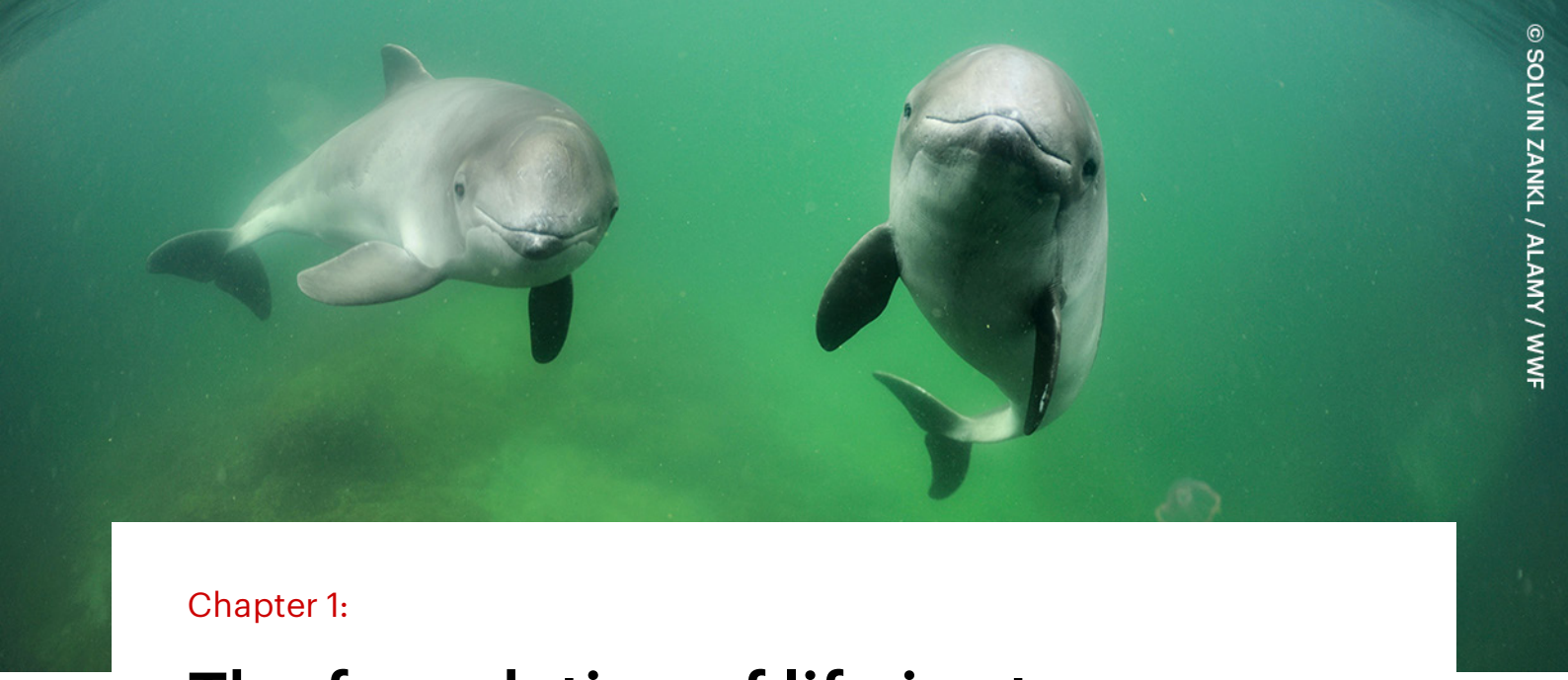
Den förändring som måste till kommer inte att ske över en natt, men de företag som agerar idag kommer med största sannolikhet att gynnas avsevärt. Att vara tidigt ute gör det möjligt för företag att ta en attraktiv position som föregångare och ta del av potentialen i naturpositiva affärsmodeller. Dessa beräknas för närvarande ha en potential på över 10 miljarder USD per år fram till 2030. Ytterligare möjliga fördelar för företag som gör något nu innefattar mer effektiv nuvarande och framtida verksamhet, tillgång till finansiering samt minskade risker. Många av de åtgärder som krävs för att bekämpa förlusten av biologisk mångfald kommer också att hjälpa oss ta itu med en nära sammankopplad och lika angelägen fråga - klimatförändringarna. Detta ger ytterligare synergier för företag som väljer att agera idag.

Intervjuer med större svenska företag tyder på att många ser det som en stor utmaning att göra något åt sin påverkan på biologisk mångfald, trots de betydande möjligheterna det medför. Lyckligtvis finns det flera konkreta saker företag kan göra redan idag. Verktyg och ramverk som WWF Biodiversity Risk Filter, Science Based Targets for Nature (SBTN) och Task Force on Nature-related Financial Disclosures (TNFD) kan hjälpa företag att bedöma sin nuvarande påverkan på biologisk mångfald och ta fram en strategi för att förbättra denna. Samtidigt kan företag också ta konkreta steg i rätt riktning genom att exempelvis öka inköp av mer hållbara material och utbilda konsumenter så att de kan göra bättre val. Parallellt med detta bör företag även ha det långsiktiga perspektivet i åtanke och samarbeta över hela värdekedjan (med innovativa små- och medelstora företag, start-ups och med resten av civilsamhället) för att utveckla åtgärder, förstå regler och hitta nya sätt att verka som värnar om biologisk mångfald.

Transformativ förändring i vårt förhållningssätt till naturen är oundviklig och kommer att påverka alla företag. Lyckligtvis finns det också goda nyheter. Företag har genomgått transformationer många gånger tidigare på grund av faktorer som digitalisering och klimatförändringar. Därför vet vi att det är möjligt. Eftersom vi också vet att det finns flera konkreta saker som kan göras idag, finns det inte längre någon ursäkt för att vänta. Att vända den negativa trenden för den biologiska mångfalden är en utmaning, men just därför är det också ytterst viktigt att företag nu väljer att agera.

"We recognize that we are dependent on healthy and functioning ecosystems for our long-term survival and success."

Sofia Krigsman
Director of Public Affairs, Essity



Chapter 1:

The foundation of life is at serious risk

The biodiversity crisis is rampant in Sweden and globally, putting the foundation of life at serious risk everywhere. Businesses, governments, and individuals are all suffering from biodiversity loss and must act collectively to reverse the negative trend.

While our survey shows that Swedish companies recognize that biodiversity loss poses an unprecedented threat to society and their own operations, their knowledge of the topic as well as the extent of action taken to reduce impacts on biodiversity remains limited, especially outside primary production sectors such as agriculture and forestry. This chapter introduces biodiversity as a concept, explores the links between biodiversity loss and other key sustainability areas, and highlights the importance of addressing the multitude of challenges biodiversity loss entails.

Key takeaways

- Biodiversity refers to the variety of life on Earth and supports the stability and resilience of our planet by enabling food production, providing access to clean water, absorbing emissions, mitigating risks of natural disasters, and much more.
- In the past 70 years, biodiversity has been under unprecedented pressure, resulting in a significant loss of biodiversity and increased degradation and loss of habitats across the globe. Populations of mammals, birds, amphibians, reptiles, and fish have on average declined by 69 percent since 1970. In addition, a million species globally (including insects, fungi, and plants) are at risk of extinction.
- The severe loss of and pressure on biodiversity is caused by human activities and constitutes a threat not just to businesses but to humanity itself.
- Businesses and the wider economy rely on nature's goods and services to operate. Human-induced pressure on nature – and the institutional failure to commit to reversing biodiversity loss – puts $44 trillion of economic, nature-dependent value at risk.
- In Sweden, 10 percent of assessed known species are threatened, and 77 percent of habitats monitored by EU directives are considered to have a poor or bad conservation status.

- Biodiversity is tightly connected to other environmental and social sustainability topics, especially climate change. To solve the nature crisis, it is imperative that businesses, civil society, and individuals address these sustainability challenges holistically.
- Based on current trajectories, we will not achieve the goal of reversing biodiversity loss by 2030. Reversing the negative trend will require an integrated strategy and fundamental, system-wide reorganization of the societies across technological, economic, and social factors – in which bold conservation and restoration efforts, and food system transformation are two key areas of change.

Biodiversity is the foundation of human life on earth

Ecosystems, species, and genes: Biodiversity encompasses the variety of life on Earth at all levels, making it hard to overstate its importance to human society.

Biodiversity encompasses the natural variety of life on our planet. It supports humans, societies, and businesses with critical natural goods that we depend on (Exhibit 1). In addition to the food we eat, the clothes we wear, and the diverse nature we inhabit and enjoy, biodiversity enables nature to provide us with the stability and resilience we need to endure natural disasters and climate change.[1] In fact, biodiversity is a crucial part of nature which encompasses both biodiversity – all life on Earth – and inanimate entities (geology, water, climate, etc.) as well as the interactions between these. Despite the crucial importance of biodiversity for life on earth, we have taken these natural goods and services for granted and caused significant damage and pressure on biodiversity along the way.

Biodiversity underpins all aspects of life

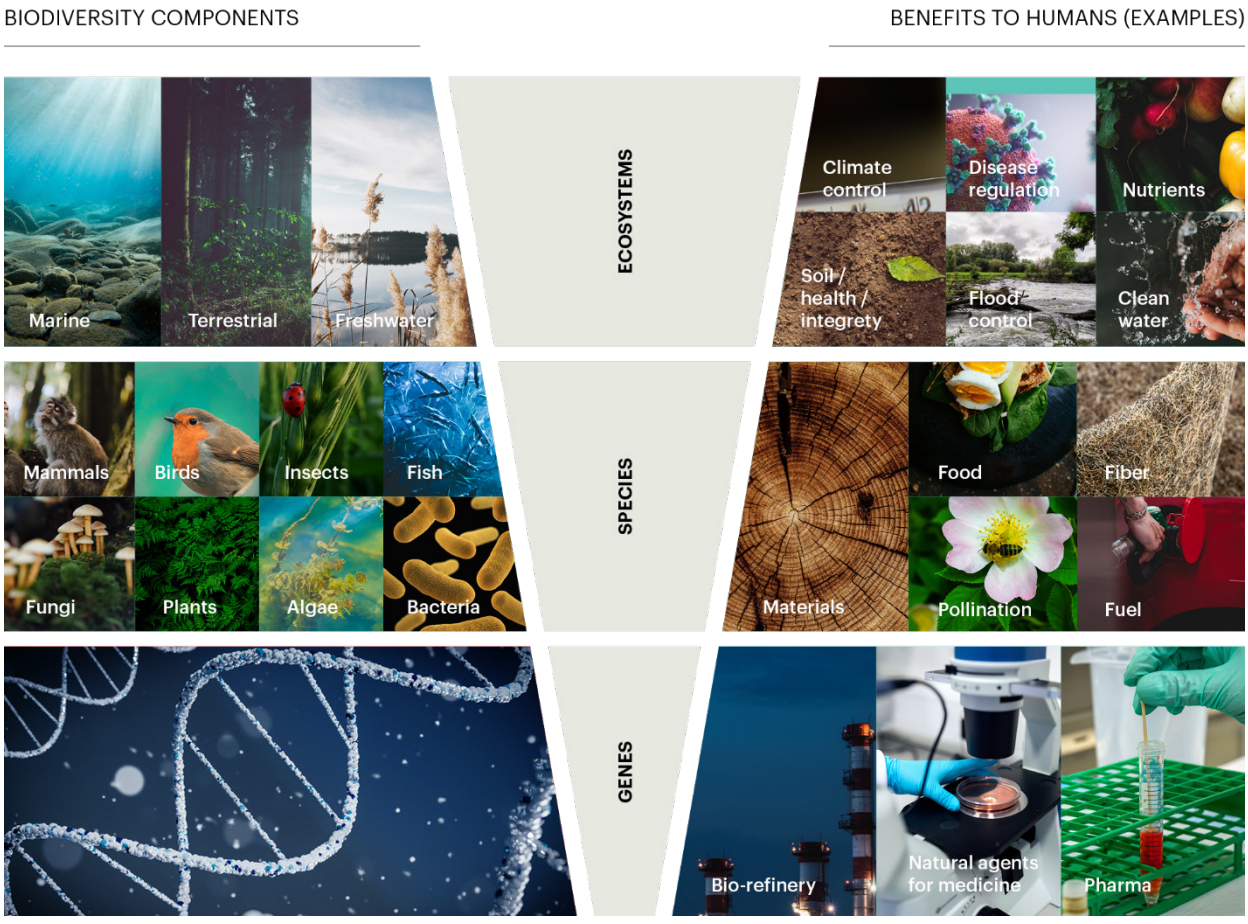


Exhibit 1: Biodiversity is the foundation of human life. Spanning across ecosystems, species, and genes, it provides humans with critical natural goods and services

[1] WWF, 2022 a

Biodiversity is the variety of life at genetic, species, and ecosystem levels (Exhibit 1). Species are often considered the fundamental building blocks of life on Earth and represent all the different kinds of life making up our natural world – animals, plants, fungi, algae, and bacteria. All the different kinds of species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life. Compared to climate change, the change in nature is much harder to measure, but one important indicator of ecosystem health is the diversity of species. The conservation status of species serves as a useful proxy for measuring the state of biodiversity – and as an indicator of nature loss. Here, it is worth noting that the assessment of species also has its limitations as taxonomists have 'only' identified and described two million species while an estimated total of 12 million species may exist globally.[2]

Biodiversity is at serious risk

Biodiversity has been put under significant pressure the last 70 years. Industrialization and overconsumption of natural resources have driven an unprecedented loss of species and habitats – both globally and in Sweden.

The main driver of the swift loss and degradation of biodiversity is the continuous, accelerating human-induced pressure. The second half of the twentieth century stands out as an age of acceleration for human activity. The period saw the most rapid transformation of the human relationship with the natural world ever recorded, fundamentally affecting the state and functioning of Earth's socio-economic and biophysical systems.[3] A million species globally are at risk of extinction[4] and population sizes of mammals, birds, amphibians, reptiles, and fish have decreased 69 percent since monitoring began in 1970 (Exhibit 2).[5] Human activity is the main driver of biodiversity loss and caused by extensive changes in land, freshwater, and sea use, resource exploitation, pollution, climate change, and invasive species and diseases.[6] This degradation of biodiversity severely impacts not only ecosystems and species, but also modern societies, including businesses, which cannot exist without functioning and stable ecosystems. Businesses and society at large are extracting more goods and services from nature than ever before, and the overconsumption of natural resources comes at the expense of nature's biodiversity and resilience.

[2] Raven, 2020
[3] Stockholm Resilience Center, 2015
[4] Intergovernmental Science-Policy Platform, 2019
[5] WWF, 2022 a
[6] Intergovernmental Science-Policy Platform, 2019

Overexploitation of global natural resources accelerates species extinction

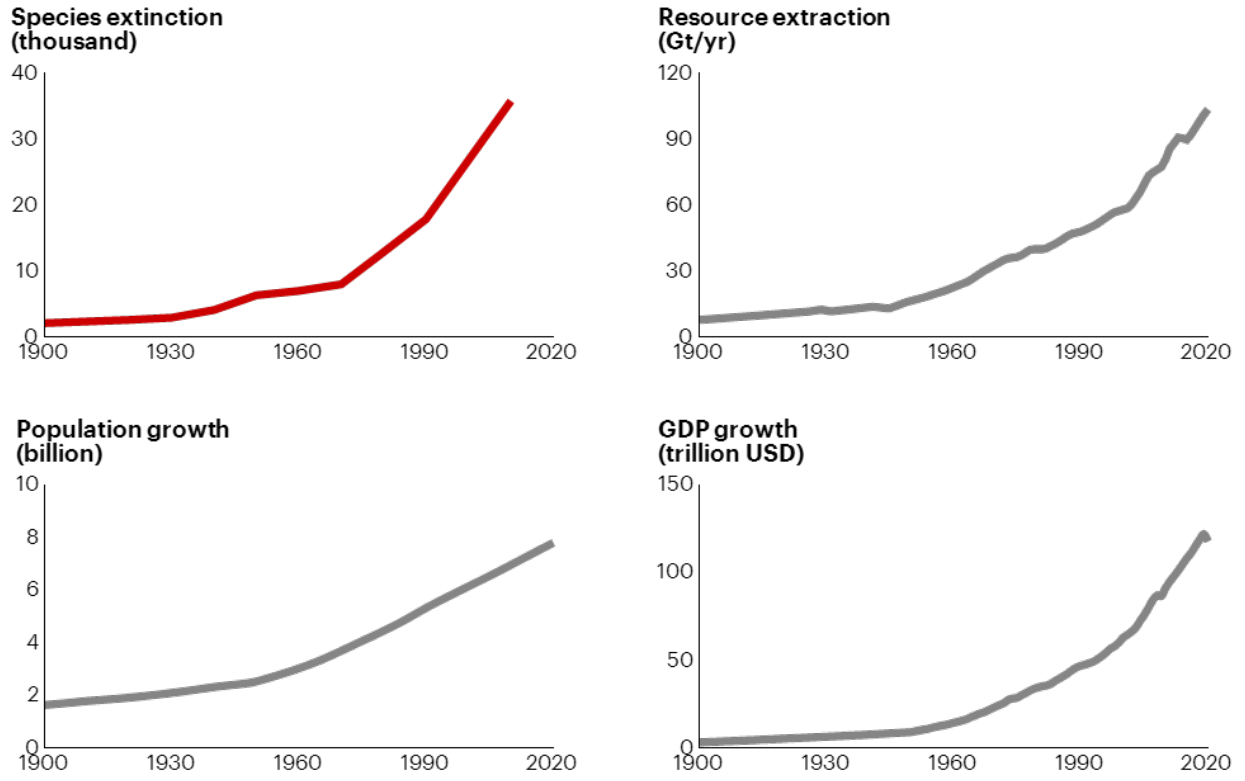


Exhibit 2: Population growth, economic growth, and consumption have fueled a 3x increase in global resource extraction by humans across supply chains between 1970 and 2020. During that same time interval, global species extinction has accelerated at a similar alarming rate[7, 8, 9, 10]

Note: GDP data for 1900-1950 is extrapolated based on available data for 1900, 1913, 1940, and 1950

Despite the severity and inherent risks associated with the nature crisis, biodiversity has historically received less attention than other global threats, most notably climate change. Luckily, this is now changing. As reported by the World Economic Forum, over 1,000 global experts and leaders expect global biodiversity loss and related environmental risks to become the most critical threats to the global economy within the coming decade (Exhibit 3).[11] In addition, studies indicate that failure to reverse the degradation of nature before 2030 can push biodiversity beyond irreversible tipping points where essential ecosystem services start collapsing and more than half of global GDP is put at risk.[12] This underlines why businesses need to improve their understanding of the impacts of the crisis and their role in reversing the current trend of biodiversity loss so they can be able to figure out how to act.

Reversing global biodiversity loss by 2030 will not be achieved by current trajectories. Halting biodiversity loss, and 'bending the curve' even further, will require increased efforts and ambitious, integrated action, both reducing current pressures to biodiversity while improving ecosystems.

[7] Scott, 2008
[8] Krausmann, et al., 2018
[9] Maddison Project Database/World Bank, 2017
[10] United Nations Population Division, 2019
[11] World Economic Forum, 2023
[12] World Economic Forum, 2020 a

Reducing pressures will require a shift toward considerably more sustainable production and consumption, while enhancing ecosystems will need to be executed by increasing the extent of land area under conservation and restoring degraded areas.[13]

Biodiversity loss and related environmental risks are top risks to the global economy

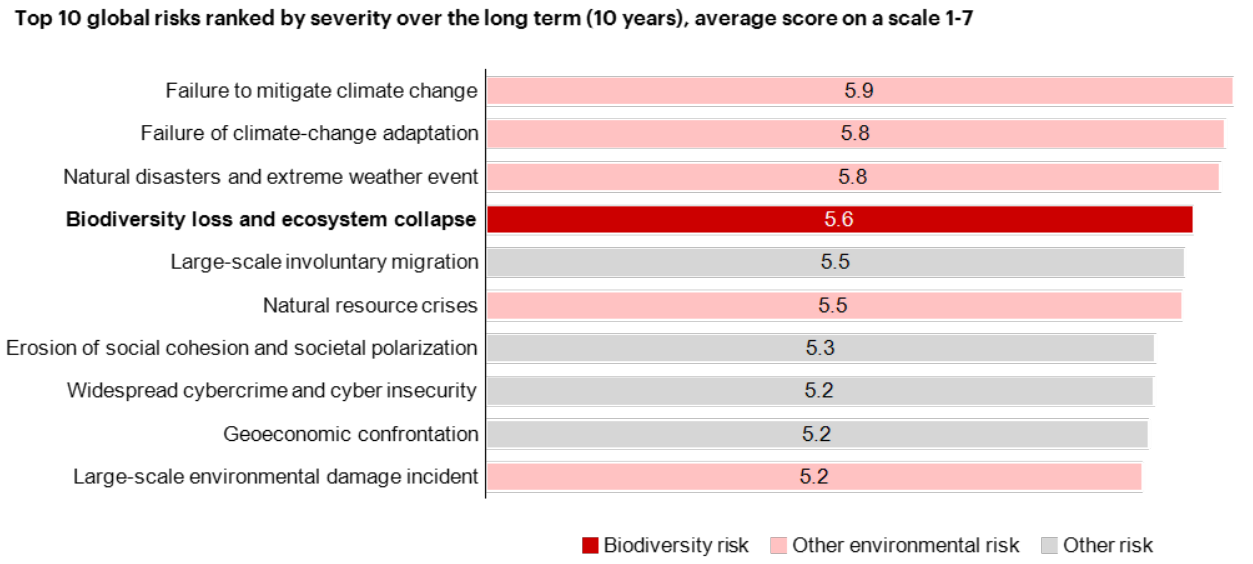


Exhibit 3: Biodiversity loss is expected to become a top risk to the global economy in the next decade[14]

While the degradation of biodiversity is a global threat, the impacts of the crisis have ramifications also on a very local scale. A large share of Sweden's historical nature loss can be attributed to changes in land use and cultivation in the pre-industrial period followed by the industrialization, which introduced more intensified agriculture, forest management, and fishery. One example is the draining of large areas of wetlands in southern Sweden to secure more arable land. Another example is the development of hydropower which has left only four rivers unregulated and free of dams and power plants.

Such historical activities explain why there is very little pristine nature left in Sweden, but biodiversity loss is ongoing and is evident also today. Out of the 21,740 known species assessed by the Swedish Red List, 2,249 (10 percent) are threatened and an additional 2,497 (11 percent) are near threatened. Notably, 201 species are already regionally extinct.[15]

The pressure on nature also becomes apparent when assessing the state of local habitats. Of the 89 Swedish habitats monitored under the EU's Habitats Directive, 77 percent have a poor or bad conservation status. (Exhibit 4). The situation is especially worrying for forest habitats (93 percent have poor or bad conservation status), grasslands (94 percent), and coastal and inland dunes (100 percent).[16] To address this issue, the Swedish Parliament has defined 16 environmental objectives,

[13] Leclère, et al., 2020
[14] World Economic Forum, 2023
[15] SLU Artdatabanken, 2020
[16] Naturvårdsverket, 2020

six of which relate to biodiversity (reduced climate impact, sustainable forests, thriving wetlands, a varied agricultural landscape, magnificent mountain landscapes, and a rich diversity of plant and animal life). However, when assessing the likelihood of reaching these six targets, the Swedish Environmental Protection Agency maintain that the prospects are dire. This further underlines the urgent need for action.[17]

Threatened species and habitats in Sweden

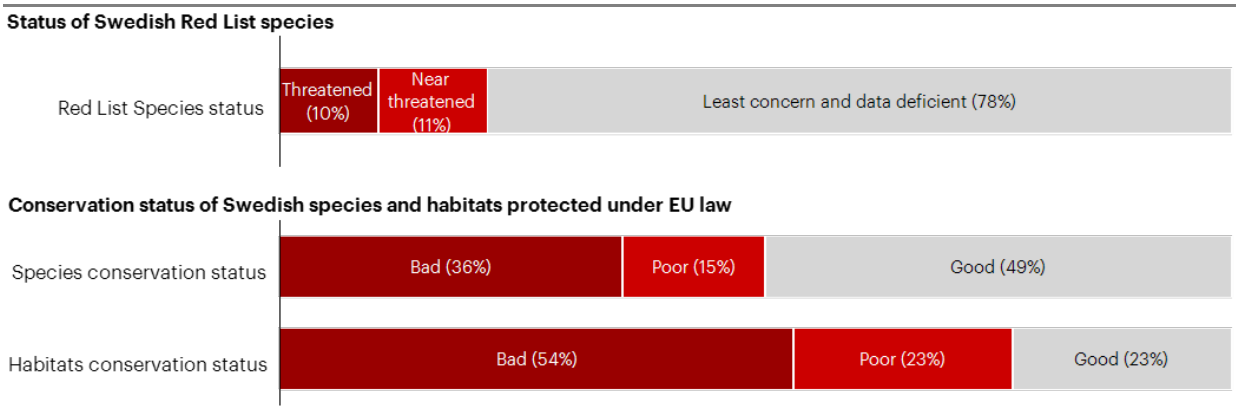


Exhibit 4: Multiple species and habitats in Sweden are threatened, and the conservation status of many protected species is poor [18, 19]

Biodiversity loss is clearly a pressing issue and awareness of the effects of biodiversity loss is increasing among both businesses and consumers. However, many still see biodiversity as just one of several sustainability issues competing for attention. The next section explores the need for a more holistic approach to nature-related issues.

Biodiversity loss is closely related to other major sustainability aspects

The biodiversity crisis is strongly linked to and must therefore be solved together with other environmental and sustainability aspects. This dual approach will both accelerate sustainable development and reduce the cost of risk mitigation.

