



SUSTAINABLE
FINANCE
LAB

A NATURE- POSITIVE DUTCH FINANCIAL SECTOR

The role of policy makers, supervisors and the private sector

In this paper

The Dutch financial sector has a big impact on biodiversity – positive, but also negative. It can be enabled to act in a more nature-positive way.

The government can stimulate this through rulemaking, its own budget and public investment institutions.

Supervisors and central banks can do so by integrating biodiversity in supervisory and monetary policies.

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POLICY
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The Sustainable Finance Lab (SFL) is an academic think tank whose members are mostly professors from different universities in the Netherlands. The aim of the SFL is a stable and robust financial sector that contributes to an economy that serves humanity without depleting its environment. To this end the SFL develops ideas and provides a platform to discuss them, thus bridging science and practice.

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The views expressed in this publication are those of the authors and do not necessarily reflect those of all members of the Sustainable Finance Lab.

Policy Paper

Sustainable Finance Lab publishes different types of publications.

This is a Policy Paper. Policy papers are reports produced by SFL members or employees that contain specific proposals and recommendations for the financial sector or policy makers.

SUMMARY

The Dutch financial sector is a substantial global player in biodiversity loss. Of the portfolio of Dutch financial institutions 36% is (very) highly dependent on at least one ecosystem service. Dutch banks made 40% of the profits of all European banks on loans to the most controversial companies linked to deforestation, one of the main drivers of biodiversity loss. Dutch pension funds are amongst the top investors in industries connected to deforestation like beef, palm oil, pulp, rubber, soy and timber.

Environmental risks and impacts are high on the financial agenda.

There is a global consensus among private financial institutions, policymakers, supervisors and central bankers that both climate change and biodiversity loss pose material risks to individual financial institutions and to the system as a whole. Increasingly, private and public financial institutions look beyond financial risks, in order to grow the positive impact of their financing and to minimize the harm it does to the environment.

The financial sector focuses mainly on climate change. In recent years much effort has been put into assembling data and developing methodologies to assess climate-related risks. Many financial institutions have pledged to align their portfolios with the Paris Climate agreement. Attention for biodiversity is growing but is still much less.

Most environmental policies of financial institutions are voluntary.

There are obligations to manage environmental risks, however these are not enforced. In the EU, capital requirements have not been adjusted to take these risks into account, as has happened in other jurisdictions. This despite the fact that most financial institutions do not meet the ECB's expectations for the management of these risks.

The window of opportunity to realize global goals on climate change and biodiversity is closing.

Time is running out. We will soon cross the thresholds — for both climate and biodiversity — beyond which deterioration will accelerate and become irreversible.

A global agreement to reverse the decline of biodiversity could ramp up much needed action.

This year the Global Biodiversity Framework could do for biodiversity what the Paris agreement of 2015 has done for climate change: set a clear objective that galvanizes action globally for all actors — both public and private.

Participation of the finance sector is indispensable for realizing global biodiversity goals.

The financial sector performs crucial allocation decisions that help determine whether the global biodiversity ambitions are realised.

Government can enable the financial sector to act in a more nature-positive way.

This can be done directly through regulation and expenditures that impact the real economy. In addition, the financial sector is one of the most heavily regulated and supervised parts of the economy and public financial institutions play an important capital steering role.

To that end we propose the following recommendations to the Dutch government.

These should be realised through its own budget and public investment institutions as well as through its participation in the EU, ECB and international institutions such as the IMF and World Bank and the UN Convention on Biological Diversity.

1. **Align all financial goals with the Global Biodiversity Framework.**

The draft post-2020 Global Biodiversity Framework addresses finance, both public and private. To ensure full and measurable contribution of the Dutch financial sector:

- a. Explicitly require alignment of all financial flows with the goals, specifically also adherence to the ‘do no harm’-principle in order to eliminate financing that is harmful to biodiversity

- b. Goals for 2030 and 2050 are specific and measurable along a clear timeline so that alignment of financial institutions can be measured

- 2. **Lead by example through the public budget.** Governments are important financial agents. Utilising the public budget, they strongly influence more nature-positive markets. To fully utilise this power:
 - a. Create an international coalition of Finance Ministers for Biodiversity or extend the mandate of the current Coalition of Finance Ministers for Climate Action to include biodiversity
 - b. Test current expenditures, such as agricultural subsidies, on their biodiversity impact and repair any harmful effects that they have
 - c. Use existing public impact investment institutions, such as InvestNL and the Growth and Climate Funds, which now focus primarily on climate, to finance biodiversity-positive companies and projects. Leverage private funding through blended finance, subsidies and guarantees

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- 3. **Act now on supervision.** We cannot wait to act until biodiversity is fully integrated into the current supervisory financial models. And we certainly cannot wait until climate change has been integrated first. Supervisors need to take precautionary measures now, by:
 - a. Demanding their own assessments of biodiversity dependencies and impacts in the risk assessments of banks, pension funds and insurance companies using currently existing methodologies — as has been done by DNB and Banque de France
 - b. Increasing capital requirements for financial institutions with large exposures to biodiversity risks (micro-prudential supervision)
 - c. Introducing floors for nature-positive financing and large exposure limits for nature-negative financing (macro-prudential supervision)
 - d. Making knowledge of biodiversity part of the DNB and AFM ‘fit and proper test’ of key financial personnel

4. **Include biodiversity in monetary policy.** The ECB is currently studying ways to take climate into account in setting and implementing its monetary policies. The same rationale should apply to biodiversity. Hence, the ECB should:
 - a. Include biodiversity in the review of its collateral framework and asset purchase programme, starting with differentiating between the best- and worst-performing sectors and companies
 - b. Target its refinancing operations of banks (TLTRO) to nature-positive bank lending
 - c. Increase the nature-positive and reduce the nature-negative investments in its own non-monetary portfolios

5. **Enable nature-positive investments in the poorest and most vulnerable countries.** Global biodiversity goals can only be achieved when all countries, including the poorest, have the financial means to invest in preserving and restoring biodiversity. Through its role as a prominent creditor country and its seats at the boards of the World Bank and IMF the Netherlands can ensure that Debt Sustainability Analyses take biodiversity risks and spending needs into account and that countries are enabled to fund these.

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LIST OF ABBREVIATIONS

ABP	Algemeen Burgerlijk Pensioenfonds (National Civil Pension Fund)
AFD	Agence française de développement (French Agency for Development)
AFM	Autoriteit Financiële Markten (Financial Market Authority)
AIMFD	Alternative Investment Fund Managers Directive
BFFI	Biodiversity Footprint Financial Institutions
BIOFIN	Biodiversity Finance Initiative
BPFBOUW	Bedrijfstakpensioenfondsen voor de Bouwnijverheid
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
COP	Conference of the Parties
CPBS	Corporate Bond Purchase Scheme
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
CSPP	Common Sector Purchasing Programme
CSRD	Corporate Sustainability Reporting Directive
DFC	Debt for Climate
DFN	Debt for Nature
DNB	De Nederlandsche Bank (Dutch central bank)
EBA	European Banking Association
ECA	Export Credit Agency
ECB	European Central Bank
EFRAG	European Financial Reporting Advisory Group
EIB	European Investment Bank
EIOPA	European Insurance and Occupational Pensions Authority
ESG	Environmental, Social, and Governance
ESMA	European Securities and Markets Authority
ETG	Export Trading Group
EUR	euro
FMO	Financierings-Maatschappij voor Ontwikkelingslanden (Financing Society for Developing Countries)
FSAP	Financial Sector Assessment Program
GBF	Global Biodiversity Framework
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GSI	Greenness of Stimulus Index
ICAAP	Internal Capital Adequacy Assessment Process

IDFC	International Development Finance Club
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
IMVO	Internationaal Maatschappelijk Verantwoord Ondernemen (International Responsible Business Conduct)
IOPS	International Organization of Pension Supervisors
IORP	Institutions for Occupational Retirement Provision
IOSCO	International Organization of Securities Commission
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
LTV	Loan to Value
MiFID	Markets in Financial Instruments Directive
MNB	Magyar Nemzeti Bank (Hungarian central bank)
MPA	Macro-prudential Assessment
NFRD	Non-Financial Reporting Directive
NGFS	Network for Greening the Financial System
NGO	Non-Governmental Organization
NRRP	National Recovery and Resilience Plan
NWB	De Nederlandse Waterschapsbank (Dutch Water Boards Bank)
OBI	Open Bodem Index (Open Soil Index)
OECD	Organisation for Economic Co-operation and Development
PBAF	Partnership for Biodiversity Accounting Financials
PBL	Planbureau voor de Leefomgeving (Netherlands Environmental Assessment Agency)
PBoC	People's Bank of China
PDB	Public Development Bank
PFZW	Pensioenfonds Zorg en Welzijn (Pension fund for care sector)
PRI	Principles for Responsible Investment
RST	Resilience and Sustainability Trust
RTS	Regulatory Technical Standards
SDG	Sustainable Development Goals
SDR	Special Drawing Rights
SFDR	Sustainable Finance Disclosure Regulation
SME	Small and Medium-sized Enterprise
SUSREG	Sustainable Financial Regulations and Central Bank Activities
TLTRO	Targeted Long-Term Refinancing Operations
TNFD	Taskforce on Nature-related Financial Disclosures
UCITS	Undertakings for the Collective Investment in Transferable Securities
USD	United States Dollar
WACI	Weighted Average Carbon Intensity
WWF	World Wildlife Fund

1. INTRODUCTION

The financial sector is an important actor in all societies. The sector takes crucial allocation decisions. Based on expectations about the future, financiers decide which corporations get the funding to realize their plans and which ones do not. While a business case may look profitable now, this may no longer be the case in a future where externalities are priced-in and regulated in order to reach biodiversity goals.

