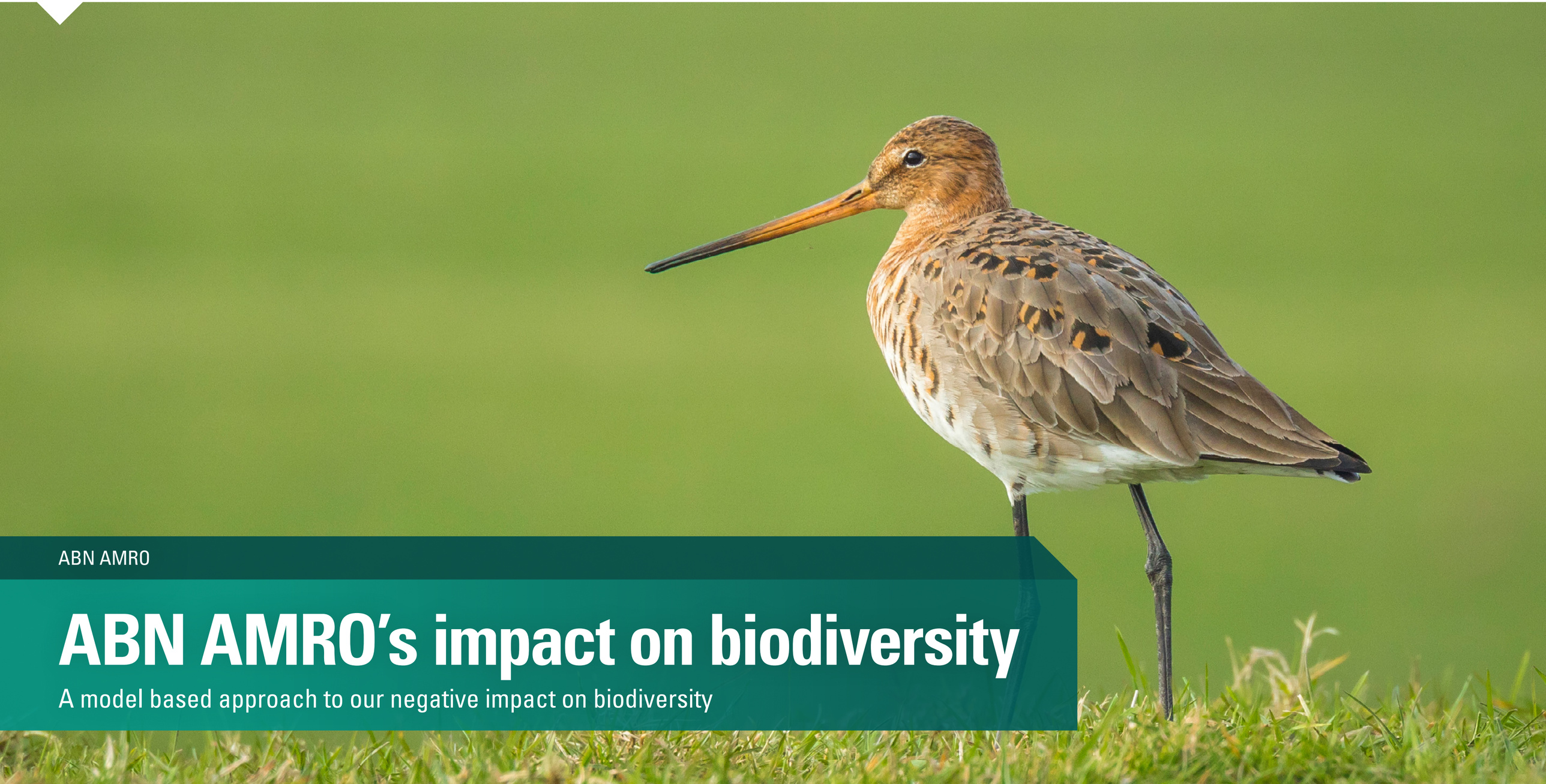
ABN·AMRO



ABN AMRO

ABN AMRO's impact on biodiversity

A model based approach to our negative impact on biodiversity

Contents

Message of our CEO

Sustainability is core to our purpose 'Banking for better, for generations to come'. As a bank, we can make impact in this area. For example, sustainability features regularly in the dialogue we have with our clients. Supporting them in their transition to becoming more sustainable is a key pillar of our strategy and at the same time brings many business opportunities. With our activities, we can contribute to the creation or depletion of different forms of value. We believe, therefore, that measuring our impact is essential to the way we create long-term value for our stakeholders. We want to be transparent about our impact.

Biodiversity underpins human welfare and is one of the most important sustainability topics the world must improve on according to the World Economic Forum which has made it one of its key topics in the coming years. Parallels can be drawn between loss of biodiversity and climate change, but biodiversity is even more complex because of the multitude of drivers involved. Further loss of biodiversity will threaten our ability to survive as a society, and obviously ABN AMRO is part of this society. With that, considering sustainability is core to our purpose, biodiversity loss is therefore a topic we should take into account as ABN AMRO. We want to gain a better understanding of our impact on biodiversity, and this publication is a step in creating such understanding.

In our impact report, we presented general data on our impact on biodiversity over 2021. This publication will, based on the same 2021 data and impact methodology, give further insight in our biodiversity impact and its causes. We distinguish between the impact resulting from our own business operations and the impact resulting from our lending and investment activities.

In the years ahead, ABN AMRO will continue to actively support the transition of our clients to a better, more sustainable society.

Robert Swaak
CEO of ABN AMRO Bank N.V

Introduction

This publication is about biodiversity and why it is important to ABN AMRO. First, we will look briefly at what exactly biodiversity is and highlight a few recent developments that have contributed towards increasing public awareness of biodiversity. Then we will provide insight into the biodiversity impact of our bank's activities, using the same methodology that we applied in our Impact Report. In that report, we briefly discussed biodiversity to illustrate how our impact methodology works. In this publication, we will take a closer look at our biodiversity impact and its causes.

The methodology we apply allows us to explore the biodiversity issue in more detail, for example which countries have the greatest biodiversity impact and which sectors are involved. We go on to focus specifically on our own portfolio, showing where in the portfolio the impact occurs, and which sectors are most influential. Finally, we report on the first steps our bank is taking in this area, describing a number of client-related projects with a strong biodiversity component.

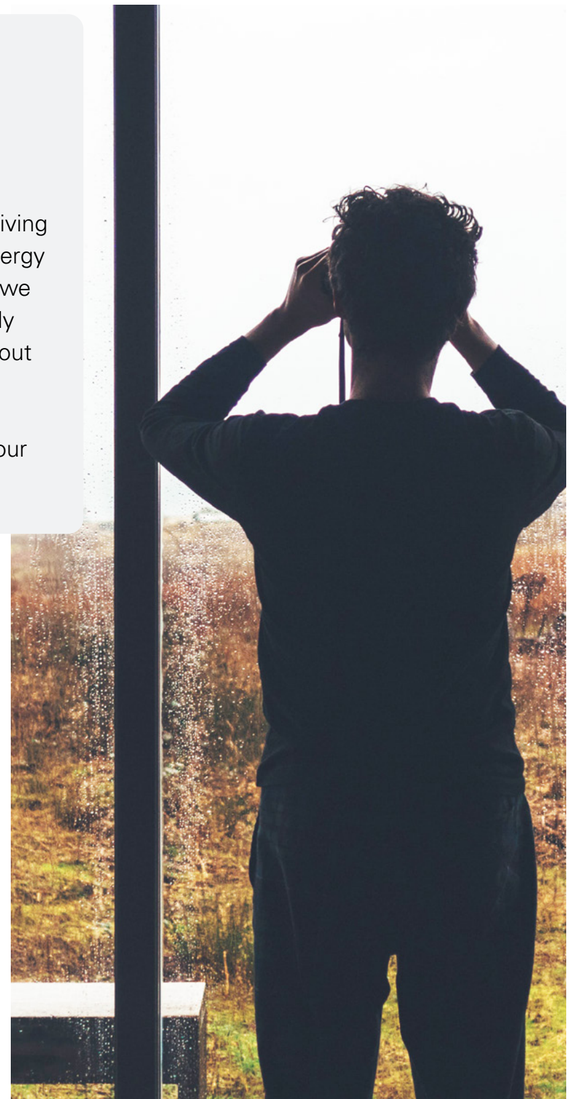
What is biodiversity?
For this publication we will follow the UN Convention on Biological Diversity of 1992 (OECD, n.d.), which defines biodiversity as "the variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."