The UN's Sustainable Development Goals (SDGs) are a key framework for identifying and prioritizing sustainability efforts – for businesses and society at large. The 17 SDGs outline what needs to be achieved to create "a better and more sustainable future for all" across themes relating to the biosphere, society, and economy.[20] The biosphere, consisting of all parts on Earth where life exists, is the most foundational part with goals that include access to clean water, halting climate change, and maintaining biodiversity through SDG 14: "Life below water" and SDG 15: "Life on land."[21]

[17] Naturvårdsverket, 2019
[18] SLU Artdatabanken, 2020
[19] European Commission & European Environment Agency, no date
[20] United Nations, no date
[21] Stockholm Resilience Center, 2016

Biodiversity is highly interconnected with multiple sustainable development goals

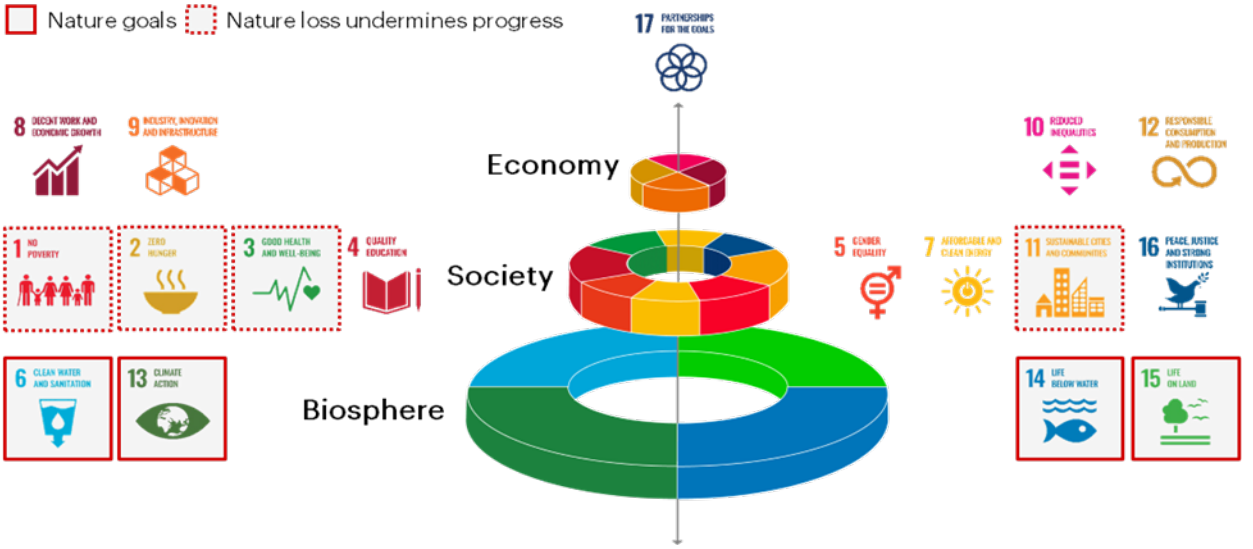


Exhibit 5: Biodiversity is the foundation for sustainable development in society and the economy[22]

An intact biosphere is absolutely crucial for maintaining an intact society and economy (Exhibit 5). If biodiversity loss continues and we fail to achieve the goals related to the biosphere, all other SDGs related to society and economy will become unreachable. According to IPBES, current negative trends in biodiversity will undermine progress toward 80 percent of the SDG targets set for poverty, hunger, health, water, cities, climate, oceans, and land.[23] As an example, nature loss threatening global food systems is putting at risk the progress toward SDG 2: "Zero hunger."

In Sweden, SDGs are widely adopted both within businesses and the public sector. Despite the Swedish Government's ambitions to realize the goals set in the 2030 Agenda for Sustainable Development, various challenges have been hindering progress. Most alarmingly when considering biodiversity, many of the national environmental objectives, including climate targets, will not be met. The Climate Policy Council of Sweden emphasizes that the measures used and the instruments available today are not sufficient to reach Sweden's long-term climate goals. Furthermore, there has been no signs of biodiversity loss slowing down in Sweden. Instead, ecosystems continue to be overexploited.[24]

While biodiversity has clear links to several of the SDGs, the topics of climate and biodiversity are especially intertwined. Climate change accelerates nature loss which in turn negatively impacts nature's resilience to climate change.[25] For example, climate change accelerates the drying of peatlands which not only has a negative impact on the species in this habitat but also releases more CO2 and lowers carbon sequestrations, thereby further accelerating climate change.[26]

Compared to pre-industrial times, temperature on Earth has already increased by 1.2°C and when looking at the concrete effects of temperature increases, the impacts on biodiversity are clear.[27] If we

[22] Stockholm Resilience Center, 2016
[23] Intergovernmental Science-Policy Platform, 2019
[24] Government Offices of Sweden, 2021
[25] World Economic Forum, 2020 a
[26] WWF, 2020
[27] Intergovernmental Panel on Climate Change, 2021

do not prevent global warming from exceeding 1.5°C, the temperature increase is forecasted to significantly diminish the number of species. The more the temperature rises, the worse the impact on life on Earth. Unless we limit warming to a maximum of 1.5°C, climate change is likely to become a leading cause of biodiversity loss.[28] If, for example, the Earth's temperature increases by 2°C as opposed to 1.5°C, the extinction risk within biodiversity hotspots will accelerate by at least 2x, according to the UN Intergovernmental Panel on Climate Change (IPCC). One reason being that increased warming causes a larger number of species to lose at least half of their habitats. An increase of more than 1.5°C is expected to have particularly severe effects (Exhibit 6). Projections also show that the northern hemisphere will exhibit much higher increases in temperatures compared to the global average.[29]

Climate change accelerates species loss

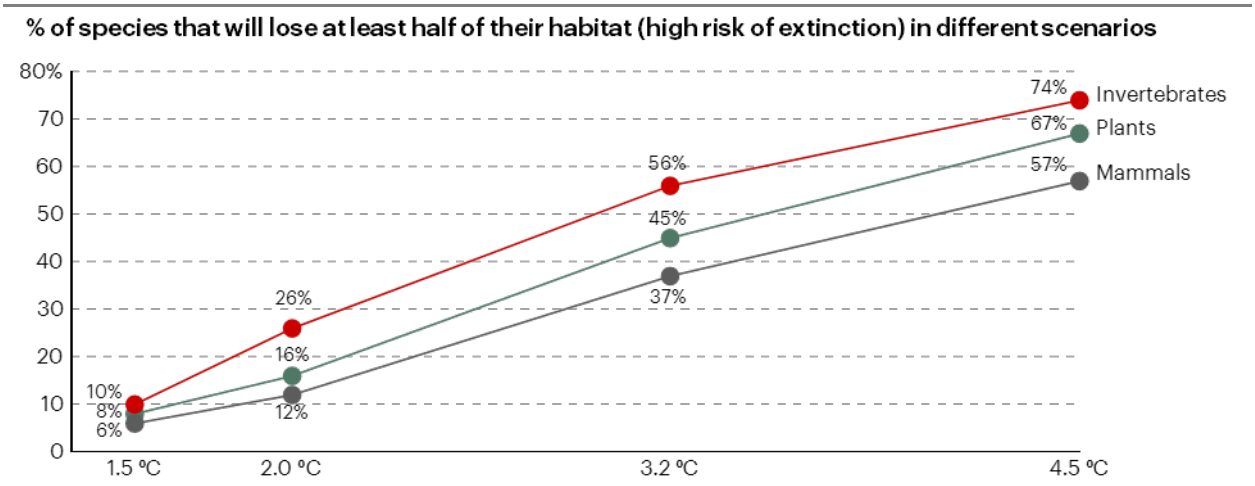


Exhibit 6: Higher temperature increases are accelerating biodiversity loss, which in turn leads to a lower resilience in nature to climate change pressures and lower carbon sequestration potential[30]

The effects of the climate crisis on biodiversity are evident also in Sweden, where climate change is considered a current or future threat factor for 396 species (of which 205 are currently threatened). The assessment of the SLU Swedish Species Information Centre is that climate change is expected to become a more significant threat to local species over time.[31]

The impact of climate on biodiversity is thus very clear, but the most recent IPCC report also strongly underlines the fundamental importance of protecting biodiversity due to its key role in enabling climate-resilient development and reducing pressures related to climate change. Healthy ecosystems like forests, peatlands, coastal & marine habitats, and agricultural lands sequester carbon dioxide, to the extent that marine and terrestrial ecosystems remove nearly 50 percent of human-created CO2 from the atmosphere.[32] Given these strong interdependencies, biodiversity loss and climate change must be tackled together.

[28] WWF, 2022 a
[29] Intergovernmental Panel on Climate Change, 2021
[30] Warren, et al., 2018
[31] SLU Artdatabanken, 2020
[32] Intergovernmental Panel on Climate Change, 2022

Businesses impact nature and depend on ecosystem services

All businesses depend on nature's goods and services to operate. In fact, more than 50 percent of global GDP is estimated to be highly or moderately dependent on nature and the services it provides. Conversely, businesses also impact nature in the places they operate and throughout their value chains, putting large pressures on nature and biodiversity.

Businesses rely on a range of ecosystem services, from provisioning services – or 'ecosystem goods' – such as raw materials and water to business-enabling regulating services such as pollination, water regulation, or soil fertility.[33] For example, agriculture is highly dependent on pollination by bees and other pollinating insects; forestry depends on complex forest ecosystems for nutrients; and the construction industry relies on timber, sand, and other raw materials.

Given businesses' dependence on nature, it should be clear that the current rate of biodiversity loss poses a major threat to the economy as well as to the role businesses play in it. The World Economic Forum estimates that more than half of the world's economic value generation is moderately or highly dependent on nature, and recent findings suggest that global biodiversity loss is expected to become one of the most critical threats to the global economy.[34, 35]

While businesses depend on nature, they are also heavily impacting biodiversity through their operations and value chain activities. The pressures they apply – both in Sweden and globally – are one of the main factors driving the biodiversity degradation that threatens business-as-usual, and current actions taken toward limiting biodiversity loss, such as reducing pollution or overfishing, are simply not sufficient. To limit the biodiversity loss-related risks for the economy and society and enable businesses to act, businesses need to obtain a comprehensive view of the pressures they put on nature. Slowing down and reversing this trend is possible but will require transformative changes across economic, social, political, and technological dimensions.

Swedish businesses recognize the threat, but underestimate their impact

While most of Sweden's largest companies are familiar with biodiversity and the threat it poses, this study shows that few companies treat it as a strategic priority, and most lack an understanding of the magnitude of their own impact.

Forty-three of Sweden's 100 largest companies participated in this survey, representing all sectors important to the Swedish economy and providing different and valuable points of view on the biodiversity crisis.

All surveyed companies are familiar with biodiversity as a concept and believe that biodiversity loss poses some degree of threat to their business. However, even though Swedish companies are at a stage where they acknowledge the biodiversity crisis, they are at different stages of maturity in terms of understanding the magnitude of their effects on nature. When asked to assess their biodiversity impacts, ~60 percent of companies believe they have low or no impact on biodiversity

[33] WWF, 2022 b
[34] World Economic Forum, 2020 b
[35] World Economic Forum, 2023

locally in Sweden, while ~40 percent believe they have low or no impact globally. Furthermore, the extent of acting on the issues at hand varies across industries and individual companies. Around 45 percent have no initiatives addressing biodiversity specifically and only one in three respondents have included a specific section on biodiversity in their sustainability strategy.

Businesses further removed from primary production and resource extraction are generally not fully considering their biodiversity impacts across their value chains. Certain sectors with evident impacts on nature – such as forest products, extractive industries, agriculture, food & beverage, and energy production – address biodiversity more commonly as a strategic priority and are on average more aware of opportunities related to reducing nature impacts. Other sectors – such as industrials & materials, non-food consumer goods, and health & pharma – treat biodiversity as a lower strategic priority, and a majority of respondents from these sectors report that they have no biodiversity initiatives in place.

Comparing survey results from Sweden with results from Denmark and Finland reveals that their overall level of maturity in terms of awareness and efforts is fairly comparable. This becomes evident when looking at the estimated impact on biodiversity, as around 20-25 percent of companies in all three countries believe they have a large impact. A comparable share of Swedish (~45 percent) and Finnish (~50 percent) companies also perceive biodiversity loss as a large threat, while fewer Danish companies (~30 percent) are of the same opinion. However, Swedish companies seem to lag behind their Finnish and Danish counterparts in terms of acting on their impact, as ~45 percent of Swedish respondents report that they have no initiatives addressing biodiversity compared to ~40 percent and ~30 percent in Denmark and Finland, respectively.

This survey focuses on Sweden's largest companies as they are critical in driving the required change and have the resources to address the problem. However, small and medium enterprises (SMEs) also have equally important roles to play in reversing the negative trend of biodiversity loss. As SMEs make up a significant share of the Swedish economy, accounting for 60 percent of total employment in Sweden, it is critical to ensure that they embark on the biodiversity journey alongside large corporations.[36] In addition to constituting a significant share of the general economy, SMEs are also able to contribute to positive development by being more flexible in driving innovative, sustainable solutions, and further accelerating the uptake of biodiversity in business models.

[36] OECD iLibrary, no date

"No matter where you operate, it's important to address biodiversity impact. Even if we don't have full control over it, we have a responsibility."

Marcus Ihre
Sustainability Manager Supply Chain, Systembolaget

© OLA JENNERSTEN / WWF-SWEDEN

Chapter 2:

Swedish businesses have significant impact on biodiversity

Swedish businesses exert pressure on biodiversity in several ways, both in a local Swedish context and globally through their supply chains and operations.

Business representatives across Sweden recognize that their activities impact biodiversity, but exactly how and why remains unclear to many. An overview of the global drivers and locally relevant areas of impact can help businesses understand their biodiversity impact.

Key takeaways

- Based on work by UN's biodiversity expert panel, IPBES, this chapter presents five main global direct drivers of biodiversity loss: land, freshwater and sea use change, resource exploitation, pollution, invasive species and diseases, and climate change.
- This report identifies nine key areas, related to the global direct drivers, where Swedish businesses negatively impact biodiversity, with the most important ones being cultivation of crops and livestock, forest management, and water management.
- Each Swedish business has direct and/or indirect impact on biodiversity, but the magnitude of each type of impact and importance of addressing it differs based on the business sector and the characteristics of each business.

The five main drivers causing global biodiversity loss

Swedish businesses impact biodiversity both at home and abroad. IPBES has classified five main science-based drivers of biodiversity loss. These drivers have clear connections to human and business activities and all five apply to a Swedish business context.

Executives at leading Swedish businesses express an urgent need for a methodology that can help them link specific business activities to biodiversity loss. Five global drivers of biodiversity loss can

Biodiversity loss stems from five main global direct drivers linked to human activity

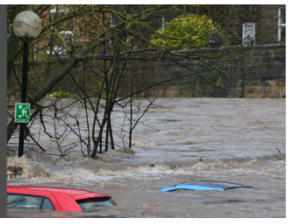
A Land, freshwater and sea use change		Modification of nature by complete removal, fragmentation, or reduction in quality of ecosystems, caused by activities such as unsustainable agriculture and forest management, infrastructure, construction, and extraction of metals, and minerals.
B Resource exploitation		Direct exploitation through unsustainable hunting, fishing, harvesting practices, as well as water, soil, and organic resource extraction, and indirect exploitation when resources are unintentionally removed (e.g., bycatch in fisheries).
C Pollution		Direct impact on ecosystems and species by e.g., oil spills, incineration, chemical substances used in production sites, microplastics, pesticides, and excess nutrient loads.
D Invasive species and diseases		Non-native species competing with native species for space, food, and other resources, preying on native species, or spreading non-native diseases. Such species/diseases can spread involuntarily via ballast water or via imported living material, e.g., exotic garden plants.
E Climate change		GHG emissions causing increased temperatures, which result in extreme weather events that require species to adapt (if possible) and lead to seasonal events such as migration and reproduction occurring at the wrong time.

Exhibit 7: The five global direct drivers of biodiversity loss, based on classification by IPBES [37, 38]

[37] IPBES, no date

[38] Bain analysis

serve as a starting point: 1) Land, freshwater and sea use change, 2) Resource exploitation, 3) Pollution, 4) Invasive species and diseases, and 5) Climate change (see Exhibit 7).

From a global perspective, all five drivers play a key role in our understanding of the biodiversity crisis. However, when assessing the Swedish business context, it becomes clear that the first three drivers (A-C) describe the clearest direct link between business activity and biodiversity loss. Invasive species and diseases (D) has relatively limited direct links to Swedish business activities and is in general a smaller problem in Sweden compared to other drivers, but it is still an important issue to focus on, for example, in relation to ballast water. Climate change (E) on the other hand plays a key role in the loss of habitats and species, but the link between the actions of individual businesses and biodiversity loss is not always as direct. While businesses that overexploit fish populations or use land in ways that destroy habitats can be directly connected to loss of specific species or habitats, emissions caused by businesses cannot be directly linked to specific biodiversity loss. Instead, they contribute to climate change and indirectly impact biodiversity on a more systemic level. Even so, climate change remains a key factor that needs to be featured high on the agenda when assessing businesses' impact on nature.

In addition to the five direct drivers of biodiversity loss, there are several underlying indirect drivers. As described in the Living Planet Report, these indirect drivers of biodiversity loss include human population growth, technological development, and overconsumption,[39] with especially the latter two having close links to business activity. The indirect drivers affect biodiversity primarily by accelerating the impact of the direct drivers. Additionally, our current economic system's inability to correctly incorporate nature-related risks, dependencies, and impacts in financial market pricing and financial valuations acts as a meta-driver that further exacerbates the effects of the other indirect drivers.[40] It is beyond the scope of this report to describe each indirect driver for Swedish sectors in detail, but system-level change and solving issues such as overconsumption of natural resources are key to achieving a nature preserving economy.

While the drivers of biodiversity loss are key for our understanding of the biodiversity crisis, the ways in which businesses impact nature need to be more concretely defined. For this reason, the next section breaks down the drivers into more detailed areas of impact that are relevant in a Swedish business context.

Swedish businesses place substantial pressure on biodiversity

Swedish businesses have a significant negative impact on biodiversity – locally, globally, directly, and through value chains. Nine areas of impact stand out.

Many Swedish businesses are aware that they impact biodiversity but lack an understanding of how this impact manifests itself. The list of direct drivers of global biodiversity loss, presented above, provides a high-level understanding of the mechanisms. To apply the drivers to a Swedish business context, we compiled data and WWF expert insights on how Swedish businesses are contributing to different areas of biodiversity impact and how this impact could cause disruption to ecosystem services that Swedish businesses rely on. Using this approach, we have identified nine primary

[39] WWF, 2022 a

[40] Dasgupta, 2021

areas of impact where Swedish businesses contribute to the drivers of biodiversity loss (Exhibit 8). The listed areas of impact were developed using the IUCN's global Red List of Threatened Species as a point of departure and cross-checked with the threats from the Swedish Red List Assessment of Threatened Species (from now on referred to as the "Swedish Red List"). [41, 42]

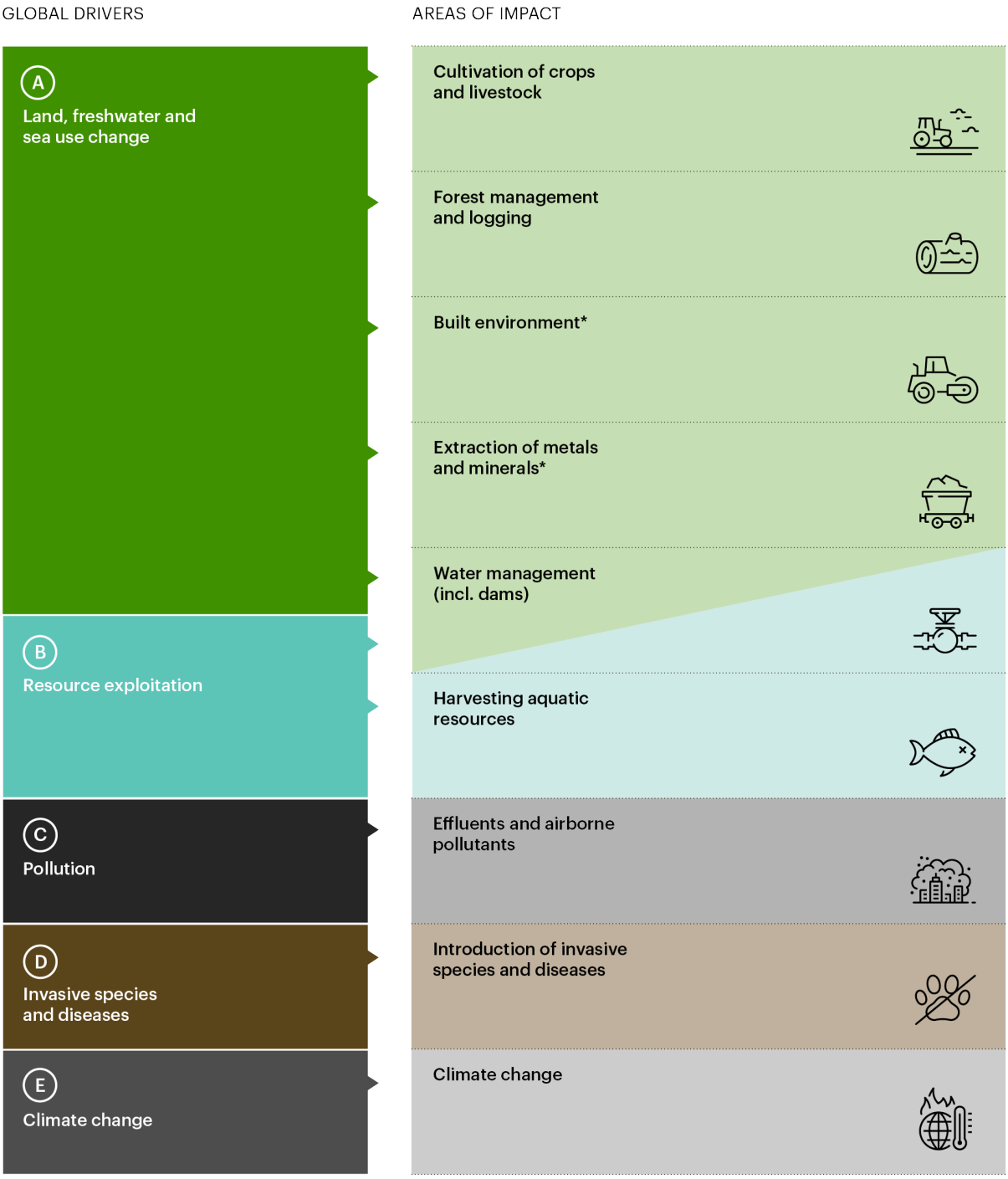
Because the areas of impact describe how Swedish businesses are impacting biodiversity, they are also key to understanding where Swedish businesses should initiate action. The impacts stem from direct business activities across all sectors, such as incineration or use of different substances (contributing to climate change or other pollution), extraction of resources, construction of built environment, and more (Exhibit 9). All areas of impact put serious strain on nature, but the larger land use-related impacts (cultivation of crops and livestock, forest management and logging, and water management) are having an especially high impact on biodiversity in Sweden overall. Cultivation of crops is of particular importance in the southern parts of Sweden where much of the agricultural land can be found, while negative impacts of forest management differ between southern and northern Sweden due to different land use history. The main impact of water management is mainly felt on rivers of all sizes throughout the country, owing largely to the construction of dams and the loss of wetlands.

As mentioned previously, the areas of impact are defined as those that are most relevant for Swedish businesses but reflect both impact from activities in Sweden and the pressure Swedish businesses place on global ecosystems. Many Swedish businesses have production facilities abroad and therefore have direct impact on biodiversity in other countries through, for example, construction of facilities, use of large volumes of freshwater, and pollution of local environments. More crucial than the direct impact abroad, though, is the fact that most Swedish businesses rely on global supply chains to provide them with raw materials or goods for sale, and thereby put indirect pressure on nature in all parts of the world. This is particularly acute for businesses relying on risk commodities such as soy, palm oil, coffee, cacao, and cotton as well as products from mining (e.g., rare earth elements), though all businesses have a role to play in limiting their supply chain impact. This is also true for Swedish businesses funding activities abroad.

[41] IUCN, no date

[42] SLU Artdatabanken, 2020

Identified areas of impact have a clear link to the direct global drivers of biodiversity loss



*A minority of associated business activities could be classified as resource exploitation. This is not illustrated in the figure.

Exhibit 8: The link between global drivers of biodiversity loss and identified areas of impact

Swedish businesses affect biodiversity through nine specific areas of impact

Cultivation of crops and livestock 	Global: Land conversion and degradation through value chain impact (related to e.g., sourcing of feed or fibres). Large scale monocultures and loss of mosaic landscapes. Sweden: Intensive agriculture with limited crop diversity resulting in low soil quality and lack of biodiversity bearing elements; degradation of rich biodiversity habitats on previously traditionally managed mowing fields.
Forest management and logging 	Loss of forests with High Conservation Values, including old-growths forests. Loss of connectivity for wildlife. Degradation of forest resilience.
Built environment 	Conversion and destruction of habitats and ecosystems for urban and industrial developments as well as infrastructure.
Extraction of metals and minerals 	Destruction and degradation of natural habitats through exploitation and resource removal, including the drilling, quarrying, and extraction of non-renewables (including metals, minerals, rocks, and fossil fuels).
Water management (incl.) dams 	Disruption of natural bodies of water (rivers, lakes, wetlands) either through deliberate action (e.g., dams, drainage, and straightening of water courses) or as a result of side effects of constructions for other purposes. Inefficient or excessive water use in value chain (agriculture and production) depleting global water resources.
Harvesting aquatic resources 	Overfishing and excessive extraction of aquatic resources. Destructive extraction methods (e.g., bottom trawling) disrupting marine ecosystems.
Effluents and airborne pollutants 	Air- and waterborne pollutants from e.g., agricultural and forestry activities (pesticides, organic and chemical fertilizers, bio-based nutrients, heavy metals and soil particles) lead to eutrophication and other forms of degradation of air and water habitats.
	... These seven areas of impact act alongside introduction of invasive species and diseases, and climate change

Exhibit 9: Description of identified areas of impact [43, 44]

[43] WWF experts

[44] Bain analysis

While the areas of impact summarize the main ways in which Swedish businesses impact biodiversity, the importance of the different areas of impact differs across sectors. The survey carried out for this report shows that Swedish businesses' perception of own biodiversity impact varies across sectors, with less than 20 percent of companies believing that they impact biodiversity to a large extent. However, perceptions of impact do not necessarily match reality, and all sectors have work to do to reduce their effects on biodiversity. The next section takes a deep-dive into specific sector impacts and looks at the ways in which the main business sectors in Sweden impact biodiversity.

Biodiversity impact differs by sector

All Swedish business sectors affect biodiversity, but impact mechanisms differ across sectors. Some sectors have a more direct and local impact, while others affect biodiversity more indirectly and abroad. Still, all Swedish business sectors have a role to play in combatting biodiversity loss.

Exhibit 10 presents an overview of the extent to which Swedish business sectors contribute to the direct drivers of biodiversity loss, directly and through supply chains. The extent of impact was estimated through iterative dialogues with WWF experts, drawing on their combined knowledge and experience to provide a qualitative assessment of the extent to which each sector impacts biodiversity. The subsequent sections provide more details on how the sectors impact biodiversity. They cover both businesses in primary sectors (e.g., agriculture and forestry) that mainly have direct impacts and those in secondary or tertiary sectors (e.g., producers of consumer goods and industrials) that exert most of their impact indirectly through value chains.

It is worth noting that while direct impacts for each sector are closely related to the sector's activities, all sectors contribute to some extent to the indirect impacts caused by built environment and transport of goods (e.g., through driving demand for buildings, contributions to emissions, or introduction of non-native marine species). These impacts are important on a national level (with e.g., transport causing about 12 percent of Sweden's greenhouse gas emissions)[45] but for many individual sectors they are small in comparison to the sector's other biodiversity impacts. Nonetheless, it is important to keep them in mind.

It is also worth mentioning that secondary sectors have many biodiversity impacts in common. The use of inputs from primary sectors and the resulting demand for resource extraction is a common theme across most secondary sectors, and even though the types of inputs and their particular issues differ, mechanisms are similar. Use of freshwater in production (particularly abroad) and energy to run stores and factories are also key areas of impact for secondary sectors, as are emissions of greenhouse gases and pollution resulting from production.

Impacts that are similar across sectors are not described in detail for each sector, but certain aspects are highlighted if deemed particularly important. Swedish businesses have a unique responsibility in addressing impacts in Sweden, so the descriptions cover these in more detail than those abroad, but reducing all impacts regardless of location should be considered of high importance. The

[45] Statistics Sweden, 2022 a

impact abroad may also be particularly time sensitive, since a lot of the active destruction of habitats now happens there, and it often happens fast. In fact, all areas designated as "high-priority areas for risk mitigation" by the WWF are located outside Europe.[46] Also, while the descriptions of sector impact hold true on an industry level, it is worth remembering that each company is different and needs to understand its own impact when choosing which actions to undertake to reduce pressure on nature.

