

A low-angle photograph of a forest with tall trees and sunlight filtering through the canopy. The sun is positioned in the upper right quadrant, creating a bright lens flare and illuminating the scene. The trees are mostly deciduous with green leaves, and their dark trunks and branches create a complex pattern against the sky.

Finance in Support of Nature

Commissioned by
The Netherlands Enterprise
Agency (RVO)

AUTHORS

This report was prepared by Liesbeth Soer (De Ontdekkingsreiziger), supported by Fleur van den Berg (interviews & financial instruments section) and Siem Bandringa (desktop research, especially on ecosystem services, data-providers & reporting standards and guidelines).

Quotes in this report were provided by the experts interviewed on the subject: Mieke Siebers, Dan Hird, Simon Scholl, Wouter Soetaert, Sonja Stuchtey, Martin Stuchtey, David Harleman, Timon Rutten, Jasper Snoek, Tom Collins, Emily de Groot, Sjoerd Schenau, Sjoerd van der Zwaag, Ton de Nijs.

It was agreed that quotes could be included in the report on an anonymous basis.

Pictures come from private collection, strongly supported by Nature.

COPYRIGHT

All or portions of this report may be used, reprinted or distributed, provided the source is acknowledged.

No use of this publication may be made for resale or other commercial purposes.

Nature is always hinting at us.
It hints over and over again.
And suddenly we take the hint.

Robert Frost

If you don't like where you are,
move.

You are not a tree.

Contents

- 1. Executive Summary 2
- 2. Introduction..... 4
 - 2.1 The Importance of Nature 4
 - 2.2 The Fundamentals of the (Dutch) Financial Sector..... 4
 - 2.3 About this Report..... 5
- 3. Research Method 8
- 4. Ecosystem Services: Concepts, characteristics and relevance 9
 - 4.1 Definition of an Ecosystem and Ecosystem Services 9
 - 4.2 Understanding the Characteristics of Ecosystems..... 13
 - 4.3 Significance of Regulating Ecosystem Services 14
 - 4.4 Valuation Methods for Ecosystem Services..... 16
 - 4.5 Data on Ecosystem Services: An overview of Data Providers..... 16
 - 4.6 Insights about the Use of Valuation Data 17
 - 4.7 Guidelines to Assess and Report on Ecosystem Services Impact 18
 - 4.8 Payment for Ecosystem Services (PES) 20
 - 4.9 Summary and questions 21
- 5. Financial instruments for Ecosystem Services 23
 - 5.1 Ecosystem Services are the foundation of our Economy 24
 - 5.2 Relevance for financial institutions to invest in ecosystem services..... 24
 - 5.3 Limit Negative Impact on Ecosystem Services 26
 - 5.4 Green Bonds..... 26
 - 5.5 Private Equity (PE) Funds 28
 - 5.6 (Bank) Senior Loans..... 31
 - 5.7 Environmental Impact Bonds..... 34
 - 5.8 Debt for Nature Swap 37
 - 5.9 Grants and Venture Philanthropy 38
 - 5.10 Other Instruments..... 39
 - 5.11 Summary and questions 41
- 6. Scaling our Efforts: Contours for Solutions 43
 - 6.1 Nature as an Asset Class 43
 - 6.2 Finance Green: Elements to Support Finance for Nature..... 45
 - 6.3 Blended Finance..... 47
 - 6.4 Greening Finance: Elements to Support Finance for Nature 48

6.5	Conclusions	50
7.	Conclusions and recommendations	51
7.1	Insights and Conclusions	51
7.2	Recommendations	52
8.	References & sources	56

The major problems in the world are the result of the difference between how nature works and the way people think.

Gregory Bateson

1. Executive Summary

The restoration, conservation and sustainable use of natural resources such as land, water, nature and ecosystems and the ecosystem services they provide is urgent in the light of climate change and environmental degradation. These can deliver significant biodiversity gains, alleviate the impact of climate change and function as a green infrastructure for our economy and society.

In principle, ecosystem services are public goods: Services such as carbon sequestration, pollination and water quality are freely accessible to everyone. Therefore, they require a different way of investing and financing, assuring that the social interest of these services is preserved.

Upscaling nature restoration requires additional financial resources. In light of the challenges faced in finding finance in support of nature, in this report the main approaches to finance (restoration and maintenance of) ecosystem services currently applied are described.

Large investments in nature are needed to tackle biodiversity loss and climate change. Ecosystems consist of all plants, animals and micro-organisms living within a specified area. Ecosystem services are the conditions and processes through which natural ecosystems sustain and fulfil human life and explain that humans are fundamentally depending on the healthy flow of ecosystem services. Four types of ecosystem services can be distinguished. Of these, provisioning ecosystem services have a clear monetary value and are prioritized by humans. This puts pressure on regulating ecosystem services, leading to severe land degradation and pollinator loss. This comes with material risks for companies and financial institutions.

A healthy state of ecosystem services supports the health of our economic activities, and is highly relevant for the financial sector: Deterioration is not just an ecological crisis, but undermines the foundation for the majority of our economic activities (and the robustness of the financial sector).

“You can raise a billion, or want to raise, and say: yes, this comes from institutional investors and they just want a 5 to 8 percent return on these types of projects financially, year on year. That's not the type of money needed in this sector.”

Calculation of its monetary value can help in understanding the value of ecosystem services to our economy. Benefits of nature accrue over a longer time span and are likely to increase over time. For that reason, valuation principles should be redesigned from what we are used to.

Understanding the characteristics of ecosystems can guide us in evaluating financial instruments, as these should preferably be ‘mirrored’ by the specifications of the financial instruments. If this is not balanced, a distressed situation appears. As ‘finance’ is dominant in today’s world, this leads to a distortion on the ecosystem side. Payment for ecosystem services are introduced to support the actors to maintain all ecosystem services at a healthy level. Given the deteriorated state of most ecosystems this will mostly not be enough as a stand-alone instrument.

“Where these issues often stop is the return issue, of an institution that wants to make a profit, investing in ecosystem services that does not realize a short-term profit, and so it is not possible and it is not a business case.”

Because of the deteriorated state of regulating and supporting ecosystem services, more finance needs to flow to projects that provide a positive contribution to regenerate and maintain resilient ecosystems.

The instruments and case studies presented, provide elements on how nature can be financed. From the assessment at the end of each chapter in which the alignment of the instrument has been assessed against the ecosystem requirements as well as the financial sector requirements, it becomes clear that crucial elements were sacrificed to fit the financial requirements

Respondents agreed that to finance nature, the optimal solution has not been found yet. For that reason, in the last chapter new elements are provided that can support finance to move into this sector.

There are good reasons to label investment in ecosystem services as a separate asset class, based on the unique characteristics that set them apart from other asset classes, and are yet subject to the same (natural) dynamics of ecosystems. Ecosystem services provide a wide range of economic and societal benefits, and (in terms of value) a low correlation with other asset classes. Labelling it as a separate asset class benefits awareness and visibility.

Policymakers that would like to support private sector investments to invest more in these kind of initiatives basically have 2 ways to approach this challenge: 'Finance Green' and 'Greening Finance'. Both approaches need to be developed, but have different implementation paths and effects.

For the 'Finance Green' path, instruments and other options (including pre-conditions) are presented that can lower the perceived risks for such investments (in terms of liquidity, principal, delivery etc.) and support these institutions to build up the capacity and knowledge for a new investment theme.

The 'Greening Finance' pathway is targeted at changing the (deeply embedded) fundamentals of the financial sector, and/or impose governmental regulations to ensure that actors that benefit from a healthy state of ecosystem services, share the costs of it as well. As these fundamentals are rooted in habits, culture and mindset, these will take more time to develop, but will also lead to a more just, fair and deeply rooted change in society.

Given the diversity and holistic nature of ecosystems, it is likely that a Blended Finance approach will be needed to come to more viable solutions for financing nature.

Recommendations are in the category 'Simplicity is the key to brilliance': Act now, Act on different pathways and Act together. An abundance of options are available to make finance flow to support nature. We 'just' have to make it our priority and act on it for the coming years. The answers will become clear when we start to experiment with different financial instruments. The longer we wait, the more it will cost, so act now (instead of tomorrow). We work on different pathways to make sure we can increase the speed once we have found some answers. And act together, as collaboration is the new currency. We de-risk this transition by putting our wealth (in terms of money, knowledge, expertise, network) together to make finance work in support of nature.

2. Introduction

2.1 The Importance of Nature

Over the past 50 years, there has been an average decline of 69% in wildlife species populations (WWF, 2022). Global temperatures are 1.1 °C above pre-industrial levels, and harmful events such as droughts, floods and storms will continue to intensify in the coming decades (IPCC, 2023).

The restoration, conservation and sustainable use of natural resources such as land, water, nature and ecosystems and the ecosystem services they provide is increasingly urgent in the light of environmental degradation. These can deliver significant biodiversity gains and function as a green infrastructure for our economy and society.

A forest provides a safe habitat for many wild species, while also ensuring water retention and natural cooling during hot periods, reducing costs of air conditioning in nearby buildings.

“Nature is wealth. So far, markets never allowed us to look at nature as what it was, which is wealth. In a way, it is part of a much bigger story (Prosperity 2.0), for which we are trying to build the infrastructure.”

Ecosystem services are public goods: services such as carbon sequestration, pollination and water quality are freely accessible to everyone. For that reason, these services require a different way of investing and financing in which the social interest of these services is reflected.

Upscaling nature restoration requires more finance to flow towards nature. In 2019, the Paulson Institute calculated that to halt biodiversity loss by 2030, yearly global investments in biodiversity should increase by USD 598–824 billion. The Kunming-Montreal Global Biodiversity Framework (GBF) of the United Nations calls for an increase in biodiversity investment of at least USD 200 billion annually (CBD, 2023).

The ‘financing gap’ cannot be closed by governments and philanthropic organizations alone. Public finance now accounts for the vast majority (87%) of biodiversity finance, but it is acknowledged that large-scale private investment is needed to reach global biodiversity targets (AFME, 2022).

“The problem is that for parties that rely more on profit, especially in the short term, it is not attractive enough. This means that you end up in public finance more quickly and attract less commercial money. That is of course a problem, because the financing gap is too big for these parties to bridge.”

Financial institutions play an important role in mobilizing and allocating private capital, and are looking for ways to invest in nature. Investments have been introduced that claim to maintain and enhance ecosystem services, but overall the total stake of the financial sector to finance nature is limited.

It is recognised that financing nature will need a different approach. The Kunming-Montreal Framework explicitly calls for more innovative financial schemes for investing in biodiversity, such as ‘*payment for ecosystem services, green bonds, biodiversity offsets and credits and benefit-sharing mechanisms*’.

2.2 The Fundamentals of the (Dutch) Financial Sector

In a report published in 2023 by the Dutch Research Institute for Transitions (DRIFT), highlights of a discussion were provided that was held with a group of Dutch financial sector representatives, to discuss the sustainable impact of investments and loans. The report provides an overview of the fundamentals of the financial sector that complicate the implementation of sustainable investment practices.

The challenges presented include a focus on efficiency and growth, backward risk modelling, a tendency to increase inequality and a high degree of specialization and a lack of knowledge on the social impact of investments. These same fundamentals will be present in the efforts that are taken to realise finance in support of nature.

Some financial institutions have started their learning journey and explore different financing mechanisms and are investing more in nature supportive projects, in an effort to develop new business cases for making money flow towards natural resources and reducing their impact on ecosystems and the global climate.

“We try to show that you have to take a small loss on your production services, because in return you get a factor of 10 in regulating ecosystem services. It is difficult to convince the private investor to make that loss. You have to dare to project a longer horizon: then you will see that it first falls, but then rises.”

ASN Bank for example formulated the ambition to have a net-positive effect on biodiversity by 2030. The bank published a report in which they set out their approach to measuring and improving their positive impact on ecosystem services.

The Make Nature Count reports (ASN, 2022 and 2023), discuss the use of monetary valuation data on ecosystem services to support financial institutions in decision-making.

The authors conducted assessments using the data from the Ecosystem Services Valuation Database (ESVD) to analyse the ecosystem service impact of four "positive impact" projects in the Netherlands, Madagascar, Paraguay, and Nicaragua, provided by ASN Bank.

Financial regulators share the understanding that a healthy state of ecosystem services is of high importance. The Dutch Central Bank (DNB, 2020) published 'Indebted to Nature', an exploration of the impact of biodiversity on the economy and its consequences for the financial risks applicable to financial institutions. Conclusions are clear: Biodiversity loss is a driver of financial risks, and this will have a material impact on the companies in their portfolio. The health state of the economy and businesses is strongly depending on a healthy state of ecosystem services, but also with regard to reputational risks associated with having financed companies that are involved in environment controversies with negative consequences for ecosystem services or biodiversity. Recommendations include that financial institutions put more capacity on the identification of these risks, and develop standards for measuring and reporting on biodiversity risks.

The need to catalyse capital for positive action is not only coming from positive commitments, but also from the regulator, based on the assessment that material exposures of the financial sector are highly or very highly dependent on one or more ecosystem services. This is also reflected in The New Nature Economy Report (WEF, 2020): over half of the world's GDP is moderately or highly dependent on nature and its services.

2.3 About this Report

In light of the clear need to have more finance flow to restore nature, this report sets out the main approaches to finance (restoration and maintenance of) ecosystem services currently applied in the financial sector. Desktop research and interviews with a diverse set of professionals working in (or in the sidelines of) the financial sector were conducted.

The investment instruments in this study are analysed on their impact on ecosystems and the communities that depend on them. Given the billion-dollar commitment needed for investing in natural capital, the effectiveness and possible obstacles of financial instruments for ecosystem services are assessed. This research maps the financial products and instruments that are available in the market and assessed on their net positive effect on the restoration, conservation and sustainable use of ecosystem services.

Chapter 3 provides a brief overview of the research methods used for this study. Chapter 4 explains the definition, characteristics and importance of ecosystem services and overview of the concepts, data, valuation and disclosure guidelines that could support institutions in making informed decisions with regard to ecosystem services. In this same chapter, Payments for Ecosystem Services are explained as well as a direct way of support for such services by the beneficiaries.

Chapter 5 provides an overview of the financial instruments that are used to finance (parts of) ecosystems, focusing on their fit with the characteristics of such ecosystems and their fit with financial sector requirements. Chapter 6 discusses the insights from the assessment of these instruments and interviews and explain how finance to support a healthy state of ecosystem services constitutes a new asset class that will need a different approach. In addition, it provides recommendations about elements that should be added to financial instruments to provide better support for ecosystem restoration and the uptake by the financial sector to commit more financing towards the restoration of ecosystem services. In the final chapter, the authors present their conclusions and recommendations, as well as further research questions.

Quotes of interviewees are (anonymously) taken up in the chapters to provide an insight in the sentiments and broad experiences that were provided through the interviews.

Wyre Catchment NFM Project

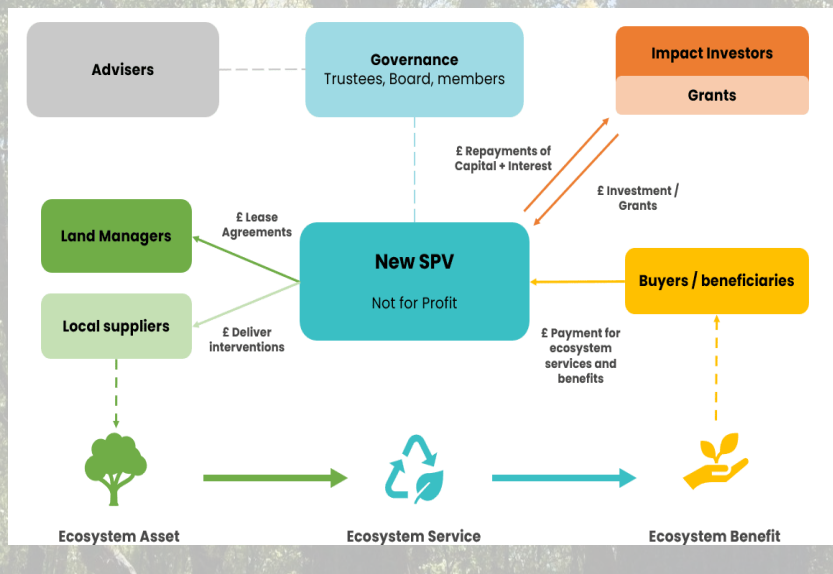
The Wyre Catchment Natural Flood Management Project (Wyre NFM Project) uses nature-based solutions to reduce flood risk in the Wyre River catchment in the UK. The project is funded through an innovative blend of public and private finance and the process is led by the Rivers Trust, the Wyre Rivers Trust, Triodos Bank UK Corporate Finance, the Environment Agency, United Utilities, Flood Re, Co-Op Insurance and the Esmée Fairbairn Foundation (EFF).