Biodiversity refers to the variety of living species in any given area, be that planet Earth, a continent or even our own garden. The health of an ecosystem is largely determined by biodiversity. It is not only the sum of all ecosystems, species and genetic material – it represents the variability within and among them. Enhancing biodiversity is therefore vital to safeguarding our future and protecting the planet.

Why it is relevant now
The decline of biodiversity has rapidly emerged as an area of concern for governments, businesses and organisations around the globe. And yet biodiversity – and specifically the loss of biodiversity – is largely uncharted territory for the financial sector. This will

Ursula von der Leyen
President of the European Commission
from speach on the 'one planet summit 2021':

"This is about sustainable development. Because thriving biodiversity can ensure access to food, water and energy for billions of people. This is about equality. Because we know that the effects of nature loss disproportionately affect poorer and indigenous communities. This is about our security. Because conflicts explode when more people grapple for less natural resources; and this is about our quality of life. Because we need nature in our lives for our physical and mental health."



change, however, as biodiversity climbs the national and international policy agendas over the coming years. The European Green Deal and agreements under the UN Convention on Biological Diversity are examples of what is to come.

In its Global Risks Landscape 2022, the World Economic Forum identified the most severe risks on a global scale over the next 10 years and named biodiversity loss the third most potentially damaging risk. In 2020, a World Wildlife Fund (WWF) index of animal life showed that the populations of almost 4,400 monitored mammals, birds, reptiles, amphibians and fish had declined by 68 percent (on average) since 1970.

Ecologists from Wageningen University have warned that roughly 70 percent of plants and insects, and 40 percent of bird species have disappeared or are at risk of disappearing from the Netherlands. Wildlife populations in the Netherlands have halved in the last 30 years, according to the World Wildlife Fund.

It can be argued that this loss of biodiversity directly undermines more than half of the UN's Sustainable Development Goals, in particular those related to health, water, hunger, poverty, land and oceans. According to the Dutch central bank (DNB) and the Netherlands Environmental Assessment Agency (PBL), biodiversity loss is considered "one of the greatest risks to society and the economy."

Read more about the bee decrease and its effect on Dutch agriculture here

There is also a link with climate change. The IPCC (Intergovernmental Panel on Climate Change) stated in its most recent report that climate change, biodiversity conservation, disaster risk and economic development are closely related. Biodiversity loss is accelerated by climate change, while loss of biodiversity itself, in turn, accelerates climate change. This also means that measures to protect biodiversity may also mitigate the impacts of climate change.

Why it is relevant for ABN AMRO

Biodiversity has been on our radar for some time now. We held our first stakeholder dialogue on biodiversity in 2017, and a second one in 2020. One of the outcomes of these stakeholder dialogues was the need felt by stakeholders for more quantitative substantiation of our biodiversity impact. This publication is a first step towards meeting that need. Furthermore, to make our analyses more detailed and useful for daily decisionmaking , we participate in initiatives like the Partnership for Biodiversity Accounting Financials (PBAF) and the Finance for Biodiversity Pledge.

Koos Biesmeijer

Professor of Natural Capital at Leiden University
Scientific Director Naturalis Biodiversity Centre

Biodiversity adds more value to our economies than our combined GDPs. It is a source of food and materials, regulator of climate, water and air quality and provider of human well-being. The financial sector has great responsibility and the position to both limit the loss of biodiversity and mobilize nature's services for the future. It is great to see that biodiversity and natural capital appear high on the agendas of financial institutions such as ABN AMRO.

ABN AMRO and our clients need to understand not only the impact we have on biodiversity, but also the impact biodiversity has on us. We want insight into the dependencies we have in this area so that we can differentiate between impacts and dependencies (as required by regulators and standard setters). EU legislation in the pipeline for the coming years will focus not just on climate but also increasingly on biodiversity. From a strategic point of view, too, it is important for us to see clearly where our impact on society is greatest.

Biodiversity loss also poses a financial risk, according to the Dutch central bank (DNB). Over 50 percent of global GDP (gross domestic product) is "moderately or highly dependent" on nature and the goods and services it provides. Moreover, 2.1 billion jobs rely on effective management and sustainability of ecosystems. This financial risk is also relevant for ABN AMRO and for our clients. Where we face potential risks, however, we can also identify opportunities that align with the bank's purpose. The EU and other regulators and standard setters are currently working on frameworks to manage biodiversity-related risks. The most relevant and mature framework at the moment is the one developed by TNFD[1] (TNFD – the Taskforce on Nature-related Financial Disclosures). This will result in various new reporting requirements with regard to biodiversityThis publication does not include calculations on how biodiversity-related risks affect ABN AMRO and our clients. Its focus is on the biodiversity impact that ABN AMRO itself has through its own operations and through its portfolio. To manage our sustainability risks, ABN AMRO has a sustainability risk policy framework in place. Biodiversity is part of this framework.

Calculating biodiversity

In this publication we base our biodiversity impact calculations on four drivers, the same ones that we used in our Impact Report to calculate our bank-wide impact on natural capital. The drivers are climate change, air pollution, water pollution and land use. We apply the four drivers to the Global Impact Database (GID of the Impact Institute) to make our biodiversity impact transparent and measurable. In appendix 3, we compare the GID methodology to other widely applied methodologies (often used for a different purpose). Appendix 2 shows a (simplified) example of a calculation for a specific biodiversity impact component. More in-depth information on the impact methodology we use can be found in our methodology document available on the ABN AMRO website.

[1] TNFD has recently released the Beta v0.1 version of "the TNFD Nature-related Risk & Opportunity Management and Disclosure Framework"

The impact of the world on biodiversity

Before we go into the impact of ABN AMRO, we look shortly to the total impact of 'the world' when we look through the lens which our methodological approach presents us (see Figure 1). This gives a general insight in where the biggest impacts are made, but also how the scope of the models we used translate the drivers we use into Impact. Do realise, this is not the impact of ABN AMRO. The impact of ABN AMRO will be presented on the next pages.

When it comes to impact on biodiversity loss based on the drivers used in this report, four countries turn out to be major contributors: China, the United States, Brazil and India. China and the US 'lead' the way, as they are the single two greatest contributors to biodiversity loss.

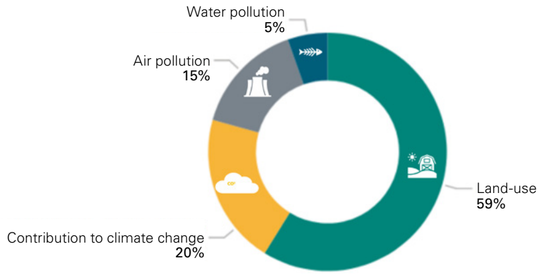
China's biodiversity impact is primarily driven by its land use and contribution to climate change. Its land use is related to cattle farming, while electricity generation has a significant impact on climate change. On the other side of the world, the United States' biodiversity impact is mainly driven by water pollution, related to its cattle farming, and climate change, also due to electricity generation.
On a world scale, based on the methodology used, land use is the single biggest driver of biodiversity loss, followed by climate change. The (worldwide) sectors that contribute most to biodiversity loss are cattle farming, electricity generation, forestry and milk production. Cattle farming's impact stems mainly from its land use, while electricity generation has a major negative impact on biodiversity through climate change and air pollution.