[46] WWF, 2022 a

All Swedish businesses impact biodiversity and need to take responsibility for impacts across the entire value chain

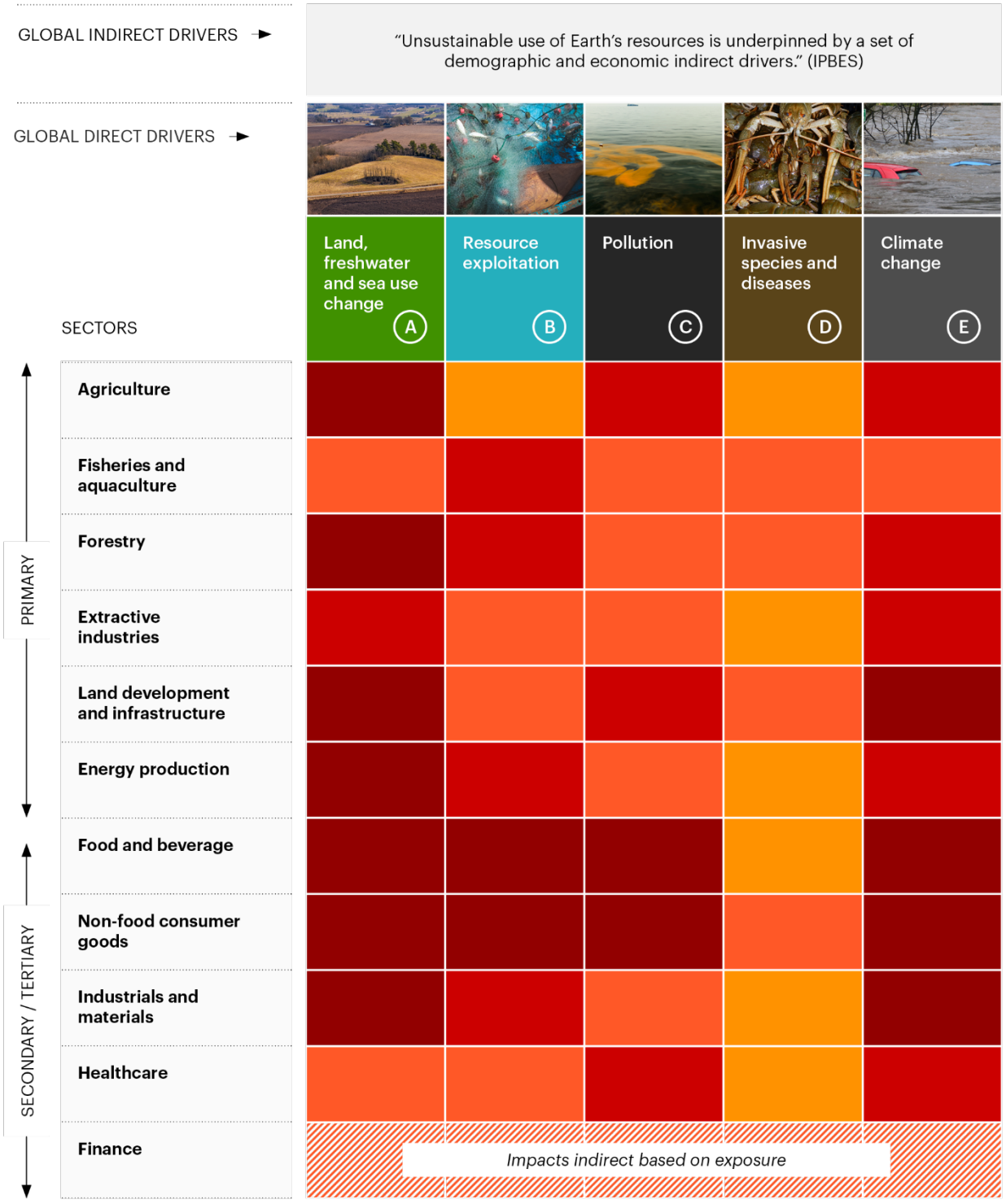


Exhibit 10: Qualitative assessment of impact on biodiversity by different Swedish business sectors, directly and across the value chain. [47, 48, 49] Comparable within each sector only. See Exhibit 7 for definition of drivers.

AGRICULTURE

About 7 percent of Sweden's land area is used for agriculture. This is comparable to the numbers for both Finland (7 percent) and Norway (3 percent), but significantly less than in Denmark (60 percent).[50] Nevertheless, this smaller scale does not mean that the biodiversity loss fueled by agriculture in Sweden is negligible – agriculture contributes significantly to Swedish pressures on nature. At the same time, it is important to recognize that the absence of certain agricultural practices, and especially the decline in meat and milk production through extensive grazing of semi-natural pastures, poses an additional and significant threat to biodiversity in Sweden.

Additionally, approximately 50 percent of the food[51] consumed in Sweden is produced abroad,[52] and these agricultural products contribute significantly to the global biodiversity impact of Swedish businesses. While this section covers the local impact of Swedish agricultural businesses, the impact of imports will be covered under the food and beverage sector.

Through conversion of habitats, agriculture has historically played a key role in the loss of Swedish biodiversity. This includes the loss of species-rich traditional agricultural landscapes such as semi-natural pastures, but also drainage of wetlands and widespread lowering of water levels as well as complete draining of lakes. Particularly in the Southern parts of Sweden, this has led to loss of a significant share of wetlands. In some agricultural areas, as much as 90 percent of the wetlands have disappeared.[53] In addition to the direct destruction of important habitats, this loss of wetlands has contributed to eutrophication of the sea since healthy wetlands play a role in water filtration.

Today, low profitability for animal husbandry in less favorable areas for agriculture (forest regions, hilly regions, mosaic landscapes, less favorable climatic conditions/short growing season etc.) has led to the abandonment of natural pasture grazing and key habitats have turned into forest or been overgrown with bushes and trees. When compared to the 19th century, only a small fraction of semi-natural pastures, forest pastures, and meadows remain. Still, these habitats are crucial for more than 1,300 red-listed species, and their disappearance currently constitutes one of the main threats to Swedish biodiversity.[54] Loss of natural and diverse wood land edges and islands in the agricultural landscape is also a top concern in this context, and restoration of these could help biodiversity.[55]

Practices associated with intensified farming place additional pressure on biodiversity in Sweden. This is especially true for practices seen in conjunction with more intensive feed production and spatial concentration of animal production. Lack of sustainable crop rotation and especially monoculture of annual crops lead to soil degradation and a decrease in soil organic carbon. Agricultural practices that include bare soil also increase the risk for particle runoff to surrounding bodies of water. Meanwhile, high input of fertilizers increases the risk for nutrient leakage, and the use of mineral fertilizers requires accelerated phosphorus mining, which leads to additional destruction of natural habitats. Effluents from pesticides (chemical or organic) as well as airborne pollutants have further negative impacts on nature. Use of chemical pesticides can have a direct negative impact on pollinating insects, which are important for higher trophic levels and provide important ecosystem services to the agricultural sector. Together, the aforementioned factors pose a real threat to the Swedish biodiversity because they harm important habitats (such as the Baltic Sea) through increased nutrient load, particle load, and presence of harmful chemicals.

[47] WWF experts
[48] Bain analysis
[49] ENCORE, no date
[50] World Bank, no date
[51] In monetary terms
[52] The Federation of Swedish Farmers, 2022
[53] Wesström, 2017
[54] SLU Artdatabanken, 2020
[55] Jordbruksverket, 2018

In addition to impacts from intensified agriculture, closing farms due to economic constraints as well as the loss of arable land due to construction of infrastructure and buildings lead to a pressure to expand agricultural land in other parts of the world, thereby contributing to global conversion of habitats. This is also true for the supply chain impact of purchasing of soy used in, for example, poultry and pig feed, through which agricultural businesses contribute significantly to global biodiversity loss. Though minor in comparison, construction of agricultural facilities can also contribute to the fragmentation of habitats.

Climate change and its many impacts on biodiversity are also further accelerated by negative impacts from agriculture. Greenhouse gases are released from the ground during tilling and, depending on the type of soil, this can result in significant emissions into the atmosphere. Emissions of greenhouse gases such as methane from livestock farming also have a warming effect but methane emissions from livestock have decreased by approximately 30 percent in the last hundred years due to a declining livestock population in Sweden. Though less significant in scale than other sources of emissions, heavy agricultural machinery also contributes to climate change when run on fossil fuels. These fuels impact biodiversity both through the extraction process and through emissions when the fuels are used.

FISHERIES AND AQUACULTURE

Swedish fisheries produce only a minority of the seafood consumed in Sweden,[56] so the impact from this sector lies mainly abroad. However, fishing in Swedish waters still impacts the country's marine habitats and fish and crustacean populations. Overfishing in particular, but also bycatch, discards, and lack of control and monitoring, are threats to both sensitive fish populations (e.g., the cod in the Baltic Sea) and entire marine ecosystems. Though there are regulations, adherence to these is often poorly monitored and controlled, and fishing quotas are often set without taking an overall ecosystem approach into consideration. Unsustainable fishing practices therefore continue, further exacerbating the pressure on biodiversity in the Baltic Sea which is already suffering from widespread eutrophication and acidification.

It is, however, not only the number of fish caught that puts pressure on biodiversity, but also the methods used. Bottom-trawling is one of the most harmful fishing methods available, in part due to the physical damage it causes to the seabed. In Sweden, bottom-trawling is commonly used when fishing for cold-water shrimp off the West Coast, causing long-term damage to the surrounding marine ecosystems in the process. Fuel and other effluents from fishing boats further add to these pressures and can adversely affect marine habitats.

Though somewhat different in nature than fishing, aquaculture in Sweden is also applying pressure on biodiversity. Aquaculture may be associated with a number of environmental impacts, with leakage of nutrients being especially relevant in a Swedish context. This type of leakage is small in scale compared to other sources of nutrients (e.g., agriculture), but the heightened nutrient load nonetheless causes oxygen depletion, harming many fish and vegetation species. An additional issue in certain Swedish lakes is the escape of cultivated fish from aquaculture farms. These fish can spread diseases and pathogens and compete with wild fish populations for food. Use of antibiotics, pollution, and damage to habitats and the seabed are other potential impacts of aquaculture that need to be taken into account. Some of these impacts could be mitigated by moving aquaculture compartments to closed recirculatory systems on land.

Feed used by the aquaculture industry can also contribute to biodiversity impact. Feed for fish and crustaceans consists of both marine, plant, and animal-based components that require extensive wild-capture input from the oceans and extensive land-based farming practices and, with it, the associated use of land, meaning that demand for aquaculture feed enables further land conversion to agricultural farmland. The severity of this impact differs depending on the species farmed, but feed for e.g., Arctic char, a commonly farmed species in Sweden, can be problematic.

[56] Axfoundation, no date

FORESTRY

Forests[57] account for 69 percent of the Swedish land area and are home to around half of the red-listed species in the country.[58] Although forest management is only allowed on productive forest land, it still has a direct impact on 84 percent of the forest area and 58 percent of Sweden's total land area.[59] Forest activities occur at stand level[60] and direct impact largely occurs locally, i.e., at the site of the forest, but the scale and impact of forestry activities aggregate to put significant pressure on biodiversity. Impact also reaches beyond Swedish borders as some Swedish forestry companies and other businesses source and process wood products in many other countries.

Harmful forest management activities take many forms, but include clear-cutting, planting of forest monocultures, construction of forest roads, and drainage of peatlands. It is estimated that 97 percent of final felling of trees in Sweden is practiced with clear cutting.[61] Unlike many other European countries, Sweden has no defined legal limit for a clear-cut area. In northern Sweden, almost 50 percent of all felling notifications to the Swedish forest agency are larger than 10 hectares,[62] though some of these cover areas far larger at up to 1,000 hectares.[63] Large clear cuts combined with low retention of trees inevitably cause radical changes to forest habitat and threaten biodiversity because it removes substrates, changes hydrology and microclimate, and breaks the linkage of interaction between species. Today, close to 400 threatened species living in conifer-dominated forests are directly threatened by Swedish clear-cutting practices.[64] For instance, hundreds of mycorrhizal fungi species are currently threatened because the symbiosis with trees breaks down as a result of clear-cutting.[65]

Clear-cut areas are often put under additional pressure as subsequent soil scarification for planting further undermines the living conditions for many species. Soil disturbance also increases risk of silt and release of soil bound mercury leaking into water courses. The subsequently established production forests are far less diverse than natural forests and are typically dominated by trees of one species and of the same age. Spruce is the tree species most frequently planted, while naturally regenerating broad-leaved trees are at risk of being removed when cleaning and thinning are practiced. The production forests are generally fast-growing, dense, and dark forests, which are unsuited as habitats for both rare and common species. For instance, ground lichens that are important to Sami reindeer herding have decreased by 70 percent in northern Sweden since the 1950s[66] and blueberry shrubs by 25 percent since the 1990s on average for Sweden.[67]

Forest activities also contribute to loss of important habitats through harvesting of forests with a high degree of naturalness and replacing them with production forests. It is estimated that about 16,000 hectares of so-called nature-type classified forests[68] are harvested annually.[69] This is part of the reason why 14 of the 15 forest types reported by Sweden to the EU, according to The Species and Habitat Directive, do not have favorable conservation status.[70] Using current practices with production forests with 50-90 years of rotation with insufficient retention cannot replace the loss of conservation values that old-growth forests and large old trees exhibit.

The presence of dead wood is also related to old-growth forests. Dead wood is a crucial habitat for many threatened species and as the amount of dead wood decreases, these species struggle to survive.

[57] Forests according to FAO definition
[58] SLU Artdatabanken, 2020
[59] Riksskogstaxeringen, no date
[60] A forest stand is defined as a continuous group of trees of uniform character
[61] Swedish Forest Agency has estimated that only three percent of managed stand are practiced with continuous cover or gap cutting forestry
[62] Swedish Forest Agency, 2022
[63] Avverkningskoll, no date
[64] WWF, 2022 c
[65] WWF experts
[66] Swedish University of Agricultural Sciences, 2022 a
[67] Swedish University of Agricultural Sciences, 2017
[68] "Naturtypsklassad"
[69] Swedish University of Agricultural Sciences, 2020
[70] Naturvårdsverket, 2020

Although the amount of dead wood has increased on average in the managed forests in the last decades, it has increased from very low levels and not for all tree species. Apart from the harvesting of stem wood, removal of dead wood and logging residue (tops, branches and stumps) from the felling site may occur with the purpose of using it for bioenergy. This may further undermine living conditions for species but also increase risk for damage to soil and water courses.

In addition to the direct impacts on biodiversity, forestry is also closely linked to climate change. This is a complex topic, and it is beyond the scope of this report to discuss the climate impacts of forestry in detail. However, it is worth briefly mentioning that, for example, the harvesting of wood and soil preparation related to forest management are activities that can be connected to the release of carbon stored in the ground and forest carbon sinks.

EXTRACTIVE INDUSTRIES

Sweden is one of the Europe's leading mining nations. The country accounts for 93 percent of all iron ore produced within the EU and holds a position as one of the largest producers of other base metals.[71] In total, mines and limestone quarries occupy around 170 square kilometers of Sweden.[72]

The main impact on biodiversity from mining activities is the construction of the mines themselves and the resulting fragmentation of habitats. Despite tightening of regulations such as restoration requirements aimed at minimizing this impact in the long run, nature's scars are often permanent and with existing mines, much of the impact has already taken place. In addition to the mines themselves, construction of related infrastructure (e.g., roads and electric lines) puts additional pressure on the environment through the fragmentation of habitats. Pollution in the form of leakage of chemicals can put strain on local water systems, and emissions from transport and use of machinery contribute to climate change. Overall, the mining and minerals industry is currently responsible for about eight percent of Sweden's carbon emissions.[73] Extraction of other materials (e.g., sand and rocks) have similar impact on biodiversity as traditional mines, especially regarding fragmentation of habitats.

In the local Swedish context, extraction of peat from peatlands also puts pressure on both biodiversity and climate. Harvesting peat typically involves lowering the water levels to achieve a drier surface, and this reduced water supply disrupts the local ecosystem. The water level is also crucial for the capacity of the peatland to sequester carbon, so when water levels are lowered, more carbon is released into the atmosphere. Many Swedish peatlands are also affected by ditching in the past and in need of restoration to maintain or increase biodiversity.

[71] SveMin, no date a
[72] SveMin, no date b
[73] SveMin, 2019

LAND DEVELOPMENT AND INFRASTRUCTURE

Land development and infrastructure impact Swedish biodiversity by transforming natural habitats into urban living and commercial spaces and extracting the raw materials required for such developments. With built environment covering around three percent of the country's total area in 2015, this impact is far from negligible.[74] Impacts on biodiversity are typically local and largely linked to land use. For existing built environment, much of the impact has already taken place, but new construction projects are an ongoing cause of land conversion.

Built environment for commercial, logistical, or housing purposes requires the clearing of natural areas and therefore have direct impact on biodiversity, often severely degrading and diminishing important habitats. The impact is usually substantial, including the complete transformation of natural forests, meadows, and other habitats. Aquatic habitats are also impacted as water is used as a direct input for cement and the extraction contributes to the harmful overuse of water resources.[75] Additionally, natural water cycles are often disrupted by construction, as water can no longer return to the soil and enter the groundwater when large areas are paved over with asphalt or covered with buildings. This has further effects on habitats that depend on this water.

The construction sector also has indirect impact on nature through, for example, the extraction of metals and minerals. These resources are used as direct input in production and construction and extracting them contributes directly to the fragmentation of habitats. Sand in particular is a commonly used input in construction materials, used for cement and concrete work. Further, building materials such as timber are commonly used and drive the need for logging of forests.

Pollution from effluents, fuel spills, and the use of chemicals also negatively impact biodiversity but are often an unfortunate side-effect of infrastructure and construction activity where heavy machinery is involved. Long-term contamination of the surrounding environment can also originate from buildings and construction materials and then be channeled to vulnerable habitats through sewage water effluents and storm drains. Furthermore, construction projects also disturb contaminated sediments in coastal areas and may reactivate the hazardous substances in the soil.

[74] Statistics Sweden, 2020

[75] Miller, 2018

ENERGY PRODUCTION

The energy sector impacts biodiversity directly through the construction of necessary production facilities and infrastructure, but also indirectly through sourcing of fuels and emissions contributing to climate change. Different types of energy production have their own distinct challenges, but all have potential to reduce the impact they have on biodiversity.

Hydropower is a key source of electricity in Sweden, accounting for 45 percent of electricity generated.[76] While production of hydropower has a low carbon footprint, construction and operation of dams put significant strain on biodiversity in river ecosystems. The process of damming a river leads to habitat fragmentation as areas upstream are flooded while the river downstream receives a reduced or, at times, completely obstructed flow of water. Dams also cut off migration routes and unless routes to bypass the dam are constructed, this can make it impossible for migratory fish to reach their spawning grounds. In Sweden, this is the case in several rivers for species such as salmon.[77]

The biodiversity impact of dams is clearly direct, but also other types of construction related to energy production put pressure on biodiversity. Nuclear power plants, also crucial for electricity production in Sweden, require water for cooling that impact temperatures in recipient water bodies. These power plants also produce hazardous nuclear waste that can have significant impact on nature if not contained properly.

Wind turbines, set to be a growing source of energy in the future, can also pose a threat to biodiversity. This is true especially at the site of construction. Impact results both from direct habitat fragmentation and because the wind turbines can disturb birds and at times cause deadly collisions.[78]

Solar power and solar heating currently occur at a limited scale in Sweden but are expected to increase. Land use for solar technologies can compete with other land uses, in particular agricultural production, and thus contribute to increased pressure on nature.

That the burning of fossil fuels contributes directly to climate change through emission of greenhouse gases is rather well-known, but fossil fuels used as input in energy production also put pressure on biodiversity in other ways. For example, biodiversity impact through supply chains is worth highlighting here, as drilling for and extraction of crude oil causes direct habitat fragmentation and pollution in other parts of the world.

Biofuels, which are often based on agricultural or forestry products, have the same impact on the environment as cultivation for other purposes. In this context, it is important to distinguish between primary and secondary biomass for energy, where the former is extracted for energy production, while the latter is biomass from by- or co-products in the industry. It is not uncommon in Nordic forest management to extract logging residues or even some stem wood for energy, often used in Combined Heating Plants (CHP). Dead wood and residues can be important for both biodiversity and the carbon-nutrient cycle in forests. Hence, primary biomass extraction for energy can pose an additional threat to species and forest eco-system functions if not regulated properly.[79]

Regardless of energy type, constructing power lines contributes to habitat fragmentation and, as the need for renewable energy and batteries increases, the sourcing of rare earth elements and minerals becomes a growing concern. Mining activities related to the extraction of these often have significant impact on biodiversity in the local area.

[76] IEA, 2022, Number refers to 2020
[77] WWF, no date a
[78] Naturvårdsverket, 2017
[79] WWF Experts

FOOD & BEVERAGE

The Swedish food and beverage sector is significant because of its revenue and domestic outreach. The sector depends highly on input resources produced by the agricultural sector – in Sweden and abroad – and thus contributes to biodiversity impact through supply chains. In 2021, the value of Swedish food imports and beverage products amounted to SEK 152 Bn,[80] equivalent to just below half of total food and beverage sales in the country.[81]

Direct impacts on biodiversity from the agriculture sector in Sweden are described in the agriculture section above and the issues connected to biodiversity are mainly the same abroad, but several imported commodities in particular risk driving deforestation, land conversion, and degradation of natural ecosystems with particularly high biodiversity. These include meat, animal- and plant-based feed for livestock, soy, palm oil, coffee, and cacao. The increased consumption of products such as avocado and cashew nuts is also relevant since it is produced in areas with high biodiversity and, as trends evolve, consumption leads to increased pressure on land and biodiversity. Fish is another food and feed commodity with the potential to have a considerable negative impact on biodiversity due to extensive overharvesting of fish stocks and pressures caused by aquaculture. Nearly 75 percent of the seafood consumed in Sweden is imported and from a global perspective, imported seafood has larger impact on biodiversity than what is caught by Swedish fisheries. [82]

The use of packaging in the food and beverage sector also impacts biodiversity. As the use of bioplastics is increasing, pressure on biodiversity related to for example sugar cane production will likely increase.

Direct pressure on land is also exerted due to the required commercial buildings used for the processing of raw materials, storage, logistics, and sale of the final products. Additionally, the extensive amount of transportation needed in the sector creates considerable emissions of green-house gases.

[80] Statistics Sweden, 2022 b
[81] Statistics Sweden, 2022 c
[82] Hornborg, et al., 2021

NON-FOOD CONSUMER GOODS

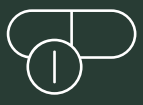
The Swedish non-food consumer goods sector is highly important, not only due to its revenue but also because of its national and global outreach. Supply-chain driven impacts stemming from the sourcing of raw materials are of key importance because a significant part of Swedish biodiversity impacts occurs beyond Swedish borders. To add to that, land use related to the vast network of retail stores and production facilities also drive the sector's biodiversity impact – both in Sweden and abroad.

Similar to the food and beverage sector, non-food consumer goods depend to a large extent on imported commodities that contribute to biodiversity loss abroad, for example, by driving deforestation and depletion of freshwater resources. Agricultural risk commodities include natural fibers such as cotton that require large volumes of water and where large amounts of pesticides are used. Fibers are used to a large extent by the Swedish textile industry, which also plays a particularly large role in driving demand for inputs such as leather and wool and contributes to the use and pollution of water driven by production abroad.

Swedish consumption of wood and paper products is mainly based on Swedish raw material given that Sweden has a major forest industry, and so these products contribute primarily to the impacts described in more detail under the forestry sector. However, many finished wood-based products (e.g., furniture) are imported and therefore contribute to impacts on forests and biodiversity in other regions of the world.

Other problematic and frequently imported inputs worth mentioning are rubber, rare earth metals used in electronics, and fossil-based plastics for both goods and packaging. All of these contribute to the sector's biodiversity impact.

HEALTHCARE AND PHARMACEUTICALS



The healthcare and pharmaceuticals sector in Sweden plays a major role for the health and well-being of its citizens. However, the continuous development and production of pharmaceuticals also pose a threat to biodiversity. While the discharge of active pharmaceutical ingredients is regulated and monitored in Sweden, production-related discharges of pharmaceutical residues into water can harm aquatic habitats in other parts of the world, either through the release of harmful chemicals or the pollution with active pharma ingredients and microplastics. This can threaten endangered species directly or alter their habitat enough to make it unsuitable for further reproduction.

Indirect, supply-chain driven impacts stem from production and packaging input materials such as agricultural and paper products as well as e.g., cotton. The significant use of single-use plastics for packaging and sterile storage also drives the extraction of oil and petrochemicals used in the plastics production.

INDUSTRIALS AND MATERIALS

The industrials and materials sector is a major part of the Swedish business landscape. Many of Sweden's industrial companies are major players and operate globally, with significant impact on biodiversity both in Sweden and abroad. This sector also includes the for Sweden significant pulp and paper production.

The many input resources required to produce industrial goods and materials, in particular metals, minerals, and rocks, mean that the sector enables the activities of extractive industries and the impacts these have on the environment. The same is true for suppliers producing agricultural and forestry products, especially risk commodities such as rubber, as well as fossil-based plastics.

Forestry products used in the production of pulp and paper have an especially large impact on biodiversity locally in Sweden. Sweden has large pulp and paper as well as wood processing and sawmilling industries and significant global trade in these products. Some Swedish companies in these sectors are also major global players with sourcing of raw material, investment, and processing in multiple countries and regions. This means they have an impact on forests and biodiversity in these locations also.

Direct impact caused by the sector includes polluting effluents from production. These effluents can be oil, heavy metals, or other chemicals that are part of the production process and pose a risk if not controlled and disposed of correctly.