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Climate change is now high on the financial agenda. Physical, transition and litigation risks are now in the lexicon of financial risk managers, supervisors and, more recently, monetary policy makers. Increasingly, private financial institutions seek maximum positive real-world impact and see opportunities in, for instance, financing the energy transition while striving for maximum positive real-world impact. This powerful movement has focused primarily on climate change. Research shows, however, that biodiversity is as much part of our economy and financial system as climate change — and the problems caused by biodiversity loss are at least as acute.

This year the 196 nations of the Convention on Biological Diversity will try to agree on common goals for biodiversity protection and restoration: a new Global Biodiversity Framework. This 15th Conference of the Parties in Kunming, China, should do for biodiversity what the Paris agreement of 2015 did for the global fight against climate change: set a clear objective that galvanizes action globally for all actors, both public and private.

This paper provides suggestions to the Dutch government on how to enable the Dutch financial sector to contribute fully to reaching global biodiversity goals: mobilizing resources to preserve and restore biodiversity, but also to limit financial institutions from doing harm to biodiversity through their financing. We look in particular to what the government can do as rule-maker and supervisor of the

financial sector. Our recommendations to the Dutch government could also be useful to the panel of experts of the Convention on Biological Diversity for resource mobilization, as well as to other governments, for their national agendas for implementing a new Global Biodiversity Framework.

The Dutch financial sector presents an interesting case in biodiversity. Firstly, the sector is a substantial global player in biodiversity loss. Dutch banks made 40% of the profits of all European banks on loans to the most controversial companies linked to deforestation, a prime driver of biodiversity loss. Dutch pension funds are amongst the top investors in industries connected to deforestation, such as beef, palm oil, pulp, rubber, soy and timber. Thirty-six percent of the total portfolio of Dutch financial institutions is (very) highly dependent on at least one ecosystem service, such as pollination or soil fertility. At the same time the sector is a frontrunner in concern for and acting on environmental issues — including biodiversity. This is evidenced by the involvement of Dutch financial institutions in the early initiatives to take biodiversity into account as natural capital, the recent groundbreaking report on biodiversity of the Dutch central bank, the launch of the Platform Biodiversity Accounting Financials and the Dutch initiative on the Biodiversity Pledge.

This report builds on WWF International's SUSREG framework and first annual report. We have studied the literature on both climate and biodiversity finance, in particular the role of both private and public financial institutions. And we have interviewed experts from the financial sector, government, supervisors, academia and civil society, as listed in annex 1. In parallel to this study, we researched a similar question for the Netherlands Environmental Assessment Agency (PBL), focusing in particular on the interaction between biodiversity and climate change. As there is overlap in the two research questions, there is also overlap in both reports.

In chapter two we describe current biodiversity issues and efforts to solve them. We discuss the relevance of biodiversity for the economy and the financial sector. In chapter three we discuss the biodiversity impact and dependencies of the Dutch financial sector. Chapter four discusses regulation, supervision and monetary policy on biodiversity in the Dutch financial sector. Chapter five compares the Dutch situation in biodiversity with best practices in other countries and in climate change mitigation. Chapter six concludes and contains recommendations to the Dutch government, supervisors and the central bank on how to enable a nature-positive financial sector.

2. THE BIODIVERSITY PROBLEM AND ITS FINANCIAL IMPACT

Biodiversity loss

The Convention on Biological Diversity (CBD) defines biodiversity as the variability among living organisms at all levels, from genetic to landscape levels. Biodiversity underpins the generation of vital ecosystem services which provides, among other things, benefits to people. Biodiversity is declining at unprecedented rates. Human modification of nature has resulted in the loss of 83% of wild mammal species and 41% of plants. The global forest area is only 68% of pre-industrial level. (IPBES, 2019). Approximately 1 million plants and animal species are in danger of extinction (WWF, 2020a). The main drivers of global biodiversity loss are habitat loss, land- and sea-use change, overexploitation of ecosystems, climate change, pollution, invasive alien species, infrastructure and habitat fragmentation (IPBES, 2019a). Biodiversity loss is largely caused by activities in agriculture, fisheries, forestry, extraction industries, energy sectors and water management (Kok et al., 2018; Van Oorschot et al., 2020). Companies further downstream in the value chain indirectly contribute to biodiversity loss in other parts of the world through importing natural resources needed in the manufacture of final products (Van Oorschot et al., 2020). Biodiversity loss is set to continue and internationally agreed environmental goals are unlikely to be met (Kok et al., 2018). The IPBES Global Assessment states that the health of our ecosystems, on which our livelihoods, economies, food security and health depend, are in danger. But the Report also states that we can still make a difference if we start now — at the local level — and realise a system-wide reorganization (IPBES, 2019a).

The Convention on Biological Diversity

The United Nations Convention on Biological Diversity (CBD) originated at the 1992 Rio Earth Summit and attempts to address biodiversity loss. In 2010, the then 194 Parties to the Convention adopted the Strategic Plan for Biodiversity 2011-2020 and the 20 Aichi (Japan) global Biodiversity Targets. Only six Aichi Targets have been

partially achieved (CBD, 2020). In October 2021 the Kunming Declaration reaffirmed the global commitment to reduce biodiversity loss and reached an agreement on the post-2020 Global Biodiversity Framework (GBF) (CBD, 2021b). The GBF sets out four long-term goals for 2050 and corresponding milestones for 2030. The four long-term goals are:

1. Increase the area (+15%), connectivity and integrity of ecosystems; reduce the number of threatened species; maintain at least 90% of genetic diversity
2. Value and maintain nature's contribution to people and support the global development agenda
3. Ensure that the benefits from utilization/use of genetic resources are shared fairly and equitably
4. Ensure that the means of implementation are available to achieve the Framework's 2050 vision (CBD, 2021a)

The Kunming Accord is built upon a 'whole-of-society' approach, meaning that all types of actors beyond governments are engaged, including local authorities, NGOs, indigenous peoples, youth groups, the business and finance community, the scientific community and other citizens (CBD, 2021a). The "Milestones" for 2030 include:

1. Conserve existing intact and wilderness areas; restore at least 20% of freshwater, marine and terrestrial ecosystems; conserve 30% of global land and sea areas under a system of protected areas
2. Eliminate plastic waste
3. Contribute to the mitigation of- and adaptation to climate change through ecosystem-based approaches and avoid negative impacts of climate change mitigation efforts on biodiversity
4. Make it mandatory for businesses to report on their dependencies and impacts on biodiversity

To close the funding gap of at least 700 billion per year the agreement calls for the elimination of incentives harmful for biodiversity, such as harmful subsidies, by at least USD 500 billion per year and an increase of nature-positive financial resources from all sources to at least USD 200 billion per year (CBD, 2021a).

The economic impact of biodiversity loss

Over 50% of global GDP depends on nature. Loss of coastal habitats and protection already puts 100-300 million people at risk of floods and hurricanes. The effect of climate change on invasive species can lead to the emergence of new diseases (IPBES, 2019b; NGFS, 2021a). The highest dependency on nature is found in primary sectors such as agriculture, fisheries, aquaculture and forestry. Other sectors dependent on nature include energy, water, oil, gas and mining. Biodiversity loss consequently affects business operations and profitability (DNB, 2020). The economic impact of biodiversity loss globally is highly unevenly distributed. A 90% loss in the services of tropical forests, wild pollinators, and marine fisheries has been estimated to result in a loss of 2.4% of real GDP globally by 2030. Lower income countries will be impacted much more with a loss of 10.1% GDP, while rich countries, which are projected to lose 0.8% of their GDP (Dasgupta, 2021; Johnson et al., 2021).

The financial impact of biodiversity loss

The economic impact of biodiversity loss is so large that it will impact most financial institutions materially, through traditional financial risks such as credit risk and market risk (DNB, 2020; NGFS, 2021a). As the figure below indicates these risks can originate in both physical and transition and reputation risks.

Interaction between biodiversity and financial risks

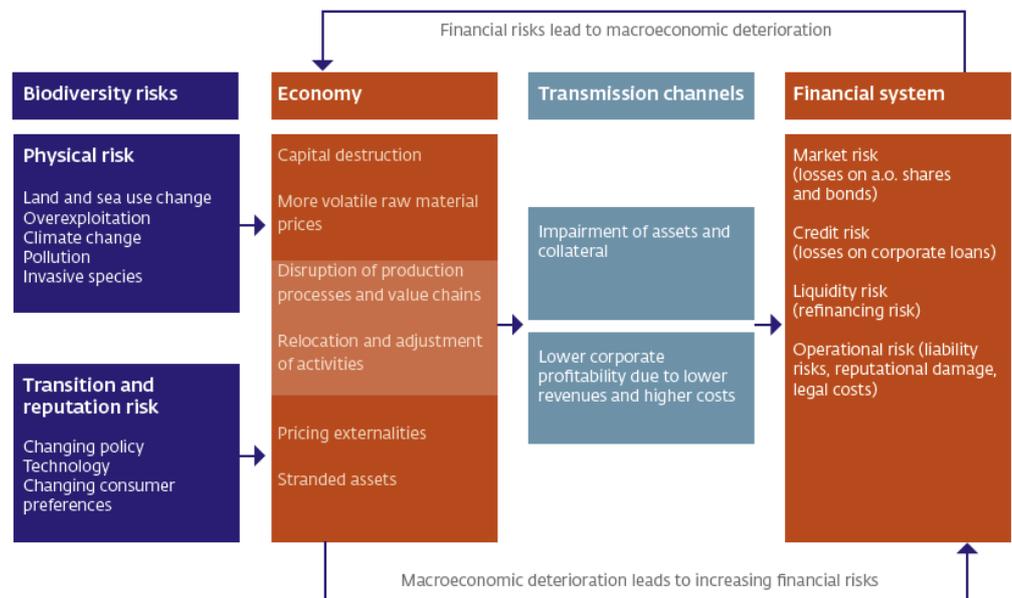


Figure 1. Source: DNB (2020).