Figure 1 - Negative biodiversity impact

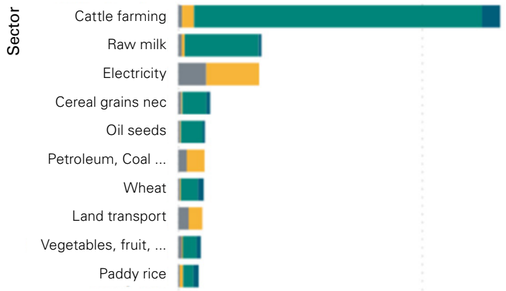
Total negative biodiversity impact of economic activity per year in each country

Legend: Air pollution · Contribution to climate change · Land-use · Water pollution

Drivers contributing to worldwide negative biodiversity impact



Top sectors contributing to negative biodiversity impact



source: 'Impact Institute (2022) Global Impact Database Biodiversity'

ABN AMRO's impact on biodiversity

Biodiversity year-by-year comparison
ABN AMRO's biodiversity impact has improved compared to 2020 mainly due to the wind-down of our international corporate banking activities portfolio, in particular in regions with significant biodiversity impact.

Looking at the four key drivers behind our impact (see Figure 2 and 3), we see that most of our negative impact on biodiversity is driven by land use and climate change. Both are responsible for approximately one-third of the total impact. The proportion of our biodiversity impact arising from land use decreased significantly in 2021 compared with 2020 due largely to a reduction in loans to companies based in Brazil. Land use has a significant impact in this region.

Figure 2 - How we measure our biodiversity impact

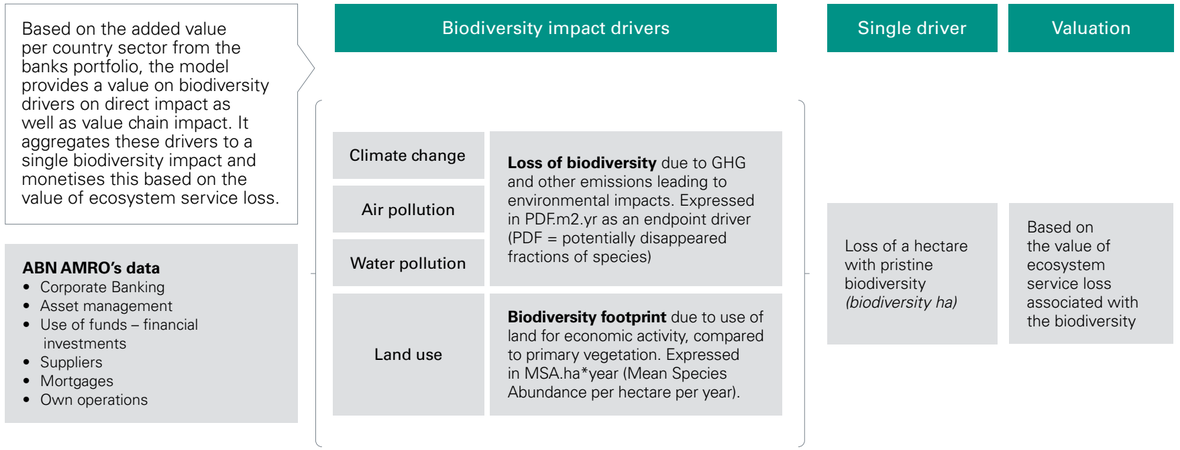
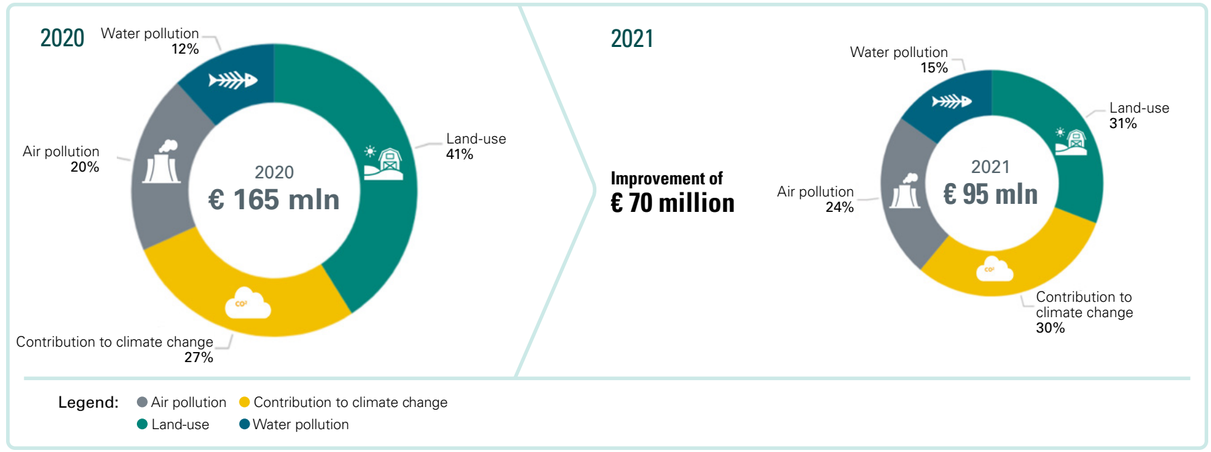


Figure 3 - ABN AMRO 2021 and 2020 impact on biodiversity loss: main drivers (%)



source: 'Impact Institute (2022) Global Impact Database Biodiversity'

ABN AMRO's impact on biodiversity per country

Visualised on a world map (see Figure 4), we see that our impact is primarily caused through Dutch clients, which is not surprising given our commercial focus on the Netherlands and Northwest Europe. In the Netherlands, a large part of ABN AMRO's impact is driven by cattle farming (see also Figure 6). The nitrogen crisis has made clear that livestock causes environmental pollution through ammonia and nitrous oxide emissions, which has a negative effect on biodiversity.

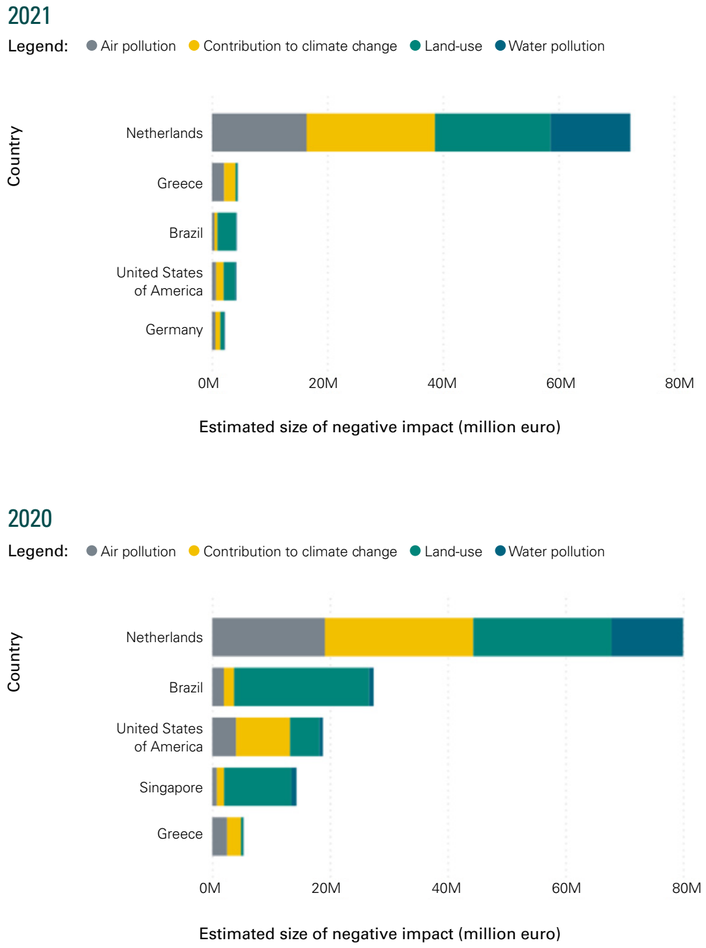
Besides the Netherlands, ABN AMRO is active in other countries but is in the process of winding down corporate banking activities outside Europe. The biodiversity impact caused by parties other than Dutch clients is caused mainly by clients in Greece, Brazil and the US. That said, the wind-down of our international corporate banking activities has resulted in a large reduction in the impact arising from our financing activities in for example Brazil, the US and Singapore. This led to a more 'European' top 5 with also Germany now being in there. In Greece, the impact is mainly driven by air pollution from shipping emissions (water transport). In both Brazil and the US, land use in the cattle sector is the main contributor to biodiversity loss.