The Department for Environment, Food & Rural Affairs (Defra), Environmental Agency and EFF contributed grants in the project development phase, in order to support the quest for scalable investment models.

In order to finance a range of nature-based solutions in the Wyre catchment, the consortium set up a special purpose vehicle (SPV) which acquired GBP 550,000 in grants and a 9-year GBP 850,000 commercial loan via the crowdfunding platform managed by Triodos Bank UK. The necessary capital was raised through a crowdfunding with high-net-worth individuals and impact investors. The SPV will pay back the loan through a payment for ecosystem service (PES) scheme (see below).

Farmers are responsible for implementing the nature-based interventions and receive compensation for their efforts. This is paid for by a group of beneficiaries that will in turn benefit from reduced flood risk. These organizations 'pay an annual project fee from year one to cover the lease payments to land managers. This is conditional on the implementation and maintenance of the interventions. The outcomes-based payments start in Year Six when the performance data, gathered by the Wyre Rivers Trust, verifies the delivery of the ecosystem services.'

While the project is a promising example of public and private capital being raised for nature-based solutions and ecosystem benefits, it also revealed that bringing together the necessary stakeholders is a time-consuming and knowledge-demanding endeavour. In order to set up the entire scheme, multiple experts worked together intensively for over three years. Insights of the process will however be used to fuel new projects that are set up.



3. Research Method

The threefold aim of this study is to identify key financial instruments available for investments in the restoration and conservation of ecosystems, assess their effectiveness and explore how these instruments might be improved or supplemented to increase financial support for ecosystems in the near future. Working towards recommendations, the authors engaged in an iterative process of expert-interviews, desk research and a practitioners and experts panel discussion.

To study promising (announced) financial instruments and assess their effectiveness and potential applicability, the researchers first conducted desktop research on ecosystem service investment. Web research was conducted to explore successful ecosystem investment cases.

To gain expert insights and learn from first hand ecosystem investment experiences, qualitative (online) interviews were conducted with experts from data-providers and platforms and professionals in finance and nature restoration.

Data-providers for ecosystem services were interviewed to understand the information available to the market if working on ecosystem services. Subsequently, professionals with financial expertise in this theme were interviewed as well to gain practical insights in ecosystem investment. Practitioners were also asked about their views on ecosystem investment, the main barriers to further implementation and positive examples they have encountered in the field.

The focus of this study is mainly on the Dutch context but investment cases from other countries and continents are included as well, evaluating what could be learnt from these schemes. Many of the policies, guidelines and data for ecosystem investment are produced at an international level, and therefore these are also feeding into the conclusions and recommendations.

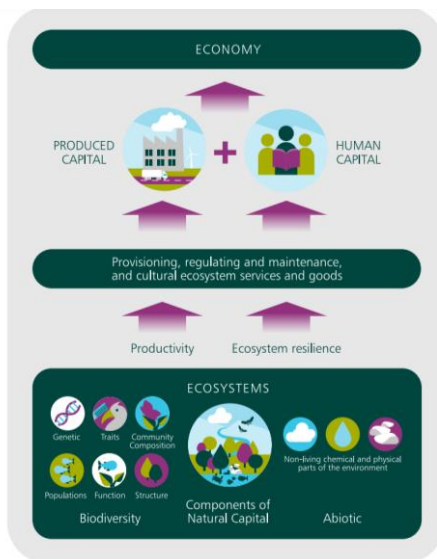
This research is of an exploratory nature and is not designed to produce a complete inventory of all ecosystem service investments and other experiences in this field. Rather, the purpose is to conduct a high level analysis to identify scalable ideas or concepts in ecosystem service investment and start a broader discussion on how to speed up the path of investment for improving the state and health of ecosystem services.

4. Ecosystem Services: Concepts, characteristics and relevance

In this chapter, we present a brief explanation of what constitutes an ecosystem, the connection to ecosystem services, as a reflection of how humans, society and our economy benefit from ecosystems through the services they deliver. After this introduction, the characteristics of ecosystems are listed, to better understand what ecosystems need to thrive. A short reflection is provided on the state of the world's ecosystems, the methods that exist for valuing these ecosystems, as well as providing an overview of parties that have valuable data on ecosystem services and the value that they bring to society. An overview is provided of the disclosure guidelines and regulations that are applicable to the financial sector, as well as a short explanation on a Payments for Ecosystem Services approach that is piloted in different parts of the world to pay more justice towards the parties that support a healthy state of ecosystem services. The chapter ends with a summary and questions and reflections for further research.

4.1 Definition of an Ecosystem and Ecosystem Services

Ecosystems consist of all plants, animals and microorganisms living within a specified area. Ecosystems take shape through the interaction between (communities of) organisms and their abiotic environment. A river bed for example where fish and algae interact both with each other and with the abiotic water current and sediments. An ecosystem can have different scales and shapes: A single tree has many species interacting in, on and around it, and can therefore be described as an ecosystem. However, entire rivers and forests are also studied as ecosystems.



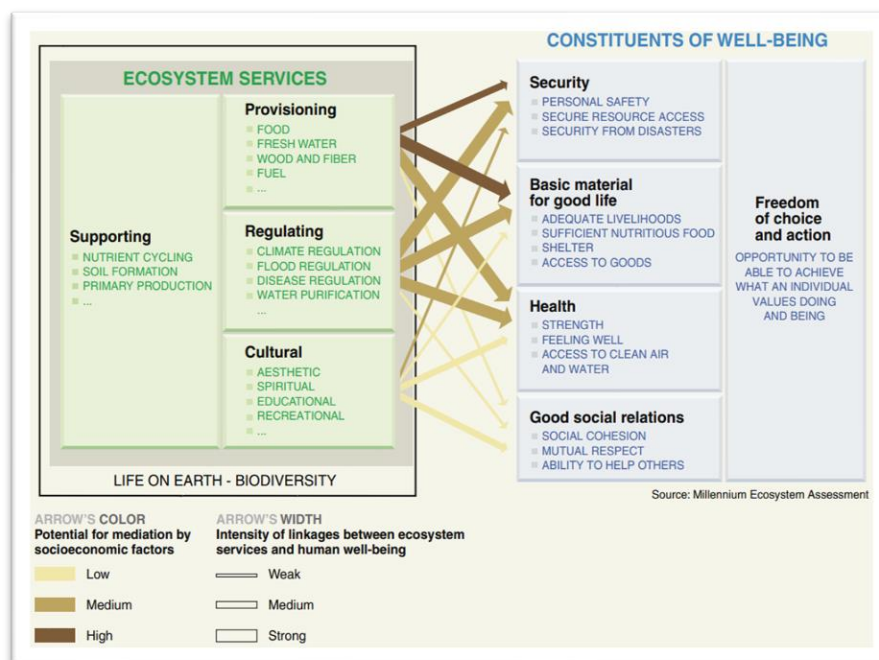
1 The relationship between Ecosystems and our Economy (Source: Dasgupta Review)

Ecosystem Services are the conditions and processes through which natural ecosystems sustain and fulfil human life (Daily, 1997). These services ensure biodiversity and the production of ecosystem goods, such as timber and seafood. The most commonly used definition of ecosystem services stems from the Millennium Ecosystem Assessment (2005):

“If there could be some kind of guarantee for people who invest money in this, that if things go wrong, they can still keep such a principal amount, for example. That could mean a huge leap forward. So if you actually remove some of the risk, with some kind of guarantee scheme, then you simply have to create a generic measure. That will fly too. That would mobilize a huge amount of capital.”

“Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fibre; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling.”

On the role of humans in ecosystems, the authors further noted that : *“the human species, while buffered against environmental changes by culture and technology, is fundamentally dependent on the flow of ecosystem services.”*



2 Types of Ecosystem Services and their relation to Human Well-being (Source: Millennium Ecosystem Assessment, 2005)

The four types of ecosystem services that can be distinguished are provisioning, regulating, cultural and supporting ecosystem services.

Provisioning ecosystem services include food production, the extraction of raw materials and freshwater for consumption and production. Many provisioning services are traded in markets as saleable goods. A fraction of provisioning services is feeding into the livelihoods of local communities directly as well (e.g. when a household owns a small vegetable garden).

Regulating ecosystem services are the benefits that stem from the regulating properties of ecosystems, such as water and air filtration, pollination (by bees and other pollinators), natural pest control, moderation of extreme weather events and erosion protection.

“Very often the appraisal values are too high for what they should be, but for nature it is rather the other way around, and that we approach too much for free. The scarcity is not experienced (and therefore not appreciated).”

Cultural ecosystem services are the non-material benefits humans obtain from ecosystems, such as recreation and enjoyment of nature, tourism, spiritual experience or artistic inspiration. These services are often connected to provisioning services, for instance for farmers who experience a sense of place during their work on the land but also for all those that can relax while being in nature.

Supporting ecosystem services, sometimes referred to as habitat services, are the ecosystem services that provide a healthy living environment for organisms. Genetic diversity is also classified as a supporting service, as the other types described above highly depend on genetic diversity, for instance for developing new strains of crops.

“As long as we continue to see ecosystem services as some kind of inexhaustible resource, without scarcity, they will not be valued. I think that is an important part of the problem.”

Provisioning ecosystem services are well known, but the state of regulating and supporting ecosystem services is deteriorating dramatically. The Dasgupta review, Nature’s worth to society (2021), elaborated on the roots of this problem:

“The true value of the various goods and services it [nature] provides, is not reflected in market prices because much of it is open to all at no monetary charge. These pricing distortions have led us to invest relatively more in other assets, such as produced capital, and underinvest in our natural assets. Moreover, aspects of nature are mobile; some are invisible, such as in the soils; and many are silent. These features mean that the effects of many of our actions on ourselves and others, including our descendants, are hard to trace and go unaccounted for, giving rise to widespread ‘externalities’ and making it hard for markets to function well.”



Protecting the future value of land assets (ASR Sustainable Farming Premium)

Insurance company ASR has a large area of Dutch agricultural land in its portfolio. This poses nature-related risk, as the productive capacity and value of these assets depend on their capability to deliver regulating ecosystem services, such as pollination, water retention and the availability of soil organic matter.

In order to assure the productivity (and value) of its land in the future, ASR incentivizes farmers to adopt sustainable farming practices. Farmers operating on ASR land can receive a three-year 10% discount followed by a 5% discount on their rent payments, when they meet three criteria: 1) sustainable business practice as defined by the EU CAP policy, 2) biodiversity measures on at least 5% of total farm surface and 3) sharing information about land management with the bank (and committing to take steps for the improvement of soil quality). Farmers are required to report on their compliance on a yearly basis (ASR, 2023).

For meeting the last criterion, farmers are required to communicate data on their soils to the Open Soil Index (*Open Bodem Index*). This database – developed on request of ASR, Rabobank and Vitens – consists of data on multiple indicators of soil health (including regulating ecosystem services).

In the future, the Open Soil Index might be used to create a direct revenue stream for soil stewardship. Whereas carbon sequestration is being incentivized through markets, other regulating ecosystem services are often forgotten and undervalued. The Open Soil Index is a promising example of a holistic ecosystem investment approach, as it creates possibilities for farmers to gain revenue by delivering multiple regulating ecosystem services.

The database also plays an important role in raising awareness amongst farmers about the importance of regulating ecosystem services for a sustainable agriculture.

4.2 Understanding the Characteristics of Ecosystems

Perhaps the largest single barrier in driving funding for nature currently is around a lack of capacity, skills and shared understanding in this space (KfW, The Investment Case for Nature, 2023):

“From a private sector point of view, this is around a lack of capacity, skills and expertise in nature and biodiversity to fully understand the issues and opportunities. Financial sector entities and on the ground conservationists are two very different communities, each with their own language and understanding which makes bringing these two communities together a challenge.”

In this research we are seeking what financial instruments are best fit to finance nature based solutions and ensure a healthy balance of especially regulating ecosystem services.

Understanding the characteristics (requirements) of ecosystems can guide us in the evaluation (and future design) of financial instruments, determining their appropriateness for restoring and effectively managing these critical natural resources. This has been recognised by IUCN, in detailing the Global Standard for Nature Based Solutions (July 2020), in which they describe 8 guidelines any such solution could be assessed against “.. to equip users with a robust framework for designing and verifying Nature-based Solutions that yield the outcomes desired, in solving one or several societal challenge(s).”

Having researched the headlines of the regulating ecosystem services, the Standard described above and based on the outcomes of the interviews, we have listed the following characteristics:

- **Adaptive terms & conditions:** Adaptation helps an organism, such as a plant or animal, survive and reproduce in its environment. Different respondents mentioned this as one of the major difficulties for getting it to large scale finance, as ecosystem services follow a (long term positive though) non-linear path. As the IUCN standard states: *“Implementation plans include provisions to enable adaptive management as a response to uncertainty and as an option to effectively harness ecosystem resilience. A degree of uncertainty is inherent when managing most ecosystems due to their complex, dynamic and self-organising nature.”*
- **Timescale aligned:** different respondents mentioned that it could take approximately 20-30 years to restore and balance a vital ecosystem (though scales could vary, based on the intervention financed). It was also mentioned that nature conservation projects in most cases only start to become positive after 5 to 10 years. To reach the full potential, a commitment is needed for the full period.
- **Community connected:** Involving local communities in the design and decision-making processes (and to ensure local capacity and connection to income sources for local community) ensures that financing mechanisms align with the needs and aspirations of those directly affected by ecosystem management and those that are direct impacted.” As the IUCN standard noted: *“Lack of consideration of water use can lead to restored ecosystems using too much water, creating pressure on local communities. Failure to take into account social and economic factors has meant that even seemingly successful pilot applications of Nature Based Solutions have ultimately not been sustainable outside of the timeframe of a project.”*
- **Diversity embraced (uniqueness):** Different respondents mentioned the challenge for getting to large scale finance due to their experience in the field suggesting that each

ecosystem has unique characteristics and requires a tailor made approach (though sub-components that can be introduced could be the same).

- **Holistic (interdependence embraced):** Ecosystems restoration and management requires an holistic (integrated) approach and at sufficient scale. The complex interconnectedness of ecosystems is fundamental to their functioning and resilience. Approaching the whole system instead of isolated components is needed (Commonland, 2023). Rather than compartmentalizing projects, a comprehensive strategy is needed that addresses the entire ecosystem. An example provided by the IUCN standard: “... a tree-planting climate mitigation project using just one non-native species could create poor soils, ultimately degrading biodiversity and making it more costly or impossible to sustain the forest in the future. Similarly, restoring a mangrove forest to reduce the risk of storm damage could be doomed from the start if upstream and downstream processes are not considered

For assessing current and (possible) future financial instruments in Chapter 5 and 6, these characteristics will be used to determine the fit of the instrument with the issue in the ecosystem that it tries to solve.

4.3 Significance of Regulating Ecosystem Services

Regulating and supporting ecosystem services are the foundation of human wellbeing, they ensure the continuity of cultural and provisioning ecosystem services. Contributing to healthy soils for agriculture and freshwater quality, they underpin human safety and biosphere integrity.

“As long as the entire problem is not addressed, I am afraid that parties want to do something good, but it will remain stuck in the “nice to have” amosphere.”

There is a clear tension between provisioning, regulating and cultural services in our economy. Overall, humans prioritize the use (for consumption or monetary value) of the proceeds of provisioning ecosystem services over adequate conservation of regulating ecosystem services, due to the short term benefits it provides them with in terms of food, water and/or wealth.

“Companies get it that nature is a critical infrastructure for them, that they are value chains, but they feel there is very little they can do about it other than sort of abstractly talking about the

This leads to shifts in ecosystem services condition and function, impairing the capacity for regulating ecosystem services and rendering ecosystems vulnerable to additional pressures as they are more ‘silent’ and/or invisible.

In its 2019 report, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) noted that, while provisioning ecosystem services like agricultural production have increased greatly over the past 50 years, essential regulating ecosystem services are in sharp decline. Key indicators of regulating capacity, such as soil organic matter and pollinator activity, have reduced significantly over recent decades. In this respect, the IPBES notes that “currently, land degradation has reduced productivity in 23 per cent of the global terrestrial area, and between \$235 billion and \$577 billion in annual global crop output is at risk as a result of pollinator loss”.