The direct financial impact of biodiversity loss is referred to as the 'physical risk', the financial risk resulting from physical changes in the world. Physical sources of risk include, for example, the disappearance or decline of ecosystem services on which economic actors depend, such as deforestation, water loss, pollinator loss, etc. The impacts of biodiversity loss are subject to non-linear dynamics, such as feedback loops and tipping points when certain thresholds are exceeded (Rockström et al., 2009; Steffen et al., 2015). It is a challenge to predict when such thresholds occur (Hillebrand et al., 2020; Lovejoy & Nobre, 2018). Recent studies on biodiversity-related risks emphasize that the concept of 'green swans', 'low probability high impact'-events like a pandemic, are particularly relevant when dealing with biodiversity (Bolton et al., 2020; Chandellier & Malacain, 2021; Dasgupta, 2021).

However, even if physical risks are addressed, this leaves another kind of risks: transition risks. These risks result from a misalignment between financial institutions' portfolio allocations and strategies and developments aimed at reducing or reversing the damage to biodiversity and ecosystems, such as government measures, technological breakthroughs, litigation and changing consumer preferences. Think of the sudden loss in value of a company whose business model is dependent on deforestation that suddenly becomes forbidden. It is not only that biodiversity loss impacts financial portfolios. The reverse is also true: lending and investments have a considerable impact on biodiversity. In the first instance these drive physical and transition shocks, that, as a second-order effect, impact the financial institution's own portfolio. This spiral/doom loop is the so-called 'double materiality' (Oman & Svartzman, 2021).

Double materiality is also relevant beyond the financial impact. Increasingly, clients and employees of financial institutions are concerned about more than just the financial bottom line (Frusch et al., 2020). Central banks increasingly look to the impact of their policies on climate and biodiversity (ECB, 2021a) – as, indeed, is their legal mandate (van Tilburg & Simić, 2021).

3. BIODIVERSITY AND THE DUTCH FINANCIAL SECTOR

This chapter describes the relationship between biodiversity and the Dutch financial sector. We start with an overview of the overall dependency of Dutch financial institutions on biodiversity. We zoom in on the negative impacts of Dutch private financial institutions, followed by a section on how Dutch financial institutions try to mitigate the risks and build a positive biodiversity impact. We end with a discussion of the impact on biodiversity of monetary policy.

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Private sector dependencies

The Dutch central bank (DNB) has investigated the dependence of the Dutch financial system on biodiversity. It considered EUR 1400 billion of loans, shares and bonds of, mostly, banks and pension funds. Of this, EUR 510 billion, or 36% of the portfolio examined, is highly or very highly dependent on at least one ecosystem service. This number is an underestimate as only direct effects are taken into account (DNB, 2020).

Private sector negative impacts

The DNB-report also analyzed the biodiversity footprint¹ of the Dutch financial sector through the 8,000 companies in which Dutch financial institutions invest. This is equivalent to EUR 320 billion, or 80% of the share portfolio of Dutch financial institutions. They find that the biodiversity footprint of Dutch financial institutions is comparable with the loss of over 58,000 km² of pristine nature. This is an area more than 1.7 times the land surface of the Netherlands (DNB, 2020). We highlight some recent research on the relatively large role those Dutch financial institutions play in financing sectors and companies with a high biodiversity impact.

¹ In the referenced report defined as species and population loss relative to pristine circumstances (DNB, 2020)

Banks

An illustration of the substantial global biodiversity footprint of Dutch banks is a recent report by Global Witness (2021a). The report looks at lending to twenty of the most controversial companies in the area of deforestation. It found that lending by the US, China and the EU, including UK were all about the same size. Most strikingly, it found that around 40% of the profits made by large European banks was made by Dutch banks. Lenders based in the European Union and UK have earned an estimated USD 646 million profit on around USD 34.7 billion worth of deals with these companies since 2016. The Dutch bank, ABN Amro, made most money (USD 130 million) followed by Rabobank (USD 76 million) and ING (USD 44 million). Each of these is larger than, for instance, HSBC bank. Globally, only the Chinese banks have made similar profits in that period (Global Witness, 2021a). Amongst the Dutch banks, Rabobank, with USD 12 billion, has the highest exposure to deforestation sensitive sectors such as beef, palm oil, soy, pulp and paper, rubber, cocoa and coffee. Its exposure to soy and beef industry alone is estimated at USD 3 billion (Chain Reaction Research, 2020). In the second and third place are ABN Amro and ING Bank with around USD 2 billion and USD 1.7 billion, respectively (Forests&Finance, 2021).

Dutch banks are also invested in biodiversity loss through various chemical companies, for instance, in pesticide production. With total loans and underwriting ING is in the top 30 investors of Bayer (2.56% of the total investments in the company), Dupont (1.53%), Syngenta (2.04%), BASF (6.49%), and Dow Inc (1.98%). Rabobank, similarly, is amongst the top 30 investors in these companies, at 0.76% in Bayer, 0.54% in DuPont, and 5.49% in Syngenta (Portfolio Earth, 2021b). In the financing of plastic production, the Netherlands as a country is the eighth largest financier of the top 40 plastic supply chain companies 3.1% of the total financing of these companies. ING Bank is among the top 20 lenders to these companies at USD 33 billion, or 1.87% of total lending to these companies (Portfolio Earth, 2021a).

A specific biodiversity issue in the Netherlands is the emission of nitrogen. With current levels much higher than permitted, new policies are expected in the coming years to reduce emissions. DNB found that the three largest Dutch banks extended credit to the amount of EUR 81 billion to sectors with nitrogen-emitting activities, equivalent to 39% of all bank lending. Of this the exposure to the sectors with the highest emissions, such as dairy farming, is more than EUR 20 billion (DNB, 2020).

Pension funds

The Netherlands has one of the largest pension fund sectors in the world. As a result, Dutch pension funds are among the top investors in biodiversity-sensitive sectors and companies. According to Forests&Finance the two largest Dutch

pension funds, ABP and PFZW, are global leaders in investing in six industries connected to deforestation -- beef, palm oil, pulp, rubber, soy and timber -- with a combined exposure amounting to almost USD 500 million. BPFBOUW is a distant third with USD 24 million (Forests&Finance, 2021).

The two largest Dutch pension funds also have a considerable stake in the Brazilian meatpacking industry, which is known to be related to deforestation activities. ABP and PFZW have invested around USD 220 million and USD 163 million, respectively, in JBS, Mafrig and Minerva, three of the top ten largest of beef producers in terms of deforestation exposure. Almost 80% of the investments by pension funds in meatpackers, such as JBS, are by Dutch pension funds. (Wenzel et al., 2021).

The biggest investors in meatpackers through pension funds (countries)

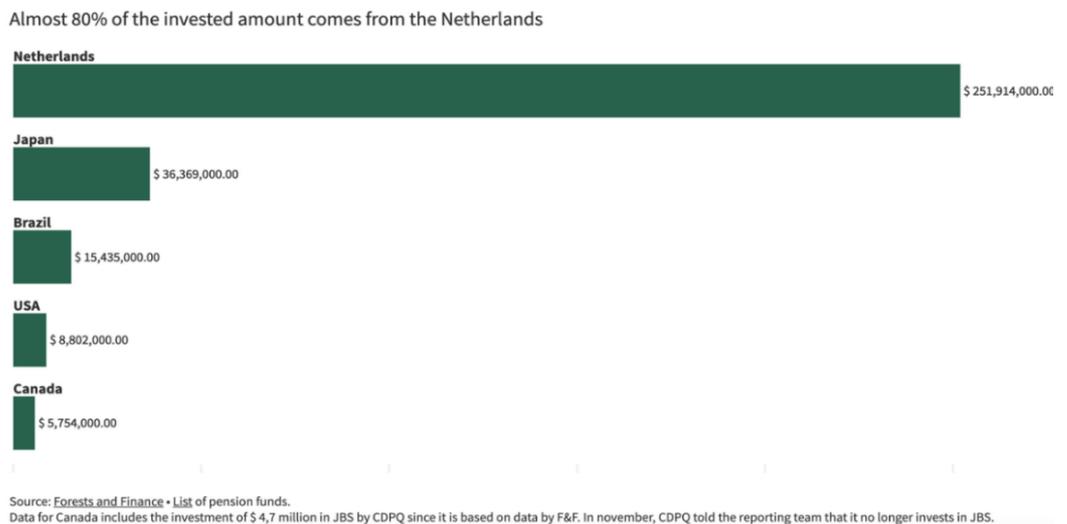


Figure 2. Source: Wenzel et al (2021)

Monetary policy dependency and impact

DNB is part of the Eurosystem that through its corporate sector purchase programme (CSPP) currently has EUR310 billion of corporate bonds, making up 20% of the euro-denominated corporate bond market. 40% of that portfolio is highly or very highly dependent on ecosystem services (Kedward et al., 2021). In addition, over 70% of this portfolio potentially contributes to key drivers of biodiversity loss. Land use and freshwater use make up 29% of this portfolio. An additional 25% is potentially contributes to climate change and the emission of other biodiversity-negative pollutants (Kedward et al., 2021). At a company-level, EUR38.6 billion of the corporate bond portfolio is exposed to high water risk. In addition, the ECB potentially has EUR17.2 billion in financial exposure to negative biodiversity impacts (Kedward et al., 2021).