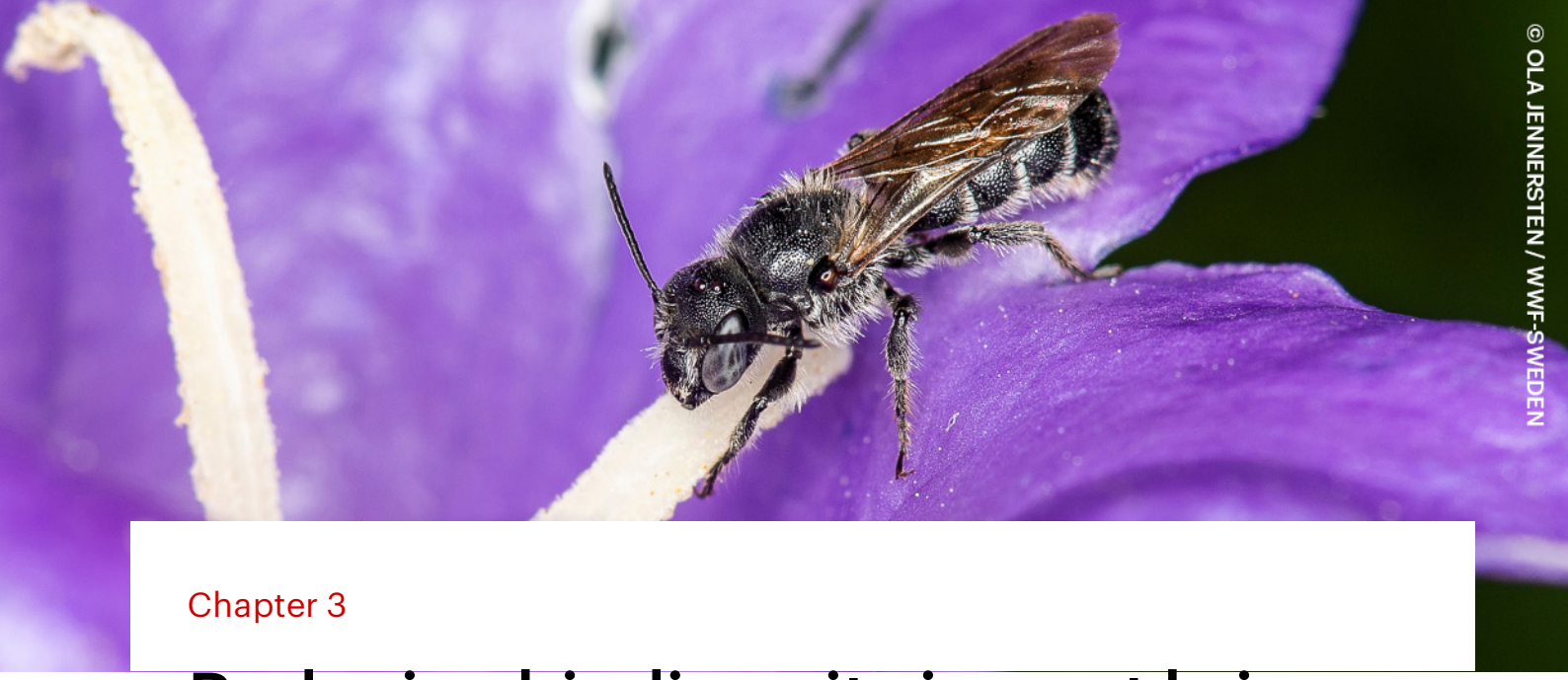
FINANCE

The financial sector is somewhat different in nature to other business sectors and therefore displays different impact dynamics. Financial companies generally do not extract resources or produce goods, so their impact on biodiversity is primarily indirect. Rather than damaging habitats or species directly, they indirectly enable biodiversity loss by financing firms whose business activities pose a threat to biodiversity. The intensity of biodiversity impact therefore depends highly on the portfolio exposure of the financial institutions.

Investments supporting businesses that have a negative effect on biodiversity can be attributed as indirect impacts from the finance sector, while the inverse is true for investments in businesses employing sustainable practices. As most businesses are dependent on financing of some form, the highly influential financial sector has a critical role to play in enabling biodiversity-friendly activities and discouraging businesses that are harming nature. To do this effectively, financial institutions need to assess companies' nature-related risks, dependencies, and impacts. Furthermore, this assessment must inform the valuation of companies and, consequently, their cost of capital.

"We need to change our mindset and not only see biodiversity as a risk but something that can create opportunities and new business models."

Hans Djurberg
Sustainability Director, SCA



Chapter 3

Reducing biodiversity impact brings opportunities and helps mitigate risks

Biodiversity loss poses significant risks for Swedish businesses. Reducing impact on nature and actively enhancing biodiversity can help Swedish businesses mitigate these risks and provide both immediate and long-term benefits and business opportunities.

According to survey results, Swedish businesses see biodiversity loss as a serious threat, but most have yet to set tangible goals or take the action to address the issue. Many are also not fully aware of the benefits from reducing their biodiversity impacts. It is therefore important to outline the key risks that can be mitigated and the attractive opportunities that can be gained by addressing biodiversity loss.

Key takeaways

- There is clear room for improvement as less than a third of the Swedish businesses surveyed have set tangible goals related to biodiversity loss, a majority believe there is a lot more they can do to address the issue, and only 20 percent of the respondents are aware of ways they can benefit from adopting approaches reducing biodiversity impacts and restoring degraded ecosystems.
- Risk avoidance will play a particularly large role in motivating businesses to act, as the impact of biodiversity loss becomes increasingly clear directly and indirectly through increasing costs of natural raw materials and services, business disruptions, regulations, reputational consequences, and changing market conditions.
- Businesses that actively reduce their impact on nature and engage in transformative change (covered in Chapter 4) can earn significant and sustainable benefits through e.g., risk avoidance, lower costs (e.g., through reduced use of materials), brand enhancement, market expansion, product innovation, and financing opportunities.

Swedish businesses lack awareness of the benefits of taking action

Most Swedish businesses view biodiversity loss as a threat but perceive their own impact as smaller than it actually is. Still, having some biodiversity goals in place is common, but they remain intangible, and many businesses remain largely unaware of the benefits from reducing impact on nature.

Understanding the current state of biodiversity efforts at Swedish businesses is a first step toward defining how to combat biodiversity loss (Exhibit 11). As demonstrated in the previous chapters, Swedish businesses perceive their impact on biodiversity as relatively low, despite the many direct and indirect impacts they have on nature. Still, many businesses do set goals related to biodiversity, but these tend to be intangible. The lack of tangible goals is driven by factors such as the fact that biodiversity is hard to measure and that businesses lack the competence(s) they need to set appropriate goals. However, interviews and survey results also indicate that it correlates with the fact that many companies are unaware of both the concrete risks and the potential benefits of reducing biodiversity impact and moving toward business models restoring degraded ecosystems. To remedy this, the following sections highlight the key business risks related to biodiversity loss as well as the opportunities available to companies that choose to act.

Most businesses surveyed are aware of the threat of biodiversity loss and have set goals, but lack tangible action and awareness of the benefits of reducing their biodiversity impact.

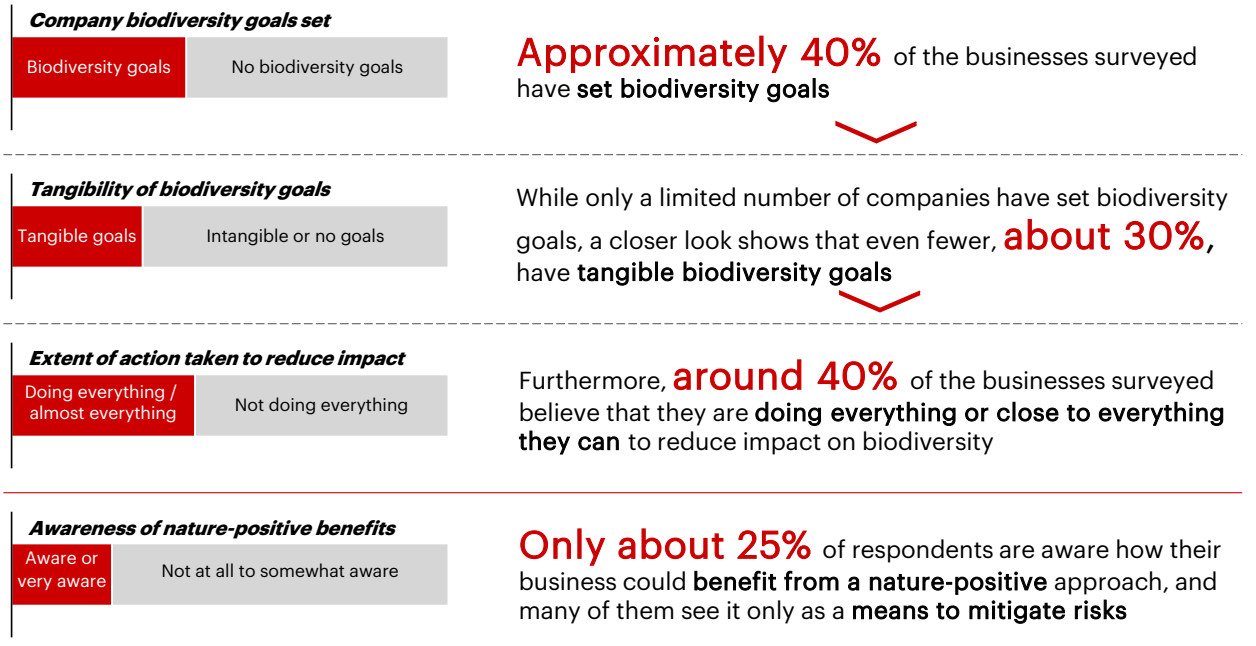


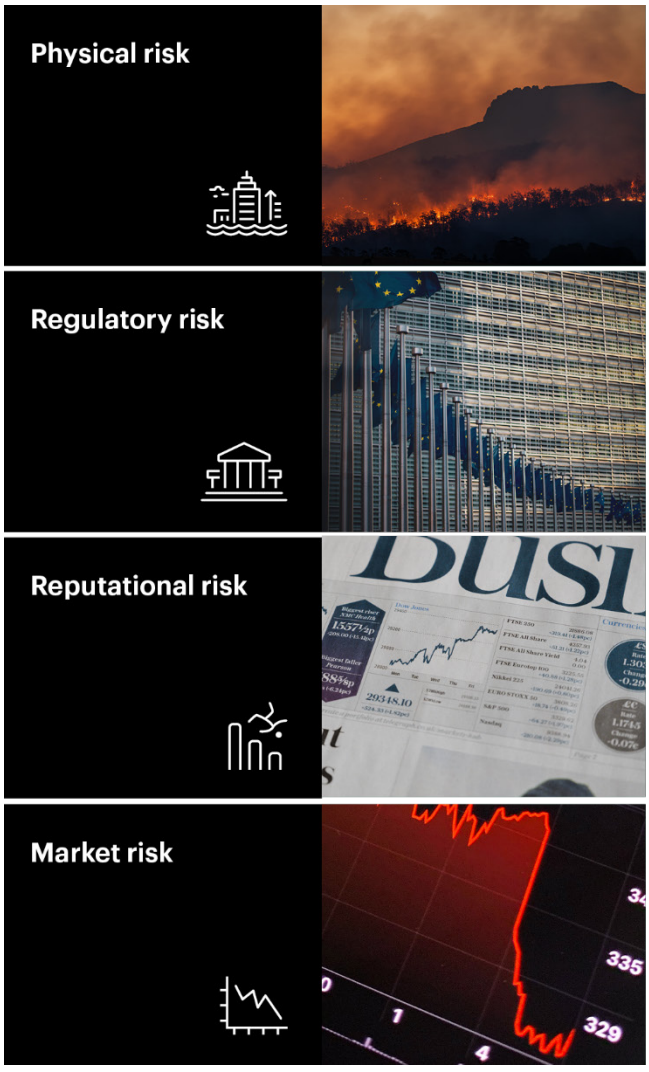
Exhibit 11: Responses from Swedish businesses to selected survey questions. Tangible targets refer to concrete targets that are measurable and/or have a set timeline

Biodiversity loss is a serious business risk

There are strong reasons to believe that the business risks associated with biodiversity loss will become more pronounced in the coming years. Swedish businesses need to act now to mitigate the physical, regulatory, reputational, and market risks they are vulnerable to.

Many businesses in Sweden are starting to see biodiversity-related risks materialize through, for example, new regulation, changes in consumer behavior, and loss of pollinating insects. Still, many lack a concrete understanding of the risks associated with biodiversity loss. It is therefore crucial that businesses now move to understand the risks and prepare accordingly. If they fail to do so, the effects of biodiversity loss in Sweden and around the world will likely hit the Swedish economy hard.

Biodiversity poses major business risks



Decline in ecosystem services and increased exposure to natural hazards. Can result in increased cost of inputs, lack of natural goods, loss of productivity, as well as disruption of operations as resilience to climate-related natural hazards is reduced.

Additional costs and business disruption caused by tighter regulations, for example, through tougher reporting, licensing, industry standards, taxation, and penalties.

Loss of brand value due to biodiversity negligence or misconduct, and access to financing becoming more difficult due to increased investor scrutiny.

Increased cost or lost revenue due to market dynamics being unfavorable to businesses not adapting fast enough.

Exhibit 12: Biodiversity-related business risks

Businesses are exposed to a wide range of sector-specific risks, but as highlighted by WWF[83] there are four main types of business risk stemming from biodiversity loss and not keeping up with the transition to a nature-positive society. These include physical, regulatory, reputational, and market risks (see Exhibit 12).

Physical risk is location-specific and threatens businesses that depend directly on ecosystem services. The risk can materialize in many ways, for example, through lack of natural inputs, reduced productivity due to loss of ecosystem services (e.g., less fertile soils), or disruptions to operations caused by lower resilience to natural hazards. A good example of this is field experiments in the county of Skåne which have shown that the presence of bees can increase rapeseed yields by 10 percent, but there are indications that bee populations are now declining.[84] Another example is the noticeably lower catch of Baltic herring near the Northern Swedish coast in 2022, possibly driven by populations being reduced due to fishing in other areas of the Baltic Sea.[85]

Regulatory risk stems from changes to the regulatory context, driven by increased environmental legislation. As regulators realize the importance of preserving biodiversity, increased focus on the topic and upcoming (and tightened) regulation is likely to cause cost increases and business disruptions. This will be driven by, for example, restrictions and compliance requirements, additional reporting requirements, raised standards driving up input costs (e.g., by requiring the use of recycled paper), or through direct taxation and litigation costs caused by the direct impact of business activity. At the extreme end of the scale, non-compliance with tighter regulation can lead to the suspension of business activities altogether. As an example, the EU deforestation regulation effectively bans businesses that offer products contributing to global deforestation from the market.

Reputational risk affects businesses through increased stakeholder scrutiny of biodiversity impact from, e.g., consumers and investors. Biodiversity-related misconduct or lack of transparency on actions can lead to negative publicity, loss of brand value, and lower sales as consumers increasingly avoid businesses and products that have negative impact on nature. Reputational risk can also play a role in worsened investor perception for businesses putting pressure on nature, which may make it harder to access financing for those businesses that do not act to reduce their biodiversity impact. Reputational risk is mentioned as an important consideration by several Swedish businesses, and for good reason. Sustainability is considered important by 95 percent of Swedes according to data from 2021,[86] and this also shows in their consumption choices as 44 percent of Swedes have rejected products due to their environmental impact.[87]

Market risk refers to the change in prices of input materials or competitive dynamics as a result of changes in the other risk categories. For example, Sweden's dependency on imports for domestic food and beverage production makes the whole sector dependent on successful international trade and exposes it to physical risks in other countries.[88] Despite no direct exposure to these specific physical risks, resource scarcity and natural hazards abroad can make it difficult for Swedish businesses to acquire crucial inputs at reasonable prices. Shifts in market dynamics may also occur in favor of businesses that adapt more quickly and gain sympathy with both consumers and

[83] WWF, 2022 b
[84] Naturvårdsverket, 2018
[85] Swedish University of Agricultural Sciences, 2022 b
[86] Insight Intelligence, 2021
[87] Stena Recycling, 2022f
[88] Federation of Swedish Farmers, 2022

investors. This could, for example, be the case if some businesses adopt circular business models, source certified inputs, making competitors that refuse to do the same fall behind.

Mitigating biodiversity-related risks is of crucial importance for Swedish businesses. Reducing biodiversity impact and restoring degraded ecosystems provides significant risk mitigation potential for businesses that choose to adapt. However, reducing impact on nature also opens up to a world of attractive businesses opportunities.

Reducing impact on nature creates attractive business opportunities

While risk avoidance is top-of-mind for many Swedish businesses when considering biodiversity, improving biodiversity also comes with significant additional benefits related to the existing business, innovations, and access to finance.

Interviews and survey results show that very few of the largest Swedish businesses realize that mitigating biodiversity risks can create significant business opportunities. In addition to the opportunities from direct risk avoidance, businesses that address their biodiversity impact can reap several benefits (Exhibit 13).

Significant and sustainable benefits from reducing impact on nature

Risk avoidance	Improvement of existing business	New business and innovation	Access to finance
E.g., avoidance of resource scarcity, operational disruption, reputational scrutiny, and regulatory interference	E.g., reduction of operational costs from efficiency gains or by deploying eco-efficient/circular production, and internal and external brand enhancement	E.g., development of new products, technologies or business models driven by recognition of the potential of a nature-enhancing approach. Includes refinement of by-products and waste materials, models like product-as-a-service and market innovations	E.g., sustainable finance through high environmental rating, or green or blue bonds. Also proactively managing the fact that financial institutions are expected to limit access to finances for nature-negative businesses in the future

Exhibit 13: Potential benefits for businesses from reducing impact on nature

Risk avoidance can take many forms but covers avoidance of any biodiversity-related risks described in the previous section. One example of physical risk avoidance can be to take pre-emptive measures such as supporting conservation or restoration of critical sites to avoid resource scarcity or natural hazards. This can be, for example, by restoring wetlands in agricultural areas that are prone to flooding, as wetlands have been shown to reduce water flows and the risk of flooding. [89] Another example is avoidance of regulatory risk by taking action early to meet market expectations,

[89] Jordbruksverket, 2010

thereby staying ahead of competition that will eventually be forced to meet the same requirements through regulation.

Improvements to existing business can materialize through, e.g., cost savings, yield improvements, or brand enhancement. These can arise, for example, as a result of more efficient production processes that make better use of inputs or through improved access to ecosystem services. This has clear potential, for example for agriculture in Sweden, as demonstrated by an international study including Swedish rapeseed fields that showed clear yield increases associated with increased diversity of pollinating insects.[90] Some Swedish businesses interviewed also recognize the upside of business models reducing biodiversity impacts and already see sustainability as a sales enabler and demand for more sustainable products and services despite a premium on prices.

New business and innovation can also arise from reducing impact on nature as it can drive the development of new technologies or products that can be used to expand or create entirely new businesses. This can be through, for example, refinement of by-products into entirely new materials. Rather than merely relying on the refinement of existing waste, however, businesses must adjust their strategic thinking to meaningfully reduce the dependence on natural resources and re-design business models or products, moving toward, for example, models reducing the need for ownership and serving the need of the customers in an innovative way (e.g., Product-as-a-Service) or supporting shifts to more sustainable diets.

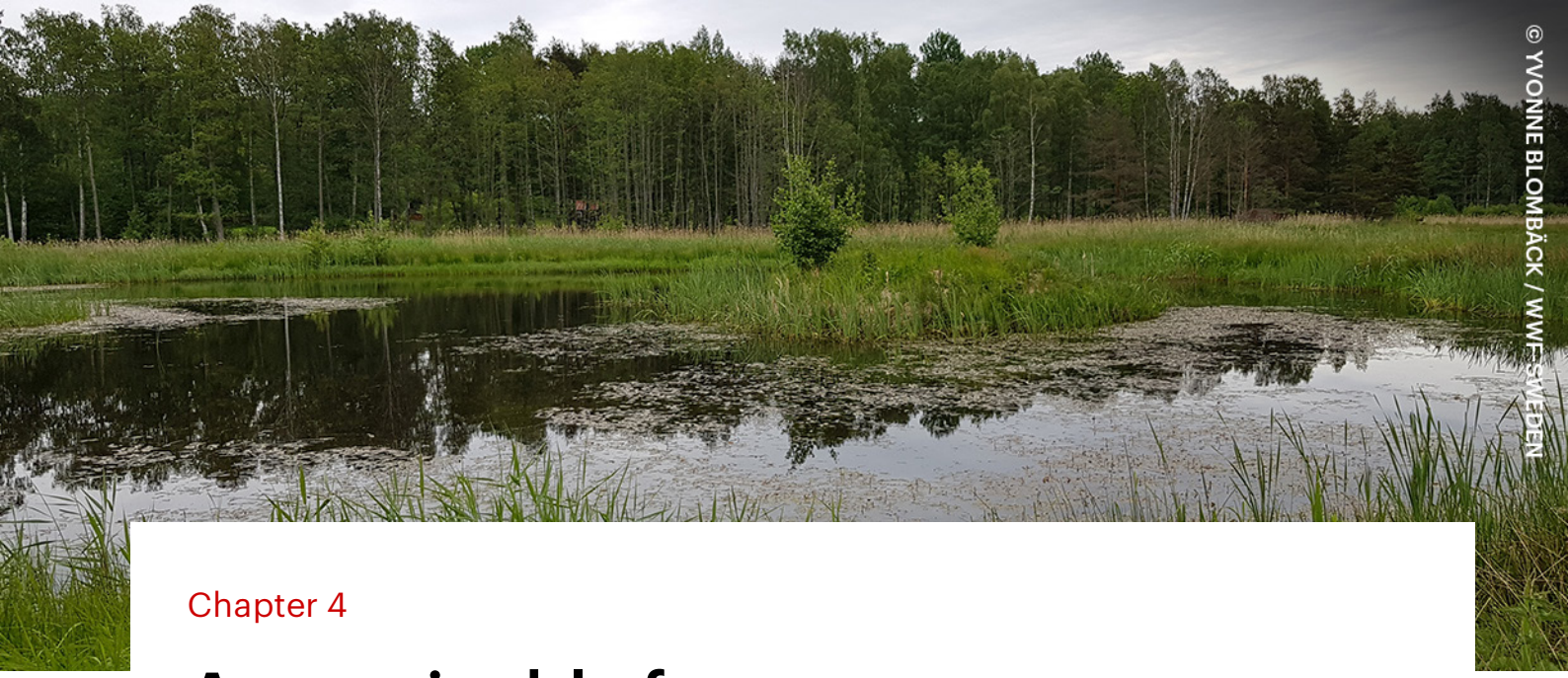
Access to finance is also likely to improve for those who act. Green or blue bonds can be ways to secure funding for biodiversity-enhancing projects, while higher environmental ratings may provide access to capital at better rates. While many attractive financing options are available to those ahead of the curve, proactively managing biodiversity impacts and taking biodiversity-enhancing action is of importance to all. The Swedish businesses interviewed mention the push from investors and financial institutions as a crucial factor for acting on biodiversity. Many also highlight that investors and financial institutions are increasingly conscious of biodiversity impact and factor this into their decision-making, meaning that staying ahead on the topic is crucial to securing future financing.

Recognizing these opportunities associated with a reduced biodiversity impact and acting on them early can help businesses gain competitive advantages as they adopt the nature-preserving business models we need to rely on in the future. These business models are described in more detail in the next section.

[90] Dainese, M., et al., 2019

"We are not only looking at how we can make our existing product portfolio more sustainable - we also have a target of bringing disruptive and biodiversity-friendly innovations to the market every year."

Heli Anttila
VP Product Development, Fazer



Chapter 4

A sustainable future economy requires transformative change

Reducing impact on nature and reversing biodiversity loss require that businesses undergo transformative change to become nature-positive. Working toward transitions within three value chain areas can be a starting point for action here and now.

It is critical that Swedish businesses realize the extent to which transformative change is needed and that they take action now. Acting on three identified areas is a first step on the path toward completing this mission and all businesses must engage in this transformation. The degree of change needed varies between businesses, but many will need to go through a profound and disruptive process.

Key takeaways

- While reducing impact on nature is good for business and will slow down the destruction of nature, a sustainable future economy requires that businesses embrace transformative change and move toward a more disruptive goal: to develop nature-positive business models that ensure halted and reversed nature loss, restore the damaged habitats and lead to resilient ecosystems.
- According to the World Economic Forum, becoming nature-positive comes with major opportunities: a global transition toward a nature-positive approach is estimated to provide annual business opportunities worth $10 trillion by 2030 (equivalent to more than 10 percent of current global GDP), but it requires that businesses invest in nature-based solutions.
- To maximize impact here and now, Swedish businesses should as a first step focus on critical improvements across supply chain, operations, and consumption, while also advocating for broader societal change through, e.g., regulation and consumption patterns.
- There is plenty of inspiration available from Swedish businesses that have already started taking action, as well as from transformative historical changes.

Transformative change needed for the nature-positive society of the future

We need transformative change to halt and reduce the business impact on nature. The long-term goal is nature-positive business models, which promise both vast business opportunities and risk mitigation potential. Accomplishing the transformation will be a journey, but businesses need to embark on that journey now.

It is no longer sufficient for businesses and societies to simply reduce their impact on nature. Slow, incremental changes need to make way for actions and investments in nature that lead to transformative change. As laid out by A Global Goal for Nature, we need to halt and reverse the current trajectory of nature loss and become nature-positive by 2030 in order to recover thriving, resilient ecosystems by 2050.[91] Businesses play a key role in accomplishing these goals by contributing to the protection of significant land and marine areas, drastically reducing consumption of natural resources, and improving production processes. Nature-positive business models are key to accomplishing this.

With nature-positive business models, businesses take action to minimize and remove pressures that drive the degradation of nature while also actively enhancing the recovery of a resilient biosphere.[92] Based on regeneration, resilience, and recirculation, nature-positive business models are applied to protect, sustainably manage, and restore natural or modified ecosystems in ways that also address societal challenges and/or business needs. An example of a nature-positive business model is the sale of sustainably managed ecosystem services (e.g., sustainable tourism in preserved or restored environments), under the assumption that tourism and associated travel is aligned with planetary boundaries.

In addition to being positive for biodiversity, nature-positive business models are also expected to add significant economic value. The World Economic Forum estimates that from 2030 onward, a nature-positive economy can create $10 trillion of global business opportunities annually, add 395 million new jobs, and support good governance, long-term stable societies, and healthy economies. However, realizing these opportunities and reaching a nature-positive economy by 2030 requires that businesses and societies invest in nature-positive solutions. The World Economic Forum estimates that the transition would require redirecting $2.7 trillion of funding each year, and closing this investment gap equates quadrupling society's investments in nature.[93] Such investments cannot be financed by public funds alone, but fortunately there are strong incentives for businesses to become part of this journey.

[91] Naturepositive, no date
[92] World Economic Forum, 2021
[93] World Economic Forum, 2020 c

Businesses need to both reduce impact on nature and enhance biodiversity

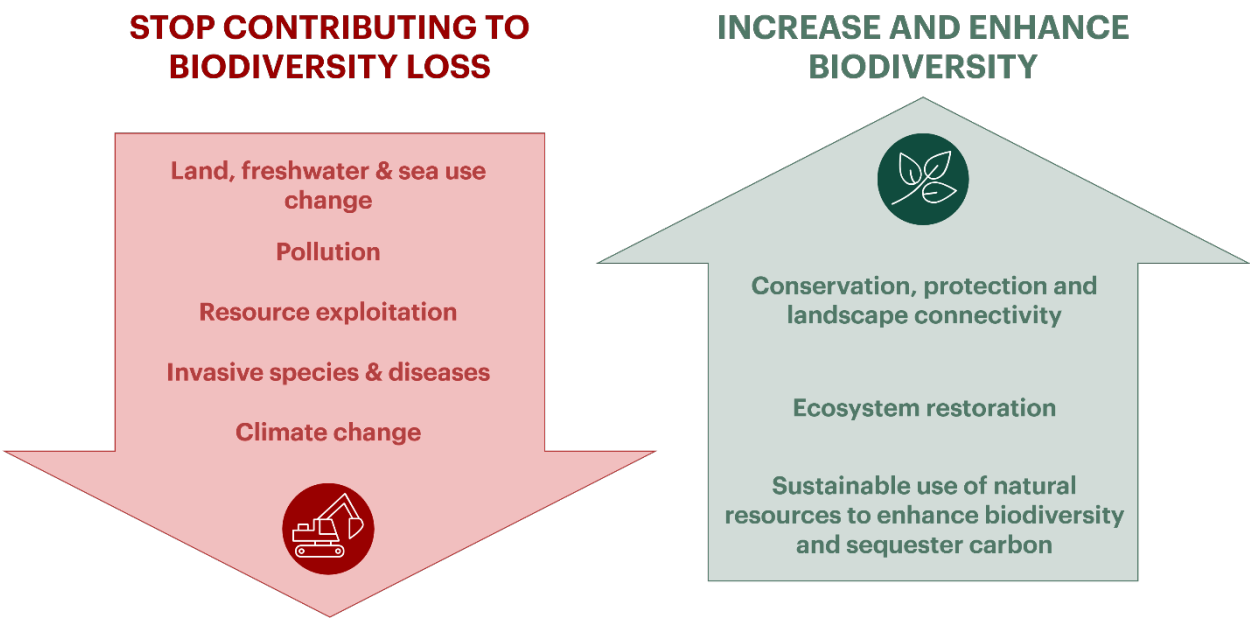


Exhibit 14: The two dimensions businesses need to work across to reverse the trend of biodiversity loss

A key part of the development toward a nature-positive society is a shift in mindset – from simply reducing impact to also contributing to restoring and enhancing biodiversity. Businesses need to work across both dimensions (Exhibit 14) to reverse biodiversity loss.