“Through this study, we actually recognized that the economy, and therefore also the financial sector, is dependent on the (financial) services that nature provides. When nature is destroyed, services are lost and this can therefore also have financial and economic consequences.”

The diminished state of regulating and supporting ecosystem services is often camouflaged by deployment of (artificial, technical and/or chemical) substitutes, such as fertilizers, sea walls, dams, and drinking water treatment facilities, which mitigate the impacts of both human-induced and natural stressors. However, these substitutes provide reactive damage control rather than proactive protection of natural elements that contribute to a healthy state of regulating ecosystem services.

Moreover, substitutes are typically designed to address specific issues, lacking the versatility and multiple benefits inherent in natural elements that ensure a healthy state of regulating ecosystem services. Some environmental policies recognize the shortcomings of technological interventions and emphasize the importance of understanding and preserving regulating and compensatory processes (Sutherland et al., 2017).

In addition to the fact that the regulating and supporting ecosystem services here described are the foundation of human wellbeing, degradation of natural ecosystems poses risks for companies and financial institutions as well. Three types of risks (Van Toor et al. (2020)) are recognised:

- 1) Physical risk - Loss of ecosystem services impairs a company's ability to produce goods and gain revenue
- 2) Transitional risk - the risk of changing regulations in response to ecosystem degradation
- 3) Reputational risk - when citizens or clients develop a negative attitude towards a company or financial institution, resulting from pollution or environmental degradation (Van Oorschot & Kok, 2020).

“We often look at the physical and transition risks. For physical risks, I notice very much that the question is “When will nature collapse?” There is consensus on this for climate, but certainly not yet for nature. The fact that this cannot be expressed in models simply does not help.”

In 2020, a World Economic Forum research estimated that half of global GDP is moderately or highly dependent on nature (WEF, 2020). The Dutch Central Bank calculated that Dutch financial institutions globally have a €510 billion in exposure through companies with high dependency on one or more ecosystems (Van Oorschot & Kok, 2020).

The reputational risk will likely increase in the coming years, due to the increased knowledge of its impact, supported by the introduction of several disclosure standards and regulations that support and/or force larger institutions to explain more about the impact of their activities on ecosystem services. Reputation risks can also be seen as a pre-cursor for regulation, which feeds into transition risks.

Transition risks are risks financial institutions are facing because of changing laws and regulations in response to decreasing biodiversity and possibly a decrease in ecosystem service provision. Recently, Central Banks added the category of systemic risk, acknowledging that when one ecosystem, or a significant number of services within this ecosystem, collapses, it potentially impacts investments far beyond the project-border, in space and time (ASN, Make Nature Count (2023)).

4.4 Valuation Methods for Ecosystem Services

In order to get a clear picture of the contributions of ecosystems to our economy, a monetary value can be ascribed to the ecosystem services we benefit from, assuming enough reliable data is available to base such calculation on.

Multiple methods exist for valuing these services. Firstly, one can calculate the avoided costs that ecosystems offer by delivering services that would otherwise require human intervention and/or investments. Another often-used method is the replacement cost method. In this case the hypothetical cost of replacing an ecosystem service by a man-made system is calculated (e.g. building a water treatment plant to compensate for the loss of natural water filtration in a polluted river).

Other methods include factor income (the contribution of well-functioning ecosystems to incomes), travel cost (what people are willing to pay to travel to an ecosystem, e.g. in the case of ecotourism), hedonic pricing (the added value of nature, e.g. in housing prices) and contingent valuation (posing multiple scenarios in a survey and deducing values from stated willingness to pay) (Farber et al., 2002).

For most of these valuation methods, a Discounted Cash Flow method is being used, taking into account future cashflows when determining the actual value. Given that this value is calculated with help from application of a discount rate, a relevant discussion is as well how to adequately determine a discount rate for (restoration of) ecosystem services in a situation where there are material longer term consequences for society once the impact becomes irreversible. The Make Nature Count 2023 report advocates for a discount rate of 0, arguing that *“to use a lower discount rate (between 0-5%) for natural ecosystems and for conservation and restoration projects because the benefits of nature often accrue over a longer time span and are likely to increase over time.”*

Engaging in ecosystem service valuation evidently requires reliable data on monetary values. In the next chapter, we show developments in this field.

4.5 Data on Ecosystem Services: An overview of Data Providers

Reliable and relevant data is also needed for adequate valuation of ecosystem services. In this chapter we highlight a couple of data providers that have some of this data available: the Ecosystem Service Valuation Database (ESVD), government agencies Statistics Netherlands (CBS) and the National Institute for Public Health and Environment (RIVM).

ESVD

The Ecosystem Service Valuation Database (ESVD) is a publicly accessible database with nearly 10.000 data points on ecosystem service values. It was originally founded in 2010, and is developed to provide a sound basis for making ecosystem service impact calculations. The data points are not extracted through field research but instead these data points are extracted from existing academic studies on ecosystem service values from all over the globe (ESVD, 2023).

The database can be used to assess the impact of a land-use change on the value of all ecosystem services in a given area. In the first and second ‘Make Nature Count’ studies, ESVD experts worked with ASN Bank to assess the ecosystem service impact of four respectively two ASN investment cases

(ASN, 2022 and 2023). The assessments provided an overview of the impact of the investment on ecosystem services. Comparing non-intervention scenarios with investment scenarios, the research showed an increase in Total Economic Value (TEV): More goods and services were delivered to society in the investment scenarios, thereby increasing societal wellbeing.

CBS

CBS (Statistics Netherlands) was founded in 1899 to develop independent, reliable information to better understand social, economic and environmental issues. Since 2015, CBS is working on the development of the Natural Capital Accounts for the Netherlands, together with Wageningen University & Research (WUR). The Natural Capital Accounts map the relationship between nature, economy and human activities. This creates a complete picture of the quality of the ecosystems in the Netherlands and dependence of the economy on them. For calculations on the monetary value of these ecosystem services, the Natural Capital Accounts follow the guidelines of the System of Environmental Encountering – Ecosystem Accounting (UN: SEEA EA). The Natural Capital Accounts is a backward looking database. Data is now available for the period from 2013 to 2021, and will be updated at least on an annual basis with new datasets becoming available.

“You actually have to move towards a system that takes into account the value of ecosystem services, and where you have to pay for the damage to ecosystem services, otherwise your business case for sustainable economic activities will never be profitable.”

RIVM

The Dutch National Institute for Public Health and Environment (RIVM, established in 1909) engages in ecosystem service valuation practices based on data from multiple government ministries and agencies and reflected in the Atlas Natural Capital (*Atlas Natuurlijk Kapitaal*).

The maps are publicly available and provide an overview of the functioning of various ecosystem services and visualize the contribution of these ecosystem services to our economy. It concerns regulating, producing and cultural ecosystem services. Physical and monetary use values of ecosystem services have been mapped.

As part of their activities, RIVM uses their data to perform societal cost-benefit analyses (MKBA), a tool for making decisions about major spatial projects.

4.6 Insights about the Use of Valuation Data

From the interviews with practitioners in data collection, and its application for valuation of ecosystem services, several findings became clear.

- a. If a financial institution seeks to evaluate whether an investment decision is contributing positively to the delivery of ecosystem services, it can rely on the data from these sources to make estimations about the value of ecosystem services – as is illustrated in the ASN Make Nature Count study (2022 and 2023). **Datasets** can create insights into the value of all ecosystem service types, including regulating services.
- b. In order to make the right assessment, a sufficient **scale** should be taken into account and a clear definition about the **beneficiaries** of ecosystem services. Identifying the beneficiaries might support investors that want to adopt more sustainable practices toward regulating ecosystem services, as they can connect with stakeholders that benefit from an uplift in

regulating ecosystem services. An example from the UK is where a flood system for a river is improved, benefitting all communities and companies in a certain area in different ways, as housing is safe and the environment more resilient.

- c. The relevance for reliance on (qualitative) user and farmer interviews to support larger formally published datasets was pointed out. Users (farmers) reported accuracy issues at the farm and parcel scale, prompting the need for additional private, *in situ* data. This will become more of a discussion once these datasets are used by a larger number of parties.
- d. **Awareness of data availability:** Although data on ecosystem services is getting increasingly detailed and readily available, practical applications are still scarce. The Atlas Natural Capital, for example, presents a detailed account of multiple ecosystem services in the Netherlands. In theory this data can be used by market actors, who wish to assess and reduce their impact on these ecosystems but successful use cases involving private investors, have yet to be developed. Part of this might be due to a lack of awareness about the availability of data. Participants pointed out that it is difficult to find effective ways to promote their data, but also that parties that use the data, do not always mention the source of such data.
- e. **Gaps in database:** Current global databases show a significant overrepresentation of Western Europe and North America, adding that other places (South America, Africa, Southeast Asia) have fewer data points. This was also highlighted in one of the cases that was worked out in the Make Nature Count 2023 report, which was in Brazil. A comparison could be made by using the average of all tropical rainforest data, but data reliability could be improved by filling in those gaps.
- f. By default, the data-sets that are available are **backward looking**. Reflections should be given on adequate forward looking calculations, without making it too complex. Most of our economic theories have not taken into account these dependencies, so new theories and language will need to be developed to support an industry wide accepted standard.
- g. **Collaboration** between institutes working in this field could be improved, but it is challenging due to different priorities and sources of funding. There is a need for better linking of different data sources. More respondents emphasized that financial resources are limited and priorities very different.
- h. There is currently **no comprehensive initiative** that bundles various investments in this field and connects them to the database to measure both financial and social impact. Collective learning is still limited.

“A lot has to be done at the same time to speed this up. There is no one authority or domain that can make the real difference. The difference will be made by opening the domains to each other, by communicating better with each other, by a more integrated approach.”

4.7 Guidelines to Assess and Report on Ecosystem Services Impact

Driven by commercial (financial) sector commitments and (upcoming) EU policies the demand for ecosystem services valuation data will likely increase in the coming years. For example in 2020, the Finance for Biodiversity Pledge was introduced, calling on financial institutions to report on their biodiversity impact by 2024. As of December 2023, 163 institutions have signed the pledge (FBF, 2023).

“It doesn't help that EU regulations are being weakened again. If there is no pressure from them as well, then it will remain very much in the voluntary sphere.”

In addition, in the EU, the Corporate Sustainability Reporting Directive (CSRD) will make sustainability disclosure mandatory for nearly 50.000 large companies active in the EU from 2024 onwards. The policy requires disclosure on a wide range of social and environmental impacts, but also includes requirements for ecosystem service assessments (EC, 2023).

To comply with regulations and guidelines, companies having little prior experience in biodiversity accounting will need to start assessments. To assist these organisations in their efforts and make results more comparable, multiple guidelines have been developed.

“We should not underestimate the importance of the emerging reporting obligations. I don't know if it will generate traction quickly enough, but I think making that impact visible could help get things started.”

Building on the sector’s experience in carbon accounting (PCAF, since 2019), the Partnership for Biodiversity Accounting Financials (PBAF, since 2019) and Taskforce on Nature-related Financial Disclosures (TNFD, since 2021) are developing guidelines for financial institutions and corporations, to guide them in carrying out the necessary environmental impact assessments in a consistent and mutually comparative way.

PBAF

The Partnership for Biodiversity Accounting Financials (PBAF) is set up in 2019. July 2023, PBAF published the PBAF-standard, which supports financial institutions in assessing, managing and reporting about their dependencies and associated risks and opportunities with regard to biodiversity. Over 50 financial institutions, ranging from asset managers to investment banks, have joined the initiative, representing a total of USD 11 trillion in assets (PBAF, 2023).

TNFD

In September 2023, the international Taskforce on Nature-related Financial Disclosures (TNFD), published its recommendations and guidelines for nature-related disclosures.

“We really see a lot of change on the corporate side ... they say: We want to take a position here, also with the new reporting guidelines coming up!”

The taskforce developed a risk management and disclosure framework for organizations to report and act on evolving nature-related risks, supporting a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes. To support organizations in their disclosures, TNFD has developed the LEAP approach, a step-by-step guide to impact assessment and reporting. Their goal is to help companies and financial institutions identify and manage these risks, as well as to mobilize finance for nature-positive outcomes.

“So if the legislator wants to do something, there must be a mandatory model, as has happened in the UK. And you see that that market is created in one year, immediately.”

4.8 Payment for Ecosystem Services (PES)

A healthy state of ecosystems can be strongly supported by establishing a program that compensates landowners, communities and/or investors for maintaining or restoring ecosystems that offer valuable services such as carbon sequestration, water purification, or biodiversity conservation, so called PES-programs. A PES program serves as a direct financial incentive for beneficiaries but could also provide more awareness about our dependence on a healthy state of ecosystem services.

“You need to work out who is going to buy those ecosystem services. These schemes are never going to be 100% privately funded. The government, providing the development ground, will always have to provide some funding for the solution, but wants to see a blended public and private finance solution.”

For the financial instruments that are presented in chapter 5 this can serve as an stable cashflow basis a financier can build its investment on, but have a broader focus as well.

More respondents mentioned a positive attitude towards a concept whereby the government or other stakeholders provide payments for ecosystem services as a reward for caring for the soil and regulating ecosystem services over a financing period of approximately 20 years (or for as long as the lifetime and use of the respective ecosystem services).

“You are looking at all potential ecosystem services and assess which of those is monetizable. I look at the operational drivers for corporations. Things like supply chain resilience, that could be around healthy soils. It could be natural flood management where businesses have a risk of flooding.”

Respondents also emphasized that there must be confidence in the strength of the outcome payers (a diverse set of outcome payers diversifies the risk), the (perceived) stability of such scheme to continue for at least the period of the underlying project and the chance for a beneficiary to comply with the conditions.

A PES program is more likely to build a stable business case if it concerns an established product (multi-year experience to build trust & success tracking), in a stable environment & clear policy focus from the respective outcome payer. Respondents have mentioned that in today’s market, carbon (voluntary carbon credits) are one of the few marketable instruments for commercial projects, giving a pretty one-sided focus if not supported by other indicators.

In addition, a warning was given by respondents about possible adverse effects, comparable to previous schemes where money could be made quickly without actually demonstrating long term positive effects on the ground. The example of carbon shows how this can work, where large scale forest plantation could work well for carbon (and (in earlier days) comply with carbon credit standards), but not so much for biodiversity and a healthy state of regulating ecosystem services.

“Wildlife and a forestry standard don’t go together, as the deer will eat from a tree, and the standard can’t deal with that. Can those standards be more open to real nature, instead of managed forestry?”

From the interviews, it was noted that for the maintenance period of an ecosystem restoration project, a tailored, multi-indicators, multi outcome payers instrument could work well to maintain the balance in a ecosystem after restructuring works were done to realise the preconditions for a functioning ecosystem.

In addition, it was mentioned that payment for ecosystem services will not necessarily provide an incentive to for example farmers, amongst other because they perceive to have limited influence on the outcome (even when committing to good practices) as this is depending on more factors than just their efforts, for example the behavior/actions of adjacent businesses, but also consequences of climate change and/or existing polluters (chemical residues due to past damages). A more direct link that they can influence is needed.

“The corporate sector has a requirement for (operational) ecosystem services. They have a net zero commitment,and face supply chain or flood management issues. They want to invest in ecosystem services, in an area where their operations are. Or might want to buy high quality carbon credits anywhere in the world / country.”

4.9 Summary and questions

In this chapter, we have explained that ecosystems consist of all plants, animals and microorganisms living within a specified area. Ecosystem services are the conditions and processes through which natural ecosystems sustain and fulfil human life. Humans are fundamentally depending on the flow of ecosystem services, of which four different types of ecosystem services can be distinguished.

Regulating and supporting ecosystem services are highlighted as they ensure the continuity of the the other ecosystem services, human safety and biosphere integrity. Provisioning ecosystem services are prioritized by humans and this puts pressure on the regulating ecosystem services, leading to severe land degradation and pollinator loss. This comes with material risks for human life, companies and financial institutions.

Understanding the characteristics of ecosystems can guide us in evaluating financial instruments, as these should preferably be ‘mirrored’ by the specifications of the financial instruments. Ecosystems are adaptive, have need for a specific timescale, is best served when working together with the local community, have unique features and require an holistic approach.