Private sector biodiversity policies

Probably as a result of their large dependency and impact, Dutch financial institutions are already active in managing these risks. Most Dutch financial institutions have a policy on nature and the loss of biodiversity. Usually, they include at least the avoidance of negative impact on High Conservation Value nature and protected nature reserves (Eerlijke Bankwijzer, 2020). However, only 28% of Dutch financial institutions have started to assess financial risks related to biodiversity loss and none of them address biodiversity loss in strategic risk management through scenario analysis (VBDO, 2021). This section showcases examples of biodiversity policies of Dutch financial institutions.

Data, metrics, reporting and goal setting

The asset manager ACTIAM, and seven other investors representing EUR 1,8 trillion assets under management, joined forces with Satelligence to use satellite imagery, machine learning and data analysis to detect changes in forestation (ACTIAM, n.d.).

Led by the ethical bank and asset manager, ASN Bank, a coalition of Dutch financial institutions developed the Biodiversity Footprint for Financial Institutions (BFFI) methodology to measure the impacts of investment portfolios (PBAF, 2020). BFFI is amongst the five leading tools globally to assess biodiversity impact (Finance for Biodiversity, 2022). The coalition aims for expanded use of the BFFI method and to that end has established the Partnership of Biodiversity Accounting Financials (PBAF) (Global Canopy, 2021a).

Dutch insurer a.s.r. and Rabobank together with water corporation Vitens, developed the 'Open Bodem Index' (Open Soil Index, OBI) in 2019. The OBI provides a quantitative appraisal of the quality of the soil. The index is based on open-source information and uses indicators such as biology, soil structure, and chemistry (Working Group Biodiversity, 2021).

ASN Bank has set itself the goal of having a 'net positive effect on biodiversity' by 2030. This not only includes ASN's own operation but includes all loans and investments (ASN Bank, n.d.). ACTIAM aims for water-neutrality and zero deforestation by 2030 (Working Group Biodiversity, 2021).

Pricing of capital

The most direct way for financiers to encourage companies to behave more responsibly is to reward them financially. ING was among the first banks globally to issue a sustainability-linked loan facility, when it issued a EUR 1 billion loan to Philips in 2017. The interest rate depended on the company's sustainability ranking and performance, as assessed by Sustainalytics — an assessment including biodiversity (ING, 2017). Most recently Rabobank extended a favorable loan to

Dutch mattress manufacturer Auping as a result of its high score on the Circular Transition Indicator (Rabobank, 2021).

More directly impacting biodiversity we see financial initiatives that result in lower land lease prices for farmers. In the Netherlands in 2018, Rabobank introduced the biodiversity monitor, a tool that quantifies biodiversity-enhancing performance in the dairy sector. Farmers in the top 25% are rewarded with an interest rate discount (The Sustainable Finance Platform, 2020). The monitor can also grant access to Rabobank's impact loans — a form of blended finance in cooperation with the European Investment Bank (EIB) with a discounted interest rate on loans to sustainable companies (Rabobank, 2017; Working Group Biodiversity, 2021).

Insurer a.s.r., one of the biggest private landowners in the Netherlands, decided in 2021 to provide lessees who manage their lands sustainably with a 5-10% discount. A.s.r. uses the OBI to indicate which land users are sustainable enough to be eligible for discounts. There are also many smaller initiatives to reward sustainable farming with lower land costs, such as BD Grondbeheer's perpetual soil bonds (BD Grondbeheer, n.d.). The fiscally attractive National Greenfund (Groenfonds) includes the Investment Fund Sustainable Agriculture, which finances farmers who adhere to sustainable key performance indicators such as reducing nitrogen, increasing biodiversity and improving animal welfare (Nationaal Groenfonds, n.d.).

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NWB Bank (the public bank for the Dutch water boards), regularly issues green bonds, or so-called water bonds. In total, twelve separate water bonds have been issued, for a total of EUR5.2 billion. The revenues of these bonds are utilized for loans for the water authorities. In turn, the water authorities use the loans for projects that promote sustainability, such as climate adaptation, climate mitigation or biodiversity restoration or preservation.

Internationally ASN Bank launched its Biodiversity Fund in 2020, targeted at biodiversity restoration and conservation. It was the first among Dutch financial institutions to launch such a fund (ASN Bank, 2021). Since 2014, the Kempen SDG Farmland Fund, set up for Pensioenfonds PostNL, promotes the transition to more sustainable food production in OECD-countries. The fund has a size of EUR 42 million (Kempen Capital Management, 2021a, 2021b). Rabobank started the Carbon Bank in cooperation with farmers in 2021 to promote projects that store carbon in trees and soil. The bank acts as an intermediate between parties that want to store GHG emissions and those that want to reduce their GHG emissions (The Rabobank Carbon Bank, n.d.).

Engagement and exclusion

Financial institutions can engage with corporates on their biodiversity performance through investor-company dialogues. Investors and lenders can consider divestment and exclusion if the companies do not comply with biodiversity targets (Global Canopy, 2021a). Robeco for example engages with companies with exposure to commodities driving deforestation, such as palm oil, beef, tropical timber, and cocoa and with the government of Brazil to reduce deforestation in the Amazon (Fuchs & van Gool, 2020). Dutch investors increasingly work together in engagement. This can be done through international platforms, but also through Dutch initiatives for international responsible investing such as the IMVO covenants for the pension funds and insurance sector. This is a collective engagement focused on deforestation caused by the soy supply chain in the Amazon and the Cerrado. Where possible a link is made with intensive livestock farming in the Netherlands (IMVO, 2021).

Exclusion lists of Dutch financial institutions do not typically include specific biodiversity activities. However, most Dutch financial institutions do exclude activities such as mining and palm oil, which can be linked to biodiversity loss. Most financial institutions have at least a statement on deforestation of High Conservation Value or primary forests (Eerlijke Bankwijzer, 2020).

4. PUBLIC POLICIES FOR BIODIVERSITY IN THE DUTCH FINANCIAL SECTOR

As one of the most heavily regulated sectors, public policies have a great influence on the private financial sector. Traditionally this has been due to the sector's systemic importance and potential instability. Increasingly it is also for the allocation function of finance, and the corresponding impact that that has on the economy. Since the 2015 Paris Agreement most attention has been paid to climate change (Carney, 2015). More recently biodiversity has also emerged on the agenda of public financial policy makers, ranging from politicians making laws and regulations (EU FSAP), to supervisors for implementation and to monetary policy makers (NGFS, 2021a).

This chapter outlines how public policy makers currently influence Dutch private financial institutions. To a large extent this is a description of European developments, as the European Union plays an increasingly dominant role in the sector. We start with a discussion of the role of public policy makers in data and transparency. Then we discuss the role of the public budget and the role of public investment institutions. After that we consider the role of supervision and we end with monetary policy.

The table below shows the different levels of policymaking and the main actors at each level. At all levels (international, EU and national) there are organisations that coordinate policies. However, between the financial subsectors the center of gravity of policymaking may differ. For banks the most important capital regulations have been globally agreed through the Basel accords. For asset management the EU is the most important rule-maker, while the large Dutch pension fund sector is still regulated primarily at the Dutch national level.

On the whole, the EU is becoming more dominant in all financial segments. It is very active with its Financial Sector Action Plans on the subject of data and transparency. With the banking union the ECB is the lead-supervisor of the largest

Dutch banks (90% of the banking market) and the ECB also determines monetary policy. Core laws are made in a combined effort by the European Commission, Parliament and Council. Much financial regulation is delegated to the three European Supervisory Authorities and to technical expert groups. EU rules do need to be translated into national laws (European Commission, 2019b; Gualandri & Crasso, 2006).

Different levels of policymaking and the main actors at each level

Financial sector	Banking	Pension funds	Insurance	Asset Management
International policymaker	Basel Committee	International Organization of Pension Supervisors (IOPS)	International Association of Insurance Supervisors	International Organization of Securities Commission (IOSCO)
European Policy maker (level 1 - basic acts)	European Commission, Parliament and Council			
EU Regulatory framework	CRR CRD IV	IORP II	Solvency II	UCITS AIFMD MIFID II
European Supervisory Authorities (level 2)	EBA	EIOPA (for occupational pensions)	EIOPA	ESMA
Technical implementation	Taxonomy Expert Group/ Platform on Sustainable Finance, European Financial Reporting Advisory Group (EFRAG)			
Dutch laws	Dutch government and parliament			
Dutch regulatory framework	Wet op het financieel toezicht (Wft, Financial Supervision Act)	Pensioenwet (Pw), Wet op het financieel toezicht (Wft, Financial Supervision Act) Wet verplichte beroepspensioenregeling (Wvb, Obligatory Occupational Pension Scheme Act)	Wet op het financieel toezicht (Wft, Financial Supervision Act)	Wet op het financieel toezicht (Wft, Financial Supervision Act)
Regulator prudential	ECB/DNB	DNB	DNB	DNB
Market conduct	AFM	AFM	AFM	AFM

Table1. Source: Authors

Financial regulation for data, transparency and goal setting

Dutch pension funds must report annually how their investment policies take account of the environment, climate, human rights and social relations (Article 135(4) of the Pensions Act of 2014). Also the EU Regulation 2016/2341 (more commonly known as IORP II) calls for explicit attention to sustainable investing. For example, transparency is required as to how sustainability factors are taken into account in the investment policy.

In March 2018, the EC introduced the Action Plan on Financing Sustainable Growth. Part of this action plan strengthens sustainability disclosure. The Sustainable Financial Disclosure Regulation (SFDR) was adopted in 2019 and came into force in 2021. The regulation lays down disclosure obligations for financial products and financial advisors in relation to the integration of sustainability risks by financial market participants (e.g. pension funds and companies).