Figure 4 - ABN AMRO's negative impact on biodiversity per country

A larger circle means more biodiversity loss, graph shows the top 30 countries

source: 'Impact Institute (2022) Global Impact Database Biodiversity'

Figure 5 - Top 5 countries negative biodiversity impact per driver



source: 'Impact Institute (2022) Global Impact Database Biodiversity'

Understanding the differences in biodiversity impact between sectors

When zooming in on the 2021 portfolio data for the different sectors, we see significant differences in biodiversity impact (see Figure 6). Not just in the total size of their impact, but also in the type of drivers and place in the value chain. For example, 'cattle farming', which relates to rearing cattle for the meat and dairy industry, has a direct impact mainly through environmental pollution and land use. Business and financial services, on the other hand, have a more indirect impact on biodiversity through their clients and suppliers. An example are the IT service companies we work with who use data centres that consume a significant amount of energy and require equipment for which scarce resources are used.

Of the different sectors in which we are active, cattle farming, business services and shipping ('water transport') are the top 3 sectors that contribute to biodiversity loss. Other sectors that contribute to biodiversity loss but are not shown in the top 5 graph include financial services, land transport, communication, electricity generation and milk production.

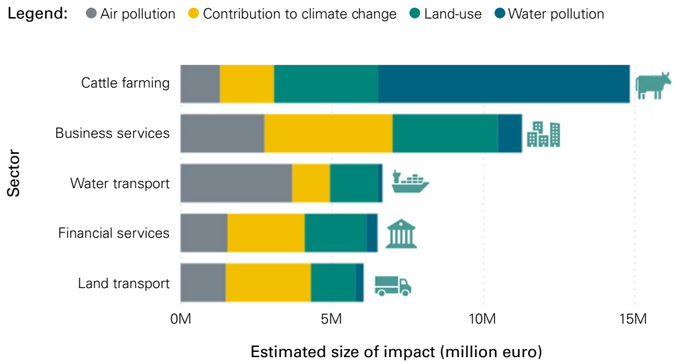
Deepdive in top sectors

The next step is to understand what is driving biodiversity impact in these top sectors. **Cattle farming** contributes significantly to biodiversity loss mainly through the direct operations of the farms (see Figure 6). Biodiversity is negatively affected through environmental pollution caused by nitrogen from manure, which affects both air and water quality. Land use is also a major contributor to biodiversity loss in this sector. This is particularly true in Brazil, where it is the largest driver of biodiversity loss due to the use of areas rich in biodiversity for commercial farming.

In the value chain, sector **business services** are mainly on our suppliers side. Business services suppliers include mostly the procurement of agency staff, contractors and consultancy services. Although many of these services may themselves not have a large impact on biodiversity, they have complex supply chains which include companies that have a large biodiversity impact.[2]

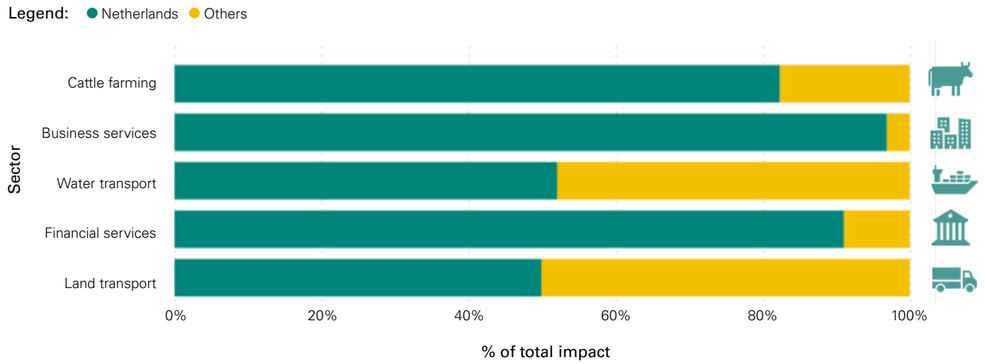
The third sector is **water transport**. Here biodiversity loss is driven largely by its direct activities, which cause significant air pollution. Shipping is responsible for a large share of global emissions of pollutants such as nitrogen oxide and sulphur oxide, which are very damaging to air quality. This is caused by the high-sulphur bunker oil that ships typically use. In addition to this direct impact, shipping also has a large indirect impact as it is partially responsible for the impact of the high volume of goods that are shipped. This is much larger than the volume transported by air freight, which explains part of the difference in impact.

Figure 6 - 2021 top 5 sectors negative biodiversity impact per driver



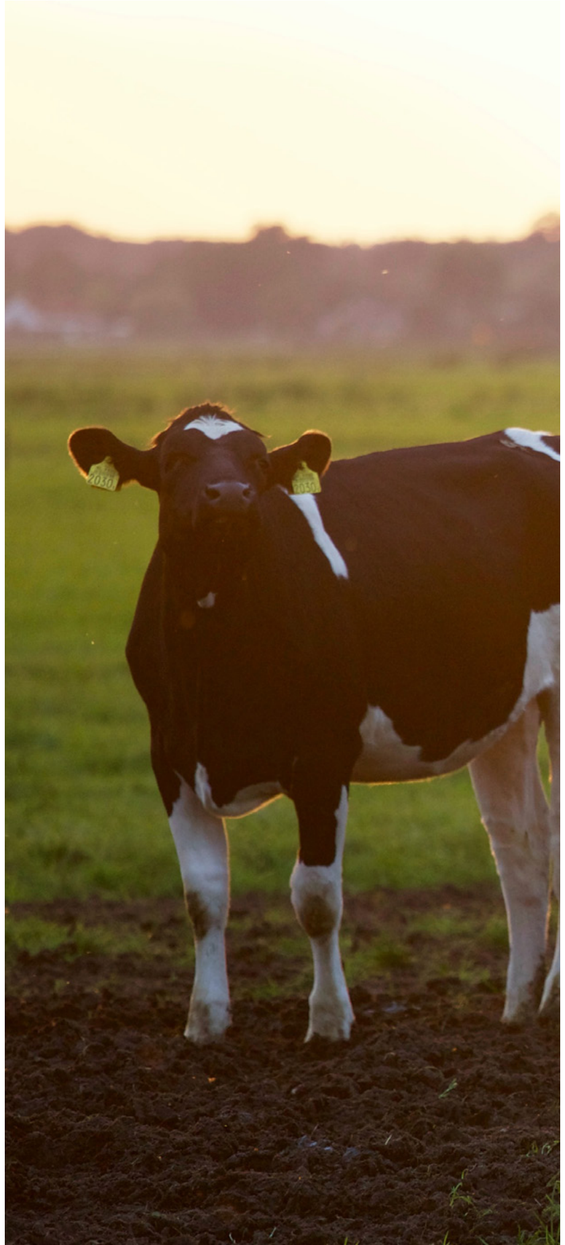
source: 'Impact Institute (2022) Global Impact Database Biodiversity'

Figure 7 - 2021 top 5 sectors negative biodiversity impact - Dutch clients vs clients in other countries



source: 'Impact Institute (2022) Global Impact Database Biodiversity'

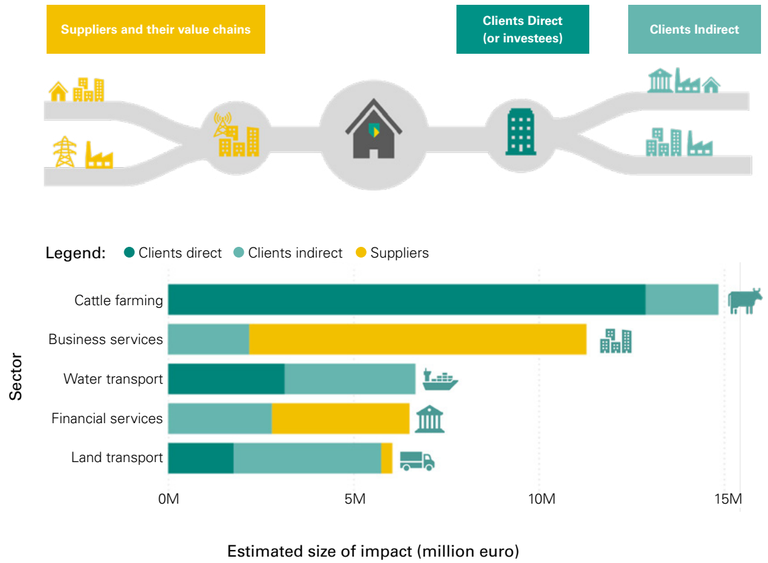
[2] Data centres require a significant amount of energy to operate (contributing to climate change), and the manufacturing of IT equipment using scarce resources can also be associated with pollution and land use. More information on the used definition of business services can be found at "https://www.gtap.agecon.purdue.edu/databases/contribute/concordinfo.asp" , in particular in the ISIC sector definitions documentation provided.