The urgent need to stop further biodiversity loss should be well known to most businesses as many issues are being discovered as part of the ongoing environmental work. It should be acknowledged that the business community at large has not done enough, hence there is a need to radically increase the work on, for example, stopping habitat destruction, reducing pollution and overfishing, and increasing the work on climate as well as including new issues such as invasive species.

Measures to increase biodiversity are, however, less known for most businesses, although work on moving toward sourcing of more sustainable, certified materials, and educating consumers to make better choices, represent important steps forward. Moving ahead, conservation and restoration work must be prioritized, and collaboration with biodiversity experts and conservation NGOs is critical in supporting these efforts. While doing this, it is also crucial that businesses always base the efforts on the principles of inclusive conservation, meaning that both conservation and transformation must respect and take the rights of indigenous peoples to manage their own land into account, [94] as well as respecting human rights.

Interviews with large Swedish businesses indicate that there is significant work to be done across both dimensions in Exhibit 14, but the behavioral change needed is especially acute when it comes to the dimension of enhancing biodiversity. While many businesses have started taking the first

[94] WWF, 2022 d

small steps toward reducing their impact, the vast majority of them do not yet think in terms of restoring and enhancing nature.

As is often the case, much of the required change is likely to be driven by grassroot initiatives and new, innovative businesses adopting and investing in nature-positive models. However, today's business leaders also have an important role to play in transforming their own supply chains and business models by investing in new, innovative companies and by contributing to research that is developing new solutions. Naturally, investing early in business model changes and new solutions does bear some risks in addition to the abundant opportunities. However, as described in the previous chapter, doing nothing also comes with other, potentially much larger risks in the long run. All companies have a choice as to whether they invest in transformation now or wait until changing regulation and market conditions will force everyone to make the changes.

A nature-positive economy requires that businesses start moving toward nature-positive business models

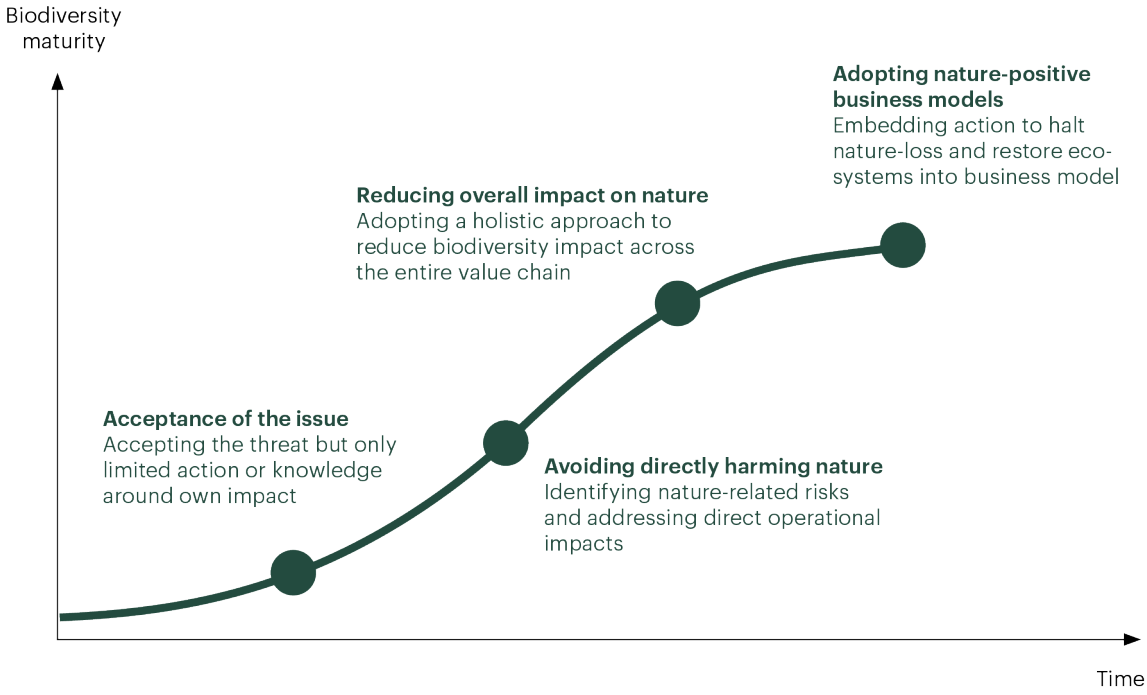


Exhibit 15: Biodiversity maturity curve illustrating the move toward nature-positive business models

While there is considerable value in nature-positive models for businesses that choose to invest in them, implementing these models will not happen overnight. To accomplish the necessary transformation and unlock the environmental, societal, and economic value, businesses need to start moving along the maturity curve (Exhibit 15). After accepting that the current trajectory needs to change, businesses need to build up knowledge about their own impact and the nature-related risks they are exposed to. Survey results show that many Swedish businesses have already recognized that biodiversity loss exposes them to additional risks and that swift action is required. Now, businesses must make a move to avoid directly harming nature and reduce their overall

impact through direct pressures and supply-chain activities. They can then continue by adopting nature-positive business models that actively restore ecosystems and thus support the creation of a nature-positive economy.

Not all businesses will necessarily take all the steps on the curve; some may have a net-positive impact on nature from the start. Regardless of how the journey looks though, it is a fact that large-scale transformation together with policy and regulation changes are needed to support the regeneration and resilience of global ecosystems. Regulation is often necessary to set the bar and ensure that new business models and products – including those that seem niche in the beginning – can show proof of concept and achieve a breakthrough to penetrate the whole market. This is especially true within sustainability, as shown by, e.g., the German renewable energy policy. By driving down prices and improving practices, this became an important driver of the Europe-wide breakthrough of renewable energy.

Key actions that drive transformative change

Primary sectors play a central role in making the necessary transformative change happen, and each primary sector should focus their efforts on a few areas locally and globally. Secondary and tertiary sectors must help enable these changes while also transforming their own operations to be more sustainable.

Since primary sectors drive most of the extraction of natural resources, these sectors play a key role in driving transformative change. While all businesses within these sectors are unique, a set of high-level common actions will drive and enable most of the necessary change for all. Exhibit 16 shows WWF's current view on some of the most important and urgent changes each primary sector needs to make locally in Sweden and on a global level. Meanwhile, secondary and tertiary sectors need to contribute to these changes both by directly enabling them through their supply chains and by reviewing their own operations. The latter should be done with the aim to produce less waste and lower the resource intensity, thereby reducing the demand for natural resources and overall impact on nature from primary sectors.

Key actions for primary sectors to drive transformative change

GLOBAL TARGETS
(these will need to be achieved in collaboration with governments, civil society, and consumers)

- Halt and reverse the loss of nature and biodiversity so that by 2030 we have more nature than now
- Protect 30% of the planet using rights-based approaches that respect and secure the rights of indigenous peoples and local communities
- Halve the global footprint of production and consumption

SECTORS	GLOBAL	SWEDEN
Agriculture 	• Level of animal production aligned with WWF Planet-Based diets • Stop global deforestation and conversion of all natural ecosystems as well as semi-natural grasslands with High Conservation Values. • Restore nature (e.g., wetlands, mosaics) and create wildlife connectivity at landscape levels • Ensure considerable regeneration of agricultural soils • Apply agricultural practices that retain and enhance flora and fauna populations on semi-natural grasslands, production lands and beyond	• Level of animal production aligned with WWF Planet-Based diets • Significantly increased area of grazing and maintaining biodiversity rich meadows (double or more*) • Significantly increased restoration of wetlands (double or more*) • Significantly increased recirculation of nutrients and other resources • Apply agricultural practices that retain and enhance flora and fauna populations on production lands and beyond
Fisheries and aquaculture 	• Stop all fishing of stocks outside biologically sustainable levels • Use an ecosystem-based and holistic approach to fisheries management • Align the extent of aquaculture to the carrying capacity of the local conditions (biodiversity-driven spatial planning) • Transform to sustainable and responsible aquaculture (taking nature and all stakeholders into account)	• Fishing activities prohibited in sensitive and marine protected areas and/or areas with High Conservation Values • Total Allowable Catch/Quotas based on scientific data derived from an Ecosystem-based Fisheries Management approach • Full implementation of the European Common Fisheries Policy (CFP)
Forestry 	• Level of harvests aligned with ecological boundaries. • Stop forest degradation and conversion of forests to forest plantations • Restore degraded forests • Apply forestry practices that retain and enhance flora and fauna populations in production forests and beyond	• Level of harvests aligned with ecological boundaries. • Long-term conservation of significant areas of representative forest types (30% or more*) • Significant share of logging not using clear cutting practices (30% or more*) • Manage a large share of production forests with enhanced conservation consideration (20% or more*) • Considerable restoration of forest ecosystems, incl. wetlands and streams • Apply forestry practices that retain and enhance flora and fauna populations in production forests and beyond

*WWF targets

SECTORS	GLOBAL	SWEDEN
Extractive industries	• Level of material extraction aligned with ecological boundaries • No net loss of natural ecosystems. Avoid biodiversity hotspots and High Conservation Values areas and ensure wildlife connectivity between natural ecosystems • Ensure responsible operations by minimizing impact on physical environment and emissions of metals and other substances to water • Rewild fully exploited open pit mines and adjacent buffer zones	• Level of material extraction aligned with ecological boundaries • No net loss of natural ecosystems. Avoid biodiversity hotspots and High Conservation Values areas and ensure wildlife connectivity between natural ecosystems • Ensure responsible operations by minimizing impact on physical environment and emissions of metals and other substances to water • Rewild fully exploited open pit mines and adjacent buffer zones
Land development & infrastructure	• No net loss of natural ecosystems – avoid biodiversity hotspots and High Conservation Values areas • Employ biodiversity driven spatial planning for all land and sea areas to minimize impact and ensure wildlife connectivity between natural ecosystems • Retain or create "natural infrastructure services" (e.g., wetlands and mangroves for flood protection)	• No net loss of natural ecosystems – avoid biodiversity hotspots and High Conservation Values areas • Employ biodiversity driven spatial planning for all land and sea areas to minimize impact and wildlife connectivity between natural ecosystems • Retain or create "natural infrastructure services" (e.g., wetlands) • Realize opportunities of enhancing biodiversity conditions in infra-related marginal lands (e.g., road verges, power line corridors, and ruderal areas)
Energy production	• Ensure natural water flows and fauna connectivity in river systems affected by hydropower • Increase wind and solar power along with measures to enhance biodiversity • Phase out use of fossil fuels and stop fossil fuel extraction • Minimize bioenergy use to a sustainable level and limit bioenergy fuel sourcing to sustainable feedstocks	• Ensure natural water flows and fauna connectivity in river systems affected by hydropower • Increase significantly wind and solar power along with measures to enhance biodiversity • Phase out use of fossil fuels • Minimize bioenergy use to a sustainable level and limit bioenergy fuel sourcing to sustainable feedstocks

Exhibit 16: Some of the most crucial changes for primary business sectors that contribute to the shift to nature-based solutions and help ensure social license to operate for businesses

Addressing three key areas can guide the way

To begin implementing concrete transformation and address the most crucial areas of change, Swedish businesses must work across three key areas to reduce business impact on nature and enhance biodiversity. Value-chain focused actions and industry-wide collaboration are the key means of driving change.

It is clear that businesses need to reduce their impact on nature. Businesses can drive transformation on different levels, from areas that are within their direct control all the way up to advocating for system-level change, but for most it is natural to start with the factors they have a high degree of influence over. To this end, we have identified three key areas (Exhibit 17) that businesses should engage in. These are areas that businesses can work on right now as first steps toward the complete transformational change that is required to ensure the compatibility with planetary boundaries. Actions within the identified areas are focused on what companies can do in their respective value chains and potential sector-wide collaboration in the value chain-adjacent areas. They do not, however, cover aspects outside of the organizations' direct control and influence, such as enabling systemic societal change. Nevertheless, the role of businesses in advocating for broader system-level change should not be underestimated and is covered in more detail toward the end of this section.

Improvements in three areas to reduce impact on nature

Supply chain	Operations	Consumption
Ensuring supply chain sustainability, driven by transparency and traceability and the sourcing of sustainable input materials from responsible suppliers, to enable and incentivize further impact reduction and regenerative actions among upstream suppliers.	Reducing dependencies on natural resources and ecosystem use by embedding nature-consciousness into development of products and services, and business model design. Includes introducing and adopting transformative products and business models, more resource- and energy-efficient operational practices and ensuring buildings and infrastructure are resource-, energy- and space-efficient, as well as restoring and enhancing biodiversity.	Advocating for sustainable resource consumption and consumer behavior by providing alternative, sustainable products and services that reduce overall natural resources demand considerably. Also cooperating with businesses in value chain to co-develop and ensure provision of sustainable products (e.g., by defining joint circular models).

Exhibit 17: Improvements needed across supply chains, operations, and consumption

The following sections provide a high-level description of actions that can be taken within the identified areas, covering both what they are and what businesses should strive to achieve when engaging in them. Immediate and concrete action within these areas is crucial and puts businesses on the path to reducing their biodiversity impacts. Any improvements should be seen as the first steps in an iterative process of continuously evaluating and addressing impact with the end goal being transformative change. The focus of the descriptions is placed on biodiversity, but it is important to remember to safeguard all issues related to social sustainability throughout the journey.

Supply chain

Establishing sustainable supply chains is crucial for Swedish businesses because, for many, this is where the majority of biodiversity impact occurs. Though supply chain impact is by definition indirect, Swedish businesses are responsible for driving demand for resources and need to work with their suppliers to ensure sustainable supply chains. While this is particularly true for secondary and tertiary sectors, primary sectors also have the potential to drive change in this area. Globally, it is key that businesses stop contributing to deforestation and land conversion, emissions of greenhouse gases, unsustainable water use, and overfishing, to name a few. When sourcing locally, contributing to biodiversity-rich forests and agricultural landscapes, and ending eutrophication are also highly important factors.

In practice, the shift to sustainable supply chains involves ensuring that sourced materials are produced in a sustainable way. This can be done through, e.g., sourcing of materials that are certified against credible certification systems with ambitious criteria for the conservation of biodiversity and ecosystems. However, it is important to remember that not all certifications automatically guarantee more sustainable products and that the reliability of each certification needs to be evaluated. If not already in place, agreeing on credible industry-wide certification standards can be an important step to take here.

In addition to what is currently sourced, Swedish businesses also have a critical role to play in driving more long-term improvements in supplier behavior. This involves advocating strongly and consistently for change and supporting and creating incentives for more sustainable practices highlighted earlier in this chapter. Setting up traceable and monitored supply chains can help ensure the adoption of and adherence to sustainable practices among suppliers and provide visibility on progress. It is also a necessary enabler for businesses to understand their impact on nature and make conscious decisions to reduce it. While traceability often is a challenge, technological solutions and digital tools can be helpful in allowing detailed assessment and monitoring.

Operations

At its core, a transition in operations is about the urgent need to move toward more resource and energy-efficient operations and developing transformative products to lower upstream and downstream impacts on nature, both locally and globally. Businesses have the most direct control over their operations, and therefore this area is also where they have the clearest responsibility for the choices they make. For primary sectors, possible improvements within operations are mainly related to minimizing land and sea use and resource extraction (described in more detail in the

previous section) as well as enhancing biodiversity in agriculture and forestry, while for secondary sectors new, innovative business models that are increasingly circular and reduce overall resource demand are particularly relevant.

All sectors also need to consider their use of industrial buildings, infrastructure, and other facilities, which drive habitat fragmentation, resource extraction, and high energy usage. Re-using and improving the energy efficiency of existing buildings, becoming energy self-sufficient using sustainable energy sources, and using alternative as well as recycled materials are examples of ways to reduce the impact on nature. The same is true of repurposing or multi-purposing existing buildings, which reduces the need for new construction, as well as working with neighboring companies or communities to enhance biodiversity in the immediate area through, for example, green roofs or green parking lots.

The exact actions to take in this area will depend on the current operations of each individual business, but the end goals are the same: swiftly find new ways to operate that are less resource-intensive, employ circular practices whenever feasible, and get as close to zero waste as possible. Also, it is critical that businesses start to focus on integrating regenerative action into their operations and go beyond impact reduction to become nature-positive. Regenerative action in this context can take the form of, for example, re-introduction of grazing of semi-natural pastures or employing forest practices that better mimic natural forest regimes.

Collaboration between innovation and industry is key for a transition in operations to happen. It also provides opportunities to come up with new solutions related to, for example, the refinement of by-products and waste material from other businesses. As a practical example, to simultaneously lower cost and optimize the use of resources, a paper mill in Sweden has entered an agreement to provide its leftover heat so it can be used to grow tomatoes and assist shrimp aquaculture.[95]

Consumption

Reduced consumption and shifting to more sustainable alternatives can contribute significantly to reducing land and sea use, resource extraction, and pollution. A shift in consumer behavior is also an important driver of more regenerative practices. For example, reduced production of unsustainable products, such as many types of meat production, can encourage other biodiversity enhancing business actions. Businesses play a key role in this area and must enable more sustainable alternatives as well as educate and guide both B2B customers and consumers toward more sustainable products and purchasing behaviors. This also involves cooperating with B2B customers and other businesses in the value chain to co-develop and ensure provision of sustainable products, for example, by ensuring that products are recyclable or otherwise defining joint circular models.

Consumer-facing businesses have a particularly critical role to play in this area, but all businesses can and must contribute to raising awareness and changing societal norms by influencing their customers. Some practical examples of what businesses must do include: offering sustainable

[95] Big Akwa, no date

Different sectors should focus on immediate action in different areas for the biggest near-term impact, while also working to ensure sustainable business models in the long term

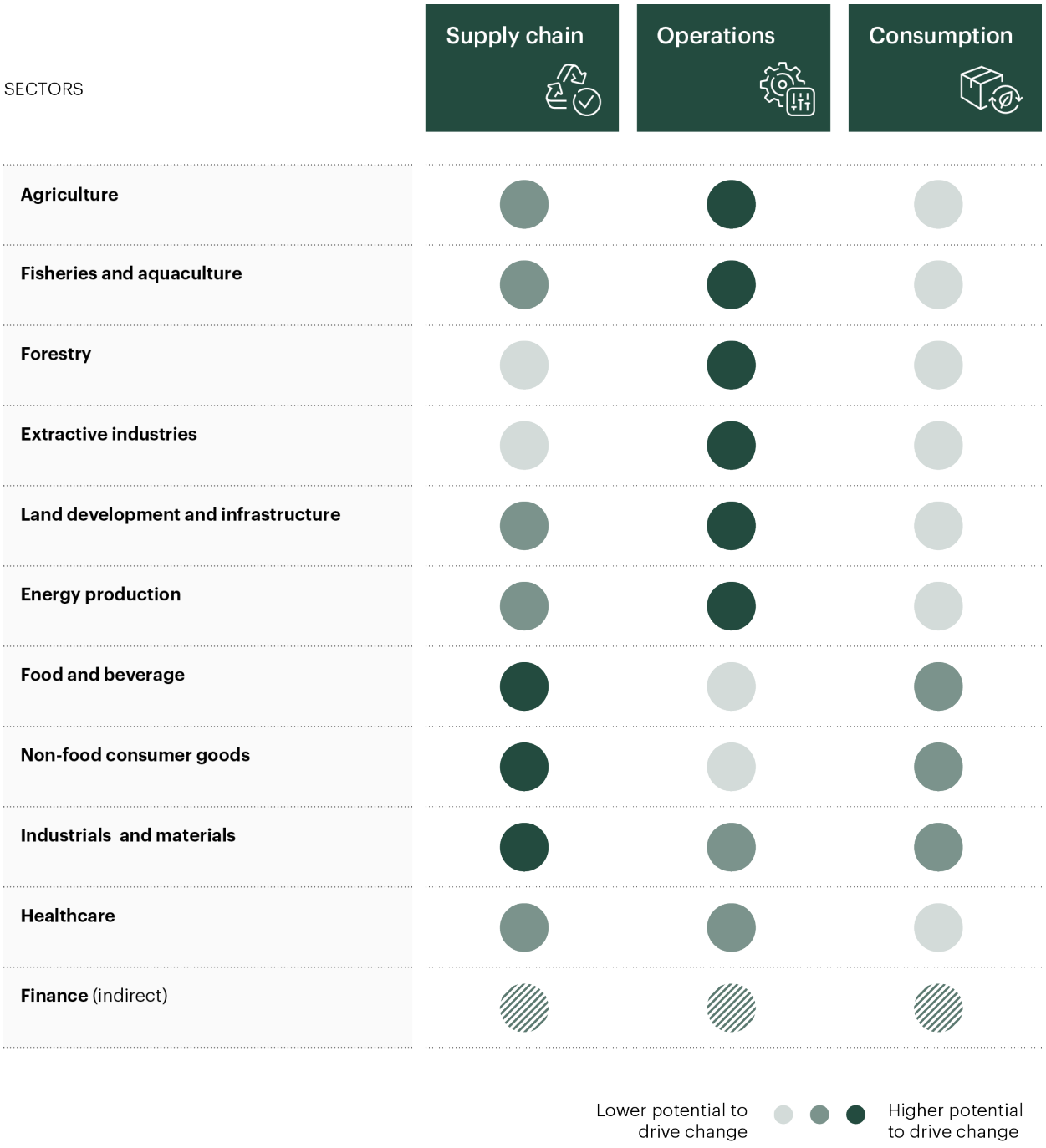


Exhibit 18: Sector-specific potential in driving change across three areas. Covers only near-term potential. Chapters 5 and 6 cover what can be done in the long term[96, 97]

[96] WWF experts

[97] Bain analysis

alternatives to resource-intensive products (e.g., proteins, dairy, leather, and natural fibers), making sustainable alternatives the default option, and moving toward business models promoting circular consumption (e.g., by offering subscription-based models instead of straight sales). Increasing awareness through joint sector communication can also help guide customers and consumers in the right direction, as has been done, for example, through campaigns encouraging higher recycling rates.

Exhibit 18 illustrates the potential of the different Swedish business sectors to drive immediate change across the value chain. This should be interpreted as the area where the most impactful near-term improvements can be achieved, without losing sight of the fact that changes in all areas are needed in the long term. The assessments are made based on their potential to both contribute to reducing negative impact on nature and promote actions to enhance biodiversity. As shown, all sectors have the potential to positively affect nature and biodiversity through actions right now, but which areas provide the biggest change potential, and therefore where efforts should be focused, differ.

In general, primary sectors can make a difference mainly through their own operations, while secondary and tertiary sectors can drive change primarily through supply chains. That is, agricultural and forestry businesses, for example, should look to their own operations to identify the biggest levers for impact reduction and biodiversity-enhancing actions. Food and non-food consumer goods sectors, on the other hand, drive a high negative impact through their supply chain, for example, through the sourcing and initial processing of raw materials. They should thus aim to address these highly impactful elements of their value chain first with concrete and holistic actions. It is worth noting that while Exhibit 18 provides high-level guidance on focus areas, not all businesses within the same sector are the same, so each company needs to make its own evaluation of what efforts have the largest transformative potential. More high-level direction on building capabilities can be found in Chapter 5, while Chapter 6 gives some guidance on assessing and addressing own impact.

The financial sector plays a big role in enabling and driving change across all areas. Interviews carried out for this report indicate that many businesses see requirements from the finance sector as a key driving force to implement new solutions and follow up on impact. Such measures can accelerate the actions on biodiversity beyond regulations and encourage businesses to move faster than regulators mandate, similar to the development that has been seen for climate change. The driver behind these increasing demands from financiers on their portfolio companies is the growing demand for enhanced disclosure of nature-related risks and opportunities from financial regulators and supervisors, as well as from industry-led initiatives such as the Taskforce on Nature-related Financial Disclosures (TNFD).[98] This demand builds on the recognition that nature loss, just like climate change, is a source of systemic risk to markets.[99]

As alluded to in the beginning of this section, businesses also need to engage more broadly and act outside of the value chain-adjacent areas to enable systemic societal change. This can take the form of, for example, advocating for behavior change and regulation or forming broader collaborations to

[98] Taskforce on Nature-related Financial Disclosures, no date

[99] NGFS, 2022

accelerate the development and more widespread adoption of sustainable practices and improvements. It also includes being mindful of how business decisions impact society on a broader level, keeping in mind that, for example, businesses establishing facilities in an area also drives demand for construction of societal infrastructure such as roads and commercial areas.

Businesses advocating for systemic change is already seen today, for example, through the coalition Business for Nature, where large businesses and financial institutions are calling for mandatory requirements to disclose impact on nature.[100] For front-runners, this is not only the right thing to do, but it also makes commercial sense as it gives them a chance to take part in shaping the regulation. Additionally, regulation can also help level the playing field and, by setting standards for acceptable practices, remove any advantages that less advanced competitors can gain from potentially disruptive practices.

Still, we cannot afford to await regulation that mandates action. Businesses and societies have a responsibility to continuously question and challenge the status quo and not blindly accept outdated perceptions. To foster the necessary transformative change, it is crucial that businesses act proactively and engage in this area now.

Leading businesses are starting to take action

Multiple businesses in Sweden have already taken action to reduce their biodiversity impact along the dimensions of supply chain, operations, and consumption.

While full transformative change is the necessary end goal, immediate concrete action is crucial if we are to become nature-positive by 2030. Our analysis shows that most companies surveyed do not believe they are doing everything they can to mitigate biodiversity loss. This means that virtually every organization have opportunities for improvement. Exhibit 19 illustrates examples of how some Swedish businesses have started engaging in making improvements to reduce their impact on nature and positively enhance biodiversity. These range from value-chain actions and cross-sector collaborations to community engagement and local restoration projects.

While these actions are steps in the right direction and can serve as an inspiration for other businesses looking to start or accelerate their transitions, it is also worth noting that all businesses (including the ones below) have the potential to, and in the long run must, go much further in their efforts. The key right now is to identify the most impactful actions a business can take today and engage in an iterative process of continuous improvements, while continuing to develop strategies, set targets, and pursue the longer-term goal of transformative change.