AIFMD, UCITS and MiFID regulations cover the supervision of various investment funds, asset managers and venture capital firms in the EU. In order to increase harmonization with SFDR and Taxonomy regulation, the acts introduce sustainability considerations. Delegated Directive 2021/1270 mandates the inclusion of sustainability in investment policy, investment decisions, risk analysis, risk management policy and procedures in Undertakings for Collective Investment in Transferable Securities (UCITS). Delegated Regulation 2021/1255 mandates that sustainability risks are included in the due diligence and monitoring of investments, as well as taken into account in decision-making and organizational structures of Alternative Investment Fund Managers. Lastly, Delegated Regulation 2021/1253 deals with decision-making, compliance control, risk management policies and procedures and client reporting for MiFID-covered investment firms. These Regulations and the Directive come into force in August 2022 (KPMG, 2021).

The Dutch Financial Markets Authority (AFM) conducted an exploratory study into the application of the SFDR among 100 managers of 1,250 Dutch funds. Fifty-seven percent indicate that this fund has no sustainable characteristics. Eight percent indicate that they do have 'sustainable investments' as their goal. It could not always be established that this is indeed the case. The 'sustainable funds' examined may have included information about sustainability risks in the prospectus, but in many cases this appears to be too general and lacking in depth. For example, there is no concrete description of the 'sustainable objective'. The SFDR is new and a taxonomy and technical standards (RTS) are yet to be finalized (AFM, 2021).

The Non-Financial Reporting Directive (NFRD), which lays down reporting rules for large companies on environmental, social, human rights, anti-corruption and diversity matters, was amended in 2021 with the proposal for a Corporate Sustainability Reporting Directive (CSRD). The CSRD requires all large companies

and listed companies to report information according to EU sustainability reporting standards. The first set of EU sustainability standards was developed by the EFRAG. In April 2021 the European Commission presented its proposal for CSRD reporting, including provisions for climate change mitigation, adaptation, water and marine resources, circular economy and biodiversity and ecosystems protection (European Commission, 2021)

Also relevant is the Taxonomy Regulation, a classification system establishing a list of environmentally sustainable economic activities. The six areas covered by the taxonomy are climate mitigation, climate adaptation, water and marine resources, circular economy, pollution prevention and control and the protection and restoration of biodiversity. In addition to contributing to these goals, the taxonomy mandates firms to respect minimum safeguards and Do No Significant Harm (DNSH) criteria.

The Netherlands also has a corporate governance code that requires companies to report on their long-term value creation. This is not (yet), according to the Monitoring commission, done satisfactorily (Monitoring Committee, 2021).

The public budget

Public spending can have a direct influence on biodiversity, but also provides direction for the rest of society and hence private finance. Public spending is therefore a 'market making' activity. For instance, if agricultural subsidies allow for the use of pesticides, private financiers will invest in the production of those pesticides. Developed countries have failed to double biodiversity-related financial flows as was agreed in 2010 in the Aichi Target 20 (Kraljević & Mitlacher, 2020). At the same time global subsidies in effect stimulating climate and nature destruction amounted to USD 1.8 trillion, most of that number going towards fossil fuels, unsustainable agriculture practices and poor water management (Koplow & Steenblik, 2022). The same bleak picture emerges when looking at the income side of the government budget. Biodiversity-relevant taxes include taxes on fertilizers, forest products and timber harvest. According to OECD, biodiversity-related taxes raised USD 8.1 billion in 2019, representing only 1% of total environmentally related tax revenue (OECD, 2022).

The Netherlands' environmental tax revenue is higher than the EU average, accounting for 3.33 % of GDP in 2017. The EU-28 average was 2.4 % of GDP (European Commission, 2019a). More specifically, revenue generated from biodiversity-relevant taxes is particularly high. On average EUR 3500 million was raised annually over the period of 2012-2016. France came a distant second with only half of that (European Commission, 2019a). These revenues include a levy on water pollution and a municipal sewerage charge (USD 1 767 million and USD 1 411 million, respectively, average between 2012-2016) (OECD, 2018).

Probably the single most relevant budgetary expenditure for biodiversity within the Netherlands is the Direct Payments to farmers within the Common Agricultural Policy (CAP). This policy has historically driven intensification of European agriculture and, despite the change in objectives, may still do so. A recent empirical study shows that farming regions with the lowest climate and biodiversity impact generate less income than their more climate-intensive counterparts, but at the same time receive less support from CAP subsidies (Scown et al., 2020).

CAP post-2020 entails higher environmental requirements from farmers and member states, but these are claimed to be too voluntary and not specific enough (Pe'er et al., 2020). Thus, the outcomes of CAP policies seem counterproductive for the targets for increased investments in organic farming and High Nature Value farmlands. These increased investments are cornerstones of the EU's Biodiversity and Farm to Fork Strategies and aim to increase biological farming in the EU to 25% of the total EU farmland in 2030 (WWF, 2020b).

Important recent budgetary developments are the recovery plans drawn up in reaction to the corona crisis. The Netherlands still has to make its plans public for the European Recovery and Resilience Facility. However, an analysis of the EUR 500 billion that has already been committed across ten European countries shows that these do not really provide a high return for nature. In total, 98% of climate-relevant investment would reduce GHG emissions, whereas only 46% of nature-relevant spending would strengthen nature. Most of the nature-relevant spending, as part of NRRPs, will actually damage biodiversity and nature. And nature-based solutions (e.g., urban greening, wetland restoration etc.) constitute only 1% of NRRP spending (Vivid Economics, 2021).

Public investment institutions

Through subsidies, guarantees and co-financing, governments seek to steer private financial flows. The Netherlands has an extensive array of subsidies and guarantees for innovation. However, most of these are generic, and where these are greened they are mainly focused on climate (Tilburg et al., 2018).

A notable exception is the National Green Fund (Nationaal Groenfonds), a fiscally subsidized fund incorporating the Investment Fund Sustainable Agriculture, which aims to finance farmers who adhere to sustainable key performance indicators such as reducing nitrogen, increasing biodiversity and improving animal welfare (Nationaal Groenfonds, n.d.).

Since 2020 the Netherlands also has a public impact investor. InvestNL is a revolving fund of EUR 1,5 billion of which now almost a third has been committed. It primarily focuses on innovative climate solutions, but circular economy is also a focal point (Invest-NL, 2021a). Towards the end of 2021 it did some co-financing of players in plastic recycling, thus contributing to waste reduction that will improve biodiversity (Invest-NL, 2021b).

InvestNL has also co-funded a Dutch Future Fund with the European Investment Bank (EIB). The purpose of the fund is to finance SMEs in the fields of energy transition, sustainability and circular economy. Each contributed EUR 150 million to the fund (EIB, 2021). EIB has also co-invested with the Nederlandse Waterschapsbank N.V. (NWB Bank) in the development of projects for flood protection and water resources management, each contributing EUR 100 million (EIB, 2019).

Financial supervision

Biodiversity loss is a material financial risk (DNB, 2020; NGFS, 2021a) — and needs to be managed by private financial institutions just as any other risks. Supervisors monitor risk management and have instruments (for example, adjusting Pillar 2 requirements) to provide incentives to financial institutions for better risk management. WWF in its SUSREG reports distinguishes between leadership and organization, macro-prudential supervision and micro-prudential supervision (supervisory expectations and rule based). We discuss each of these in turn.

Leadership and organization

DNB scores very well in leadership and organization, partially due to its Occasional papers covering biodiversity risks, amongst other nature and climate-related topics. DNB is also a member of the Biodiversity Working Group, which includes eight other Dutch financial institutions, as well as ministries and academic stakeholders. The group coordinates efforts in biodiversity and issues best-practice guidelines for integrating biodiversity considerations in the financial institutions' portfolios (DNB, 2021a). Since July 2021, DNB has a dedicated Sustainable Finance Office and a strategy for integrating sustainability completely in its core tasks by 2025 (DNB, 2021c). DNB plans to translate previously conducted explorations into concrete policies, before moving on to integration. The exhaustion of resources and pollution have been added for further exploration — given the impact that pollution can have on biodiversity and ecosystems. DNB stresses that its mission includes the sustainable development of the Netherlands. As such it is not only focused on reducing risks, but also on increasing positive impacts (DNB, 2021b).

Macro prudential

WWF ranks DNB (as well as several other Eurosystem national central banks) low on macro prudential supervision, as it has conducted stress tests only on climate, and has not set specific risk indicators to monitor the exposure of banks to material E&S risks. DNB has, in addition, no prudential rules, based on E&S considerations, to limit the exposure of banks to certain activities and thus prevent and protect against the build-up of systemic risk (WWF, 2022). DNB is exploring the potential impact of biodiversity loss and related policies on systemic risks, and the possibilities for scenario analyses.

Micro prudential supervisory expectations

In 2020 the ECB published its final guide on climate-related and environmental risks for banks, explaining how the ECB expects banks to prudently manage and transparently disclose such risks under current prudential rules (ECB, 2020b). In a separate report the ECB shows that banks' climate-related and environmental risk disclosures lag significantly (ECB, 2020a). Most recently, in a first progress report (ECB, 2021c), it was found that "only a handful of institutions have started taking into account other environmental risk drivers, such as biodiversity loss and pollution. For virtually all institutions, such other environmental risks are still a blind spot". The ECB will challenge banks with these findings in its supervisory dialogue and in 2022 will conduct a full supervisory review of banks' practices and take concrete follow-up measures where needed (ECB, 2020c). In its SUSREG report WWF concluded that, in the Netherlands, banks are not yet expected to conduct stakeholder engagement on relevant E&S issues with civil society representatives. Dutch banks have, however, committed to such stakeholder engagement (SER, 2019), though it is unclear how this has been implemented.