To understand more about the value of ecosystem services to our economy, a monetary value can be calculated ascribed to them and different methods are explained.

Payment for ecosystem services is described as well, as this instrument could support the actors to maintain all ecosystem services at a healthy level, over a longer term. For this instrument, it is important to have multi-level indicators determine payments, so as to support an holistic approach by the beneficiary.

Different databases are available to get valuable information on ecosystem services, and an overview of the gaps that are still present, as well as the option to collaborate more so as to speed up their insights. It should be noted that this however should not be a reason to not start using these data sources.

“A lot has to be done to speed this up. There is no one authority or domain that can make the real difference. The difference will be made by opening the domains to each other, by communicating better with each other, by a more integrated approach.”

In the last sections of this report, several guidelines applicable to the financial sector are explained, understanding these guidelines might become more obligatory once the insights on the impact becomes more tangible, which could also drive institutions to focus more attention on the

importance of (regulating) ecosystem services and finding ways to finance these in a net positive way.

Looking beyond data and guidelines for measuring the impact of economic activity on ecosystems, the next chapter will show what financial instruments are being used to make a positive impact on ecosystems.

Questions

- *There are quite some questions around the data and valuation practices. Each of the remarks in paragraph 4.6 are reason for more research. At the same time, there is sufficient evidence available that there is an impact. More and better data is always an improvement but is not likely to change the mindset in the short term. The question is what will trigger a change, if it is still socially and legally acceptable to sustain businesses that have a strong negative impact for long term human life.*
- *How to redesign valuation methods that better fit with the characteristics of nature? The benefits of nature accrue over a longer time span and are likely to increase over time. This includes the discussion on what discount rate should be used and whether such valuation method is accepted by investors as well. The Make Nature Count report 2023 highlights this aspect as well, making the case for a new standard (discount rate & time span of cash flows to be considered), but this will only 'fly' if accepted as best practice by investors.*
- *How to close the gap between 'worlds' with different mindsets, culture and 'language'? This counts for nature conservationists and financial specialists, but also between data providers and finance sector.*
- *Ecosystem impact assessments of public authorities (building sector/project development) seem to be based on a 'snapshot' approach. To be consistent with redesign of valuation methods, a relevant discussion would be needed whether that should not be calculated over the lifetime of the assets that are to be built?*

5. Financial instruments for Ecosystem Services

In this chapter, first a short explanation will be given about the relevance of ecosystem services for our economy, and the relevance for financial institutions to invest in them.

There are basically two approaches to ensure ecosystem services are kept in a good state (or restored to such state):

- The first is a ‘don’t do harm’ approach, directing financial flows away from projects with negative impact on biodiversity and ecosystems to projects that mitigate negative impact, or pursue positive environmental impact as a co-benefit.
- A step further is to embrace a ‘do good’ approach, financing of projects that contribute—or intend to contribute—to the conservation, restoration, and sustainable use of biodiversity and its services to people.

The first approach is strongly supported by the regulations and directives mentioned in chapter 4. Most of these provide an overview of the (in)direct impact investments have on ecosystem services. This improved awareness (for the investor, the fund manager, but also for the project the money is invested in) will hopefully lead to action.

Given the sharp decline in the state of for example regulating ecosystem services, it will however be needed to have more action towards the second category and specifically direct finance to projects that are expected to positively contribute to first regenerate and later maintain resilient ecosystems.

For that reason, several instruments will be discussed in this chapter that have been encountered as relevant during the desktop research and by interviewees. In the last section, smaller instruments are described as well, to highlight beneficial elements. The instruments we look at are listed below:

- Green bonds
- Direct Impact Investing via Fund structure
- (Bank) Senior Loans
- Environmental Impact Bonds
- Debt for Nature Swaps
- Grants, Donations and Venture Philanthropy
- Other instruments

For assessing the fit of each individual instrument with the goal of ecosystem restoration, the characteristics of ecosystems that are described in paragraph 4.3 will be used and the fit (acceptance) of the same instrument by the financial sector requirements as well. For the ‘other instruments’, only the beneficial elements will be explained.

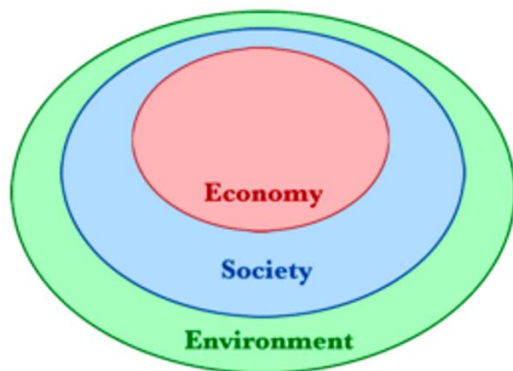
The last section will provide insights and conclusions from this chapter.

“I don't see much in biodiversity credits, but I do see payment for ecosystem services & blended finance, because they provide the opportunity to apply a multi-stakeholder approach.”

5.1 Ecosystem Services are the foundation of our Economy

As mentioned in earlier chapters, ecosystems represent intricate and dynamic systems that are highly relevant for the wellbeing of the economy. The health of an economy depends, to a large part, on the strength (stability) of its financial sector. The health of an economy is thus depending on the health of its ecosystems, as well as the health of its financial sector.

This is well described in ‘Ecological Economics’ that looks at the economic system being embedded within a social system which is in turn embedded within an ecological system—the sum of all ecosystems on the earth (the biosphere). Economies have existed way before we invented currency, and are inherently natural to the world. For the stability of the whole structure, money should flow to (the community and) the environment (ecosystem) as well. In his review of the Economic of Biodiversity, Dasgupta (2021) wrote that *“because the biosphere is bounded, the global economy is bounded.”*



While there is growing awareness of financial institutions of for example biodiversity loss, the predominant contributors to nature-related investments are currently governments, international NGOs, private foundations, and global agencies. This can largely be attributed to the risk/return profile, as indicated by Benchimol Dominguez in 2022 (ref.). The reluctance of the financial sector and other investors may be attributed to the long-term nature of such investments, accompanied by uncertainties and an unfavourable (or reverse) risk-return profile.

There is however another way to look at this: Given that most of our economic activities are based on a healthy state of all ecosystem services, every financing activity in the real economy will have an effect on these ecosystem services. This is directly recognised for productive ecosystem services, but less visible for the regulating and supporting ecosystem services. Every financial instrument that is introduced in the market and is not balanced against the requirements for healthy ecosystems (as explained in paragraph 4.3) runs the risk that these less visible ecosystem services deteriorate if these are not taken into account.

5.2 Relevance for financial institutions to invest in ecosystem services

Most financial institutions have committed to goals laid down in the Paris Agreement and are on their way of finding answers to realize climate goals. Investing in ecosystem services is relevant for the financial sector because of:

a. Risk Management

Ecosystem services, such as water purification, pollination, and climate regulation, provide critical support for various industries. Investing in these services mitigate risks associated with environmental degradation. For example, protecting watersheds can reduce the risk of water scarcity for industries dependent on water resources. One of the reasons that ASR is said to have supported in setting up the “Open Bodem Index” is that they consider it a risk mitigation aspect if farmers have a better understanding of the quality of their soils (which aspects include regulating ecosystem services). In addition, ASR has obliged farmers to share the data with them. With these insights, they can have a more thorough understanding of the state of the ecosystem services (which could be an indicator for the long term value of the land in their portfolio) signal when these deteriorate and discuss with the farmer to take adequate measures.

By monitoring on and investing in regulating ecosystem services, financial institutions act as a form of insurance against long term ecosystem related risks.

b. Compliance & reputation

Governments and international bodies recognise the importance of ecosystem services and introduce regulations to protect them. As explained in earlier chapters, an abundance of regulations and industry initiatives are introduced that support or demand disclosure of institutions how they take position towards different ecosystem services.

“The question is, does that happen on a large enough scale? I think we are still very much in the realm of reputation management, an experimental project, instead of the scale we need to achieve the desired outcomes between now and 20/30 years.”

Institutions have made commitments in these fields and investing in sustainable practices and investing in restoration of ecosystem services can therefore help financial institutions comply with these regulations, avoid legal and reputational risks and boost their profile by demonstrating their efforts.

c. New market opportunities

Investing in the restoration of (regulating) ecosystem services can lead to innovation in financial products and services. Financial institutions that position themselves as leaders in this new field can tap into new markets and attract nature minded responsible investors. For preserving and restoring ecosystems alone, the required investment is estimated between USD 300 billion to USD 400 billion, whereas at this moment only USD 52 billion is being invested in such projects. More and more nature development projects are being worked out that step into this niche. Financial institutions that incorporate supportive ecosystem services directed investments into their strategies and demonstrate an early adopter attitude can gain a head start by building the right network and knowledge, building up the capacity needed to accelerate and attract a larger investor base. Investing in ecosystem services demonstrate a commitment to environmental stewardship and sustainable development.

5.3 Limit Negative Impact on Ecosystem Services

Increased awareness of the state of ecosystems has led responsible investing shift towards companies that positively impact the environment, such as emission reduction and investments in sustainable or clean energy sources. Consequently, these funds now also consider biodiversity and other ecosystem services-related themes and have developed frameworks on how to assess them.

An illustrative example is the Biodiversity Framework of Triodos Bank, as detailed in the below image.

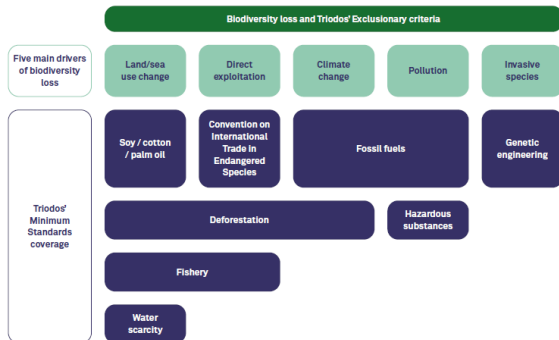


Figure 3 Five main drivers of biodiversity loss and Triodos Bank's minimum standards. Minimum standards are a set of criteria that businesses have to meet in order to receive financings or be approved for investment. This leads to exclusion from financing and investment.

For ecosystem services, the assessment is still challenging due to the scarcity of reliable and consistent data pertaining to for example biodiversity. Initiatives are actively addressing this issue by providing guidance and encouraging corporate reporting on biodiversity, with the Taskforce on Nature-related Financial Disclosures (TNFD) playing a prominent role, as detailed in chapter 4.

An example of progress can be seen at ASN Impact Investors, who, in their 2022 Impact Report, presented a comprehensive overview of the biodiversity impact for each fund under management. The expected negative or positive impact on biodiversity (in hectares) per invested euro per year is assessed, as illustrated in the below figures. Furthermore, at portfolio level, a screening process is applied to assess companies with a higher biodiversity footprint. This approach reflects a commitment to transparency and accountability in measuring and managing the impact on biodiversity, as well assuring compliance with (upcoming) regulations.

Biodiversity footprint in hectares lost per year

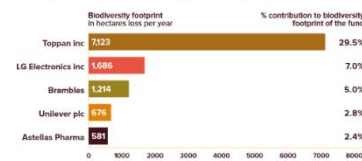


The total footprint for the assets invested in the ASN Duurzaam Aandelenfonds is 29% lower compared to the preceding year.

The data reported over 2019 and 2020 in the previous Impact Report were based on CO₂e levels obtained from our former data provider (Trucost). We have used CO₂e levels from data provider MSCI since 2021.

The 5 companies with the biggest biodiversity footprint are together responsible for 47% of the total footprint.

The 5 companies in the portfolio with the biggest biodiversity footprint



The method for measuring the biodiversity impact of investments is still under development. The quality of the data used will gradually improve. As a result, the calculated impact may be adjusted in future should better data become available.

In an ideal world, an 'assessment' would be conducted prior to financing, which includes the valuation of ecosystem services (and decisions on investment would be based on that information as well), preferably for the (economic) lifetime of the project.

5.4 Green Bonds

Green Bonds are debt securities designed to raise capital for environmentally friendly projects, including those associated with regulating ecosystem services. Financially, green bonds share

characteristics with regular bonds, offering both short- and long-term maturities, various coupon rates, and yields. The funds from green bonds contribute to financing projects with positive environmental impacts. Maintaining credibility involves issuers being transparent with investors and clearly defining green bond criteria aligned with evolving guidance and standards, such as the Green Bond Principles and the Climate Bond Standards (KPMG, 2015).

Dutch investments in green bonds have surged in recent years, surpassing EUR 70 billion by the end of 2022 (DNB, n.d.). This was also highlighted by a study of DNB (Boermans, 2023), noting that pension funds invested on average 7,4% of their bond portfolios in Green Bonds (EUR 47 billion). Pension funds were found to be eager to invest in green bonds if there is a large domestic supply, preferring long-term, high quality bonds. A growing number of Dutch pension funds, have set minimum percentage allocations for green government and corporate bonds, which in itself may explain part of the rise in green bond investments.

Since 2019, the Dutch government has issued Green Bonds, directing funds toward renewable energy projects, housing insulation, railway and bicycle infrastructure, public transportation connections, and addressing climate change impacts (Rijksoverheid, n.d.). The Nederlandse Waterschapsbank (NWB Bank) has issued (Green) Water Bonds since 2014, providing loans to Dutch water authorities. These funds are invested in flood protection, water management, and water quality, aligning with climate change adaptation and the restoration of regulating ecosystem services. Depending on the measures these funds are invested in (protection based vs supporting natural functions), these bonds could be considered as investments for restoring regulating ecosystem services. One of the respondents mentioned government bonds could be a good instrument to invest in capital-intensive parts, for example the infrastructure (land acquisition) for regenerative agriculture and/or nature development.

“I think green government bonds would be an excellent instrument to stimulate such a movement, and to invest more in that infrastructure. I think that really could be possible.”

Another illustrative example is a range of Sustainability Bonds that the State of North Rhine-Westphalia (NRW) (North Rhine-Westphalia, n.d.) introduced. The 10th bond references 53 projects addressing 14 out of 17 Sustainable Development Goals (SDGs), reflecting a diverse portfolio. A portion of this portfolio (EUR 80 million, 3% of the bond's specific volume) is allocated to the protection of nature, encompassing reforestation, ecological restoration of streams and rivers (flood prevention), and biodiversity initiatives.

Critics of Green Bonds consider them a form of greenwashing, as it could involve spending that companies and governments would have done anyway (no additionality). The effect on ecosystem services therefore heavily depends on the underlying projects and structuring of the Green Bond.

Ecosystem Requirements	
Adaptive	Regulated instrument, so less flexible to adapt to changing circumstances in terms of outcomes. Same count for interest rate structure, which would normally be based on market interest rates (instead of ecosystem services results).
Timescale	Recent Bond issues have shown terms of 20 years, but also more terms within 1 bond structure. Still attractive against reasonable pricing, based on the strong credit rating.
Community	No community involvement in the structure.
Diversity	As most investors will mainly look at credit rating of the issuer, diversity will be possible and structure could work at larger scale, involving different projects.

Holistic	Example of NRW bond shows that more elements can be included in one bond issue, supporting an holistic approach.
Financial Sector Requirements	
Well balance risk/return profile, regulated financial instrument. Wide acceptance by the financial sector (including pension funds) in case it concerns an issuer with a good credit rating and a bond volume large enough to ensure sufficient liquidity. Traded on the market. Established product, well aligned with current and upcoming legislation and regulations. More attractive if combined with a dark green label. Longer terms well appreciated.	

5.5 Private Equity (PE) Funds

Impact investments through PE Funds are defined as ‘investments made into companies, organizations and funds with the intention to generate a measurable, beneficial social or environmental impact alongside a financial return’ (GIIN, 2017, p. 58). Direct impact investing sets itself apart from SRI funds by directing investments towards private equity, not publicly listed. The Netherlands is well known for its impact investing industry, and has been a frontrunner in making for example microfinance and renewable energy investable. With the pressing need to restore and preserve regulating ecosystem services, this could provide a new investment theme for players in the field. From the desktop research as well as the respondents it became clear that most parties are exploring to set up new fund structures or initiatives that support this sector.

“So that is exactly targeting this, not only for nature based solutions, but exactly this problem: illiquid investments in a financial world with liquidity preferences.”

A frontrunner example is the ASN Biodiversity Fund, a fund specifically initiated to invest in biodiversity that was introduced in 2021. The fund aims to contribute globally to the retention, protection, and restoration of biodiversity by investing in projects across private and listed equity.