Impact: a combination of intensity and exposure
An important factor to consider when analysing sectors is the intensity (impact per euro). Impact is driven both by the intensity of a sector and by our exposure to that sector, through our loan and investment books. An illustration of this is air transport: one might expect air travel to be higher on the impact list. However, as our exposure to aviation is relatively limited, the total impact is lower. And while our exposure to raw milk is higher than to cattle farming, the intensity of cattle farming means the total impact of the latter ends up being higher.

It is also important to note that impact reflects both the direct and indirect impact of sectors (see the breakdown in Figure 8). A high impact can thus also (partly) be attributed to the value chain. The impact of business services, for example, is also influenced by the equipment and services provided to them by IT service providers.

Figure 8 - 2021 top 5 sectors negative biodiversity impact per value chain step



source: 'Impact Institute (2022) Global Impact Database Biodiversity'

Some small examples of positive impact of our own operation

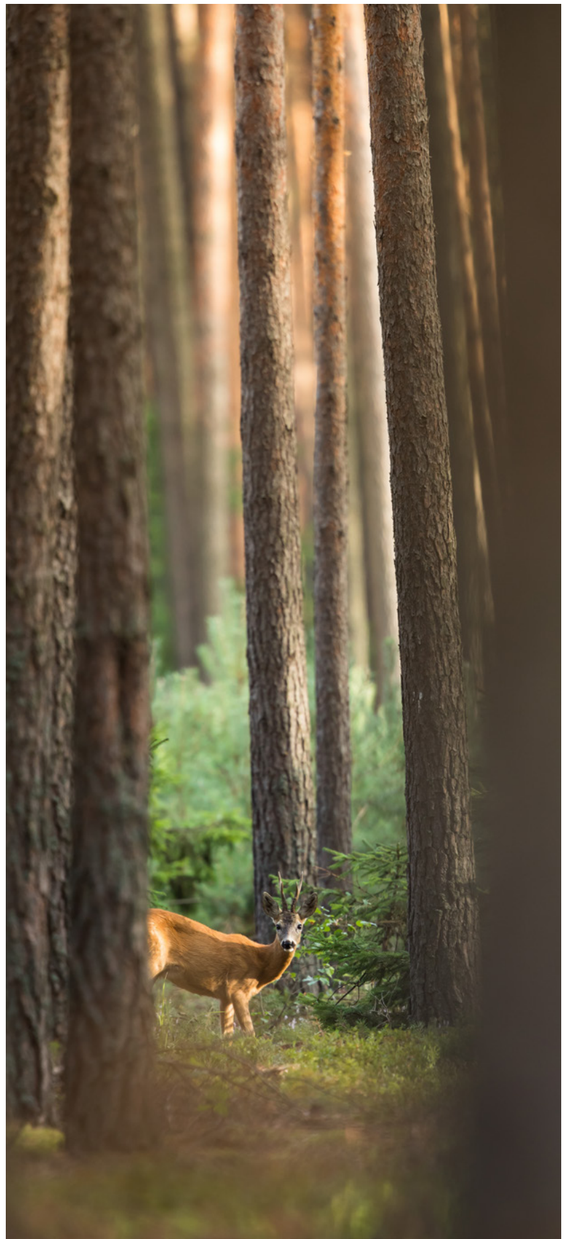
Thoughtful landscaping to support biodiversity
At ABN AMRO, we take biodiversity into account when designing our green outdoor spaces. We perform soil assessments and use only native species that are well adapted to the local environment. By carefully selecting plants, we can minimise the use of fertiliser and avoid using pesticides to combat unwanted diseases or pests. The local plant species we choose require less additional water and support vibrant insect and bird life. In addition, we only use organic and compostable products in landscaping, and green waste is deposited in the compost heap to be re-used in the soil.

ABN AMRO's Circl pavilion has two circular roof gardens and a green wall with different plants and species, and it's proved a success for the wren: since 2019 a couple have been living in the garden. Our premises have also been home to a peregrine falcon family for many years (click here)

Insight into ABN AMRO's biodiversity impact
At ABN AMRO, we are conscious of the impact of our carbon footprint on biodiversity and try to reduce our footprint wherever possible. With our Sustainable IT Programme, we aim to reduce our organisation's carbon footprint and increase our circularity by making use of recycled materials such as laptops and servers.

Through our Supplier Code of Conduct, we require our suppliers to purchase and supply products with the most positive environmental and economic effects possible. Our Procurement department has started collaborating with Global Sustainable Enterprise System (GSES), making it possible for ABN AMRO to measure and gain insight into the sustainability criteria for suppliers and the supply chain.

Florius' climate forest
Together with colleagues, a client and ecologists, Florius (ABN AMRO's mortgage subsidiary) planted a forest in February 2020 in order to restore the degraded land and develop a biodiversity platform. We know biodiversity is crucial for a healthy planet, but the value of a single tree is not easily monetised. Interested in reading more about the climate forest? Click here



Interested in ABN AMRO's other initiatives to support grassland birds? Read our publication on grassland birds or visit our website.

Some small examples of positive impact by our clients

Green savings at ABN AMRO Groenbank
ABN AMRO Groenbank (Green Bank) is a subsidiary of ABN AMRO. It makes use of the Dutch government's Green Projects Regulation. The goal of this regulation is to encourage investment in sustainability. Clients who have a savings account at Groenbank receive a lower interest rate on their savings, but – depending on their capital – they receive tax benefits in return. Attracting savings at a lower cost enables Groenbank to offer a discount on interest rates to clients who invest sustainably. The investment has to meet certain requirements set by the Green Projects Regulation. 'Green savers' contribute to a better environment and are eligible for tax benefits. For more information, click here.

Jumbo Supermarket
Jumbo supermarket in Goor became the most sustainable supermarket in Benelux. ABN AMRO financed the building of the new, sustainable premises.This was part of the supermarket's plans to become more sustainable, also in terms of distribution and reducing food waste. The materials used are sustainable and designed to reduce energy use. The surrounding area is equipped with insect hotels, room for bats and breeding boxes for birds.

Agreck
Agreck is an agricultural business covering 85 hectares on the island Goeree-Overflakkee in the province of South-Holland. After thirty years of traditional farming, Agreck started transitioning to organic farming in 2018. Step by step, business operations were adapted. A transition such as this requires a lot of preparation, time, money and energy. ABN AMRO Groenbank issued them a loan to finance a new barn, including sustainable storage and solar panels.

Conclusions and next steps

General
Until recently, biodiversity was a relatively unexplored area for banks and financial institutions. Lately, various biodiversity initiatives have been launched in the financial sector and beyond, for example to develop ways of making biodiversity measurable. But until now, few banks have published any reports on their impact on biodiversity.

ABN AMRO is issuing this publication in line with our purpose and strategy and in anticipation of expected EU regulations that will require financial institutions to provide insight into their impact on biodiversity. We discuss ABN AMRO's negative impact on biodiversity. This is an important step towards preparing for upcoming new regulations and frameworks, such as those to be drafted by the Taskforce on Nature-related Financial Disclosures (TNFD). The TNFD will form the framework used by the EU to manage the risks on biodiversity, following the methodological blue print of the TCFD, which is already used to manage climate related risks and opportunities.

When looking at the results presented in this report, we can conclude that measuring biodiversity is complex. Even if we think our methodology used is a good one, but we are pioneering with this, and work on future improvements might still be needed.