Micro prudential rule based

The globally agreed 'Basel'-micro prudential policy framework consists of three pillars. Pillar 1 refers to the minimum capital requirements with regards to credit, operational, and market risk. Pillar 2 refers to other risks not accounted for in Pillar 1 (legal, liquidity, reputational, etc.) and the supervisory review of banks, meaning that supervisors can introduce further capital requirements at their discretion. Pillar 3 sets disclosure requirements of banks, exposing them to market discipline. Banks are expected to integrate E&S considerations in their Internal Capital Adequacy Assessment Process (ICAAP) (ECB, 2020b). However, despite the poor performance (ECB, 2021c) no capital add-ons have been required (pillar 2). As it currently stands, Pillar 1 also does not account for environmental risks, which, therefore, currently have no consequences for capital requirements.

The European Commission has proposed a revision of the EU banking rules Capital Requirements Regulation (CRR) and Capital Requirements Directive (CRD IV) to fully implement the Basel III standard. Under this proposal banks will need to

disclose their exposure to ESG risks and supervisors will need to include these in their regular supervision and stress testing (EC, 2021a, 2021b). IORP II is the EU legislation regulating occupational pension funds and mandates these pension funds to provide risk assessment for climate change, use of resources, ESG risks, and transition risks. IORP II also mandates Member States to require occupational pension funds to disclose when such environmental factors played a role in investment decisions (DIRECTIVE (EU) 2016/2341, 2016). The insurance sector is regulated by the Solvency II legal framework. Unlike the IORP II, this framework does not contain any risk assessment provisions for the environment. However, EIOPA has published a legal opinion supporting the proposal for environmental risks to be included into Pillar 1 of supervisory requirements (EIOPA, 2019). Additional legal opinion has been provided on how to interpret current wording of Solvency II to include environmental risk assessment, as well as the amendments of the legal provisions to explicitly include them (van Goor & Lowet, 2018). In practice, the Dutch central bank already interprets Solvency II regulation so that it includes future physical and transition risks and requires Dutch insurers to take them into account when performing Own Risk and Solvency Assessments (DNB, n.d.-b, 2021d).

Testing of directors

DNB and the Netherlands Financial Markets Authority (AFM) assess directors and supervisory directors of financial institutions and other important officials. Reviews for large banks are performed in conjunction with the European Central Bank (ECB). The test assesses whether the candidate is suitable for the position and whether his or her reliability is beyond doubt. Does the candidate have the right knowledge and skills and the desired professional behavior? How does the candidate fit into the board? Each year, 1,700 to 2,000 applications for assessments are received. Biodiversity does not currently play a role in this assessment (DNB, n.d.-a).

Monetary policy and other portfolios

Until now biodiversity has played no role in the monetary policies of the ECB. DNB signed the UN's Principles of Responsible Investing (PRI) charter, committing to apply its principles of responsible investment. These principles entail screening the investment universe against non-ESG-compliant investments, integrating ESG criteria, promoting sustainable investing among DNB's peers, disclosing the carbon footprint and other relevant ESG information and developing an in-house approach to sustainable investment (DNB, 2019). DNB has introduced ESG and climate-related considerations in the management of its own-account portfolios and is examining how to include biodiversity considerations as well.

5. INSPIRATION FOR IMPROVING PUBLIC POLICIES

While biodiversity has risen quickly on the agenda of private financial institutions, the push from Dutch and European public financial policy makers has been limited. This chapter discusses initiatives and ideas that could inspire the Dutch (and European) public financial policy makers in enabling a more nature-positive private financial sector and in reducing the risks of biodiversity and contributing to its improvement. We look at experiences in addressing climate change, with biodiversity in other jurisdictions and at recommendations made by private financial actors, academics and civil society. The structure of this chapter follows the different instruments described in the previous chapter: data and transparency, the public budget, public investment institutions, supervision and monetary policy. To that we add two new instruments: debt-for-nature swaps and global monetary solutions such as the IMF's Special Drawing Rights.

Data, transparency and goal setting

In order for the private financial sector to act upon biodiversity related risks and opportunities, data and methodologies are needed. Several methodologies exist and there are also initiatives to standardize these approaches, like the EU's Align, the Taskforce on Nature Related Financial Disclosures (TFND) and the International Sustainability Standards Board of the IFRS (IFRS, 2021). The next step will be to translate these standards into the laws and regulations at the EU level — like the taxonomy, SFDR and CSRD.

What can be done at a national level has been shown in France: Article 29 of the law on Energy and Climate requires financial institutions to disclose the dependence and impact of their financial activities on both climate and biodiversity. The decree came into force on May 28, 2021. On biodiversity, financial institutions are required to disclose their alignment strategies by setting targets

and alignment measures in accordance with international biodiversity goals. Article 29 adopts the concept of double materiality (Svartzman et al., 2021).

India is the first jurisdiction to propose regulation aimed at ESG ratings providers (Securities and Exchange Board of India, 2022). This has been proposed also for the EU by the French and Dutch financial markets authorities (AMF & AFM, 2020).

With regard to target setting, 30 global financial institutions with more than USD 8.7 trillion of assets under management have declared their commitment to tackling commodity-driven deforestation in their portfolios by 2025 (Global Canopy, 2021b). NGO's have called for the inclusion of guidelines for the financial sector in the European guidelines on deforestation (Global Witness, 2021b).

Most recently the 84 financial institutions that signed the Finance for Biodiversity Pledge in 2021 suggested amendments for the post-2020 Global Biodiversity Framework. In particular they ask for not only focusing on increasing the nature-positive investments but to make all financial flows, bot public and private, aligned to the GBF-goals, so also reducing negative flows (Finance for Biodiversity, 2022).

The public budget

It is important to bring Ministries of Finance into the conversation to be able to look at all parts of the budget that have a biodiversity impact. In 2019, the Coalition of Finance Ministers for Climate Action was formed. The key objective of this Coalition is to promote climate action through the use of public finance and fiscal policy. The Coalition currently comprises 62 Finance Ministers (The Coalition of Finance Ministers for Climate Action, 2021).

The Netherlands has been a frontrunner, with its Climate Accord of 2019, in terms of translating international long-term objectives into concrete regulations and spending. Together with a broad alliance of stakeholders a roadmap for 2030 has been created, progress is being monitored and, where needed, policies are adapted (Climate Agreement, 2019). The most recent coalition accord (2021) not only raised the ambition for 2030 and reserved substantially more financial means, it also introduced an independent monitoring commission (Coalition Agreement, 2021).

The European Union is a global leader in terms of implementing the Paris Accord through its Green Deal- and Fit for 55-package (European Commission, 2021a, 2021c).

Public investment institutions

Many countries still support fossil fuel investment through Export Credit Agencies (ECAs), public entities that provide government-backed guarantees, credits, loans

and insurance in the support of exports. At COP26, over 25 countries pledged that before 2023 they will end public funding for fossil fuel projects abroad. (COP26, 2021). Earlier, at the November 2020 Finance in Common Summit, 450 global Public Development Banks (PDBs) issued a joint declaration to reorient financial flows towards sustainability. The joint declaration affirmed their awareness of the need for biodiversity finance and willingness “to help align all financial flows with the future post-2020 Global Biodiversity Framework” (Finance in Common, 2020). The International Development Finance Club (IDFC) is the group of 26 leading national and regional development banks, the largest provider of public development and climate finance. In a Common Position, IDFC members committed to develop biodiversity strategies and actions plans (IDFC, 2020). Agence Francaise de Developpement (AFD) announced its ambition that 30% of its climate finance will be nature-positive by 2025, effectively doubling its financing for ecosystem protection (AFD, 2021).

Public investment institutions also play an important role in financing sustainability transitions within developed countries, taking the role of an early investor in innovative technologies. They take higher risks and provide higher initial investments in order to reduce these risks and costs for (private) financiers in the later stages. Examples are the KfW in Germany and Green Investment Bank in the UK (Polzin & Sanders, 2021). KfW has played a large role in Germany’s *Energiewende*. Through its network of local banks, it has invested in various climate-related projects, such as wind park developments and energy efficiency measures. In addition, KfW has used its influence to go beyond investing, and venture into climate consultancy, education, and lobbying efforts (Mazzucato & Penna, 2015).

Whereas, as we discussed in the previous chapter, InvestNL through its focus on the circular economy does have a positive biodiversity impact, the much larger Groeifonds (EUR 20 billion) has no such focus, nor does the newly created Climate Fund (35 billion).

Supervision

Central banks

Climate has now been widely embraced as relevant by financial supervisors (BIS, 2021; NGFS, 2021c). However, not much more has been done than studying the risk. This may be about to change as the ECB has found that many of the largest banks do not meet supervisory expectations on climate and the environment. In the words of ECB head of supervision Elderson: This “creates the space for us [the ECB] to act as supervisors” (Elderson, 2021). A recent ECB publication has put this more concretely: “To ensure financial stability, [...] climate-related risks may require the application of macroprudential policies complementary to banks’ own risk

management and direct supervision” (Baranović et al., 2021). It is for this reason that banks expect climate risks to translate into capital requirements soon after the current climate stress tests (Comfort & Schwartzkopff, 2022).

Other supervisors have already taken action. Within Europe the Hungarian central bank (MNB) piloted a ‘green bank subsidy’ program that entails reducing capital requirements for banks that issue loans intended for improving the energy efficiency of houses (MNB, 2019).