It concentrates on four sectors: sustainable forestry, sustainable agroforestry, sustainable oceans and fisheries, and ecotourism. The fund's financial objective combines long-term capital growth with a moderate dividend return, maintaining a moderate risk profile due to the majority of investments being in funds (some direct investments and conservation impact bonds, next to keeping 20% liquidity), all in all offering a well-diversified portfolio. Fund management costs are relatively high compared to funds in more established sectors, a factor attributed to the novelty (higher risk) of the fund's investment theme in combination with the moderate risk profile, leading to a large share of fund of fund investments. From the Make Nature Count 2023 report, it was noted that some of investments were benefitting from a result-based PES scheme (for the Brazil case study described, this was used to benefit landholders that maintain reforested areas in their landholdings, based on a carbon credits scheme).

Another example is the Kempen SDG Farmland Fund (2021), which aims for a transition from conventional to regenerative agricultural systems via investments in sustainably managed farmland, targeting a net average annual return of 6 to 8% over a 10-year horizon. Returns stem from diverse sources, including rental income, crop yields, land value appreciation, and carbon capture fees, while at the same time improving biodiversity. Risk mitigation strategies include maintaining a globally diversified portfolio and broad diversification across crop types. For the first 5 years, a lockup period is applicable for the investor, therefore leaving some room for the improvements to materialize. For this Fund, the return profile suggests that a thorough analysis of the long term effects would be necessary to understand well which component is most leading for this (above market) result.

Especially the inclusion of the land value appreciation component could have a longer term negative effect.

Ecosystem Requirements	
Adaptive	Regulated instrument, so less flexible to adapt to changing circumstances in terms of outcomes. As it mainly concerns equity, results will vary with the results of the underlying portfolio which is beneficial for adaptiveness.
Timescale	In case of an open end fund structure (or closed end fitting well to the timescale of the respective ecosystem), timescale could fit well. Shorter timescale than needed will put 'stress' on the system, possibly leading to perverse incentives.
Community	No community involvement in the structure (could be in underlying funds, for example one of the funds the ASN fund invested in (Forest Climate Solutions Fund) explicitly apply social impact parameters to their projects).
Diversity	Portfolio approach can include more diversity and still be balanced.
Holistic	Especially if the fund is dedicated to a specific geographic area, the different parts could be included, assuming a well balanced portfolio and different instruments that in total fit the profile of the individual components.
Financial Sector Requirements	
Expected higher risk/return profile. Limited acceptance by the financial sector because of disbalanced risk/return profile and/or in startup period. Traded on the market (higher liquidity buffer needed), market movements will determine attractiveness of the product (which could lead to a mismatch between the results of the portfolio and the return for the investor). Regulated product, aligned with current and upcoming legislation and regulations. High management fee (even stacked due to fund in fund investments) needed to build up dedicated investment team (more due diligence and research required to actually do the investments because of new sector). Return investors negatively impacted by doubly management fees, in case fund-of-funds structure is chosen to provide a more balance risk profile for a relatively small fund size.	

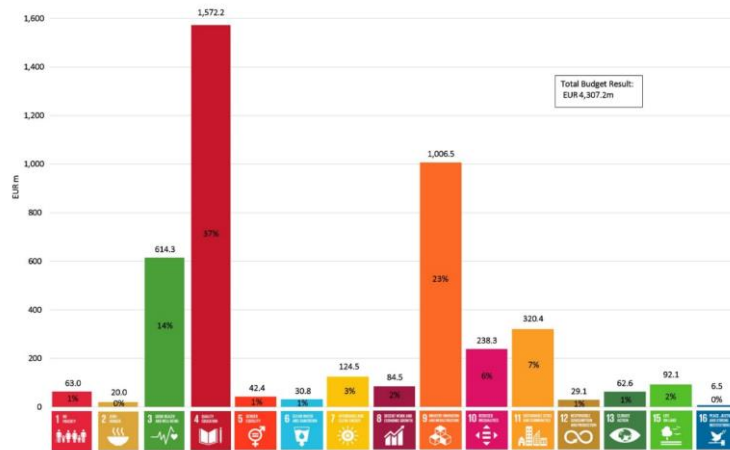
North Rhine-Westphalia Green Bond

In May 2023, the German state of North Rhine-Westphalia (NRW) issued its 10th sustainability bond, with a volume of 2 billion euros. Investors (banks and fund managers accounting for 78% of raised capital) committed for a period of 10 years, lending money to the state government to invest in sustainable projects. Just as in earlier Bonds, a part of the investment volume is designated for nature-related projects, this time with 24.2 million euros reserved for 'Forest restoration' and 45.4 million for 'Protection of nature' (NRW, 2023).

A report on the impact of the previous Sustainability Bond, #9, revealed that *"in the area of environmental effects, 77,000 ha is fully attributed to sustainable land-use, resulting from projects for organic farming and re-forestation."* This result was delivered through 112 million euros being invested in environmental projects, all funded through the bond. This indicates that, even though only a small fraction may be designated for nature (the 9th bond having a total volume of EUR 5.856bn), the impact is substantial.

Investors raise questions about the additionality of Green Bonds. However, in an interview with Environmental Finance (2019), David Marques Pereira, ESG Specialist at NRW stated that Green Bonds do deliver important benefits for the environment: *"By issuing green bonds, NRW.BANK and other issuers support the market from the issuing side. We are helping to develop the market, to get it more established, and are generating more and more momentum. This encourages other issuers to tap the market and more investors to enter the market on the demand side. This is exactly what we are seeing: creating awareness and visibility for green projects. In addition, we have seen recently a pricing advantage to green bonds compared with conventional bonds. We pass through this pricing advantage on the green lending side. If you are able to offer cheaper loans, you trigger greater volumes."*

figure 1: weighted attribution of allocated eligible projects to Sustainable Development Goals



source: Ministry of Finance NRW, 2023

Figure: SDG contributions of the 9th sustainability bond

5.6 (Bank) Senior Loans

The characteristics of a loan can vary based on the type of loan and the specific terms negotiated between the borrower and the lender. As most parties involved in nature projects have a banking relationship, this party will in most cases be the first they ask for finance. Banks are interested in finding financing solutions, as most have committed to Net Zero (which can be realised by investing in nature) and pledges for biodiversity.

A common characteristic of senior loans is that the initial amount of money borrowed must be repaid by the borrower, meaning that stable and positive cashflows are necessary (trend from historical evaluation and/or guaranteed through contracts with reputable counterparties). When Payments for Ecosystem Services are lacking, positive cashflows will only be realised in later years.

The interest rate is based on the cost of borrowing money and is expressed as a percentage of the loan amount, outcome based structures are supported. The term of a loan is normally connected to the economic life period the

“A lot of these projects cannot bear the cost of a traditional banking product.”

investment is made for, balanced against the term the lending provider is comfortable with in light of economic, societal & political circumstances and development in financial regulations. For an investment in ecosystem services, the economic life period would normally increase once the ecosystem is managed well, but this way of thinking is not supported (yet) within banks.

For regulating ecosystem services, it is depending on the type of intervention, the incentive scheme (PES scheme for example), the period (foreseeable future) that is needed to get to stable income flows. The cash flow, timescale and lack of familiarity with the sector will in most cases prohibit ecosystem development projects to receive commercial loans.

“For a bank, you want to get into the market, but even with support, these projects will not be realized without capital. There could be support there, to get projects off the ground.”

In addition, loans provided by financial institutions will require the borrower to provide collateral which not all ecosystem restoration projects can provide (unless land owner for example, or if backed by a (government)

guarantee and/or nature development subsidies). Lenders assess the creditworthiness of borrowers to determine the risk of lending to them. Credit scores, financial history, and income are often considered during this evaluation, which will be absent for most projects in this (relatively new) area. For nature and its related ecosystem services, there mostly are no long term historical records within financial institutions and also the skillset and experience needed to assess these kind of projects are not well developed.

Ecosystem Requirements	
Adaptive	Regulated and standardised instrument, less flexible to adapt to changing circumstances in terms of outcomes. Interest rate structure is normally based on market interest rates (instead of ecosystem services results).
Timescale	Timescale could be customised towards the lifetime of the project, unless this exceeds the maximum terms the bank is willing to provide (because of other (external) risks involved). Shorter timescale than needed will put ‘stress’ on the system, possibly leading to perverse incentives (an example is farmers that need to push for higher volumes, increasing the productive ecosystem services, at the cost of regulating ecosystem services).
Community	No community involvement in the structure.

Ecosystem Requirements	
Diversity	Less likely given costs involved in tailor made solutions. Most banks require standardised products for the larger part of their portfolio to keep a profitable business model. Tailor made solutions are more likely in case of higher (financial) volumes involved and well established borrowers.
Holistic	Most likely to be included if the solvency and collateral of the project is at a good level, along with a good track record (and financing more on the balance sheet of the project developer than on the project itself).
Financial Sector Requirements	
Established financial instrument, easy accessibility in case the project 'tick the boxes'. Banking regulations will increasingly look at cashflows for the project: Without a stable PES scheme, most of these projects will only be eligible for bank loans after the start up phase (once fully operational and cash positive). Well aligned with current and upcoming legislation and regulations. Risk assessment might limit the appetite of financial institutions for longer term loans, especially because of relatively new sector, limited historical insights & data inside the institution and not well developed market dynamics. Based on insights from interviews, it is more exceptional than standard that this type of finance is flowing towards nature.	

Oxygen Conservation

Oxygen Conservation is a UK-based environmental non-profit which buys up land to protect and restore natural processes at landscape level. On the acquired sites, Oxygen engages in rewilding practices, carbon storage and delivers a variety of environmental and social impacts. The nature uplifts and other benefits are transformed into natural capital products and services which are sold on markets, creating revenue for more land acquisitions. According to Oxygen, this system “*allows nature to pay to protect itself.*” (Oxygen Conservation, 2023).

Oxygen has embarked on a diverse range of projects with multiple income streams such as regenerative agriculture, woodland creation, renewable energy production, sustainable housing, eco-tourism and carbon sequestration through woodland and peatland restoration. A major source of revenue for Oxygen, is their trade in ‘high quality UK-based carbon credits’. To date, the organization has acquired 8 sites in 3 countries, totalling 25,000 acres of land. More than 50 million pounds were invested in these projects, partly financed with a GBP 20 million loan with a duration of 25 years from Triodos Bank UK proving that a commercial bank loan in some cases can also finance a landscape project.



5.7 Environmental Impact Bonds

Comparable to the structure used for green bonds, environmental impact bonds operate as outcome-based instruments where investors provide upfront capital for projects that yield measurable environmental outcomes. If the specified outcomes are met, investors receive an outcome based return on their investment. In most cases, these Environmental Impact Bonds are not publicly traded, limiting liquidity.

An example is the Wildlife Conservation Bond issued by the World Bank, characterized by its favourable terms for investors, including a short maturity (5 years), an excellent credit rating (AAA for World Bank), including assurance of principal repayment. This so-called Rhino Bond distinguishes between the principal and yearly interest payments.

Investors buy the Rhino Bond, forgoing fixed yearly coupon payments, which are invested into the management of protected areas and rhinoceros conservation activities. If rhinoceros populations achieve a growth rate of at least 4% over 5 years (when the Bond matures), the GEF, as the outcome payer, will pay a success payment higher than the foregone coupon payments. If expected rhinoceros population levels do not grow by 4%, the success payment is reduced in line with the actual percentage change.

Rhinoceros numbers are independently calculated by a private sector calculation agent and verified by the Zoological Society of London. With a volume of USD 150 million, the bond closed in March 2022 and was sold to a diverse mix of institutional and private investors.

“The problem with nature is that it is simply difficult to express in figures. We are making attempts in this regard, we are working on scenario development and we have discovered that many of those models really fall short in this regard.”

Analysis of the case study showed that it took many years to set up the bond, and its original intent was to design a product for a larger habitat or ecosystem and for a longer time horizon. However, the idea was postponed because ‘financial payments for more ambitious outcomes would be more complicated in terms of monitoring and evaluation’.

Ecosystem Requirements	
Adaptive	Non regulated instrument, so more flexible to adapt to changing circumstances in terms of outcomes. Outcome based structure fits with the adaptiveness, though the single indicator approach could jeopardise this fit again.
Timescale	Timescale could be a fit, assuming the loan is customised towards the lifetime of the project. Shorter timescale than needed will put ‘stress’ on the system, possibly leading to perverse incentives that might actually harm (other) parts of the ecosystem. In the example described, the term was lowered from 10 to 5 years to fit with investor appetite.
Community	No community involvement in the structure, though (based on the World Bank involvement & its other social standards) assured within the project.
Diversity	Less likely given costs involved in tailor made solutions (was originally foreseen, but considered too complicated).
Holistic	Assessment of the Rhino Bond structure shows that the intention was to build it for a larger ecosystem, but that was deemed less tangible (too complicated)

Financial Sector Requirements

The Rhino Bond is well accepted by investors probably due to the guarantees built within the structure: Guaranteed repayment of principal by issuing party with excellent credit rating. No liquidity provided to investors, which is balanced by the shorter (5 yrs) term of the loan. Tailor made product, requires dedicated efforts for a longer period (9 yrs for the Rhino Bond) of an intermediary and high upfront costs. The idea would be that it is easy to replicate after one go, but in their experience, it is a struggle to create a next impact bond. It was noted as well that in the end, the largest part of the nature conservation efforts would be paid by the World Bank, not so much the investors in the Bond. The GEF is only obliged to pay in case of success of the program.



Deshkan Ziibi Conservation Impact Bond

In Ontario, Canada, the Deshkan Ziibi Conservation Impact Bond (DZCIB) financing model was conceived to mobilize capital for reversing the trend of habitat loss and accelerating the growth and long-term stewardship of healthy landscapes.

DZCIB is set up to increase habitat quality, quantity, commitment, and leadership by implementing nature-based solutions throughout the area. The project seeks to apply a 'Two-Eyed Seeing approach' to habitat work by interweaving Western science with indigenous ecological knowledge and the teachings of nature. Representatives of indigenous groups were working together closely with the other stakeholders, developing outcome targets resonating with all parties involved in the area. Initial investment by VERGE capital amounted to CAD 130k (USD 97.74k).

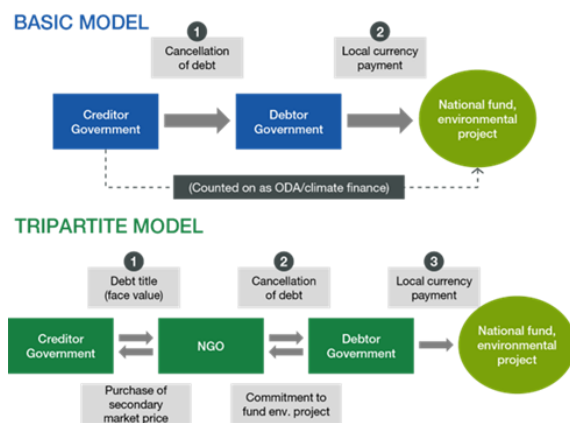
Carolinian Canada Coalition (CCC) is the project facilitator of the Conservation Impact Bond, including the DZCIB pilot project. CCC seeks to co-develop a scalable CIB model and use the model to build relationships for improving 400 hectares of land in southern Ontario. DZCIB is the first phase of the CIB model, but it has already made a big impact by directing funding towards land restoration non-profits operating in the area, accelerating improvement and resiliency of 169 hectares of nature-based solutions. A research team from Ivey Business School aided in the design and implementation of the DZCIB, focusing notably on the evaluation framework and bond structure.

A diverse range of groups and landowners is activated through the bond, to conduct or host on-the-ground conservation work. The CCC is responsible for the allocation of capital

5.8 Debt for Nature Swap

Debt-for-nature swaps represent financial transactions where a portion of a developing economy's foreign debt is forgiven in exchange for local investments in environmental conservation initiatives.

The financing mechanism for debt-for-nature swaps involves an agreement among the funder(s), the national government of the debtor country, and conservation organization(s) utilizing the funds. The indebted country's national government commits to a payment schedule for the forgiven debt, typically facilitated through the nation's central bank, in local currency or bonds. This process is outlined in Figure 1. Participation in debt-for-nature swaps has primarily been focused to countries facing a high risk of default on debt payments, allowing funders to acquire the debt at a discount.