[100] Business for Nature, 2022

Leading businesses are taking action to reduce the impact on nature and enhance biodiversity

Supply chain

H&M Group:

- To identify priority actions to reduce their impact on nature H&M Group has conducted a materiality assessment of its impact on biodiversity across the value chain
- Building on the guidance set out by the SBTN, H&M Group is working on more sustainable and regenerative raw material sourcing
- To enhance biodiversity in the value chain, H&M Group is working with local farmers in India and South Africa in important wildlife corridors and buffer zones to implement regenerative practices and support access to markets for regenerative raw materials

Telge Energi:

- Telge Energi supported an inventory of possible measures in a heavily hydropower-modified river to allow for environmental flows and species migration, as well as restored habitats and spawning grounds

Operations

Lantmännen:

- To reduce the impact on nature, Lantmännen is developing alternative farming concepts
- Impact reducing actions include development of chemical free crop protection, optimization for efficient use of land and fertilizers, and breeding resistant plants that minimize the need for plant protection
- Biodiversity enhancing action includes the creation of dedicated zones that provide food and protection for pollinating insects

Riksbyggen:

- To enhance local biodiversity, Riksbyggen equips housing complexes with birdhouses, insect hotels, and flower and cultivation plots
- Biodiversity is also considered together with other sustainability topics in the construction and property management process

Consumption

Coop:

- To encourage sustainable consumption and reduce the impact on nature, Coop introduced a product-level sustainability declaration
- Among the included measures are biodiversity, fertilization, water, and pesticides
- Based on production countries and raw materials used, certifications, and to some extent the location of the processing, grades from 1 – 5 allow consumers to make more informed decisions

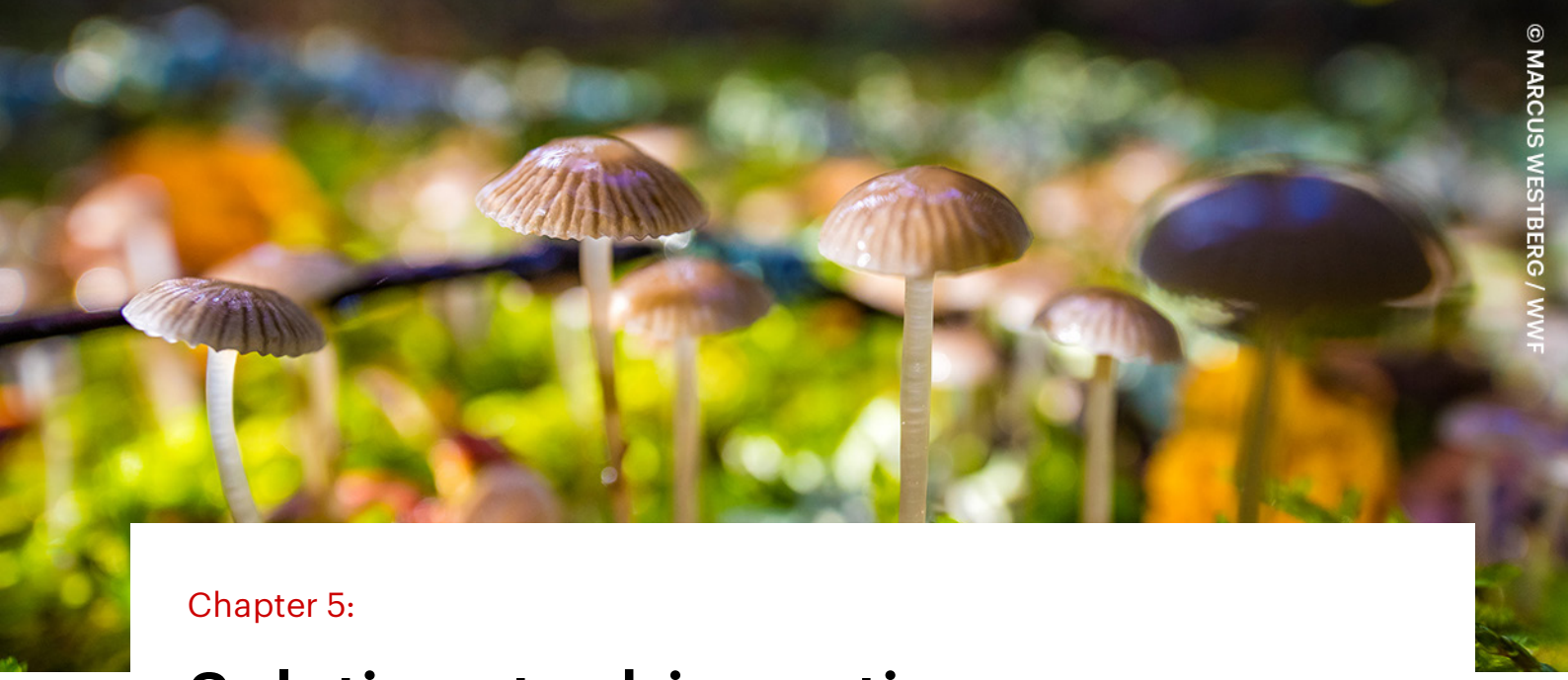
Exhibit 19: Swedish businesses have already started to take action [101]

Actions like those featured in Exhibit 19 are required to put us on the path of becoming nature-positive. However, a complete transformation is necessary to reach a nature-positive state by 2030. Fortunately, it is nothing new that companies need to undergo transformations. Factors like climate change and digitalization – and industrialization before that – have already repeatedly challenged businesses and required drastic re-thinking of the status quo, so we know transformation is possible. The next chapter covers the roadblocks companies may face in the process of getting started, and also offers solutions for how to tackle them and put us on the path to reversing biodiversity loss and making the changes needed for us to live within our planetary boundaries.

[101] Company websites and interviews

"Biodiversity is much more complex than climate change. It is highly multi-faceted, and we find it challenging to determine our direct and indirect contributions to biodiversity loss."

Susanne Olsson
Head of Group Environment, Scania



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Chapter 5:

Solutions to drive action

Swedish companies are facing a range of roadblocks which hinder them from advancing their biodiversity efforts. Fortunately, existing solutions can help them overcome these challenges.

Businesses play an important role in reversing biodiversity loss by 2030, and they need to address their impact starting today. The insights collected through the conversations with business executives generally reveal a strong and laudable readiness to place biodiversity higher on the strategic agenda – and to initiate action. However, biodiversity is an emerging field for businesses and the level of complexity, lack of proven approaches, and the sheer difficulty of making the connection between biodiversity impacts and business value produce a range of roadblocks that delay action. However, existing solutions can help companies overcome these roadblocks.

Key takeaways

- Swedish companies are facing a variety of roadblocks that limit their ability to systematically address biodiversity loss – but solutions do exist, and companies can take steps today to advance their biodiversity efforts.
- Through conversations with business executives, we identified three categories of common roadblocks among Swedish companies: unawareness of impact and dependency on nature, immaturity of biodiversity in a corporate context, and difficulty of demonstrating the value of biodiversity initiatives.
- It is imperative that companies act today instead of waiting for the 'perfect' infrastructure (i.e., standardized frameworks, metrics, and regulation) to be put in place.

Swedish companies face roadblocks to action, but there are solutions

Companies mention several challenges which hinders them from taking further action to mitigate biodiversity loss. This chapter explores a range of solutions that companies can pursue to address – and overcome – these roadblocks.

The insights collected through our conversations with business executives generally reveal a strong readiness to place biodiversity higher on the strategic agenda and initiate action. However, biodiversity is an emerging field for businesses and the level of complexity and lack of proven approaches to effectively deal with it creates a range of roadblocks that delay concrete action.

However, for every roadblock there is a solution that can help companies push forward already today. Such solutions will naturally have to be tailored to company- and industry-specific characteristics, while some also depend on close collaboration with external stakeholders such as legislators, NGOs, and other civil society organizations. The six roadblocks addressed in this chapter fall within three main categories (See Exhibit 20):

Swedish businesses are facing a multitude of roadblocks to action

1. Companies are unaware of their impact and dependency on nature	1A Lack of understanding of own impact on biodiversity	1B Biodiversity and other sustainability topics compete for attention
2. Companies are inhibited by the immaturity of biodiversity in a corporate context	2A Lack of standardized metrics and measurement approaches	2B Lack of guiding regulation and reporting requirements
3. Companies find it difficult to identify and demonstrate the value of biodiversity initiatives	3A Difficulty in identifying concrete business opportunities from biodiversity efforts	3B Challenging to drive action in supply chains

Exhibit 20: Several solutions can help companies overcome roadblocks and further the biodiversity agenda

In the following sections, we discuss each of the six roadblocks and their corresponding solutions.

1. Companies are unaware of their impact and dependency on nature

Most companies are aware of the biodiversity crisis and see biodiversity as an increasingly important sustainability topic. However, many are unaware of the potentially massive business implications and lack an understanding of their impacts and dependency on nature. As a result, other strategic (sustainability) priorities are prioritized over biodiversity.

1A Lack of understanding of own impact on biodiversity

As established earlier, all companies impact nature and the ecosystems. However, the high complexity of the dynamics within natural ecosystems makes biodiversity a challenging topic. As a result, many companies lack a sufficient understanding of their direct and indirect impact on biodiversity and the concrete business risks and opportunities associated with this. A thorough understanding of this serves as a fundamental starting point for defining actions that promote nature-friendly outcomes. A lack of understanding, on the other hand, poses a critical roadblock toward real action as it often results in a lack of attention, which in turn leads to the omission of biodiversity as a strategic priority on a par with other key sustainability topics.

Map impacts and dependencies on nature and understand implications of responses to avoid common pitfalls

A first step for companies eager to reduce their impact on biodiversity is to build a detailed understanding of their impacts and dependencies on nature, both in their direct operations and throughout their value chains. Gaining this overview provides a baseline for risk and opportunity assessments, target setting, identifying actionable areas, and the tracking of progress. It, thus, constitutes a critical starting point for a company's biodiversity efforts.

Assessments of impacts and dependencies can be done at different levels and should ultimately be done at the most detailed (and feasible) level. A sector-level materiality assessment can give companies a quick overview of the issue areas associated with the economic activities of its sector and is a low-effort activity for any company given the range of readily available resources (e.g., SBTN's Sectoral Materiality Tool).[102] By doing so, companies will be able to identify biodiversity-related pressures they are currently not addressing and consider whether they are doing enough on the pressures they are already acting on (e.g., climate change, pollution).

A natural next step is to perform a value chain assessment for understanding where impacts and dependencies occur, both in terms of activities and geographical locations. It is vital that such an assessment not only covers the company's direct operations, but also upstream and downstream value chain activities (See Exhibit 21). Performing these assessments require that companies can trace their supply chains to primary production, which may prove a daunting challenge for

[102] Science Based Targets Network, 2022

companies with complex supply networks.

Biodiversity impact is exerted across the value chain

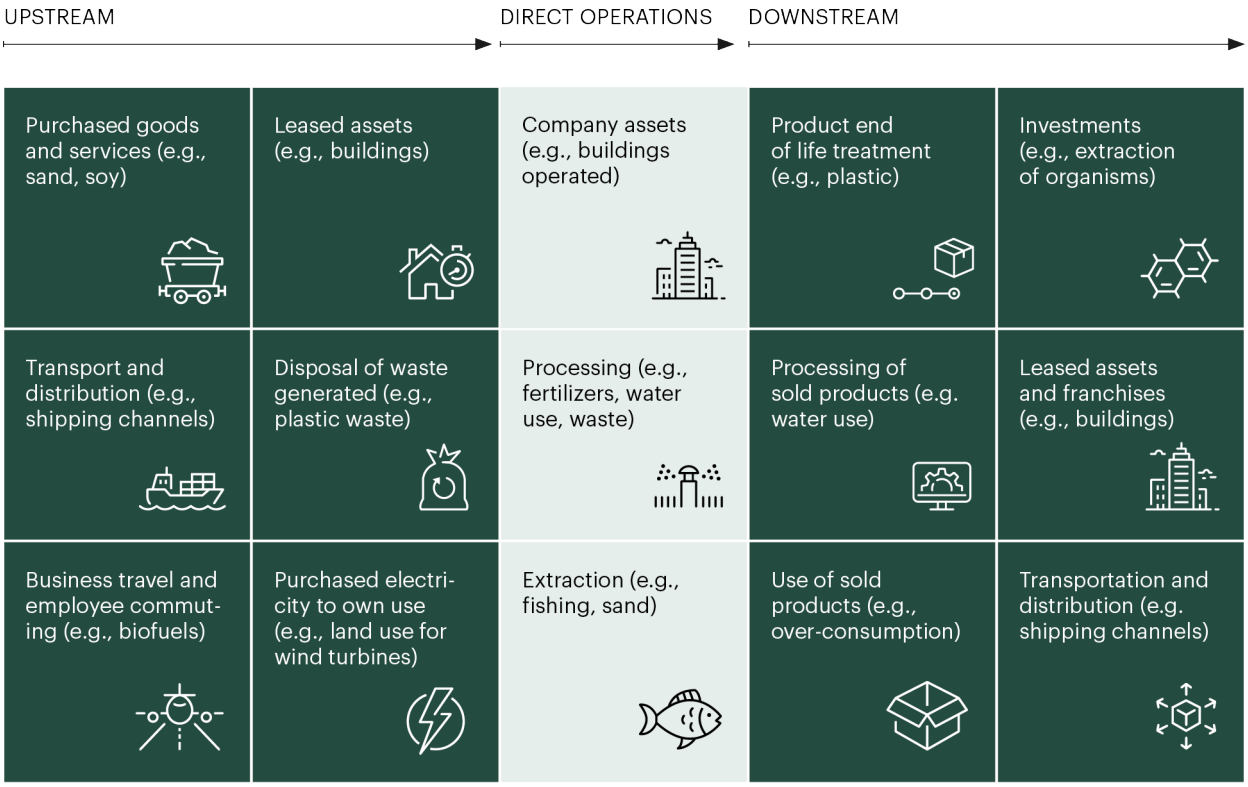


Exhibit 21: Impact assessments should consider full value chains, both upstream (including third-party suppliers), direct assets and operations, and downstream (including final product use and disposal)[103, 104]

There are several frameworks in development, such as the Science-Based Targets for Nature (SBTN) and the Taskforce on Nature-related Financial Disclosures (TNFD), aiming to guide companies in their learning journey and toward identifying relevant actions. In addition, several tools are available for companies to assess and measure their concrete impacts. For example, the Global Biodiversity Score[105] is a recognized tool for corporate biodiversity footprint assessments. It allows companies to assess biodiversity impacts of economic activities across their value chains, along the five global drivers of biodiversity loss. The output from the tool allows companies to identify issue areas & locations and provide them with a preliminary identification of baseline. For a further discussion on relevant tools, we refer to Chapter 6.

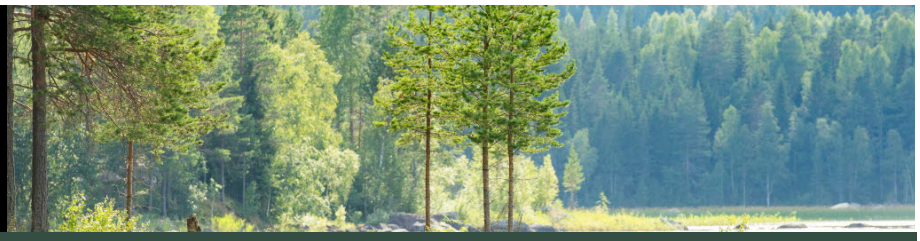
A detailed impact and dependency assessment is essential for companies if they are to identify risks and opportunities. Without an understanding of how the business depends on ecosystem services and the magnitude and location of the pressures business activities exert on nature, a thorough assessment of the risk exposure will be difficult to conduct. Likewise, the definition of business

[103] Natural Capital Coalition, no date
[104] Bain experience
[105] CDC Biodiversité, 2022

opportunities will rely on a detailed understanding of the biodiversity impacts to capture the complexities of how value creation can be generated from addressing biodiversity concerns. To be able to assess and identify key risks and opportunities facing the business, companies should therefore build internal knowledge and capabilities for biodiversity (e.g., by training employees and hiring new talent with relevant backgrounds).

In addition to building a solid understanding of impacts and dependencies, it is important that companies understand the implications and implicit trade-offs of their current and planned sustainability initiatives to avoid counterproductive outcomes. An example of this could be circular economy solutions which will be fundamental to addressing overconsumption. While increased circularity of resources, in general, will reduce pressure on biodiversity, there can be unintended trade-offs for biodiversity if not carefully applied. This is especially important to consider when moving toward renewable solutions. For example, the large-scale use of biomaterials such as plastics for packaging and vegetable oils for energy could exacerbate land use pressures or hinder the development of regenerative agriculture and forestry practices.

Lastly, having an overview of impacts, dependencies, risks, and opportunities – and the companies' exposure to nature and biodiversity loss in general – will be necessary to create a sense of urgency around biodiversity, especially in companies where biodiversity is currently not a strategic priority. In certain cases, shareholders primarily led by strong financial incentives will have incentives that are misaligned or conflicting with addressing biodiversity, forcing top management to balance and prioritize between competing strategic agendas. Top management needs to be convinced and educated about the business rationale behind lifting biodiversity higher up on the agenda. While the most persuading business rationale in many cases will be reducing exposure to nature by mitigating risks, the potential opportunities related to biodiversity should not be overlooked.



CASE EXAMPLE: Assessing impacts and taking responsibility – identification and conservation of red-listed species in forest lands

SCA owns 2.6 million hectares of forest, of which two million hectares are productive forest land. Preserving biodiversity, with the many species that make up the flora and fauna, is one of SCA's most important sustainability targets. In 2020, SCA launched an initiative to assess their potential adverse impacts on species in their forests, to increase the linkage between conservation activities and day-to-day forest management operations and achieve greater precision in the work to protect biodiversity. By doing so, SCA were able to identify species and habitats on which the identified species are dependent, and subsequently define forest management approaches to ensure that the concerned habitats are being preserved.

As a part of the initiative, SCA did an in-depth analysis of the Swedish Red List to identify red-listed species living in SCA's land areas. A total of 203 red-listed species were registered and are now designated as 'SCA's species commitment' (or 'ansvarsarter'). Further, habitat requirements were analyzed for each of the 203 species, resulting in the identification of 10 critical habitats. With this information, SCA is able to take measures toward setting aside and preserving forestland with high conservation value. In 2021, habitat land corresponding to 11 percent of planned area of harvesting was left untouched. In addition, SCA takes active measures, such as creating dead wood and restoring water bodies, to secure the long-term survival of selected species.

The detailed impact assessment has now laid the foundation for SCA to further develop their strategy and work on biodiversity and continue reinforcing conservation measures in its forest operations, enhance the underlying knowledge base, set meaningful targets, improve monitoring and reporting, and establish partnerships for collective knowledge sharing. [106, 107, 108]

[106] SCA, no date
[107] SCA, 2021
[108] SCA, 2022

1B Biodiversity and other sustainability topics compete for attention

Biodiversity is competing for attention with other sustainability topics, and companies struggle to balance these priorities due to the limited resources available. Climate change and decarbonization especially have for long been regarded as more pressing issues for businesses, partly driven by an increase in demands from regulators, investors, and consumers. The subsequent lack of capacity makes it difficult to address several concerns simultaneously, even though key concerns around biodiversity and climate change are often closely interconnected.

Prioritize actions that tackle several sustainability problems simultaneously

As discussed in Chapter 1, biodiversity is tightly interlinked to other sustainability aspects, making it difficult to treat biodiversity in isolation from other aspects. In many cases, companies are already addressing issues like climate change and pollution, which are impact drivers that also affect biodiversity. Companies could move toward a more integrated sustainability strategy by increasing the linkage among these sustainability areas, and still keep climate change at the top of the agenda.

To move toward a more integrated sustainability strategy and capitalize on actions already being taken, companies should review their portfolios of sustainability initiatives and educate themselves on the dependencies between biodiversity, climate change, and other sustainability topics to understand the potential trade-offs and adverse effects that exist. Initiatives conflicting with biodiversity goals should be adapted or replaced, and actions that tackle several sustainability problems should be prioritized. By doing so, companies will do better for nature without sacrificing their progress on other sustainability objectives. One initiative addressing multiple sustainability issues is the *Lowering Emissions by Accelerating Forest finance* (LEAF) coalition, which aims to halt deforestation of tropical forests that act as carbon sinks by financing forest protection while protecting the rights of Indigenous Peoples and members of local communities. In late 2022, H&M Group became one of the latest corporations to make financial commitments to the coalition, a contribution that comes in addition to H&M's efforts to reduce their biodiversity and climate impacts within their own value chain. Exhibit 22 provides more examples of Swedish companies' sustainability initiatives that address several issues simultaneously.

What is sometimes labeled 'nature-based solutions' proves particularly beneficial, as they benefit from the positive feedback loops that exist between climate and biodiversity. For instance, stopping deforestation and restoring natural ecosystems have obvious benefits for both climate change and biodiversity. Even if most climate actions are positively reinforcing biodiversity, companies should keep in mind that this is not true in all cases. Certain proposed climate solutions could create large risks for nature more broadly (e.g., burning crops for energy, developing wind power plants).

While integrated approaches have clear benefits for nature, it can also provide benefits for companies. First, companies can drive synergies from tackling several issues simultaneously, as targets for decarbonization, society, and nature can be met with fewer cost-efficient solutions. Additionally, early biodiversity efforts will start building internal capabilities and could potentially

help companies reduce the transition risks associated with rapidly changing regulations and reporting requirements.

Examples of solutions addressing several sustainable issues at once

Lantmännen: Cultivation program

- Lantmännen is running a Climate & Nature farming program that aims to increase sustainability of farming in collaboration with Swedish farmers.
- In the program, measures are taken to improve biodiversity and reduce climate impact through, e.g., climate smart fertilizers, precision farming, thermally treated seeds, and flower zones. For farmers participating in the program, Lantmännen guarantees payment for both the crops grown and measures implemented.

Arla: Regenerative Dairy Farming

- In 2021, Arla launched a pilot program with selected pilot farms to apply and explore regenerative dairy farming practices.
- In this program, Arla provides training and support for farmers on the implementation of regenerative practices, with the aim to build knowledge on regenerative practices that can simultaneously enhance biodiversity and soil health, reduce effluents, and increase carbon sequestration.

Exhibit 22: Integrated solutions allow companies to address several sustainability goals simultaneously [109] [110] [111]

[109] Lantmännen, no date
[110] Arla, 2022
[111] Arla, 2021

2. Companies are inhibited by the immaturity of biodiversity in a corporate context

Companies that are eager to reduce their biodiversity impacts often find it challenging to drive concrete action and outcomes in a similar way to other business operations. One key reason is that they lack concrete enablers and experience. While further development of concrete metrics and measures for biodiversity and nature is ongoing, and with many stakeholders contributing, it is still at an early stage and no consensus has been reached. At the same time, we see a lack of consistency in the use of biodiversity terms as no widely accepted reporting standards are available and most regulation is still in its infancy.

2A Lack of standardized metrics and measurement approaches

Despite earlier efforts dating back more than a decade, business measurement and reporting on natural capital in general – and concerning biodiversity in particular – is limited. Due to evolving reporting and disclosure requirements, businesses increasingly understand the need for robust and consistent measures of biodiversity impacts and dependencies. As there are currently no widely accepted reporting standards for corporate biodiversity impact and performance (comparable to, for example, the 'CO_2 equivalent' measure for climate change), companies are confused about how to proceed or struggle with defining their own metrics. The lack of consistent standards and metrics also amplify the value chain-related challenges companies face, as traceability, transparency and data availability are essential elements for assessing impacts and prioritize actions across value chains.

Collaborate with industry peers and NGOs and leverage available measurement methodologies

Despite the lack of common metrics to measure and report on biodiversity, some methodologies outlining how to work with and apply measures are available for businesses to leverage as a starting point. In addition, there are more established metrics in place for several of the issues driving negative impact – such as pollution, overfishing, deforestation, and climate – as these are already part of many companies' sustainability agendas. While these initiatives do not solve the actual challenge of providing concrete metrics, they provide guidance on how to approach the development of measurement of nature-related dependencies, impacts, risks, and opportunities across industries. One such initiative is the Taskforce on Nature-related Financial Disclosure (TNFD), which is expected to become a widely backed disclosure framework for companies (a beta version of the framework is publicly available at the time of writing).[112]

It can be challenging for companies to develop relevant biodiversity metrics that are of interest to a variety of stakeholders. Businesses can benefit greatly from partnering and pooling resources with other companies facing the same challenge(s) or other stakeholders trying to solve similar problems

[112] Taskforce on Nature-related Financial Disclosures, 2022

(e.g., NGOs, universities, or research institutes). Collaborating with the NGOs that are currently developing standards and metrics allow companies to not only help shape the upcoming standards and metrics, but also give them access to the latest knowledge. As an example of an industry/NGO collaboration, the Hållbar Livsmedelskedja initiative coordinated by WWF is bringing together 15 companies and organizations with the objective to have significantly more sustainable food production and consumption in Sweden by 2030. For example, the initiative has published Sustainable Products guidelines for food industry players to work for more sustainable products. The guidance brings up concrete actions for several raw material categories that companies can already take within different sustainability areas, including biodiversity.[113]

While defining metrics and target-setting are important activities to advancing the biodiversity work, they can also be resource intensive and time-consuming exercises. Rather than waiting for detailed metrics to be completed, ensuring preliminary validation that a given initiative is contributing positively to biodiversity (despite not knowing the full extent of its impacts) can be a pragmatic approach that will send the company in the right direction even as they await the (often lengthy) process of developing metrics.

2B Lack of guiding regulation and reporting requirements

Existing international agreements and national policies have not been sufficiently effective in protecting nature or driving the required change. The lack of more effective and binding international legislation – and, in turn, national policies – that define a baseline of minimum requirements for businesses is seen as a hindrance to adopting business models respecting planetary boundaries. Without a level playing field on a global scale, biodiversity front-runners are put at a disadvantage and are more hesitant to taking truly transformative action. While both international targets (e.g., Aichi Biodiversity Targets for 2020) and national targets (e.g., Sweden's Environmental Targets) have been set, few have been backed by broad and effective national policies as there has been a lack of accountability among involved parties. Effective policies and regulations could secure the required transparency and traceability needed to drive positive impact in global value chains but remain a challenge for companies. Realizing that current policies are insufficient, governments are working on updating regulation and setting clear targets for biodiversity, and companies need to be prepared.

Collaborate with industry peers and NGOs to advocate for stricter regulation

While there is currently a lack of efficient policies on biodiversity, the increased focus from governments around the world is about to change this. New legislation, regulations, and reporting standards are currently under development and, when finalized, expected to have significant impact on the playing field both in Sweden and around the globe. National governments adopted the new post-2020 global biodiversity framework – often referred to as the 'Paris Agreement for

[113] Hållbar Livsmedelskedja, 2020

nature' – at the CBD COP15 in December 2022, setting 23 targets to be achieved by 2030. Meanwhile, the EU is preparing a series of follow-up initiatives under the EU Green Deal (e.g., EU's biodiversity strategy and the EU Taxonomy) that will influence business practices significantly. On a national level, Swedish regulation is expected to adapt according to upcoming international directives. See the Appendix for an overview of upcoming regulation and other international agreements that might shape future regulation.