Outside of Europe, the PBoC has conducted informal window guidance since 2006 for green lending targets and since 2007 for negative ‘dirty’ lending targets. The former was discontinued in 2019 and the latter in 2014 (Dikau & Volz, 2021). To encourage the development of green credits by banks the PBoC included the performance of green finance into its macro-prudential assessment (MPA) potentially leading to a higher interest rate for deposits with the PBOC (Cheng et al., 2021)

Other proposals

Movement is needed not only on climate but also on biodiversity. Despite the lack of fully developed and mature metrics, the alarming speed with which biodiversity loss is taking place, means organizations need to act now (IUCN NL, 2020). In particular there is a call for setting capital requirements for excessive environmental risks. From a macro-prudential point of view, Schoenmaker and van Tilburg have argued for an array of cyclical and structural measures (such as LTV caps, counter-cyclical capital buffer management, and large exposure restrictions) to reduce the exposure of the banking sector to climate-related financial risk (Schoenmaker & van Tilburg, 2016). Others have appealed to supervisors to treat banks’ new fossil fuel explorations similarly to equity exposure, meaning in effect they would have to cover the full amount of the loan with their own funds (Hohn, 2021; Philipponnat, 2020). Others have called for central banks to (re)institute stricter lending quotas, credit floors/ceilings, and more stringent sectoral lending (Bezemer et al., 2018). Most fundamental is the criticism that neither climate nor biodiversity should be considered as risks but rather as uncertainties. Thus, as long as the effects of biodiversity loss cannot be quantified, the current approach of integration into existing risk models will most probably be unsuccessful (Kedward et al., 2020).

Instead, a precautionary approach is suggested that relies on heuristics, experience, and softer, qualitative skills of central bankers: such as the reaction of central banks seen during the 2008-financial crisis and more recently during the pandemic, with capital buffer boosting policies, swap line introductions, launching of asset purchasing programs, etc (Kedward et al., 2020).

Current regulations and guidelines do allow for such discretionary measures. For instance, the BIS's Core Principles for effective banking supervision state, on the topic of concentration risk that in situations of "credit concentrations through exposure to [...] market and other risk concentrations where a bank is overly exposed to particular asset classes, products, collateral, or currencies" the supervisor "may exercise discretion in applying this definition [of concentrated risk] on a case-by-case basis" (BCBS, 2019). Similarly, EBA guidelines recognize that "[s]upervisors should assess whether institutions are adequately capitalised [...] in relation to their concentration risk profile" and that "[s]hould the capital held by an institution not adequately cover the nature and level of the concentration risks to which it is or might be exposed, the supervisor should take appropriate action aimed at reducing risk exposures, possibly including obliging the institution to hold additional own funds as described under Article 136 of the CRD" (CEBS, 2010). These guidelines and regulations do not currently include climate or nature-related risks explicitly, but large exposures of banks to some of the climate and nature dependent assets might merit a more inclusive, climate focused interpretation.

Testing of directors

DNB has made knowledge about climate change part of its fit and proper test (Banken.nl, 2020). In France, the financial market regulator requires some knowledge of climate change for the "certification AMF" needed to act as asset manager (AMF, 2021).

The purpose of the financial institution

Increasingly financial institutions define their societal purpose and set targets for purpose. In 2019 the Dutch financial sector was the first to publicly commit to the then current Climate Accord, a roadmap towards 2030 to reduce CO₂-emissions in line with the global Paris Accord (Klimaatcommitment, 2022). At COP 26 the Global Financial Alliance for Net Zero was launched comprising over 400 large financial institutions with combined assets of 130 trillion (GFANZ, 2022).

This development is also encouraged by civil society and proposals have been made to make this more obligatory. In the Netherlands the monitoring commission of the Corporate Governance Code has stressed the need for better reporting on required societal long term value creation (Monitoring Committee, 2021). Twenty-five professors of corporate law advocated the introduction of 'responsible corporate citizenship', a broadened statutory task of the governing board. They also proposed that companies should be able to formulate a statutory basis for existence (purpose or *raison d'être*), thus establishing their purpose and guiding principles. This initiative is on a voluntary basis, but a judge can test these open standards (Winter et al., 2020). A similar arrangement already exists in France, since 2019, where the Loi PACTE makes the responsibility of companies in society

explicit and provides for the possibility of including a *raison d'être* in the statutes and to adopt a new corporate form, the 'société à mission' (Segrestin et al., 2018).

Monetary policy

In the summer of 2021, the ECB presented the conclusions of its monetary strategy review. One of the outcomes was to integrate climate concerns in its policymaking (ECB, 2021a). This includes further research and model development, and, possibly, the intent to modify the collateral framework and Asset Purchasing Programme (ECB, 2021a).

WWF has proposed not only to go beyond climate and include also other environmental considerations in collateral framework and asset purchasing programs, but also in bank refinancing programs and foreign exchange portfolios (WWF, 2021).

The Bank of England has recently had its remit expanded by the UK Minister of Finance to include considering environmental factors more broadly when setting its monetary policy (Sunak, 2021). Such an expansion may not be needed as the central banks, united in the NGFS, have already concluded that "risks related to biodiversity loss pose threats to financial stability, meaning that it falls within the mandates of central banks and financial supervisors" (NGFS, 2021a).

Asset purchases

The Swedish Riksbank in 2019 sold bonds issued by the Canadian province of Alberta and the Australian states of Queensland and Western Australia due to their ties to fossil industries (Flodén, 2019). The Riksbank in 2021 decided on a norm-based negative screening of its bond purchasing program. In practice, this means not purchasing the bonds of companies that do not subscribe to principles codified in UN Global Compact, the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights (Andersson & Stenström, 2021).

The PBoC has introduced a preferential green bond purchasing scheme. This scheme gives favorable funding conditions to commercial banks that offer green bonds as collateral for central bank lending operations (Macaire & Naef, 2021).

The Bank of England has announced its plans to decarbonize its Corporate Bond Purchase Scheme (CBPS). To this end the BoE will compile a scorecard for each company, based on emissions intensity, amongst others, and tilt their bonds accordingly (Bank of England, 2021). However, this approach has been criticized as this would reduce the BoE's Weighted Average Carbon Intensity (WACI) by only 7% — far short of its target of 25% by 2025. The CBPS tilting could even entail an

increase in exposure to carbon intensive companies due to the Bank's adherence to the market neutrality principle (Dafermos et al., 2022).

Green TLTRO

A tool not considered by the ECB is greening the cheap refinancing of banks, the so-called targeted longer term refinancing operation (TLTRO). This is a remarkable outcome given the fact that in its assessment of options for greening monetary policy the NGFS labeled green targeted refinancing operations as strongly positive in contributing to mitigating climate change (NGFS, 2021b). The ECB also recognized their relevance in that "support for the green objectives of the EU could be ensured by the fact that green TLTROs would reduce the costs related to the green transition by promoting investments in green activities" (ECB, 2021b). Greening TLTRO has also been advised by academics and NGO's as a way to directly inject finance for green projects into the economy through the banking sector that plays such a dominant role in Europe (van 't Klooster & van Tilburg, 2020). A follow-up on this idea has been put forward where the 'green TLTRO' funds would be used to finance housing renovations in the Eurozone (Batsaikhan & Jourdan, 2021).

Outside of Europe, decarbonizing refinancing operations is not only theory. The Bank of Japan has recently designed a refinancing operations scheme where commercial banks will be offered a zero per cent interest rate credit if they issue more 'green' loans (Haruhiko, 2021). The People's Bank of China has recently announced a new carbon reduction supporting scheme that will refinance banks cheaply for loans targeting carbon reduction (PBoC, 2021). And, already since 2015, the Central Bank of Bangladesh offers private banks reduced refinancing rates for the loans they issue for improvement of water and energy efficiency in the textile sector (Barkawi & Monnin, 2015).

Own funds

With their own funds (own investments, pension funds or foreign exchange portfolios) central banks are often more ambitious. DNB aims to make its own investments and foreign exchange portfolios Paris aligned and make investments more generally in line with international ESG standards, such as UN Global Compact and various chemical, biological and nuclear weapons conventions (DNB 2021). The Banque de France takes biodiversity into account more explicitly by investing in energy and ecological transition funds linked with reduced marine pollution. In 2020 the bank also started measuring its impact on biodiversity (Banque de France, 2021). The Bank of Italy gives priority to firms that: [...] focus on the responsible use of natural resources and their effects on ecosystems" and "favours those with the best ESG profile" (Banca d'Italia, 2021). The Swiss National Bank too, explicitly excludes companies that "cause severe environmental damage" or "seriously damage biodiversity" (SNB, 2021).

Debt for nature swaps

Climate change is already driving up the costs of debt of the most vulnerable countries, undermining an often already bleak debt sustainability. One study found this effect to be on average 117 basis points increase in the cost of debt for 40 climate vulnerable countries, translating annually into USD 40 billion additional interest payments. This number is likely to grow to USD 146-168 billion over the next decade (Buhr et al., 2018). Increased costs of sovereign debt impede investments in development and resilience. The impact of COVID19 made matters worse. In at least 62 developing countries, external debt service was larger than health care expenditure (V20 Presidency, 2021).

Vulnerable countries have set out several expectations regarding debt support and flexibility, including debt forgiveness and Debt for Climate (DFC) swaps for middle- and low-income vulnerable economies (V20 Presidency, 2021). Multilateral agencies such as the World Bank Group and multilateral development banks can facilitate these instruments through guarantee facilities such as the Guarantee Facility for Green and Inclusive Recovery. However, for this to work effectively, Debt for Climate or Nature swaps need to be standardized and scaled (The Economist, 2021).

Debt for nature deals: Promising but small

Costa Rica received a USD 20 million debt write-off from the US and as a result received a total of USD 50 million investment to protect its natural habitats. Its plan was to double the size of marine protected areas and expand terrestrial parks in order to serve as a basis for eco-tourism and sustainable fishing practices (Walsh, 2010). Similarly, in 2010, Seychelles bought back a USD 21.6 million debt at a discount, and is paying off the amount to Seychelles Conservation and Climate Adaptation Trust (SeyCCAT). This trust, in turn, finances marine conservation activities. Under the scheme, Seychelles committed to keeping 30% of its marine resources protected (World Ocean Initiative, 2020). In 2021, Belize also repurchased a part of its foreign debt at a discount with the help from The Nature Conservancy. A part of the savings, USD 23 million, is dedicated to maintaining marine life and, similarly to Seychelles, protecting 30% of its waters (The Economist, 2021).