An illustrative example is the Ecuador debt-for-climate swap closed in May 2023. This financing approach exchanged USD 1.628 billion in Ecuadorian government bonds for a USD 656 million impact loan. With a nearly 60% discount, the transaction is supposed to generate large savings for the Ecuadorian economy through 2041, alleviating some of the country's debt distress. In return, Ecuador commits to directing savings of USD 323 million toward conserving the Galapagos Islands by 2041. Additionally, a new endowment fund, maturing to USD 227 million, will be

established to finance their preservation thereafter. The bond comes with an USD 85 million 'credit guarantee' from the Inter-American Development Bank and USD 656 million of political risk insurance from the U.S. International Development Finance Corp (DFC), effectively making it less risky.

Debt-for-nature deals have grown in size and frequency in recent years. Costs for intermediaries are assumed to be on the high side and not transparent. Mostly, these bonds (both old and new) are denominated in hard currency, though the country would benefit more if it were in local currency, taking away the FX risk.

The African Sovereign Debt Justice Network, in its book entitled 'Transforming Climate Finance in an Era of Sovereign Debt Distress' highlights the ongoing global commodification and corporatization of nature which fuels the trend of 'extractivism' from Africa by developed countries. Greenpeace has made a call at the COP 15 Biodiversity to reject Debt for Nature Swaps as it lacks transparency, makes use of subsidiary companies in tax havens and the repackaging of developing country debts by investment banks using opaque company structures. Supporters of these structures emphasize that with only 6 years left to achieve global target of conserving and managing 30% of the world's lands and waters, this mechanism could have a game changing impact on fragile ecosystems.

Ecosystem Requirements	
Adaptive	Non regulated instrument, so more flexible to adapt to changing circumstances in terms of outcomes. Outcome based structure fits well with the adaptiveness.
Timescale	Timescale could fit, depending on the commitment of the debt providers for the new bond.
Community	Set up might undermine independence/autonomy of local government and community.

Ecosystem Requirements	
Diversity	Tailor made solutions (involving high costs for transaction advisors), so less likely to replicate easily.
Holistic	Given size of the debt exposure and the ecosystem area to be developed, an holistic approach is more likely.
Financial Sector Requirements	
Debt forgiveness is needed for such structure to work. As it mostly concerns distressed debt, the debt provider will be more likely to accept a haircut if a well worked out plan can guarantee the remaining part while at the same time improving ecosystems. In the example, the lower principal amount combined with the credit guarantee structure and the political risk insurance lead to an improved risk/return profile for the new bond (while impact on ecosystem services is beneficial). The arranger is normally an established financial institution (Credit Suisse in the example) and will require an attractive return for their services. Because of the large amounts involved, a material budget can likely be claimed for the work attached to it, probably leading to a stable business case for the arranger of the financial instrument (not disclosed).	

5.9 Grants and Venture Philanthropy

Grants are awarded to support specific charitable activities and projects, typically nonprofit organizations that operate for the public benefit which could include restoration of ecosystems. An example of a party that strongly supports nature conservation is the Esmee Fairbairn Foundation, which dedicated funds to nature restoration projects in the UK (especially known for funding the start-up costs for regional initiatives that were looking for ways to get ready for private investment), but also larger well established organisations like WWF and Greenpeace or Dutch organisations like Doen Foundation, Adessium Foundation and many more.

Grants are not provided with the expectation of a financial return and can be used to explore innovative approaches. This flexibility allows grant recipients to adapt their strategies based on changing circumstances or emerging needs. Nowadays, financing of microfinancing institutions in developing economies is considered more mainstream, but that started by some venture philanthropy initiatives in the 90s, step by step leading what is now considered an investable proposition by larger commercial parties.

“I always think back to microfinance. Without philanthropy it would not actually have been a fund that ended up on the shelf of established financial institutions and institutional investors. We are really in that phase here, and not 20 years later with 200 projects that have already succeeded. Ultimately, it will take you 20 years to get there. I'm also impatient by nature, but that business case was actually easier.”

Venture philanthropists offer their beneficiaries a wider array of financing options, including longer-term (and perhaps larger-scale) impact first investments, with a patient capital approach (equity like investments, without a direct return perspective). A lot of innovation in instruments is coming from this development, which can again be the basis for new (more formalised) instruments once understood that it actually realised the impact that is intended and the market and knowledge within the financial sector for the a new investment theme has built up, lowering the perceived risk.

This source of money can catalyse private funding and play an important role in Blended Finance structures. Such grants can be provided by a wide variety of governments, NGOs or even private companies, through their Corporate Foundations.

“We work with some foundations that use part of their core capital in our impact fund. If there would be an obligation for such charities to put 10% of your assets in ecosystems, then the world would turn upside down, hundreds of millions would become available. That would be huge!

Grants can support unprofitable activities such as capacity building, technical assistance or monitoring or fund through a grant or concessional loan (extended grace period, first loss capital/guarantee, inverse risk return structure) interventions to realise restoration of ecosystem services (bridging the financial viability of economically viable projects, leading to an ROI that is more risk/return balanced).

In the interviews, some of the market actors emphasized the need for ‘capital grants’, which would fit in this same category and could strongly support developments in this field. The quote to the right explains why: As a catalyst for private sector investments in the years thereafter.

“We think the best one, and the easiest one for the government is capital grants. Because, if the government provides the upfront funding to deliver landscape interventions, then the private sector pays for the ecosystem services which creates a revenue stream which then pays the landowners.”

Ecosystem Requirements	
Adaptive	Non regulated instrument, no fixed return obligation. In principle more flexible to adapt to changing circumstances in terms of outcomes.
Timescale	Timescale could fit (a grant is ‘eternal’ by default), no fixed rules and ‘patient capital approach’ are all not defined, other than by the institution itself.
Community	For most charities, a prerequisite for their funding is involvement of local community (in line with the requirement that it should be beneficial for society).
Diversity	Well adapted to diversity. Could also be used to catalyse private funding in a blended finance structure.
Holistic	See answer for diversity.
Financial Sector Requirements	
Limited requirements. It should be noted that this type of capital is much sought after for very different needs (and will therefore compete with other transition themes). Due to the source of money, the requirements can be quite specific (and volatile) and change over time in terms of focus.	

5.10 Other Instruments

During the research, more examples were found that each, on a smaller scale, provided finance in support of nature. Though the list is not exhaustive, it highlights at least that investing in nature is a topic that is alive in society and pilots are being executed to find ways to make nature flourish.

Compensation payment

To put biodiversity on the map, Florius is working with ecologists to create a climate forest by enriching a huge area of land with 3,000 native tree and plant species. This removes CO2 from the air, improves water storage, creates space for new animal species and boosts soil quality. As there is no direct connection between the climate forest and their financial products, the impact alignment is limited, though it does show a commitment to raising public awareness for biodiversity issues.

Beneficial element: No return needed, as it is not considered a traditional investment but more a 'gesture'. A next step could be if they connected this directly to the building environment they are investing in. Committing part of the profit of the business to be reinvested in the regulating and supporting ecosystem services that provided the green infrastructure for their business.

In one of the interviews, an example was mentioned where this connection was piloted: A real estate developer that was explained (supported by calculations) that the climate resilience of their buildings would be protected better if the nearby forest (and its connected regulating ecosystem services) would be well maintained (which could be a more cost effective method than investing in technology for the building to do the same).

Crowdfunding

Crowdfunding provides a flexible option to fund smaller scale ecosystem restoration projects. For the near future, technological innovations (tokenisation, smart contracts, alternative currencies that can make a connection to ecosystem services related components) will make these instruments more scalable and can 'mimic' fund structures, allowing for lower cost structures and more diverse reward structures.

Crowdfunding regulations (still) provide more flexibility in terms of structuring and are increasingly becoming more professional (secondary market coming up). Nature related projects could benefit from this by allowing them more outcome based return structures, while making a direct connection to the impact realised (which could include Payment for ecosystem services if applicable to the project activities). It should be noted however that most these platforms do not have the size and budget yet to make in depth impact assessments.

Beneficial element: more flexible approach due to less established regulations which could better fit the ecosystem requirements. Technological innovations can support applicability at a larger scale against acceptable costs by mimicking well diversified structures (such as funds) for investments that have no additional benefit from investment management activities.

Transition aligned investment fund

One of the reasons change/transition is difficult to execute is the fact that investors tend to put the transition risk with the entrepreneur and/or project owner. The Perennial Fund, managed by non-profit organisation Mad Agriculture, is an innovative USD 10M fund which extends operating loans to selected farmers, to support their transition to regenerative organic production (which is expected to have a strong positive effect on the regulating ecosystem services).

The fund is piloting a revenue-sharing model to split risks more fairly between farmers and funders during the transition period, where farmers often face a "valley of death" before they are able to obtain fully organic certification and premiums for regeneration. Investors are repaid with an additional income based on a percentage of predefined income streams and only if positive revenue streams are being realised. In addition, if the transition is not bringing the results as planned within a defined period, the debt is released, de-risking the farmer.

Beneficial element: Improved incentive for entrepreneur, as interests, risks and incentives are more aligned. Because the transition costs are funded through the fund, the structure can also work in case no Payment for ecosystem services scheme is available for such project. The outcome-based elements support the adaptiveness requirement can be adapted to individual situation (supporting diversity).

Nature Service Agreements

There are initiatives that explore how Nature Equity can become an asset on your balance sheet. The Landbanking Company for example introduced 'nature service agreements' in 2023. They claim that, if done well and having all the technological, scientific and legal safeguards, this option will make net investments into nature uplift, as these are capital assets that you can put on your balance sheet. This is still under discussion, as this can only be realised if financial auditors accept this as an asset. "This could be a very interesting sort of new asset class, that people want to be invested into. All of this happens already in today's world without changing any rule of law." Critics fear a 'commodification of nature', or perverse market incentives as have happened in the carbon credits market.

"Wouldn't we solve many of the problems that we currently have with regard to the alphabet soup, to the taxonomies, to the carbon markets, if we were moving towards a regime where the government actually rewards players that hold Natural Capital Accounts, where you can actually say that this is your net position over your liabilities and your assets."

Beneficial element: Companies (and financial institutions) can 'account' for their investments (the flow of measurable ecosystem services they have realised, not so much the asset (like land or trees) itself) by putting the result of their efforts on their balance sheet (carbon realised for example). This could work well for recognition and awareness, and work to a more integrated approach of a balance sheet (especially if combined with other incentives such as tax benefits).

5.11 Summary and questions

A healthy state of ecosystem services support the health of our economic activities, and are highly relevant for financial institutions. Most of our economic activities are based on a healthy state of all ecosystem services and most of our financing activities in the real economy will have an effect on these ecosystem services. In case of a misfit between the ecosystem requirements and the financial instrument metrics, it is most likely that the non-monetizable regulating ecosystem services will deteriorate as they are not taking into account for investment decisions.

The degenerated state of especially the regulating and supporting ecosystem services, underlines the importance for more focused and accelerated action. More finance in support of nature is necessary to support projects that provide a positive contribution to regenerate and maintain resilient ecosystems.

All instruments and case studies presented in this chapter provide positive elements that support nature. The assessment of each of the instruments that were described provides an overview how the respective instrument is aligned with the ecosystem requirements as well as the financial sector requirements.

Overall, the conclusion is that for most instruments, crucial elements that were needed to fit the ecosystem requirements, were sacrificed to fit the financial sector requirements. That aligns with the insights from desk top research in which the unfavourable risk/return profile makes it a domain that is mainly served by the public sector. At the same time, it is also a clear reflection of the 'dominance' of finance in today's society: In the hierarchy of today's society, money is strongly prioritised over nature.

The instrument that provides the best option to scale is the Green Bond, where larger investors could be highly interested to invest, assuming the credit rating of the issuing party is strong. In cases where the issuing party has a high credit rating (well established government bonds, institutions like EIB or World Bank), and the proceeds would be used for the 'right causes' (dark green), the uptake of such instruments by institutional investors could be very good, even in case a longer term would be introduced: the market guarantees liquidity.

A Debt for Nature Swap could also be a good example (also because the countries that qualify for such swap have critical ecosystems that could benefit the world if regenerated), if there were not so many more critical components connected to it, that could jeopardize the overall integrity of the transaction and instrument, as well as respecting the rights and interests of local communities. Apart from that, a material amount of distressed debt would be needed to realise such transaction, which would not be applicable for all countries/regions.

Given the diversity and holistic nature of ecosystems (described in paragraph 4.3), it is likely that a combination of instruments will be needed to more viable solutions for financing nature. One overall instrument will not provide the 'silver bullet' for restoration and maintenance of ecosystem services, but a package of complementary instruments could be structured.

Questions

- *From desk research, quite some criticism was found on the fees charged by the arrangers (which are mostly departments of financial institutions as well), and even more on the lack of transparency. It could be researched whether there is sufficient reason to request more transparency on this matter.*
- *Given the lack of available structures, it seems highly unlikely that a commercial entity (like a financial institution) will be interested to explore more complex structures. Further dialogues with the sector could provide more insight on what is needed to support such research.*
- *Liquidity requirements (also required by regulations) put a high pressure and distorting effect on most instruments described. But how can you divest from something that is illiquid by nature?*

6. Scaling our Efforts: Contours for Solutions

The restoration, conservation and sustainable use of ecosystems services is urgent. In earlier chapters, a lot is said about the importance of ecosystem services and the financing mechanisms that we have seen in the market. From chapter 5 we conclude that none of the current instruments really fit the characteristics of an ecosystem (though some could be slightly adapted to have this realised), and most of the solutions that are available in the market are still largely dependent on public finance.

In this chapter, we will explore what could be done to scale up finance in support of nature, providing the contours for new solutions that could be taken up by especially the private sector, in order to come to a balanced blend with the public funding available for this domain. The suggestions provided in this chapter are non-exhaustive and based on the inputs that were provided by desktop research and insights from the interview.

To start with, it is argued that investments in (regulating and supporting) ecosystem services are to be considered as a separate asset class, as they exhibit characteristics that set them apart from other asset classes, and are yet subject to the same (natural) dynamics, recognising that ecosystem services provide a wide range of economic and societal benefits.

In next paragraphs, an explanation will be provided what this implies for policymakers and other stakeholders that intend to support private investors and the financial industry to invest more in these kind of initiatives.

“For the coming 5 to 10 years, we still need a combination of making it fit in our financial system and investors to be provided with guarantees etc.”

elements that could be introduced to improve the situation.

6.1 Nature as an Asset Class

In general, an asset class refers to a group of financial securities or investments that exhibit similar characteristics and behave in a similar way within the marketplace. Asset classes are mainly categorised based on their risk-return profiles.

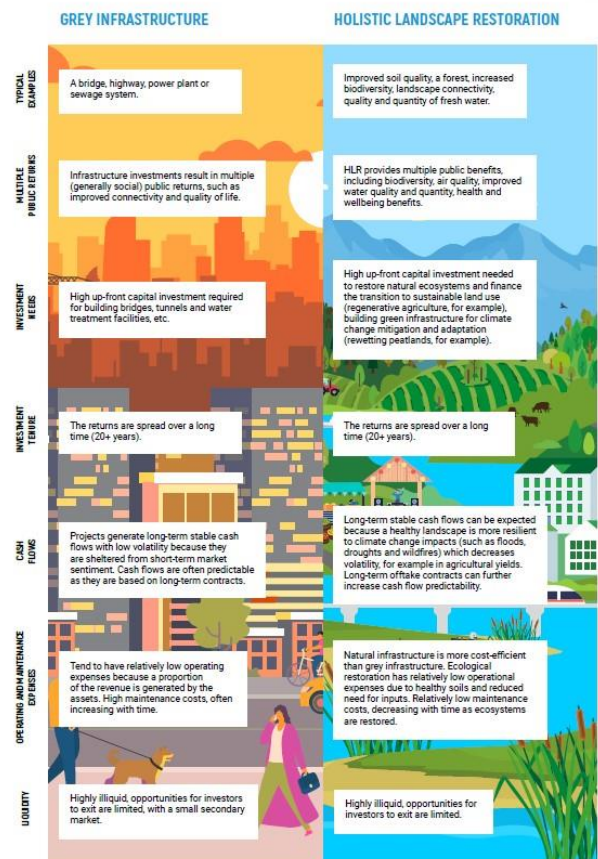


Figure 2. Demonstrating the similarities and differences of financing needs for large-scale infrastructure projects versus HLR (which may include sustainable grey and green infrastructure development)

As explained earlier, there are 2 ways to approach this: ‘Finance Green’ and ‘Greening Finance’. Both approaches can be developed side by side, but have different implementation paths and timelines while at the same time interacting with each other. For both, actionable options will be provided on

In a recent study by Commonland (2023), *Financing Holistic Landscape Restoration*, it is argued that “... (these) investments have even more in common with traditional infrastructure investment. In addition to lowering risks related to climate change,... (they) provide significant added benefits to society.... If viewed through such a lens, factors such as return being spread over longer horizons (20+ years)... we also recommend that investments in grey infrastructure should incorporate complementary green infrastructure to build resilience.”