Grant Rudgley
Senior Manager, Centre for Sustainable Finance
University of Cambridge Institute for Sustainability Leadership

By degrading nature, we undermine the ecosystem services on which our economy and health depends. The Banking Environment Initiative, convened by the Cambridge Institute for Sustainability Leadership (CISL), has worked with member financial institutions that include ABN AMRO, to demonstrate that quantification of nature-related financial risks is possible, yielding multiple notch downgrades and double-digit valuation declines. Nature must urgently be integrated into financial assessments. By doing so, the existential risk posed by nature loss can begin to be understood, mitigated and resolved.

When we look at the examples mentioned on page 12 and 13, they illustrate the possibilities we can have as a bank, but the measurability of the positive effects on biodiversity is still very difficult. They are included merely based on expert opinion and have the aim to inspire all our stakeholders.

To us, this publication also serves as a benchmark. It is the first time we are providing extensive insight into our impact on biodiversity. It will serve as a baseline which we will use to further shape our approach towards biodiversity.

Findings and conclusions

The first and most obvious conclusion is that ABN AMRO does have a negative impact on biodiversity. Land use and climate change are the two main drivers, but the other two (air- and waterpolution) also play a significant role. This negative impact is only partially due to our own operations, but mainly through our value chain (clients, purchased services etc.).

The second conclusion concerns which sectors have the greatest impact within our portfolio. Cattle farming is at the top of the list, as expected. However, looking at the next four sectors, it turns out that client portfolios are not the only cause. Business services is also in the top five. This impact is related to our own operations such as procurement of supporting services (IT services, datacentres, manufacturing of IT equipment etc.).

The third conclusion is that the negative impact mainly comes about indirectly. This means through our supply chain and through clients and their partners. Changing the impact of an entire value chain is more difficult than influencing our own operations.

The fourth conclusion is that our impact in The Netherlands is relatively large compared with our worldwide impact. This is partly due to the Business services mentioned above, but it is also a result of our strategy of focusing on the Northwest European market. Moreover, many of the sectors in which ABN AMRO is active have a fairly large negative impact in The Netherlands through our clients.

The fifth and final conclusion is that the negative impact was significantly reduced from 2020 to 2021. This is a side effect of our renewed strategy which included the wind down of Corporate & Institutional Banking activities in various countries beyond Northwest Europe.

Ultimately, it is important to realise that these conclusions must be viewed in the right way. We measure the impact in monetary terms, mainly because it allows us to compare different impacts, as we also do in our Impact Report. As such, the numbers we present in this report are primarily meant to provide direction, to identify important sectors, to show the various biodiversity drivers in relation to each other, and to demonstrate the progress we are making in our ambition to reduce our negative impact on biodiversity.

Engaging to make investing more sustainable

Besides our normal proces of engagement, where we establish a dialogue with companies who need improvement, we joined in 2020 the engagement programme of EOS at Federated Hermes (EOS). through this programme we engage on a larger scale, with more companies and in a more pro-active way. By collaborating with EOS, we now proactively try to establish a dialogue with companies on the basis of certain themes which will help prevent potential violations and inspire companies in a positive way. EOS does the same on behalf of a group of pension funds and large institutional investors, the process now carries significantly more weight than when financial institutions were acting independently. We now engage in a positive way and try to inspire companies to do the right thing. One of the themes on which EOS engages is biodiversity. Many sectors are highly dependent on biodiversity and ecosystem services, but at the same time are also driving biodiversity loss. It is imperative that companies develop a comprehensive understanding of how biodiversity underpins their business model, and take urgent steps to protect it.

Martin Lok

Executive Director Capitals

Coalition and Board Member of the PBAF Foundation

Recognizing and integrating the value of biodiversity across decision-making is an important step forward in ABN AMRO's sustainability approach. Nature underpins our societies and the success of our economies, and its continued destruction puts the wealth, health and happiness of people and the success of organizations at risk. Embedding the value of nature across ABN AMRO's decision-making and disclosure will promote resilience, efficiency, and innovation for the bank, while creating a host of cost-free co-benefits for its stakeholders and for the natural world.

Next steps

Looking at the results gives us a good indication of which sectors are the most relevant in terms of negative biodiversity impact. This is where it makes sense to place our initial focus and stakeholder engagement. Together and in cooperation with our clients we need to see how much we can limit our negative impact on biodiversity in our value chain.

As our examples show, ABN AMRO has already taken several initiatives in a few sectors to make a positive impact on biodiversity. Although a good start, these are mostly still small-scale initiatives. We want to expand these and, where possible, focus on the sectors we have identified in this publication as relevant to us. Seeking cooperation with sector partners is a possible next step.

In the coming years we want to further reduce our negative impact, and this publication is an important step in that direction. Our strategic approach will be established in more detail in the near future, for example with a biodiversity statement. We also plan to continue implementing biodiversity impact measurement methods and further integrate them into our decision-making processes.

To support these aspirations, it is important to further develop more sophisticated ways to measure positive and negative biodiversity impact in monetary terms. This will enable us to more accurately calculate the effect of individual activities on our overall impact, allowing us to make informed decisions.

By further mitigating our negative impact and providing incentives for positive impact projects, we will work towards our ultimate goal: to steadily reduce our net negative impact, with the prospect of one day even turning our impact on biodiversity into a positive one.

Appendices

Appendix 1: Methodology and GID

Methodology
Over the past years, ABN AMRO has published four Impact Reports in which we reported the bank-wide impact in monetary terms. In the 2021 Impact Report, we also present some results on our biodiversity impact.

Since publishing the 2020 Impact Report we have considerably refined the models we use to attribute impact to the various sectors. We used the same data set as was used for the Impact Report. This allows us to compare and contrast different types of impact and ensures connectivity with the annual Impact Report. The comparability and monetisation are also essential for integrating impact into decision-making and existing analyses.

We used the same four drivers (land use, climate change, air pollution and water pollution) as before, because they were already an integral part of our bank-wide impact measurement. In addition, quantitative data is available for these drivers in Exiobase and Globio, and they are in line with the Natural Capital Protocol developed several years ago. Also, these four drivers are used in many other models to measure biodiversity in different areas (xxx reference to annex XXX). Other drivers might possibly become more quantifiable in the future, such as 'invasive species'. Currently, these are only qualitatively reflected in a few other methodologies like ENCORE.

As it stands, we believe that the currently used four drivers are the most useful ones that can be applied in policy and decision-making processes within a reasonable period of time. As soon as good quantitative data becomes available on other biodiversity drivers, they can be included in our approach. We do believe, however, that these four drivers are the most important ones and provide a good proxy for our impact on biodiversity.

Explaining the Global Impact Database
To assess the impact of ABN AMRO's portfolio on biodiversity, the bank collaborated with the Impact Institute. The Impact Institute uses its Global Impact Database (GID), which quantitatively describes environmental, social and economic impact estimates for countries and sectors in the global economy. To achieve a tailored estimate of biodiversity loss in our business portfolio, data was used from Commercial Banking, Corporate & Institutional Banking, Asset Management, Investments and suppliers. Economic activity causes impacts throughout the entire interconnected economy. GID estimates this impact using input-output analysis based on data on the interconnectedness of industries in various countries and their environmental, social and economic performance. The impact estimates produced are categorised into capitals and presented in comparable monetised units.

Monetisation is one key reason for ABN AMRO to work with the GID, as this allows us to compare different sustainability topics with one another and position non-financial impact within a business context. Another key advantage of the GID is that it covers direct and indirect impact, which is especially relevant for financial institutions as most of our impact is caused by our clients and their value chains.

In the impact methodology used for our Impact Report and this publication, four key drivers were identified as key contributors to biodiversity loss: These are translated into relative species loss for different biomes. For climate change and air and water pollution, data was used from 140 countries and 65 sectors. For land use, we looked at 65 sectors, building on 42 different types of crops and grid data at the subnational level.

One driver that is not in scope is invasive alien species. Invasive species have a negative impact on habitats and their native inhabitants by competing with them for resources and causing the loss of native biodiversity. Globalised human activities facilitate the movement of invasive species. It would be extremely helpful to include these activities in our calculations, and we hope to be able to do so at some point in the future. For the time being, however, the available quantitative data is too limited for it to be included in this report.