Global monetary solutions

To support the global economy during the corona pandemic the International Monetary Fund (IMF) issued new Special Drawing Rights (SDRs) equivalent to USD 650 billion. By their nature most of the new SDRs are allocated towards high- and medium-income countries (Task Force on Climate, 2021). To channel purchasing

power to the places where it is needed most the IMF has proposed the creation of the new Resilience and Sustainability Trust (RST). This fund would tackle not only the impact of the Covid-19 shock but would also address climate change-induced events, lack of investment in digitalization, demographic shifts, etc. (Pazarbasioglu & Ramakrishnan, 2021). The IMF-proposed amount of USD 50 billion for this fund would be insufficient. It is estimated that for climate adaptation and mitigation at least USD 140 billion per year is needed until 2030 and USD 280 billion per year until 2050 (Steele et al., 2021).

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Globally biodiversity is declining at an alarming speed. The impact on humans and their economies is growing. While the exact impact and timing is hard to predict, it is clear that the impact will be substantial, potentially systemic, and largely irreversible. Time is running out to prevent the crossing of thresholds beyond which deterioration accelerates.

The financial sector will not be shielded. Biodiversity loss will impact individual financial institutions as well as the system as a whole. Biodiversity thus needs to be on the radar of every financial risk manager and supervisor. Restoring biodiversity offers financial opportunities and aligns with the mission for a positive impact of public financial institutions, including central banks, and of an increasing number of private financial institutions.

The financial sector has potent instruments at its disposal to effectively reduce risks and seize opportunities from biodiversity. Companies that do harm to biodiversity can be forced to change their ways or risk losing access to finance. Companies that improve biodiversity can be appropriately rewarded and be facilitated in expanding their activities.

While biodiversity is rising fast on the financial agenda, the impact on the ground so far has been limited. The challenge ahead is to match the severity and urgency of the biodiversity problem with an appropriate and effective reaction from the financial sector. Awareness has been raised, the time for action has come.

We cannot wait to act until biodiversity is fully integrated in the current financial models and tools, let alone only start after climate change has been integrated. The multi-faceted dimensions of biodiversity and the fundamental uncertainty of its workings and effects, as well as the overlaps between diversity

and climate mean full integration may never be possible. Supervisors have been studying and modelling climate change for over seven years. However, despite climate being labelled a material risk driver and expressed supervisory expectations on how to manage these risks, this has had no consequence for the capital requirements of banks. While biodiversity is now also widely recognized as a material financial risk, it is, however, not being managed.

The coming years will be decisive in order to avoid crossing critical thresholds in both climate and biodiversity. It is for this reason that the financial sector and its supervisors should follow the precautionary principle and start to act, accepting that it is better to be roughly right than to be exactly wrong.

In recent years there has been much European regulation to increase data availability and transparency. However, so far, this has mainly been focused on climate change related data. France has shown with a new law that it is possible to broaden the scope.

Public budgets are market making and currently do not effectively help to preserve biodiversity. The aim of the 2010 biodiversity framework to double spending on preservation has not been met and annually over USD500 billion of public spending actually harms biodiversity. In 2019, the Coalition of Finance Ministers for Climate Action was formed to promote climate action through the use of public finance and fiscal policy.

Public investment institutions play an important role in driving the energy transition. However, so far, biodiversity has not been high on the agenda of the Dutch public investment institutions — either those operating nationally or those operating internationally.

Supervisors have started to consider climate change, but have not yet acted. For biodiversity the situation is arguably worse. The ECB recently concluded that, for virtually all banks, biodiversity risks are still a blind spot. We do, however, see that, outside of the eurozone, supervisors are already linking environmental risk performance to capital requirements, effectively providing an incentive for financial institutions for more nature-positive financing. Academics and civil society organisations also argue for this, and, more specifically, for supervisors to adopt the precautionary principle and act now. In particular, this means a new paradigm for supervisors, accepting that it is better to be roughly right than to be exactly wrong. We cannot wait to act until biodiversity is fully integrated into current financial models and tools.

Monetary policy is starting to take climate change into account, yet still needs to move on biodiversity. The ECB is expected to integrate climate risks into its

collateral framework this year. Other central banks have already done so and have also adjusted their purchasing programmes. For biodiversity there have been no such actions and none are planned.

Recommendations

To build upon the positive momentum for biodiversity in the Dutch financial sector we make the following recommendations to the Dutch government. These will enable the financial sector to take a more effective role in preserving and restoring biodiversity.

1. **Make alignment of financial flows part of the post-2020 Global Biodiversity Framework.** The post-2020 Global Biodiversity Framework (GBF), to be agreed upon this year, should:
 - a. Contain an explicit reference to require the alignment of financial flows, both public and private, with GBF goals
 - b. Encompass both increased resource mobilization and nature-positive finance, in addition to adhering to the 'do no harm'-principle, thus eliminating financing that is harmful to biodiversity
 - c. Stipulate specific and measurable goals with a clear timeline to allow the financial sector to benchmark its performance and thus determine its alignment

2. **Improve the business case of nature-positive business.** The single best way to enable the financial sector to extend more nature-positive finance is to structurally improve the business case of nature-positive business. This can be done through:
 - a. Regulation, making biodiversity harmful activities illegal
 - b. Putting a price on such activities, giving negative externalities a price
 - c. Procurement policies that create new markets for nature-positive products
 - d. Clear and credible national biodiversity transition plans, independently monitored, that help private financial institutions understand where developments will be going
 - e. Making technically operational the new transparency initiatives such as the CSRD, SFDR and Taxonomy and ensuring this includes biodiversity. Valuing both the positive impact as well as requiring disclosure of activities that harm biodiversity. Work towards global standards with the TNFD and IFRS
 - f. Obliging boards to monitor and evaluate the corporate citizenship of their companies

3. **Lead by example: the public budget.** Governments are important financial agents. Through their own budget they can make or break nature-positive markets. To fully utilize this power:
 - a. Biodiversity should not be a topic for only the Ministry of the Environment or Nature. Nor is the agenda only a national one: create an international coalition of Finance Ministers for Biodiversity or extend the mandate of the current Coalition of Finance Ministers for Climate Action
 - b. Test current expenditures, such as agricultural subsidies, on their biodiversity impact
 - c. Use public impact investment institutions, like InvestNL and the Growth and Climate Fund, to finance biodiversity positive companies and projects. Leverage private funding through blended finance and subsidies or work with guarantees where necessary
 - d. Ensure multilateral development banks do no harm through their financing and double nature-positive funding.

4. **Supervision: act now.** There is consensus that biodiversity poses both micro- and macroprudential risks. These risks cannot be completely quantified. Steps need to be taken to align current supervisory frameworks with the need to reduce biodiversity risks. To this end:
 - a. Demand assessments of both biodiversity dependencies and impacts per bank in the ICAAP, using existing methodologies — as DNB and Banque de France have done
 - b. Demand assessments of both biodiversity dependencies and impacts, also from pension funds and insurance companies
 - c. Increase capital requirements for the largest biodiversity risks — based on specific sectors and companies with a bad track record and/or strategy
 - d. Introduce floors for nature-positive financing and limits for nature-negative loans and investments
 - e. Add knowledge of biodiversity to the ‘fit and proper’ test of key financial personnel by DNB and AFM.

5. **Monetary policy: also include biodiversity.** The ECB is currently studying ways to take climate into account in setting and implementing its monetary policies. The same rationale applies to biodiversity. Hence the ECB should:
 - a. Include biodiversity in the review of its collateral framework and asset purchase programme, starting with differentiating between the best and worst performing sectors and companies
 - b. Also do this for the refinancing operations of banks and target these to nature-positive bank lending

- c. Own funds: Promote nature-positive impacts through their non-monetary portfolios

- 6. **Enable nature-positive investments in the poorest countries.** Global biodiversity goals can only be achieved when the poorest countries have the financial means to invest in preserving and restoring biodiversity. Through its role as a prominent creditor country and its seats at the boards of the World Bank and IMF, the Netherlands can support:
 - a. Debt Sustainability Analyses that take into account biodiversity risks and spending needs
 - b. Introduction of sovereign debt with interest rates based on a biodiversity score linked to key performance indicators
 - c. Biodiversity as an integral part of debt restructuring efforts. Structural adjustment plans should be nature-positive rather than commoditizing and selling the nation's biodiversity. This includes capacity building on how to commercially structure nature-positive projects so that they become investable for private financial institutions
 - d. Developing ways through which global liquidity, as created through the IMF's Special Drawing Rights, can be used to reward the preservation and restoration of biodiversity, thus rewarding the care for this great global public good.

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ANNEX 1

INTERVIEW LIST

Interviewee	Organisation
Maud Abdelli	WWF
Elena Almeida	LSE Grantham
Sylvian Augoyard	WWF
Remco de Boer	AFM
Merel Hendriks	NWB Bank
Onno van den Heuvel	BioFin
Anita de Horde	Biodiversity Pledge
Katie Kedward	LSE IIPP
Sanne van Keulen	SN&M, iMVO
Raoul Koehler	AFM
Martin Lok	Capitals Coalition
Arthur van Mansvelt	Achmea IM, Biodiversity Pledge
Roel Nozeman	ASN Bank
Tim Steinweg	Rainforest Foundation Norway
Romain Svartzmann	NGFS/Banque de France
Florian Titze	WWF CBD team resource mobilisation
James Vaccaro	Climate Safe Lending Network
Ulli Volz	SOAS
Gerko Wessel	AFM
Simon Zadek	Finance for Biodiversity Initiative
Sjoerd van der Zwaag	DNB