Given the multitude of upcoming regulations, companies could face considerable transition risks if they fail to react now. Instead, companies should already start to take action, for example, by providing industry-specific expertise on activities linked to policy development and collaborating with NGOs to exchange knowledge and prepare for upcoming changes. By being proactive, companies can remain aware of upcoming changes and start aligning their operations and activities accordingly.

Biodiversity front-runners, a category which comprises several Swedish companies, could benefit from international agreements and national policies that 'level the playing field' by ensuring that the front-runners are not at a substantial cost disadvantage against competition lagging in their environmental efforts. For the businesses that are reluctant to address their environmental impacts proactively, regulation will be the key driver for taking action to avoid penalties.

Companies can also benefit from being informed and prepared for upcoming regulation, as this can help reduce biodiversity-related transition risks and give a competitive advantage vis-à-vis competition when new regulation is eventually enforced.

3. Companies find it difficult to identify and demonstrate the value of biodiversity initiatives

Businesses play an important role in reversing nature loss and need to take responsibility for their impacts. For some companies, the sense of corporate responsibility might provide enough motivation to initiate action. However, most companies will need to be able to clearly demonstrate the business value of addressing biodiversity before allocating resources to initiatives that address biodiversity impacts rather than other strategic priorities. While internal decision-making is important to drive positive change in a company's value chain, it is equally important to convince and incentivize value chain participants to act, as preserving biodiversity often requires joint efforts. All this is especially relevant in the current absence of effective and binding regulation, which would (at the bare minimum) motivate companies to act to stay compliant and/or mitigate regulatory risks.

3A Difficulty in identifying concrete business opportunities from biodiversity efforts

While the value potential from mitigating risks related to biodiversity can be obvious, the potential for value creation through active business model development is often more difficult to identify. Only in recent years has biodiversity become more of a strategic interest for companies. This recency explains why few proven models exist to show companies how biodiversity-enhancing initiatives can be a real driver of business value at scale.

Broadly explore value creation opportunities, establish connection between impact and business value, and communicate success stories

Businesses will need to identify tangible value creation opportunities to take action on a larger scale and justify the investments needed. As described in Chapter 3, companies can explore several avenues of opportunities when addressing biodiversity impact such as improving core business operation, driving innovation, and gaining access to new sources of financing. It is worth keeping in mind that companies historically have had to adapt their business models and develop more sustainable products and services to address other sustainability issues, so while biodiversity is the most recent sustainability frontier for many, there is a lot to be learned from past experiences.

It is critical that businesses generate initiatives that clearly connect positive biodiversity impact to concrete business value because a strong connection between the two will make it easier to scale the initiatives. Scalability of initiatives is important for demonstrating proof-of-concept, rather than smaller 'one-off' projects. Making the connection between business value and impact is often focused on own operations, but when searching for opportunities companies should also broaden their view to include a value chain level. For example, Coop has, in collaboration with Nordic meat and meals company HKScan, been offering a range of natural pasture meat options under its own brand. The number of natural pastures known for being species-rich has been decreasing sharply in

Sweden, posing a big threat to biodiversity. Therefore, offering meat products from animals grazing in natural pastures helps to preserve Swedish biodiversity.[114, 115]

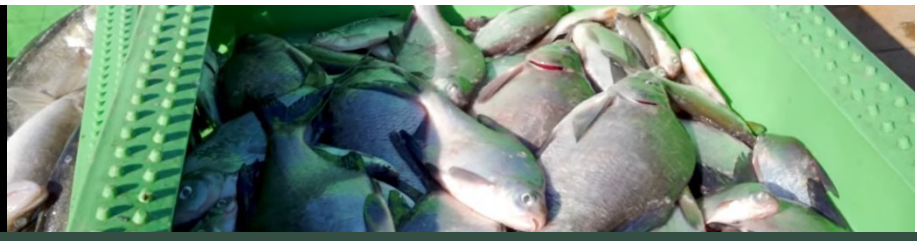
While change and sustainable business model innovation can be part of the agenda for larger industry incumbents, the more transformative initiatives will often be driven from a 'grassroot' level. Hence, companies should also make sure to actively monitor 'grassroot' initiatives to get inspiration for new nature-positive business models. Fazer – a Finnish food and beverage company – is dedicated to finding innovative food solutions to sustainability problems. Fazer Lab invests in foodtech-related R&D and actively monitors the foodtech space for attractive investment opportunities.[116] One example of this is Fazer's investment in Solar Foods, a company developing a novel protein ingredient named Solein, which is aiming to disconnect food production from agriculture.[117]

Lastly, companies should not forget to communicate success stories and 'proof-of-concepts' both externally and internally. By publicly communicating the actions taken, peers can find inspiration on where to get started and what actions to prioritize. Moreover, communicating success stories internally can help to build awareness and knowledge about biodiversity as well as increase employee engagement and even recruitment.

Not every biodiversity-related initiative will have obvious business benefits – at least not in the short term. Companies will have to make potentially significant investments upfront to build the required business structures needed to tackle biodiversity issues (e.g., building internal capabilities, gathering data from own operations and value chains for assessing impacts and dependencies). Such investments should be seen as enablers for long-term value creation in a field that will be critical for most companies over the coming decades.

Additionally, companies should be mapping restoration projects that support the strategic biodiversity targets of the company. To ease investment decisions for such initiatives, companies should commit to strategic ambitions of becoming nature-positive. Setting such ambitions is required to reverse the negative trend of nature loss by 2030 but also require companies to invest in biodiversity restoration.

[114] Coop, 2022 a
[115] Coop, no date
[116] Fazer, no date a
[117] Fazer, no date b



CASE EXAMPLE: Developing fish products from species that have previously not been of commercial interest to Swedish fisheries

In Sweden, fishing focuses mainly on a few large predatory fish species which creates an imbalance in the ecosystem. To contribute to more balanced fishing and efficient use of resources, the non-profit organization Axfoundation, together with partners such as research institutes, professional fishermen, and fish product producers, have been investigating new innovative fish products made from species that have previously not been of commercial interest. As a result, a viable business model for bringing such products to the consumer markets has been created.

Axfoundation was responsible for creating the business model, conducting product development, and setting up a supply chain together with external stakeholders. As a starting point, to confirm consumer interest, Axfoundation aimed to create an environmentally sustainable, great tasting, and reasonably priced product. The project resulted in a practical, scalable, and biodiversity enhancing minced bream product called Braxenfärs that has now been introduced to the Swedish markets. It has gained popularity – especially among younger consumers – and is currently sold both in restaurants and as fish cakes in retail.

Through the project, Axfoundation has been able to gather stakeholders across the value chain and show that the business model works in real life. Having created a proof of concept, Axfoundation is hoping other actors will develop products and scale the business model even further.[118, 119]

3B Challenging to drive action in supply chains

To drive significant impact, companies often depend on transforming activities in their supply chains. To address this, they need to find ways to incentivize both suppliers and customers to take action. As discussed above, proving the business value of an initiative can be difficult in itself but influencing suppliers to act on it can be even more challenging, especially among those suppliers a company does not deal with directly. At the same time, sustainable solutions and services will often be more costly, and convincing value chain participants and customers to bear this additional cost is difficult.

[118] Axfoundation, 2021

[119] Axfoundation, no date

Collaborate with supply chain to influence suppliers and customers to take action

Well-functioning supply chains are key to driving the biodiversity agenda. As discussed in Chapter 4, the transition to sustainable supply chains involves ensuring that sourced materials are produced in a sustainable way in the very near future, if not done already. This requires that supply chains are transparent, traceable, and monitored to ensure the adoption of sustainable practices among suppliers and to be able to provide visibility on progress. To drive these transitions in the long term and have a true impact on biodiversity, companies must incentivize both downstream and upstream supply chain participants to adopt more sustainable practices.

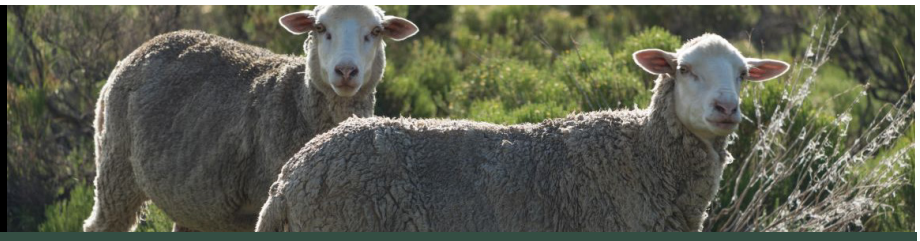
Incentivizing suppliers can be done in various ways, either through setting requirements or more positive business incentives. The purchasing power held by many large corporations gives them significant influence over their suppliers' business practices. Companies should monitor and set high standards for suppliers' sustainability performance and hold them accountable – just as they do with every other business aspect. If suppliers fall short of meeting the standards, companies should react and guide them toward best practices, or in the extreme case, stop doing business with them altogether.

Alternatively, companies can create incentive systems for suppliers to improve their sustainability performance. This can be an effective tactic when procuring goods from smallholders or from countries with lower standards, where economic incentives might be needed to drive the wanted outcomes. For example, the forest owner cooperative Södra both increased the premium for FSC-certified forest products and initiated a new nature conservation premium program in 2022. The premiums were introduced to both increase motivation among its members to become FSC-certified, but also to increase the total voluntary area set aside to collectively meet FSC forest management requirements at a group level. [120, 121] Lastly, as supply chains overlap in many sectors, horizontal industry collaborations can be an effective way to drive transformative change in supply chain networks.

Indirect biodiversity impacts are also exerted in downstream value chains, where there is a need to shift consumption toward nature-friendly products and services. Companies can incentivize such behavior by educating customers on the importance of biodiversity and making it easier for customers to make sustainable choices. An example is the design of products for circular consumption, where the downstream impact can be greatly reduced. In recent years, numerous apps and platforms have emerged that offer subscription-based models for customers to rent rather than 'buy-and-own' everything from clothes and furniture to cars and electronics, hence giving customers concrete incentives to choose products and services with reduced impact on nature.

[120] Södra, 2021

[121] Södra, 2022



CASE EXAMPLE: Collaborating with WWF to engage farmers in adopting regenerative wool production practices in South Africa

H&M Group and WWF entered a partnership in 2011 with an initial focus on water stewardship. Since then, the collaboration has expanded to also address climate and biodiversity challenges within H&M Group's value chain. In 2021, a regenerative wool production pilot project was launched in South Africa. The objective of this project is to support H&M's long-term ambition to have a net positive impact on biodiversity, as well as to unlock more sustainable wool for use in clothes production. The initiative aims to engage 70 communal smallholders and 10 large commercial sheep farms in adopting regenerative wool production practices over the next five years. The project area is within and around the area targeted for the new Grasslands National Park and will contribute to preserving biodiversity in the area.

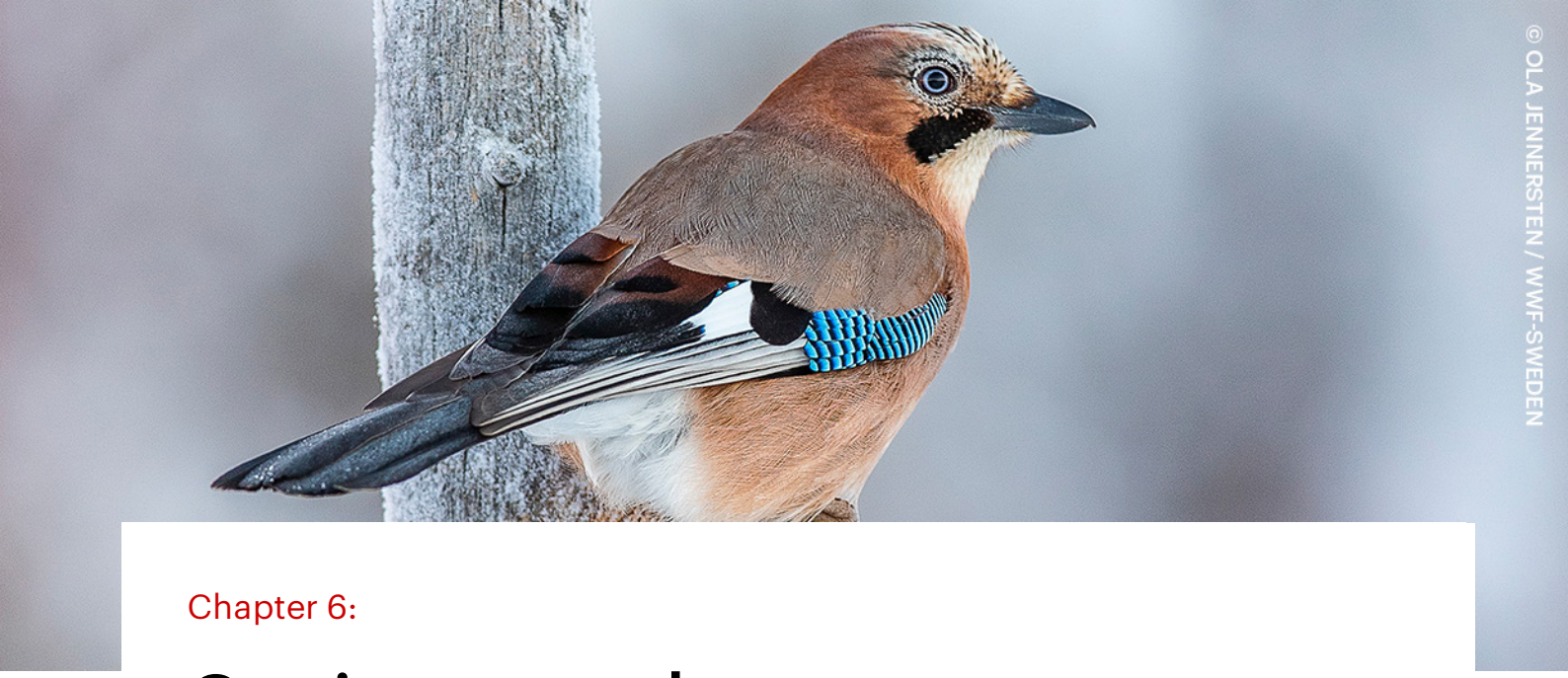
The project's aim is to ensure that the farms are certified under the Responsible Wool Standard (RWS) as a starting point. However, certification can be seen as the 'floor' for more sustainable sourcing, and the project recognizes the need to go beyond certifications to ensure larger impact on improving biodiversity outcomes. To do this, the pilot project in South Africa includes collaboration with farmers on improved grazing practices that promote biodiversity.

Two elements have so far been identified as key to incentivizing suppliers to take actions. First, overlaps in activities that are beneficial to both the farmers and the environment have been identified and communicated to farmers. This includes actions such as improving water security by clearing invasive plant species from river systems. Second, showcasing local examples of regenerative farming practices and the benefits achieved has been seen as a key factor to incentivize action. Once local examples are in place, it gets easier to attract wider groups of farmers to take part and thereby scale up the regenerative practices. H&M is also collaborating with local industry players to apply the best practices learned through the pilot project on a larger scale.[122, 123, 124]

[122] H&M Group, no date a
[123] H&M Group, 2022
[124] WWF, no date b

"The lack of KPIs should not stop us from acting – if we can establish that identified measures are improving biodiversity then that is good enough, even if we cannot say exactly how great the improvement is yet."

Per Arfvidsson
EVP operations, Lantmännen



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Chapter 6:

Getting started

Existing frameworks can help businesses map out a structured approach to addressing their biodiversity impact. Initiating concrete actions now will yield valuable learnings already tomorrow.

The high urgency to halt biodiversity loss underlines the importance for businesses to initiate concrete efforts toward limiting their biodiversity impact now. While the previous chapter explored a range of roadblocks that businesses need to overcome to properly commence their journeys, the interviews conducted with Swedish companies also revealed a strong willingness to get started. Businesses can leverage several existing frameworks to define their approach to addressing their biodiversity impact. While these frameworks can form a solid foundation for moving ahead in a structured manner, companies also must not overthink but instead prioritize concrete actions. Driving concrete initiatives will get businesses moving on this vital agenda and ensure that they pick up critical learnings to further inform and improve their work.

Key takeaways

- Now's the time. Defining an overall approach to biodiversity should not come at the expense of immediate, concrete actions.
- Frameworks guiding businesses toward structuring their biodiversity efforts are being developed and comprehensive draft versions are already available.
- An important first step for companies is to thoroughly understand their impact on biodiversity, and a range of tools supporting these activities are available for companies to get started.
- Companies should adhere to the principles of the action framework called AR^{3}T when identifying actions: **A**void impact, **R**educe impact, **R**egenerate & **R**estore – keeping in mind that **T**ransformative changes are required to tackle the fundamental drivers of nature loss.
- Working with credible certification schemes can be a way for companies to start addressing their biodiversity impact – however, the limitations need to be understood.

Structure your approach on biodiversity with existing frameworks

Existing frameworks can guide businesses in their biodiversity efforts – from defining and structuring an approach to increasing the knowledge of impacts and, finally, defining a clear course of action.

The survey and executive conversations carried out as part of this report clearly show that the concrete experience working with and structuring efforts around biodiversity vary significantly from company to company. However, most conversations reveal a general lack of a comprehensive and standardized approach to tackling biodiversity, and many companies are currently exploring ways to apply a more structured approach that can guide their biodiversity work, similar to what has been developed within other sustainability topics such as climate change.

Concrete frameworks that aim to guide businesses in structuring their approach to biodiversity-related activities have emerged (Exhibit 23). These frameworks are typically step-by-step methodologies for assessing how businesses can increase understanding of their own impact, identify and implement action, and set up the right process for monitoring and follow-up.

Examples of comprehensive frameworks helping companies define their approach to addressing impacts on nature

Science-Based Targets for Nature (SBTN): Collaboration between leading NGOs and Science Based Targets Initiative to guide companies in setting science-based targets for nature. The framework lays out the five-step guide for companies to proactively address their impact on nature. The 'Initial Guidance for Business' was released in 2020, and the first release of SBTs for nature will be launched in early 2023.

WWF's Biodiversity Stewardship Approach: Roadmap developed by WWF for companies to find meaningful ways of achieving their science-based targets and developing nature-positive business models. The roadmap consists of five iterative steps and is closely linked to the SBTN and TNFD approaches.

Natural Capital Protocol: Framework developed by Natural Capital Coalition for companies to identify, measure, and evaluate their direct and indirect impacts and dependencies on natural capital. The protocol was published in 2016 and is publicly available.

Taskforce on Nature-related Financial Disclosures (TNFD): Framework offering guidance on assessment and disclosure of nature-related risks and opportunities. Latest beta version of the framework was released in November 2022, and the final release is expected to be launched in late 2023.

Exhibit 23: Comprehensive frameworks can guide businesses in their biodiversity efforts by helping define a clear approach for how to tackle biodiversity challenges [125] [126] [127] [128]

[125] Science Based Targets Network, 2020
[126] WWF, 2022 b
[127] Natural Capital Coalition, no date
[128] Taskforce on Nature-related Financial Disclosures, 2022

One concrete framework to build a comprehensive roadmap for addressing biodiversity efforts is WWF's Biodiversity Stewardship Approach.[129] This iterative five-step approach helps companies find meaningful ways of achieving their biodiversity targets and is aligned with the approach defined by Science-Based Targets for Nature (SBTN) (Exhibit 24).

WWF's Biodiversity Stewardship Approach

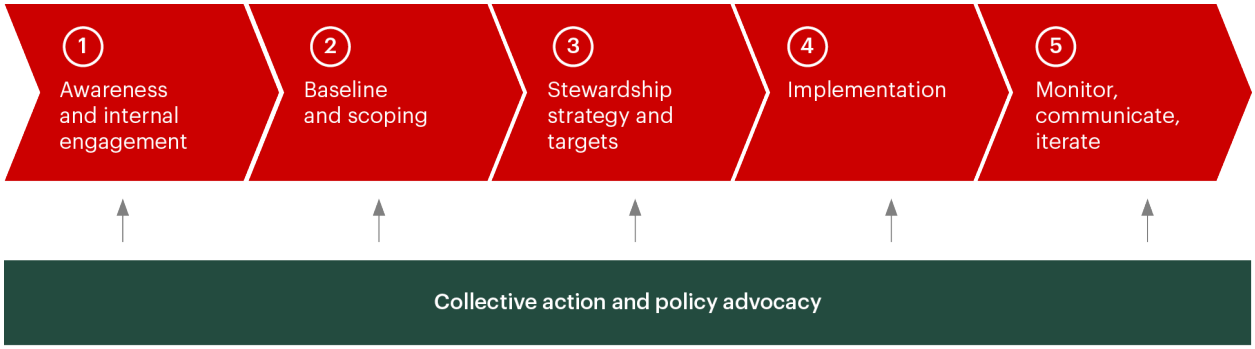

Exhibit 24: The WWF Stewardship Approach aims to help businesses take action to reduce their biodiversity impact

As a **first step**, companies must develop an internal understanding of how biodiversity is relevant to their business and raise awareness within their organization. In the **second step**, a detailed analysis of impacts and risks across operations and value chain should be carried out to identify biodiversity areas for action. In the **third step**, companies determine measurable, time-bound, and science-based targets for the prioritized issue areas and locations. As a **fourth step**, companies define actions for driving progress toward the strategic targets. Actions implemented should not only aim to reduce risks but also drive positive impact. Lastly, in **step five**, the biodiversity impact and outcomes of companies' biodiversity efforts should be monitored, tracked, and evaluated regularly to ensure that progress is being made.

To embrace a stewardship role, companies will also need to engage in collective action and policy advocacy. Collaboration is essential given the complex interactions between different actors in landscapes where activities take place, so a company's collective action may be coordinating all stakeholders' efforts or supporting other stakeholders with more limited resources to respond to biodiversity issues. Further, companies can improve broader biodiversity governance through policy advocacy. By fulfilling corporate responsibilities for biodiversity and using their influence to encourage governments and other actors to do the same, companies can play a positive role. It is essential to understand that stewardship is about guiding and supporting government policy, not supplanting it, and certainly not thwarting or undermining its implementation.

General frameworks such as those presented here are critical for businesses as they set out to define a structure for addressing their biodiversity efforts and, not least, what they want to achieve with it. As such, they will provide a strong foundation for deciding how and where to initiate action and measure progress.

[129] WWF, 2022 b

Financial institutions differ from other economic sectors in that they provide finance and other services to the companies responsible for reducing their biodiversity impact rather than exercising direct control. Thus, the role of finance is rather to ensure that finance flows are consistent with a pathway toward biodiversity preserving development. However, financial institutions can leverage many of the same frameworks as corporates, such as the Taskforce on Nature-related Financial Disclosures (TNFD) which is explicitly intended for use by financial institutions. In principle, the steps are the same but with the portfolio in focus, including assessing assets, setting targets for the portfolio, enabling action, and disclosing portfolio performance.

Identify and assess biodiversity impacts using existing tools

The first critical step for companies in their biodiversity journey is to map the actual impact they exert on nature. This will provide a strong foundation from which biodiversity enhancing actions can be identified. The various approaches to assessing the impacts are under constant refinement, but several tools can already be leveraged to initiate this key exercise.

The interviews and survey carried out for this report show that Swedish companies struggle to make informed decisions regarding biodiversity. Although around 50 percent of survey respondents evaluate their overall familiarity with the topic as being 'high', the companies lack an understanding of their own impacts on biodiversity – both within their operations and across the value chain. As discussed in Chapter 5, one way to overcome this is to start by making a detailed assessment of key impact drivers. This helps companies gain deep(er) knowledge of their impacts and identify the most important risks and opportunities. This, in turn, becomes the foundation for concrete actions toward promoting biodiversity and reducing impact. Although there are no cross-industry frameworks setting out a standardized way to assess impacts available yet, companies can use existing tools to get started with their analyses.

Exhibit 25 presents a selection of established tools and guiding resources that can support companies in making value-chain wide impact and risk assessments. Sector-level materiality screening tools provide a great starting point by helping companies identify impacts and dependencies associated with their respective sectors. Value chain assessment tools can be divided into two categories: 1) tools for assessing the pressures put on nature due to business activities across the value chain, and 2) tools for assessing the state of nature in geographical areas where a company or their suppliers are operating. Lastly, there are a few guiding resources that provide an overview of available tools and measurement approaches.

An example of one of these tools is WWF's Biodiversity Risk Filter. This ambitious tool will enable companies to analyze spatially explicit biodiversity data, helping them better assess and respond to biodiversity risks and opportunities across their operations and value chains.

Tools for assessing biodiversity impacts, dependencies, and risks

Sector-level materiality screening

- Encore: Tool to understand the exposure to natural capital risks by identifying the impact of environmental change on the economy and of business activities' impact on biodiversity.
- SBTN Sectoral Materiality Tool: Tool to understand types of environmental impacts that are materially relevant to company's sector and activities.

Value chain assessment: state of nature

- WWF Biodiversity Risk Filter: Tool to address biodiversity risks and opportunities within operations and value chain. The tool contains a module for assessing sector-level impacts and dependencies (launched in January 2023).
- Integrated Biodiversity Assessment Tool (IBAT): Helps to identify geographical biodiversity risks of projects/sourcing regions and to develop action plans.
- GLOBIO: Calculates human-induced changes in terrestrial biodiversity expressed by the mean species abundance (MSA) indicator.
- Global Forest Watch: Online platform providing data and tools for monitoring forests and land use.
- Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST): Model to report on the supply, use, and value of terrestrial, freshwater, marine, and coastal ecosystem services in a given territory.

Value chain assessment: pressures

- Biodiversity Footprint for Financial Institutions (BFFI): Provides a biodiversity footprint of the economic activities in which financial institutions invest. The methodology is based on calculating the environmental pressures posed by the investment portfolio or parts of it.
- Bioscope: Provides businesses and financial institutions with a simple indication of the key impacts on biodiversity caused by their supply chain or financial products.
- Exiobase: A global database used for analyzing environmental impacts associated with final consumption of product segments. It is a detailed Multi-Regional Environmentally Extended Supply-Use Table (MR-SUT) and Input-Output Table (MR-IOT).

Resources for exploring other tools

- Natural Capital Toolkit: Lists tools to measure and value natural capital, incl. filter of applicable tools by sector (incl. value chain boundaries).
- Finance for Biodiversity: Guide for biodiversity measurement approaches. Provides an overview and real-life case examples of measurement approaches in use and underway, mainly targeted at financial institutions. Published in July 2022 as a part of EU Business and Biodiversity work.
- Assessing Portfolio Impact (WWF, 2021): Report with overview of currently available tools for portfolio investors to measure investment portfolios' impact on environment.

Exhibit 25: Several tools are in place to support businesses in assessing biodiversity impacts and risks [130] [131] [132] [133] [134] [135] [136] [137] [138] [139] [140] [141]

[130] ENCORE, no date
[131] Science Based Targets Network, 2022
[132] Integrated Biodiversity Assessment Tool, no date
[133] Global biodiversity model for policy support, no date
[134] Global Forest Watch, no date
[135] Stanford University, no date
[136] The Netherlands Enterprise Agency, 2021
[137] Bioscope, no date
[138] Exiobase, no date
[139] SHIFT, no date
[140] Finance for Biodiversity Pledge, 2022
[141] WWF, 2021

Deep dive:

WWF Biodiversity Risk Filter

The WWF Biodiversity Risk Filter is an online tool intended to act as a starting point for companies to address biodiversity impacts, risks, and opportunities within their operations and value chain. The tool supports businesses on their biodiversity journey through four key steps: informing, exploring, assessing, and responding. Three of the tool's four modules were launched in January 2023.