The GID uses two metrics to determine biodiversity impact: Potentially Disappeared Fractions (PDF) and Mean Species Abundance (MSA) loss. PDF captures the fraction of species that has a high probability of no occurrence in a region due to unfavourable conditions caused by various environmental problems. MSA, on the other hand, is the percentage of biodiversity lost under current usage compared to a natural ecosystem. Both can be interpreted to approximatively represent: the loss of a hectare with pristine biodiversity (biodiversity ha) for a year. It is important to note that only negative effects on biodiversity are in scope here. This means the results presented in this report do not account for positive impact and are thus not net effects.

While the GID has high granularity in comparison to other approaches used, like all other available models it has its limitations. This is due to limited

availability of quantitative data,[4] which may result in an underestimation of biodiversity loss in certain locations/sectors. Some other methods do take into account factors such as invasive species, but they do so qualitatively. In our approach, we want to be able to compare different impacts, which is why we only include drivers if there is good quantitative data available. The database and methodology are continuously refined and improved.

About the Impact Institute

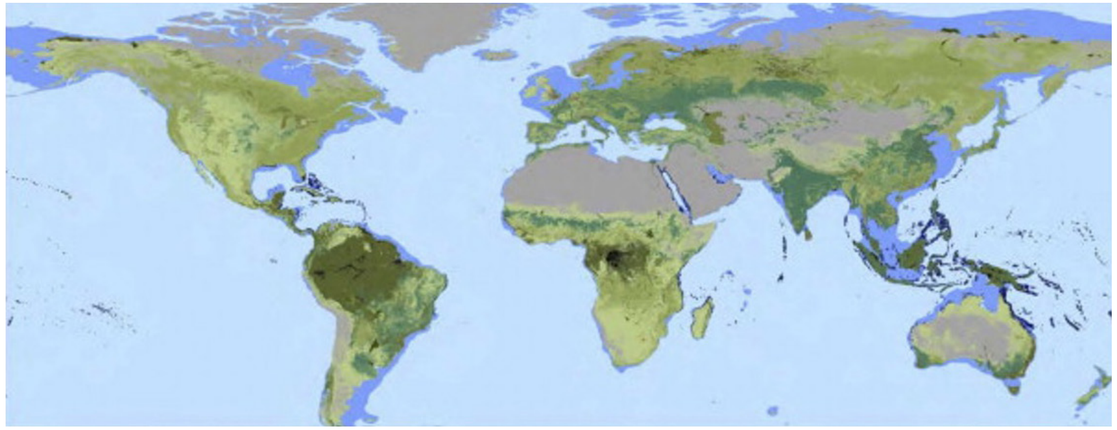
The Impact Institute, based in Amsterdam, is a social enterprise that aims to empower organisations and people to realise the impact economy by providing them with the mindset, capabilities and technology they need to succeed in creating a positive impact on the world. The impact economy is an economy where everyday work, entrepreneurship, innovation and technology lead to a better world. To achieve this, a global system shift is needed in which we keep the valuable components of the old market system while embracing new economic models.

Ecosystems differ in value

A key factor in valuing biodiversity loss is the type of ecosystem service that is affected. For example, while the impact of land use in the Netherlands is certainly considerable, the value of lost ecosystems is much higher in the Amazon rainforest of Brazil. Extensive studies have been conducted on the value of different ecosystems. The figure shows the different ecosystems and their value.

A key factor in measuring the impact of biodiversity loss is the type of biome that is lost and the value of associated ecosystem services. This map shows the distribution of biomes over the world and an estimation of the value of the ecosystem services they provide. Ecosystem services are the benefits people derive from ecosystems such as clean air and water, food provision, coastal protection and climate regulation. Extensive studies have been conducted on the value of different ecosystems. Knowing the value of ecosystem services can help to know where action is needed most and support effective management. As the authors of this map state, it is important to emphasize that valuing ecosystem services is not the same as privatizing them or commodifying them for trade in private markets.

Map of global annual ecosystem services based on 2011 land areas and 2011 unit values[6]



LandCover	Flow Value per Hectare per year	Legend	Area (millions of hectares)
Desert	$0		2,159
Tundra	$0		433
Ice/Rock	$0		1,640
Open Ocean	$491		33,200
Marine Shelf	$2,222		2,660
Grass/Rangelands	$2,871		4,418
Temperature/Boreal Forest	$3,013		3,003
Lakes/Rivers	$4,267		200
Tropical Forest	$5,264		1,258
Cropland	$5,567		1,672
Urban	$6,661		352
Swamps/Foodplains	$25,682		60
Tidal Marsh/Mangroves	$193,845		128
Coral Reefs	$352,249		28

[4] There is limited data available on land transformation, marine ecosystem impact of climate change, scarce water use and invasive species.
[5] Global map of ecosystem service value. Costanza R., de Groot R., Sutton P., van der Ploeg S., Anderson S.J., Kubiszewski I., Farber S., & Turner R.K. (2014) Changes in the global value of ecosystem services. Global Environmental Change, 26, 152–158

Appendix 2: Land use (crops) methodology

To the right we provide an example of how we measure part of our biodiversity impact.
The diagram shows the main components used to assess the impact of using previously undisturbed biomes (e.g. forests, grasslands) for cropland.

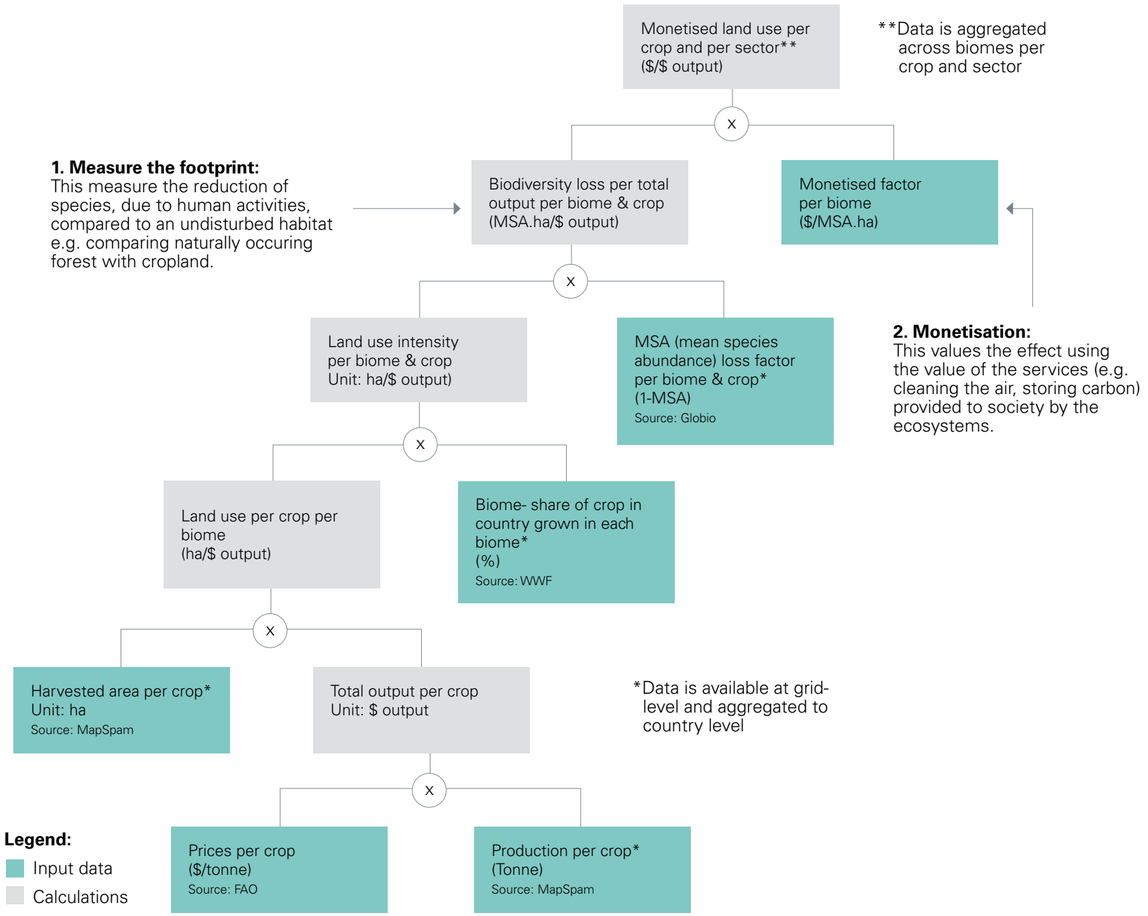
Broadly there are two stages to the calculation:

1. Measure the footprint
   In this step, the reduction in species is measured per sector, crop and biome. For example, the total loss of species within the cereal grains sector, when naturally occurring forests are used for the production of wheat. This is biome and crop specific as they carry unique MSA (mean species abundance) values, or in other words, the amount of biodiversity is not the same across different crop land and biomes. This is divided by the total output per crop (measured in terms of economic value).