Looking at nature finance, there are some characteristics that they have in common, and should therefore ideally be included in the specifications of new financial instruments. The characteristics are elaborated on in paragraph 4.3. and will be summarised as follows:

- **Adaptiveness:** Accepting that nature is non-linear, there is a need to accept more flexibility.
- **Timescale:** Unlike an investment in technology, nature will appreciate (instead of depreciate), and will need a timeline that is longer (20 years seems reasonable) and also not a ‘one size fits all’, but connected to the kind of ecosystem restoration that is envisaged.
- **Community:** For ecosystems, it is important to acknowledge the importance of having the backing and buy-in of the community that lives within the ecosystem.
- **Diversity:** No ecosystem is the same. The uniqueness of each ecosystem will require a tailor made approach.
- **Holistic:** More interventions (and financing mechanisms) will have to work together to improve the situation.

In addition, from the picture (Commonland, 2023), it can be added that a ‘*high upfront capital investment*’ is needed, and that a green infrastructure provides ‘*multiple public benefits*’. Other than grey infrastructure, green infrastructure is expected to be more cost-efficient and has relatively low operational costs. The investment itself is highly illiquid by nature: Uprooting a tree or forest destroys its ecosystem services, keep it upright in a balanced ecosystem and it will continue to provide benefits.

Based on the unique characteristics that set ecosystems apart from other asset classes, but also are subject to the same (natural) dynamics, there are good reasons to label investment in ecosystem services as a separate asset class. This separate label would recognize the fact that ecosystem services provide a wide range of economic and societal benefits, and (in terms of value) a low correlation with other asset classes. This asset class realises the foundation for a wide range of economic and societal benefits.

Defining it as a separate asset class comes with new questions around:

- **Valuation and Accounting:** The principles that are used to assign a monetary value to ecosystem services (and even accounting for it on a balance sheet, include the avoided damage costs and the avoided replacement costs in the valuation) would need to be reconsidered. Our ‘generally accepted’ valuation techniques are based on technology/entrepreneurial dynamics and do not include societal effects, and should adequately reflect the value of ecosystem services. This was already reflected in an earlier chapter (the discount rate discussion), but could be elaborated further to include the timescale (connected to the depreciation/appreciation effects of investing in ecosystem services), appropriate valuation techniques and how this can be incorporated in accounting standards as well. It should be noted as well that if such impact on ecosystem services would be accepted for valuation standards, it could provide a strong incentive for any asset owner to take adequate action to keep all ecosystem services at the right level.

- **Ownership and property rights:** Agreeing that natural assets are ‘commons’ (we all benefit, we all depend on a healthy state of ecosystem services), the challenge will be to determine a new definition for property rights, as well as the rights to receive the benefits of the ecosystem services. This could be closely aligned with the discussions in society around ‘rights of nature’, but also to embrace the rights of local communities that are depending on most of these ecosystem services for their livelihood. Rights could therefore come with obligations as well (a duty of care) for those that own or lease natural assets.
- **Regulations & guidelines:** Clarification is needed on how to embed this in economic and financial frameworks. A question as well whether these regulations should be centralised (or not), and how to encourage continued sustainable practices (Duty of care 2.0). Commonland (2023) argues that it is critical to “*implement incentives that are aligned to nature*”.
- **Monitoring and evaluation:** As we are still understanding how this can work at landscape level, monitoring, evaluation and shared learning is needed to ensure that a new set up is actually improving the situation for ecosystem services and can be adapted based on the outcomes. Monitoring, evaluation and learning will also encourage that ‘new language’ is developed.
- **Integration:** Carbon neutrality (climate) will need to be treated holistically, including biodiversity and a healthy state of ecosystem services.

Classifying ecosystem services (‘green infrastructure’) as a separate asset class could represent a significant shift in how we value and interact with ecosystems. Being a critical foundation for our economic well-being as well, emphasizes the importance and could increase the respect for nature. For all businesses and the financial sector, investing in ecosystems is not just financially prudent but also fulfils a duty of care towards their clients and society. This responsibility needs to be coordinated at national, European and international level (a concerted action) in order to prevent a flight of activities to areas that do not apply the same standards.

And finally, investing in green infrastructure contributes to a diversified and resilient portfolio. By incorporating green infrastructure projects, the impact of environmental risks is counterbalanced, ensuring stability and consistent returns for clients over the long term.

It should be noted that the introduction of a new asset class only makes sense if there is a government and/or regulator that is willing to support or force the uptake of such new instrument (independent of the type of instrument).

6.2 Finance Green: Elements to Support Finance for Nature

For the ‘Finance Green’ path, instruments and other options (including pre-conditions) are presented that can change the risk/return profile by lowering the (perceived) risks for such investments (in terms of liquidity, principal, delivery etc.), and/or increase the (perceived) return for such investments (PES, taxation, etc.). By introducing these element, players within the financial sector are encouraged to build up the capacity and knowledge in this field. For this path, the fundamentals of the financial sector will broadly remain intact, but will also stretch their comfort zone.

“We see the market is probably not there yet in the upcoming 2-3 years to have full commercial loans, so there probably needs to be some supporting mechanism, we think it is really important to have something like “EU guarantees” in place to mobilize private capital into the market.”

For each of the instruments below, detailed conditions need to be worked out. This might include a minimum holding period, a co/financing or risk sharing agreement (skin in the game), etc.

A: Quick win

- Introduce **Green Ecosystem Bonds** (issued by Dutch government, to support uptake based on the credit rating of the issuing party) to finance the capital intensive part of restoration of regulating and supporting ecosystem services. This also refers to a recommendation by the Sustainable Finance Lab, that concludes in a 2020 report *“Lead by example through the public budget. Governments are important financial agents.”*
 - **Bonus:** Additional awareness can be realised in case the reporting framework connected to these focused Green Ecosystem Bonds includes a calculation of the value of the ecosystem services that are restored via these investments.
- **Use existing public impact investment institutions** (Invest NL and the Groeifonds) to support in financing ecosystem services. Leverage private funding by improving blended finance structures (through their expert centre, see paragraph 6.3 as well).
- For **every Green Bond introduced, reserve 5-10% to invest in regulating ecosystem services** (see below as well around the ‘investment readiness program’, and the need for ‘first loss capital’).

B: Introduce supporting instruments for private investors and financial sector to lower the risk profile.

- Develop the market: Introduce an **‘investment readiness’ program** for (combined) projects targeted at restoration of ecosystem services (example of Defra, UK). Encourage nature development projects to actively look at market participants that have a long term interest in sustaining ecosystem services, by providing them with a subsidy scheme to work out such structure. Pre-condition for receipt of such subsidy could be that a relevant group of stakeholders have agreed to work this out in a partnership approach (including prospective longer term financiers). Advantage is that more projects will reach investment ready, without high development costs by the investors.
- Introduce **guarantee schemes** (NL and/or through EU) for investors in ecosystem restoration, targeted at least at investments in Nature-based Solutions. Such guarantee(s) could target:
 - **Default of project:** Option to claim % of remaining principal in case of default of the project. This can provide more flexibility from institutions to develop new models and instruments (better collateral, effect on capital requirement), supporting innovation in this field (and laying the responsibility with the intermediary instead of the government).
 - **Liquidity:** Option to claim (partial) liquidity after an initial lock up period (and/or increasing % with time). For institutional investors (such as pension funds) a ‘last resort’ state-guarantee could be introduced for liquidity (meaning that if the institution would need the money to fulfil their fiduciary responsibilities, they could still access these funds). Note: this option is only needed in case there is no liquid market for

“What I often hear from institutions is that it requires a lot of due diligence to invest, and that the projects are actually too small to become really profitable. So that may require collaboration, but at the same time you may need that small scale.”

“For the coming 5 to 10 years, we still need a combination of making it fit in our financial system and investors to be provided with guarantees etc.”

the instrument (not regulated and/or not-listed).

- **Delivery:** (subsidized access to) insurance with regard to the delivery of PES incomes (or carbon credits). See also below the reference to the SDE subsidy, to improve profitability of such projects.
- Transition risk payments and/or insurance: for ‘operators’ (farmers, forest owners) in an ecosystem restoration project, having the benefit (or backstop) of defined income streams to bridge their income in the transition period (comparable to the corona bridge facilities).
- Include **capital grants and/or first loss capital** as instrument to jumpstart the changes envisaged and increase the profitability (and thereby investment readiness) of nature projects (financed through the earlier mentioned Green Ecosystem Bonds, or the 5-10% rule). Benefit of a capital grant is that the project itself is less dependent on continued government support and therefore more likely to receive private sector funding. For government, it is a reason to demand a ‘skin in the game’ from other stakeholders as well, and/or request win/win situation for the longer term maintenance of such ecosystem restoration through involvement of relevant market participants that benefit from these ecosystem services.

Introduce supporting instruments for private investors and financial sector to increase the return profile:

- **Tax incentive scheme:** Specific tax incentive scheme for Ecosystem restoration investments, supporting a longer term commitment from investors and extended benefits. This could be realised in different ways, Dutch environment provides already some examples that could be built on:
 - Dutch tax benefit scheme for green projects : extension of categories & special treatment (differentiation on benefit based on impact realised) and/or
 - Addition to the ANBI based donations tax incentive, for example by introducing a new category (see ‘Green Finance’ section in paragraph 6.4) and/or
 - Introduce elements from the Dutch NSW (natuurschoonwet) into such scheme so as to underscore the importance of long term commitment.
- **Subsidy** (comparable to SDE that was introduced in NL for renewable energy), in which cash flows would be supplemented once the project would fall below a certain level.
- **PES schemes**, introducing multi-outcome payments scheme that are aligned with the period needed for the ecosystem to regenerate and flourish. PES schemes will be needed as part of any new model for financing ecosystem services, to make sure stable cashflows fund the operational costs of the project (next to the operational income from other sources). This creates a direct link between financial contributions and tangible benefits, such as clean

“It's way more cost effective for governments ... to introduce incentives that set off the desire to participate. And of course, avoiding taxes seems to be an absolute ultimate incentive to direct investments

water, carbon sequestration, and biodiversity conservation. PES schemes should preferably include multiple outcome payers, with a mixed income based on a mix of outcome results (no single unit calculations) from ‘good practices that were realised’ and ‘outcomes that were realised’. The PES scheme could be worked out

as a tangible outcome deliverable from the investment readiness program that is explained before (as we have learned from the UK).

6.3 Blended Finance

Quite some projects have the potential to contribute to transition objectives but are insufficiently served by existing public and private financial instruments. Situations in which existing financial solutions are not sufficient arise, for example, because:

- After initial grant or subsidy, there is still a long, expensive and risky road to go and not enough parties dare to step in, for example due to technical, operational or time-related risks.
- The project initiators and/or investors are insufficiently wealthy and investors with deeper pockets are not yet convinced, risk averse or simply have not enough inside information to understand the actual risks and benefits of the project.

“I’m a bit worried of over structuring in an early stage of the market.”

The OECD definition of Blended Finance is: The strategic use of ‘development finance’ for the mobilisation of additional finance. We are talking about a blend of financial instruments that are connected in a clever way, connecting public and private resources in tailor-made solutions - especially for large(r) projects.

Although there is no uniform definition of blended finance, there are a number of characteristics typical of blended finance financing (Rebel Group, 2023):

- Various financing sources are combined, often involving the combination of public and private financing flows.
- There are various financial products: subsidies, equity and various forms of loans, or financial products with features of debt and equity.
- Constitutes of the use of “tailor-made” products, in addition to generic financial products.

Anyone can draw up a blended finance structure: We have this type of risk capital, then we add a first loss, and then we add insurance. We put that picture together within an afternoon and then the big question: who is going to put in that 100 million first loss? That real risk money, I think that is still the big bottleneck, as far as I can see.

In other words: in addition to traditional capital and standard loans, customized products are used to finance projects. Such financing is aimed at eliminating temporary cash shortages that are difficult to finance.

Critics of Blended Finance mechanisms have pointed out that in most of these structures, the

involvement of public finance is still far more than the private part (and the structuring of these complex structures require a lot of public money as well). Finally, it is questioned whether it is needed to tie these instruments all together (requiring a lot of additional operational/alignment monitoring and costs), or more loosely connected.

And last, as can be read by one of the quotes on this page, but highlighted in other interviews as well: Who is going to put in that 100 million first loss? Once that is arranged, it should not be too difficult to find all other instruments that can fit the other purposes.

6.4 Greening Finance: Elements to Support Finance for Nature

The ‘Greening Finance’ pathway is targeted at amending the (deeply embedded) fundamentals that have built the current financial sector in a step by step process, and/or impose governmental

regulations that ensures that all actors that actually benefit from healthy ecosystem services take their proportionate share of the costs.

As these fundamentals are much more rooted in habits, culture and mindset, these will take a longer timeline to develop, but will also (in the end) a more just, fair and deeply rooted change in society.

- Advocate and develop standards that include [longer term forward looking risk management \(and mitigation\)](#) strategies and models that include the (healthy) state of all ecosystem services and include these in regulatory frameworks as well.
- Advocate and develop [standards for valuation of all ecosystem services](#): Most of our current valuation practices are based on (backward looking) technologies, fixed assets and/or company dynamics. Valuation for ecosystem services (and probably also its underlying assets, such as land and forests) should be developed separately. Amend guidelines for valuation, to include the state of regulating ecosystem services and its characteristics.
- The former point will also need developments for [accounting standard](#) (depreciation/ appreciation principles). One of the interviewees stated that the dynamics would change if (commercial) companies would be encouraged to account for 'natural assets' in their balance sheet. Investments into these 'natural assets (which they meant to be ecosystem services, not so much the tangible assets) would be more beneficial as they were now become more tangible (and a value could be attached).
- More respondents mentioned that [capital intensive investments](#) (acquisition of arable land for example in NL) will probably need to be [funded in a different set-up](#) or through larger institutional/public finance, so that the companies that work with these assets (land, water, nature) can be financed via regular channels. Capital-intensive financing is a huge bottleneck (land ownership for example) to get new projects off the ground, as this materially lowers the return profile of projects. If the capital-intensive part could be funded separately, private parties could more easily finance business and projects on the ground. Respondents mentioned the government could play a role in this, because the government is in a better position to mobilize a lot of capital.
- Put requirements for investments by parties in the financial sector that have a clear social mission. [Request a commitment of 5-10% of the assets in such a fund that should flow towards restoration of ecosystems](#) (in combination with introducing a Green Ecosystem Bond by the government, so that this can be done in a risk/return acceptable way). The requirement of the French government to request pension funds to take a stake of 5-10% invested in Social Enterprise Qualified Assets is an example of such instrument.
- Once a green infrastructure is guaranteed (access to water, soil & nature, against impact-aligned fees), stakeholder that (in)directly benefit from restored landscapes can flourish again. A [contribution system](#) could be developed to share these costs proportionally. A comparison could be made with the experiences of the Waterschappen (Water Boards), and probably connected to the systems & methodologies they use as well (water & soil (and nature) guiding principles). Calculation of the [total value of regulating and supporting ecosystem services becoming the basis for the monetary contribution of parties](#) that (directly or indirectly) benefit from ecosystem services (depending on their practices and use of these services). Because of that reason, there is an incentive for parties to take adequate care of these resources, work in a circular, nature-inclusive way and align all their other practices accordingly.
- These same methodology could be adopted for the [Social Cost Benefit Analysis](#) (maatschappelijke kosten baten analyse, MKBA in NL) for large infrastructure and building

“Ultimately, we are almost going back to the foundations of our economy as it is now structured these are certainly questions to think about, but at the same time it is not a short-term change.”

projects, and also for at least the time period of the impacted ecosystem (with a default of 20 years).

6.5 Conclusions

In this chapter, we have explored what could be done to scale up finance in support of nature.