The **Inform** module provides companies with an overview of sector-level impact and dependencies. With the **Explore** module, the spatial component is added, so companies can identify high risk and opportunity areas globally, and identify and focus their efforts on locations across the value chain that should be mapped at site level. The **Assess** module brings together sector-level materiality data with relevant biodiversity data to provide a more detailed assessment of risk and opportunity types across a company's value chain sites. This makes it possible to investigate underlying causes and prioritize focus areas. The **Respond** module, which will be launched at a later stage, will support businesses in identifying company-level response options to minimize their biodiversity-related risks. The module offers recommendations fitted to specific issues and locations (Exhibit 26).

WWF Biodiversity Risk Filter helps identifying high-risk areas

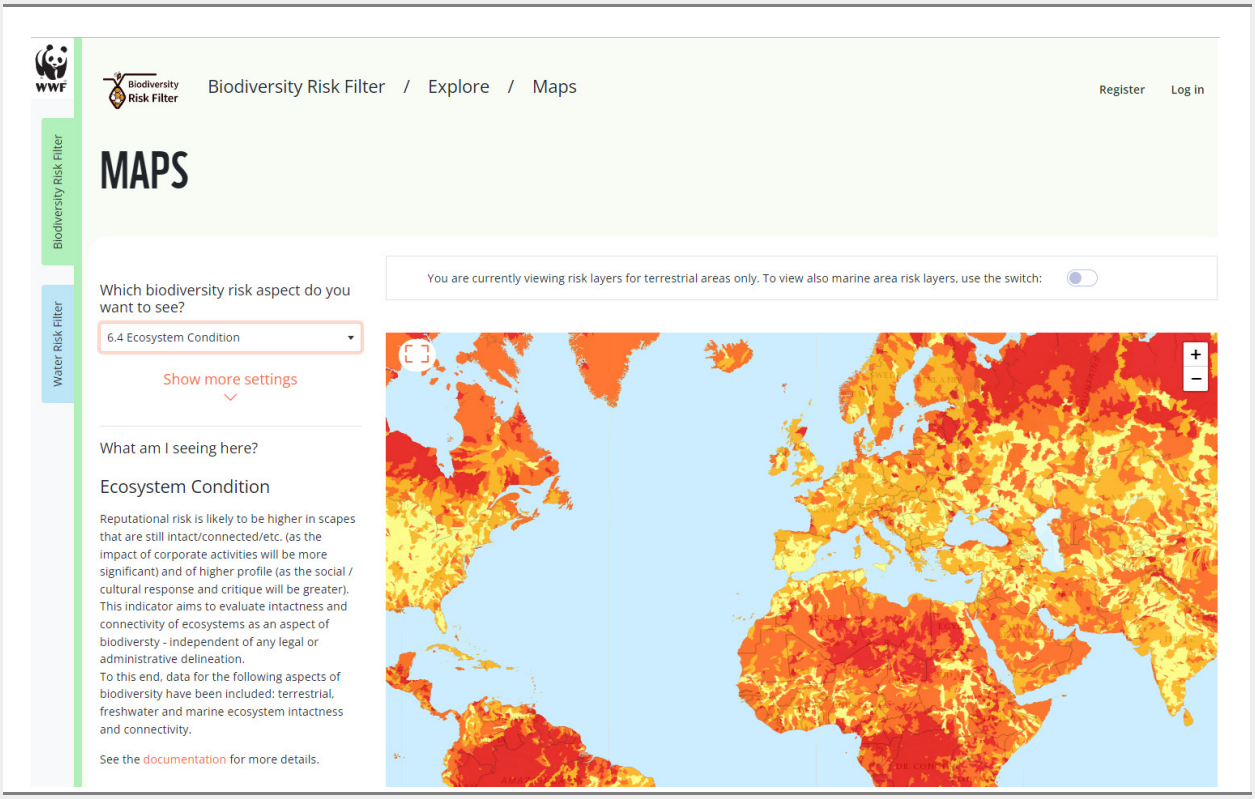

Exhibit 26: Biodiversity Risk Filter currently being developed by WWF allows companies to address biodiversity-related risks and opportunities within their operations and value chain through visualized map outputs

In addition to the tools mentioned above, some leading companies have also started developing internal tools to measure and monitor biodiversity impacts. The interviews show that companies find collaboration with other companies and NGOs important when they develop these tools and measures, because it enables information and experience sharing as well as more synchronized efforts. For example, retail chain Coop has developed and introduced a sustainability declaration that presents a product's sustainability footprint to customers. Sustainability is assessed through ten areas, including biodiversity, that were identified under the Hållbar Livsmedelskedja initiative coordinated by WWF, involving 15 of the largest companies in the Swedish food industry.[142]

Survey results show that many companies are struggling to develop indicators and targets on biodiversity impact that are tangible and with concrete timelines. However, some leading companies have started developing and identifying indicators relevant to their business and pressures to support the assessment and tracking of their impacts (Exhibit 27). Such indicators target key elements of the companies' operational impact on nature and are hence a way of tracking the development in assessing biodiversity over time.

Examples of biodiversity-related indicators set by leading companies

Supply chain

- Share of materials, e.g., palm oil, traceable to source (%)
- Share of certified materials procured, e.g., FSC, RSPO (%)
- Share of recycled materials used (%)

Operations

- Share of deadwood in owned forests (% compared to base year)
- Amount of biodiversity improvement projects (in number)
- Amount of skylark territories per hectare of agricultural field (in number)
- Amount of Red List and national conservation list species identified in sites (in number)
- Amount of operational sites adjacent to areas of high biodiversity value (in number)

Consumption

- Share of sales of credibly certified products (%)
- Share of packaging made from renewable or recycled materials (%)
- Share of plastic reduced in packaging (% compared to base year)

Exhibit 27: Leading businesses are already assessing part of their biodiversity impacts through metrics across supply chain, operations, and consumption[143, 144, 145, 146, 147, 148, 149]

[142] Coop, 2022 b
[143] AAK, 2022
[144] H&M Group, no date b
[145] H&M Group, no date c
[146] Stora Enso, 2022
[147] Boliden, 2021
[148] Lantmännen, 2018
[149] KICKS, 2022

Identify and drive concrete actions to improve impact and secure early learnings

Defining an overall approach to addressing biodiversity impact should not come at the expense of initiating concrete action right away. Kickstarting efforts to reduce biodiversity impact can help companies drive company-specific learnings that are critical to defining the right way forward.

Assessing and measuring biodiversity impact help companies understand their natural dependencies as well as related risks and opportunities throughout the value chain. It thus provides a great foundation for taking concrete actions to address biodiversity loss. But defining a more systematic approach to addressing biodiversity can be a comprehensive process. Companies should identify and drive concrete actions addressing biodiversity impact and make sure that these steps are completed in parallel (even if they cannot yet rely on an entirely structured approach). Getting started on concrete, easy-to-implement initiatives will help companies build the internal and organizational awareness and capabilities regarding biodiversity, and, critically, help them develop a more detailed knowledge of industry- and company-specific biodiversity characteristics. Moreover, the lessons learned through these easy-to-implement initiatives should act as an important feedback element that can serve to inform and concretize the definition of the overall company approach to biodiversity as well as future actions.

Science-Based Targets for Nature's Action Framework: AR³T

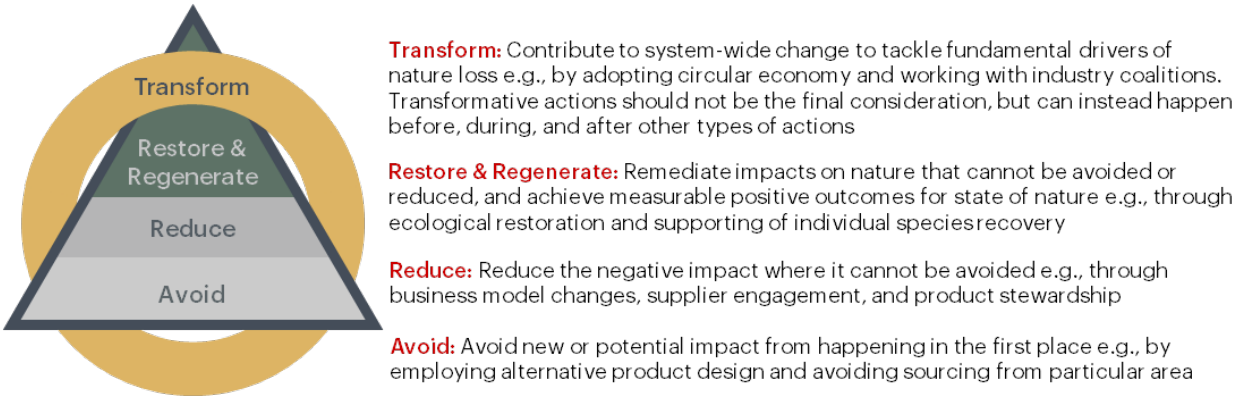

Exhibit 28: Illustration of the Science-Based Targets for Nature framework's action hierarchy framework[150]

To start identifying concrete initiatives and actions to address biodiversity, companies can utilize the Action Framework – AR³T – developed for the Science-Based Targets for Nature framework (Exhibit 28).[151] The action framework is expanding on well-known mitigation and conservation hierarchies by including transformative ways in which companies can contribute to systematic change inside and outside their value chains. It guides companies on available actions categorized under four elements.

[150] Science Based Targets Network, 2020

[151] Science Based Targets Network, 2020

Credible certifications help companies take immediate action

Companies can drive change in scale within their supply chains by using credible certifications. However, there are limitations to certifications, and they should only be considered part of a company's biodiversity work.

One significant challenge standing in the way of driving a positive biodiversity impact concerns supply chains. Many of the companies interviewed stated that the lack of traceability and difficulty of incentivizing action among supply chain stakeholders make up significant challenges. To address environmental concerns in the supply chain, various certification schemes have reached an established position across industries. However, not all certification schemes can be considered credible and ambitious enough to deliver satisfactory improvements. WWF has been promoting and co-designing credible certification schemes for more than 30 years. To be considered credible, certifications should be based on ambitious standards, involve multiple stakeholders, and have independent third-party verification of certificate holders and auditors.

More sustainable goods are increasingly demanded by customers and consumers, and certifications play a role in simplifying their decision-making.[152] However, certifications do have limitations that companies should be aware of. First, certifications are not an ultimate guarantee for environmental sustainability. Standards include social, environmental, and economic aspects, and trade-offs between the three dimensions might be unavoidable. Second, extensive compliance audits of certificate holders are often not economically or technically viable. For example, some supply chains cannot always keep certified and non-certified products separated due to difficulties in terms of how the supply chain and market operates (e.g., cotton and wood fibers being handled in bulk). Finally, most certification schemes track the producer's processes rather than actual environmental outcomes. Given the limitations, purchasing certified products can only be part of a company's biodiversity efforts. Ultimately, a company continues to bear part of the responsibility for the state of nature in those places where the source raw materials from.

Despite all limitations, certifications are an important starting point for companies to quickly bring about change to their supply chain at scale. At best, they can help companies drive hundreds to thousands of suppliers to change their practices. Businesses can also gain reputational benefits as well as competitive advantages when adopting credible certifications. In the case of forest products, for example, these benefits include selling at price premium, achieving operational efficiencies, improving stakeholder relations, and managing reputational risks.[153, 154]

Exhibit 29 lists examples of credible certifications already being used by leading businesses today. For example, 86 percent of palm oil purchased by the dairy company Arla during 2021 was RSPO-certified, while more than 99 percent of wood used in furniture retailer IKEA's products was either FSC-certified or recycled in 2021.[155, 156]

[152] WWF, no date c
[153] WWF, 2015
[154] WWF, 2017
[155] Arla, no date
[156] IKEA, 2022

Examples of credible certifications

FORESTRY PRODUCTS

Forest Stewardship Council (FSC)
Forest products, including paper

SEAFOOD PRODUCTS

Aquaculture Stewardship Council (ASC)
Seafood from aquaculture

AGRICULTURE AND CONSUMER PRODUCTS

Better Cotton Initiative (BCI)
Cotton products

Roundtable on Sustainable Biomaterials (RSB)
e.g. biobased fuel, textiles, fibres, and plastics

Roundtable on Sustainable Palm Oil (RSPO)
Palm oil and palm oil derivatives

Rainforest Alliance
e.g. coffee, tea, bananas, and cacao

KRAV
Organic food & beverages and other agricultural products

Exhibit 29: When making sourcing decisions, businesses can choose certified products as a first step to address their biodiversity impact [157] [158] [159] [160] [161] [162] [163]

Next steps

If we are to reverse the trend of global degradation of ecosystems by 2030, Swedish companies must act today.

As this report emphasizes, biodiversity is under unprecedented pressure both globally and in Sweden. It is evident that the severe pressure on nature and biodiversity is caused by human activities and poses a threat not only to businesses but also to societies and, ultimately, humanity itself. All Swedish businesses contribute to biodiversity loss in one form or another, through direct and indirect activities.

While most Swedish companies recognize biodiversity loss as a threat to their business, they face a variety of roadblocks limiting their ability to address biodiversity loss. The solutions presented in Chapter 5 and the resources presented in this chapter aim to lower the barrier and enable companies to take the first steps toward reducing their biodiversity impact and adopting more nature-friendly business models.

Keeping the urgency of the biodiversity crisis in mind, companies must act today if we are to reverse global degradation of ecosystems by 2030. As covered in this chapter, developing biodiversity-related taxonomy, frameworks, tools, and metrics is still an ongoing process; however, there are many existing resources readily available that can help companies get started. Utilizing these resources will allow companies to build an initial understanding of their biodiversity impact, prioritize key areas of impact, and identify no-regret actions to initiate the learning process.

Appendix

Glossary

Afforestation: planting trees in areas and regions previously not covered by trees

Biodiversity: the variety of life on the planet, at genetic, species, and ecosystem levels

Biodiversity footprint: impact on biodiversity resulting from production and consumption of resources

Biosphere: the parts of the Earth where life exists

Bottom trawling: fishing method that involves dragging heavy weighted nets across the sea floor

Carbon sequestration: the process by which carbon dioxide is captured from the atmosphere and transformed, e.g., into biomass through photosynthesis

Carbon sink: natural environment that retains or sequestrates carbon

Clear-cutting: practice where all or most of the trees are removed in a selected area simultaneously

Conservation: the act of protecting Earth's natural resources for current and future generations

Conversion of an ecosystem: the conversion of an ecosystem to another land type (e.g., forests to farmland and pastureland), primarily for human use, leading to the loss of the habitats and animals that were part of the original ecosystem

Crop monoculture: the farming of a single crop or organism

Decarbonization: the process of reducing the release of carbon gases into atmosphere

Deforestation: the process of clearing forest or a large area of trees from land

Degradation (environmental): the process by which the natural environment is deteriorated in a way that reduces its biodiversity

Ecosystem: a community of animals and plants interacting with each other and their physical environment (e.g., soil, water, nutrients and living organisms in the environment)

Ecosystem services: benefits that people obtain from nature, ranging from provision of commodities to cultural benefits

Effluent: liquid waste material discharged into the environment (e.g., stream, lake, ocean)

Habitat fragmentation: the separation of one continuous habitat into smaller non-continuous pieces

Logging: the process of cutting, processing, and moving trees

Natural capital: the world's natural assets, including water, air, all living things, soil, and geology

Nature-based solutions: actions to protect, sustainably manage, and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively to provide both human well-being and biodiversity benefits

Nature-positive approach: an approach that not only minimizes impact on nature, but also enhances resilience of the planet and society

Overexploitation: the use of a natural resource to the degree where it is harvested at a greater rate than it can replenish itself

Regenerative agriculture: approach to farming that restores degraded soils and takes environmental factors such as biodiversity impacts into account

Global regulation

Convention on Biological Diversity

The Convention on Biological Diversity (CBD) is an international legal instrument, ratified by 196 nations. The convention aims at the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The convention covers biodiversity at all levels: ecosystems, species, and genetic resources. The CBD's governing body is the Conference of the Parties (COP). This ultimate authority of all governments (or Parties) that have ratified the treaty meets every two years to review progress, set priorities, and commit to work plans.

The second part of the fifteenth Conference of the Parties to the Convention on Biological Diversity (CBD COP15.2) was held in Montreal, Canada on 7-19 December 2022. The first part (COP15.1) took place in October 2021. At COP15.2, governments from around the world came together to negotiate and agree on a new Global Biodiversity Framework (GBF), with a new set of four goals and 23 targets, to guide global action through 2030 to halt and reverse the loss of biodiversity.

The Global Biodiversity Framework is expected to be the equivalent of the Paris Agreement for biodiversity — targets include conserving 30 percent of land and sea areas (Target 3), and for all businesses to report and reduce biodiversity impacts (Target 15)

UN Plastic treaty

UN member states have agreed on a roadmap for establishing a global plastic treaty that would address the full lifecycle of plastic, including its production and design, to tackle plastic pollution and its environmental impact. The aim is to complete an agreement by the end of 2024. The final treaty is expected to be legally binding, hence it will require nations to commit to solving their plastic pollution. A future treaty may have a large impact on companies that produce plastic or use it in packaging.

Production of virgin plastic will likely be curbed by governments with increased global focus on recycling

Paris Agreement

The Paris Agreement is a legally binding treaty signed by 196 countries on climate change, aiming to limit global warming below 2°C. The utmost importance of ensuring integrity of all ecosystems and the protection of biodiversity in addressing climate change is noted explicitly, and protecting ecosystems is an important element of the long-term global response to climate change. In addition, Article 6 of the agreement, which covers the use of carbon markets in the fight against climate change, also affects biodiversity. The article provides guidelines on how countries can use internationally tradable mitigation outcomes to reach their climate commitments. Companies can already offset part of their emissions through voluntary carbon markets, where nature-based solutions, such as afforestation projects, play an important role.

Implications for biodiversity within the international treaty on climate change are included in recognizing protection of ecosystems as an important element of fighting climate change and in the use of nature-based solutions for carbon offsetting which is subject to Article 6

Other proposed global regulation

- **Marine biodiversity in areas beyond national jurisdiction:** Negotiations are ongoing to set a global legally binding instrument under the UN Convention on the Law of the Sea (UNCLOS) on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction (BBNJ). The negotiators' aim is to complete an agreement by 2023.
- **Deep seabed mining:** There is strong pressure to open up oceans for deep seabed mining, and discussions on development of regulations are ongoing within the ISA (International Seabed Authority). There is currently no existing regulation in place. WWF, as well as many other organizations, political leaders, and scientists, are calling for a global moratorium on deep seabed mining. This is an important process for businesses and companies to follow.

EU regulation

The European Commission has set ambitious targets to put Europe's biodiversity on a path toward recovery by 2030. To achieve these goals, a variety of regulation and policies have been enforced and proposed.

This section lays out some of the key regulations and policies enforced by the European Commission to halt biodiversity loss, followed by proposals for new legislation that corporations should be aware of. The new proposals are guided by the European Green Deal – a set of strategies and initiatives ranging from reducing greenhouse gas emissions to preserving environment. Lastly, as a part of the Green Deal, a 'Fit for 55' package of proposals has been adopted to ensure EU policies are fit for reducing net greenhouse gas emissions by at least 55 percent by 2030, compared to 1990 levels. The key proposals within this package are presented in the end of this section.

EU regulation and policies in place

Regulations

- **EU Taxonomy for Sustainable Activities 2020/852:** A classification system for investors to identify economic activities considered as environmentally sustainable in respect to the EU Green Deal. The taxonomy came into force in 2020.
- **Sustainability Related Disclosures in the Financial Services Sector 2019/2088:** Regulation under which financial market participants must disclose information about their policies on the integration of sustainability risks in their investment decision-making processes.

Directives

- **The Habitats Directive 92/43/EEC:** Adopted in 1992, the directive aims to promote the preservation of biodiversity, taking into account economic, social, cultural, and regional requirements. It establishes the EU-wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.
- **Water Framework Directive (WFD) 2000/60/EC:** Adopted in 2000, the directive requires all EU member states to protect and improve water quality in all waters to achieve good ecological status by 2015, or by 2027 at the latest.

Policies and programs

- **8th Environment Action Programme (EAP):** A guide for EU's environmental policymaking and implementation until 2030. The program sets the most crucial targets for 2030 and defines the conditions needed to achieve these targets.
- **Common Agricultural Policy (CAP):** Launched in 1962, CAP aims to support farmers and improve agricultural productivity, ensuring a stable supply of affordable food, while helping to tackle climate change and the sustainable management of natural resources.

- **Common Fisheries Policy (CFP):** With the latest reform in 2013, the common fisheries policy is the first comprehensive legal framework, featuring attention to the environmental, economic, and social dimensions of fisheries.

Proposed regulation and policies

Regulations

- **Regulation on Deforestation-free Products 995/2010:** Regulation to guarantee products consumed on the EU market do not contribute to global deforestation. Includes mandatory due diligence rules for operators placing commodities associated with deforestation on the EU market.
- **Legislative framework for sustainable food systems (FSFS)**: Regulation to lay down rules on governance and monitoring, sustainability labeling of food products and minimum criteria for sustainable public food procurement to increase the overall sustainability of EU food system and integrate sustainability into food-related policies.
- **Regulation on Nature Restoration:** Proposed regulation for reviving forests, wetlands, and other sea- and landscapes marred by human development with the aim of making restoration targets legally binding.

Directives

- **Corporate Sustainability Reporting Directive (CSRD):** Directive to revise the existing reporting rules that were introduced by the Non-Financial Reporting Directive (NFRD). The proposed directive would be the foundation of a consistent flow of sustainability information through the financial value chain and for other stakeholders.
- **Directive on Corporate Sustainability Due Diligence (CSDD) 2019/1937:** Establishes a corporate due diligence obligation to identify, prevent, and end negative human rights and environmental impacts in the company's own operations and value chains.

EU Green Deal

The EU Green Deal is a coordinated set of policy initiatives with the overarching aim of making the European Union climate neutral by 2050. It includes various strategies and initiatives targeting biodiversity, for example:

- **Biodiversity Strategy for 2030:** All EU member states endorsed the EU 2030 biodiversity strategy in October 2020. The strategy aims to put Europe's biodiversity on the path to recovery by 2030 for the benefit of people, the climate, and our planet, and contains specific actions and commitments. The strategy includes e.g., commitments to legally protect at least 30 percent of land and sea by 2030 (and to strictly protect at least 10 percent), to establish legally binding EU nature restoration targets, and to reverse the decline of pollinators. In 2023, the EU Commission will assess the progress and approach, and may impose a legally binding governance if needed.

- **Farm-to-Fork Strategy:** Includes targets for 2030 such as 50 percent reduction in the use of chemical pesticides, 50 percent nutrient loss reduction, 20 percent reduction in fertilizer use, as well as the aim for 25 percent of total farmland to be organic.
- **Circular Economy Action Plan:** Promotes circular economy processes, targets product design, and aims to minimize waste. Includes a 'sustainable products policy' prioritizing reducing and reusing materials and measures to ensure recyclability of packaging.
- **European Green Deal Investment Plan:** At least €1 trillion of sustainable investments through facilitating public and private investments supported by the EU budget.

Fit for 55 package:

A set of inter-connected proposals to revise and update EU legislation, and to put in place new initiatives with the aim of ensuring that EU policies are in line with climate goals. All proposals drive toward the same goal of ensuring a fair, competitive, and green transition by 2030 and beyond. These include the following proposals:

- **Emissions Trading System (ETS):** Proposal for revising the ETS directive to better align with climate policy objectives. The revised directive will accelerate emission cuts, provide better-targeted rules to address the risk of carbon leakage, and set up several low-carbon funding mechanisms to support the transition to a low-carbon economy.
- **Effort Sharing Regulation (ESR):** Proposal to revise ESR for sectors outside ETS. The aim is to align the regulation with climate targets for 2030 by setting more ambitious national targets and new annual emissions allocations for member states.
- **LULUCF Regulation:** Definition of accounting rules for taking into account emissions and sinks from land use, land-use change, and forestry in the EU's climate objectives from 2021 to 2030.
- **Renewable Energy Directive (RED):** Proposal to revise the directive aiming to increase the share of renewable energy sources by 2030, fostering energy system integration, and meeting the environmental and climate targets including biodiversity protection.
- **Energy Efficiency Directive (EED):** Interlinking with Renewable Energy Directive, the EU Commission is proposing to recast the Energy Efficiency Directive to further increase efforts to promote energy efficiency and achieve energy saving objectives.

Swedish regulation and policies

The Swedish Environmental Code

The Environmental Code (1999) constitutes a framework legislation that consists of the general provisions regarding environmental protection. Scope of the Environmental Code is directly linked to the promotion of sustainable development. To achieve this, the Code is to be applied so that:

- human health and the environment are protected against damage and detriment, whether caused by pollutants or other impacts
- valuable natural and cultural environments are protected and preserved
- biodiversity is preserved
- the use of land, water, and the physical environment in general is such as to secure long-term good management in ecological, social, cultural, and economic terms
- re-use and recycling, as well as other management of materials, raw materials, and energy are encouraged so that natural cycles are established and maintained.

The 'general rules of consideration' determine fundamental principles for the application of the Code. One of the fundamental principles, Burden of proof principle, requires that the party pursuing activities proves that the commitments featured in the Code are complied with. Other general rules include taking all necessary precautions to limit impacts on the environment as well as applying the best available techniques to limit damages.

The Forestry Act

The Forestry Act obligates forest owners to take nature and cultural heritage into account in operations. The act aims to promote reforestation and other sustainable forest management practices while also regulating clear felling. Various considerations covered by the Forestry Act aim to promote biodiversity within forests through, e.g., avoiding damaging rare and valuable biotopes, leaving dead trees, and retaining protective zones with trees needed adjacent to rare biotopes, cultural heritage sites, water, wetland, and large bird nests.

A Swedish strategy for biodiversity and ecosystem services

Adopted in 2014, the strategy covers everything from the protection of land and the sea, measures for endangered plant and animal species, genetic diversity, natural and cultural environment considerations in land and water use to increased cooperation with industry. The proposals in the bill will help achieve the targets in the EU Biodiversity Strategy to 2020, and the international Aichi Biodiversity Targets within the UN Convention on Biological Diversity (CBD)

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About WWF and Bain

WWF

WWF is the world's largest and most experienced independent conservation organization, with over six million supporters and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. We will do this by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable and promoting the reduction of pollution and wasteful consumption.

Bain & Company

Bain & Company is a global consultancy that helps the world's most ambitious change makers define the future. Across 64 offices in 39 countries, we work alongside our clients as one team with a shared ambition to achieve extraordinary results, outperform the competition, and redefine industries. We complement our tailored, integrated expertise with a vibrant ecosystem of digital innovators to deliver better, faster, and more enduring outcomes. Our 10-year commitment to invest more than $1 billion in pro bono services brings our talent, expertise, and insight to organizations tackling today's urgent challenges in education, racial equity, social justice, economic development, and the environment. In addition, over the past five years only, Bain has worked on over 950 projects with clients on sustainability and responsibility in a number of different ways – including in strategy, operations, investing, disruptive models, and results acceleration. Since our founding in 1973, we have measured our success by the success of our clients, and we proudly maintain the highest level of client advocacy in the industry.

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