2. Monetisation
   In this step, a monetary value is added to the impact. This is based on the value of ecosystem service loss associated with the biodiversity.

More information on this methodology can be found in the Land use, Land use change, biodiversity and ecosystem services publication by True Price and Wageningen Economic Research.

Land (crops) methodology



Appendix 3: The Global Impact Database compared to other methods

The Global Impact Database (GID) that has been used for the analysis can provide organisations with an estimate of biodiversity loss based on data on the interconnectedness of industries in various countries and their economic and environmental performance from global databases. GID Biodiversity data can be used to measure the impact of portfolios, sectors, products categories and conduct hybrid assessments, in combination with client data. The GID approach is one of the several approaches that are available to measure biodiversity impact. Below looks at four key characteristics of the approach and how they compare.

Drivers: The GID looks at emissions of GHG and pollutants, and land use. These are translated into relative species loss for different biomes. A limitation of the GID is that it does not account for all drivers of biodiversity loss namely land transformation, marine ecosystem impact of climate change, scarce water use and invasive species. This limitation is due to limited quantitative data availability. This lack of data will result in the underestimation of biodiversity loss in certain locations/sectors. Impact Institute is investigating possibilities to add these modules in future versions of the tool. In the other methodologies, alternate datasets and assumptions are used to make the ties to these impacts. It is a deliberate choice to not include qualitative data in the GID to ensure comparability of drivers.

Granularity: The granularity between the different methods differs according to the datasets that they use and the scope of coverage. The GID has strong granularity in comparison to the other approaches and can be translated to sectors defined by Biodiversity Footprint for Financial Institutions method (BFFI) and ENCORE.

Accessibility: The methods brought into analysis can be divided into the open or commercial source. The CBF, GBSFI and BIA are commercial, while BFFI, STAR and ENCORE are open sources (with support). The GID methodology is publicly available, but its database is not and can therefore be put in the middle of this division.

Monetisation: The GID's methodology stands out from the other methods as it monetizes the biodiversity impact using the value of services provided to society by ecosystems, e.g. cleaning air, storing carbon, to value biodiversity loss. While no other method currently monetizes impact, CBF intends to develop such a tool in 2022.

ABN AMRO works with the GID due for two main reasons. Firstly because it provides monetized impact data. This allows us to connect biodiversity loss to other sustainability topics and position it within a wider context. Secondly, to ensure connectivity with other sustainability topics, the GID has been used with success in the Impact Report for many years allowing us to get a grip on the impact arising in our value chain.

Other biodiversity measurement approaches that are compared:

STAR
Species Threat Abatement and Recovery (STAR)

ENCORE
Exploring Natural Capital Opportunities, Risks and Exposure

PBAF BFFI
Partnership for Biodiversity Financials (Focusing on Biodiversity Footprint for Financial Institutions method)

CBF
Corporate Biodiversity Footprint

GBSFI
Global Biodiversity Score for Financial Institutions

BIA
Biodiversity Impact Analysis

Appendix 4: Assumptions and limitations

Overall biodiversity data

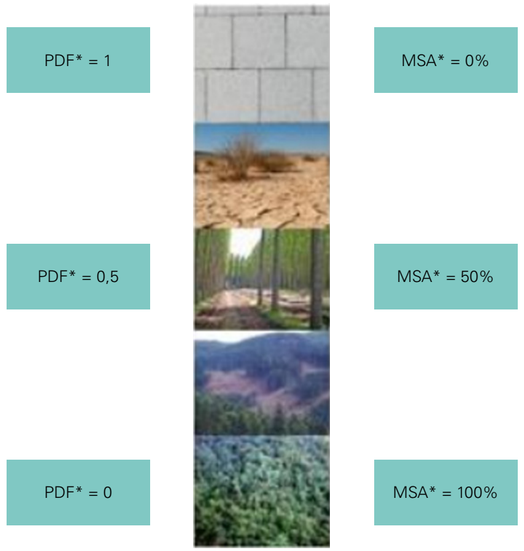
- All species loss is considered to have equal weight, independently of whether species and habitats are more or less endangered, rare.
- In this version, not the full range of biodiversity damage is taken into account due to data availability (no land transformation, marine ecosystem impact of climate change, scarce water use…). However, the model is in line with state of the art for quantitative biodiversity footprinting.
- ESS valuation is a useful step to show economic magnitude of damage, but is not the full story as it assumes biodiversity loss leads to ecosystem services loss linearly.
- Additionally, ESS valuation can best be done using local models. However, it has been shown that top-down estimates based on average values can be quite comparable to bottom-up estimates.
- Uncertainty level increases by combining several characterisation steps.
- Global databases have full coverage of the whole economy, but not always with the most recent data.
- Low comparability of monetary values with GID and True Price method for climate and water pollution.

For land use:

- It is assumed the loss of biodiversity in GLOBIO can be fully attributed to land use.
- It is assumed that multi-cropping is included sufficiently in the MapSpam physical area driver.
- PDF.m2 and MSA.ha are comparable as relative biodiversity loss drivers. However, they quantify biodiversity differently (number vs abundance of species).

Appendix 5: Key terms and definitions

The MSA and PDF scale compared



*Values would require a time frame to get a rate.
E.g. 10PDF.m2.yr can be interpreted as:
- 10m_2 has lost all species during a year
- 100m_2 has lost 10% of its species during a year
- 10m_2 has lost 10% of its species during 10 years

Units of measurement
Biodiversity loss is measured in two comparable units - Potentially disappeared fractions (PDF) and Mean species abundance (MSA) loss as impact factor

- **Potentially Disappeared Fractions (PDF):** Fraction of species that has a high probability of no occurrence in a region due to unfavorable conditions caused by various environmental problems (e.g. climate change, eutrophication)
- **Mean Species Abundance (MSA) loss:** Percentage of biodiversity lost in current use compared to natural ecosystem. Calculated by GLOBIO as average species abundance of originally present species.

MSA and PDF can be considered comparable, both representing the percentage of biodiversity lost in a specific area due to a specific environmental problem. The figure shows the scales move in opposite direction: when there is maximum biodiversity loss, PDF is 1 and MSA is 0%.

Drivers of biodiversity
The main drivers of biodiversity loss are:

- **Land/sea use change:** Land occupation methods are key ones, because it is through land use and the way land is managed that agricultural value chains have the most direct (and often largest) impact on ecosystems and biodiversity.
- **Climate change:** Considering climate change, when land is transformed from one state to another, carbon stocks contained in trees, vegetation and soil may decline, emitting this into the atmosphere and affecting biodiversity and ESS.
- **Pollution:** Air, soil and water pollution and their effects are closely linked to biodiversity and ecosystem services, via for example acidification, ecotoxicity, photochemical oxidant formation, freshwater and marine water eutrophication and ozone depleting emissions.

In our methodology, we only account for biodiversity loss from land use, climate change, air and water pollution. As the field of biodiversity measurement matures, we hope to expand the measurement of drivers of biodiversity loss.

Research & data collection
Impact Institute (Amsterdam)

Design & layout
LVB (Amersfoort)

Measuring impact, creating value

Our goal is to create long-term value for our stakeholders. To do so, we measure the impact our business has on the world around us. This Publication sets out the results of our 2021 biodiversity impact assessment – and the steps we are taking to improve our value creation for stakeholders.

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