I am convinced that if you do give a duty to invest socially, then you should look at how you define that, that could really be a revolution.

First it was explained, supported by the insights of report by Commonland (2023) that investments in (regulating and supporting) ecosystem services are to be classified as a separate asset class, as they exhibit characteristics of 'grey' infrastructure, but also differentiating from 'grey' dynamics to justify a separate 'green infrastructure' asset class. It constitutes a tangible recognition that regulating ecosystem services provides a resilient foundation for our economy, for society and the stability of our financial sector. In addition, the correlation of such new asset class is probably negative towards other assets classes.

At the same time it is concluded that this is not a solution in itself: The introduction of a new asset class only makes sense if there is a government and/or regulator that supports and enforces the uptake of such new instrument (independent of the type of instrument), supplementing it with the introduction of other instruments. Voluntary efforts are less likely to provide the acceleration path needed to realise a material shift.

“For the coming 5 to 10 years, we still need a combination of making it fit in our financial system and investors to be provided with guarantees etc.”

For the 'Finance Change' path, a non-exhaustive list of instruments and elements were presented that can change the risk/return profile, as research and respondents agreed this to be the major hindrance for the private sector to invest.

Lowering the (perceived) risks for such investments, and/or increase the (perceived) return for such investments to support the financing for these kind of projects by private capital. By introducing these element, players within the financial sector are encouraged to build up the capacity and knowledge in this field. For this path, the fundamentals of the financial sector will broadly remain intact which will accelerate this transition, but will also (gently) stretch their comfort zone, assuming that for each of these instruments a reasonable 'skin in the game' is requested from these financiers, which will support them in still performing their assessments and understanding the dynamics.

The 'Greening Finance' pathway is targeted at amending the (deeply embedded) fundamentals that have built the current financial sector and/or impose governmental regulations that ensures that all actors that actually benefit from healthy ecosystem services take their proportionate share of the costs. A non-exhaustive list of possible topics and actions has been provided, of which the speed and way of introduction could be taken step by step, adapted to the urgency reflected by the state of ecosystem services and the capacity of the market to embrace these changes.

7. Conclusions and recommendations

In the last years, a lot of attention was given on the impacts of financial institutions on ecosystems. Standards, regulations and frameworks are being introduced to improve the awareness of those institutions, its regulators and the public audience for the impact of our economic and financial activities on ecosystem services. This is recognised and acknowledged by the financial sector, but developments in terms of targeting more finance in support of nature stagnates. For this report, the assessment has been done what financial instruments and other actions could be used to support more action by the private sector.

7.1 Insights and Conclusions

When looking at the abundance of research papers available that have analysed this topic, it should be concluded that most of the information is known to some extent, but not for all actors in the field, also not having the same understanding about the urgency and dynamics of the other players.

Looking at for example the calculation of monetary value of ecosystem services, we conclude that a lot can still be said about the gaps and omissions but overall these provide a calculated estimate of the impact. A lot of improvements can still be made in terms of cooperation and sharing data and experiences and resources which can improve the variance of the outcome, but this is not a justification for not taking action in this field.

If all institutions would use the information and act on it, the data and calculations will become better (as we have seen from the developments in illiquid instruments such as microfinance investments and renewable energy).

In terms of instruments, the short conclusion is that the largest share of it is still realised with public finance, leading to increased costs for society. The risk-return profile (for the established way of thinking about finance) is not very attractive and as there is more tension and anxiety present in society (leading to a risk averse attitude), it is unlikely that more finance will flow to nature if this is not supported by instruments that ease the pain.

“Ultimately, my impression is that it is at this moment not sufficiently worthwhile to invest in nature. There is no good cash flow for the parties, while a lot of money can be made by cutting down a forest and then building a farm on it.”

Most of the financial institutions are working on commercial terms (while acknowledging their ‘duty of care’), and will have to balance between ambitions and what is realistically viable within the current market dynamics on return (for shareholders, savings, pension holders and investments) and risk.

Most desk top research results and respondents agreed that for financing regulating ecosystem services, the large scale and optimal solution has not been found (yet). Most mentioned that they were looking for an overarching instrument that can fit all of the cases and had come to the conclusion that this approach was not going to work. Time and experiences and knowledge still has to be built up, even when supporting elements (as listed in chapter 6) have been introduced.

A number of instruments are discussed that provide some positive incentives, but it is more likely that a number of **initiatives will need to be introduced side-by-side** and amended with new elements for a first step towards an optimal solution. It should be noted, as some of the respondents pointed

out, that the way we perceive investments in microfinance institutions and renewable energy is already way different than where we were 30 years ago (where mainly philanthropic and public money was flowing towards these new developments). And we are still struggling, exemplified by the recent consultation of the Ministry of Finance around the measures needed for financial institutions to support (the transition to a better) climate.

To avoid the situation in which parties will feel forced to act (which will only increase resistance and anxiety), the elements to be introduced should at least involve ‘carrot and stick’ elements, and preferably elements that will request a concerted action.

It was noted that parties **point towards each other** to find the solution: The financial sector should take more initiative, the regulator should act on this, the government should take the first step and lead by example. This will not help to move forward, as all of these statements are true (and not a legitimate reason for any of these stakeholders not to move at the same time).

In the current market and social dynamics, this stalemate situation will worsen the problem around the state of regulating ecosystem services, and lead to an increase in the costs for a transition, and jeopardise well being of current and future generations.

The longer we wait, the more it will cost, the more complex it will become. We are entering a new era and have to understand how to adapt to these new circumstances.

“The same is true if we talk about natural capital, which is to be misunderstood by the capital markets just because of the wording there is a lot of misunderstanding, we're using the same words to meaning something differently. As humanity, I think we agree that we all want to continue to live on a planet that's worth living on and that really provides the resources we need to keep living here.”

7.2 Recommendations

The most important recommendations can be summarised as follows:

- Act now
- Act on different pathways
- Act together

Now: As it is still socially and legally accepted that it is ok for business and humanity to destroy ecosystems, every day longer will just increase the problem and increase the amount of money needed to restore the balance.

Different pathways: It is explained before that the fundamentals of our financial system basically work against financing nature. A fundamental shift is needed, but that will require more time and probably one or more generations to change. The Greening Finance pathway will require time and will be supported by positive examples if Financing Green is supporting a quick take up by the financial sector.

Together: We all benefit, we all make an effort. Stepping away from the commercial attitudes and work towards a more collaborative attitude will increase insights and lower risks. The ‘duty of care’ rests upon society.

“There is a lot of softening in the language. We have landed after a couple of years, because we need to bring lots of people together to deliver this. It cannot be seen as too much led by the government or too much led by the financial sector, because everyone (communities, landowners) need to understand this as well.”

This requires an ‘enabling environment’, in which stakeholders take a step to stretch their comfort zone and commit themselves to jointly find ways to move this forward.

Financial sector requirements have built up in the last decades based on strong industrial and technological developments, characterised by increased standardisation, predictability and scalability. In addition, every ‘crisis’ has led to increased regulations and rules, and a strong tightening of risk responses. Ecosystem requirements are fundamentally different and need a full reset of the current requirements.

By experimenting with diverse approaches, ‘willing’ stakeholders that have a profound interest to be a frontrunner in nature finance should be supported to gain valuable insights, improve their strategies and uncover new (better-matched) solutions. Through proactive learning and engagement, we draw closer to the core of what needs to be solved, navigating the complexities of nature financing with resilience and adaptability.

For realising such ‘enabling environment’, the following recommendations apply:

Regulatory Innovation Hub for Nature

For DNB, an ‘Innovation Hub’ has already been set up that provides support for innovative financial products. A Nature Finance expert could be added, as well as exploring options for a ‘regulatory sandbox’, of which the EU mentions that they consider this a reasonable action:

“For the European Union, regulatory sandboxes – i.e. regulatory test laboratories for innovations, in which major innovations can be tested in special cooperation with the authorities – are especially relevant in innovation policy due to its high regulatory density”.

Blended Finance x Nature

A Blended Finance expert desk is established within Invest NL. Add a Nature Finance expert to such team, or build such expertise centralised in a separate team.

Set up Facility for experimenting on practical solutions

Dedicate funds to support ‘experimental financing’ in a non-regulated environment (comparable to Invest NL and/or Nationaal Groeifonds) for regulated ecosystem services.

Introduce multi-disciplinary Community of Practice

- Alle relevant stakeholders involved will join and commit to a joint mission statement, with a certain timeline and deliverables.
- The CoP has a say on where & how the money from the earlier Facility is spent.
- Experimentation and learning is the main goal. Gain practical solutions and experiences that can guide all participants towards the future (for ecosystem services).
- Based on involvement of ‘subject matter experts’ from financial institutions, that have gained practical experience & a systems perspective, together with the same kind of expertise from ecology, regulatory & compliance, public authorities, lobbyists and community representatives.
- Pooling of:
 - o funding & resources to experiment: Funded through a blend of public and private (re)sources.

- insights to remove obstacles (of policies, laws & regulations)
 - identify effective responses or enabling solutions (for example a more detailed work out from the suggestions made in chapter 6).
- Definition of learning modules.

8. References & sources

AFME (2022), *Into The Wild: Why nature may be the next frontier for capital markets*. Accessed through < <https://www.afme.eu/publications/reports/details/into-the-wild-why-nature-may-be-the-next-frontier-for-capital-markets>>

ASN (2022), *Make Nature Count*. Accessed through <<https://www.asnbank.nl/nieuws-pers/investeren-in-de-natuur-loont-ook-voor-de-economie.html>>

ASN (2023), *Make Nature Count 2.0*. Accessed through <<https://www.asnbank.nl/nieuws-pers/neem-de-waarde-van-de-natuur-mee-in-financiele-besluitvorming.html>>

Atlas Natuurlijk Kapitaal (2023) *Welkom bij de Atlas Natuurlijk Kapitaal*. Accessed through <<https://www.atlasnatuurlijkkapitaal.nl/>>

Bertels, J. et al (2023) *Towards financing large-scale holistic landscape restoration in Europe*. Recommendations for EU policy actors to attain inspirational, social, natural and financial returns. A policy brief published by Commonland, The Nature Conservancy, Gold Standard & Climate-KIC.

Centraal Bureau voor de Statistiek (CBS, 2023), *Natural Capital*. Accessed through <<https://www.cbs.nl/en-gb/society/nature-and-environment/natural-capital>>

Convention on Biodiversity (2023), *Convention on Biological Diversity 2030 Targets (with Guidance Notes)*. Accessed through < <https://www.cbd.int/gbf/targets/>>

Daily, G. C. (1997), *Introduction: what are ecosystem services*. *Nature's services: Societal dependence on natural ecosystems*, 1(1).

Dasgupta, P. (2021), *The Economics of Biodiversity: The Dasgupta Review. Abridged Version*. (London: HM Treasury). Accessed through <https://assets.publishing.service.gov.uk/media/6014329ce90e076265e4d9ba/Dasgupta_Review_-_Abridged_Version.pdf>

De Nederlandsche Bank (2020), *Indebted to Nature – Exploring biodiversity risks for the Dutch financial sector*. Accessed through <<https://www.dnb.nl/media/4c3fqawd/indebted-to-nature.pdf>>

DRIFT (2023), *Waarde voor geld : Synthese transitiegesprekken financiële sectorI*. Accessed through <<https://drift.eur.nl/nl/publicaties/waarde-voor-geld-synthese-transitiegesprekken-financiele-sector/#:~:text=De%20publicatie%2027Waarde%20voor%20geld,verandering%20binnen%20de%20financi%C3%ABle%20wereld>>

Ecosystem Services Valuation Database (2023), *About us*. Accessed through < <https://www.esvd.info/about-1>>

ENCORE (2023), *About ENCORE*. Accessed through < <https://www.encorenature.org/en/about/about-encore>>

European Commission (2023), *Corporate sustainability reporting*. Accessed through < https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en>

European Commission (2023:2), *The Commission adopts the European Sustainability Reporting Standards*. Accessed through < https://finance.ec.europa.eu/news/commission-adopts-european-sustainability-reporting-standards-2023-07-31_en>

European Commission (2023:3), *Sustainability-related disclosure in the financial services sector*. Accessed through < https://finance.ec.europa.eu/sustainable-finance/disclosures/sustainability-related-disclosure-financial-services-sector_en>

European Investment Bank (2023), *Investing in nature-based solutions*. Accessed through < https://www.eib.org/attachments/lucalli/20230095_investing_in_nature_based_solutions_en.pdf>

European Parliament (2022), *Sustainable economy: Parliament adopts new reporting rules for multinationals*. Accessed through < <https://www.europarl.europa.eu/news/en/press-room/20221107IPR49611/sustainable-economy-parliament-adopts-new-reporting-rules-for-multinationals>>

Farber, S. C., Costanza, R., & Wilson, M. A. (2002). *Economic and ecological concepts for valuing ecosystem services*. *Ecological economics*, 41(3), 375-392.

Finance for Biodiversity Pledge (2023) *Home: Finance for Biodiversity Foundation*. Accessed through < <https://www.financeforbiodiversity.org/>>

IPBES (2019), *Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES secretariat, Bonn, Germany. <<https://doi.org/10.5281/zenodo.3831673>>

IPCC (2023), *AR6 Synthesis Report: Climate Change 2023 – IPCC*. Accessed through < <https://www.ipcc.ch/report/sixth-assessment-report-cycle/>>

IUCN (2020), *Global Standard for Nature-Based Solutions. A user-friendly framework for the verification, design and scaling up of NbS*. First Edition. Gland, Switzerland: IUCN.

KPMG (2022), *UK Sustainability Disclosure Requirements*. Accessed through < <https://kpmg.com/xx/en/home/insights/2022/10/uk-sustainability-disclosure-requirements.html>>

Millennium Ecosystem Assessment (2005), *Ecosystems and human well-being: Synthesis*. Accessed through < <https://www.millenniumassessment.org/en/index.html>>

PBAF (2023), *A Biodiversity Accounting Standard for the Financial Industry*. Accessed through < <https://www.pbafglobal.com/standard#standard-v-2023>>

PCAF (2023), *About PCAF*. Accessed through <<https://carbonaccountingfinancials.com/en/about#our-mission>>

RIVM (2022), *Ruimtelijke MKBA Alblasserwaard-Vijfheerenlanden. Waar is toepassing van drukdrainage maatschappelijk gezien rendabel?* Accessed through < <https://www.rivm.nl/publicaties/ruimtelijke-mkba-alblasserwaard-vijfheerenlanden-waar-is-toepassing-van-drukdrainage>>

SBTi (2023) *SBTi FLAG Project: New Implementation Timelines Announced*. Accessed through < <https://sciencebasedtargets.org/blog/sbti-flag-project-new-implementation-timelines-announced>>

SEEA (2023) *System of environmental economic accounting: Frequently asked questions*. Accessed through < <https://seea.un.org/content/frequently-asked-questions>>

Sustainable Finance Lab (2020), *A Nature Positive Dutch Financial Sector – The role of policy makers, supervisors and the private sector*.

Sutherland, I. J., Villamagna, A. M., Dallaire, C. O., Bennett, E. M., Chin, A. T., Yeung, A. C., ... & Cormier, R. (2018). *Undervalued and under pressure: A plea for greater attention toward regulating ecosystem services*. *Ecological Indicators*, 94, 23-32.

TNFD (2023) *Taskforce on Nature-related Financial Disclosures: About us*. Accessed through < <https://tnfd.global/about/>>

TNFD (2024), *TNFD Early Adopters*. Accessed through < <https://tnfd.global/engage/inaugural-tnfd-early-adopters/>>

Van Oorschot, M. & Kok, M. (2020), *Indebted to nature Exploring biodiversity risks for the Dutch financial sector*, Planbureau voor de Leefomgeving and De Nederlandsche Bank. Accessed through < <https://www.dnb.nl/media/4c3fqawd/indebted-to-nature.pdf>>

World Economic Forum (2020), *Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy*. Accessed through < <https://www.weforum.org/publications/nature-risk-rising-why-the-crisis-engulfing-nature-matters-for-business-and-the-economy/>>

World Wildlife Fund (2022), *Wildlife populations - mammals, birds, amphibians, reptiles and fish - have seen a devastating 69% drop on average since 1970, according to WWF's Living Planet Report (LPR) 2022*. Accessed through <https://www.wwf.eu/?7780966/WWF-Living-Planet-Report-Devastating-69-drop-in-wildlife-populations-since-1970>