

BIODIVERSITY – OPPORTUNITES AND RISKS FOR CREDIT INSTITUTIONS

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Abstract: *Sustainability and the implementation of ESG aspects are not only becoming increasingly important in general, but in particular – due to the public interest and corporate responsibility of companies – in the economy. In addition to climate/climate change, which is currently by far the most important issue, the topic of biodiversity, or the progressive loss of biodiversity, is gradually moving into the focus of economic players. The implementation of sustainability aspects and the associated transformation of companies' business models require sufficient time and financial resources. To ensure that the economic transformation not only progresses on the topic of climate, but that the topic of biodiversity is also given sufficient consideration, credit institutions, as financiers of the economic transformation, have a key role to play. So, on the one hand, credit institutions are influenced by the decline in biodiversity and its effects and, on the other hand, can play an influential role in the direction of a biodiversity-positive economy. Based on scientific research, the fundamentals of biodiversity and the status quo of the topic of biodiversity, including its economic implications, are presented. The scientific findings are then used, among other things, to identify the opportunities arising from the consideration of biodiversity and the biodiversity risks for credit institutions, including the formulation of practical recommendations for action.*

Keywords: *Biodiversity, Credit Institutions, Opportunity and Risk Management, Sustainability*

INTRODUCTION

Biodiversity is one of the most valuable assets on our planet. Its conservation is of central importance for securing our future, as biodiversity is the basis for all vital resources and processes (Bundesministerium für Bildung und Forschung 2022). Compared to the great importance of climate protection aspects, the protection of ecosystems and biodiversity continues to play a subordinate role in the economy. Nevertheless, credit institutions are addressing the issue of biodiversity for various reasons. On the one hand, they contribute to sustainable transformation through their investment and financing activities by providing capital for environmentally friendly economic activities. On the other hand, credit institutions are also directly affected by biodiversity risks. Similar to climate risks, biodiversity risks can have a negative impact on individual companies, sectors and entire economies, which ultimately also affects financial institutions. However, it is important to consider the opportunities as well as the risks. Companies and especially financial institutions that have a positive impact on nature or whose activities do not harm the environment can benefit from additional opportunities (Bankenverband 2023).

It turns out that credit institutions are highly dependent on the effects of biodiversity loss, as their borrowers are mostly dependent on the ecosystem services provided by nature. This paper aims to present the current state of scientific knowledge on the risks for credit institutions from the progressive loss of biodiversity on the one hand and the opportunities arising from a proactive approach to the topic of biodiversity, including a biodiversity-positive orientation of the business activities of credit institutions, on the other.

RESEARCH METHODOLOGY

The research methodology comprises several steps. In the first step, the scientific, general principles of biodiversity are presented. Afterwards, the economic implications of the topic of biodiversity and the progressive loss of biodiversity for credit institutions are then outlined on the basis of scientific literature and relevant e-resources. The scientific findings will then be used to highlight the opportunities arising from the consideration of biodiversity and the biodiversity risks for credit institutions on the basis of existing scientific literature and relevant e-resources on the one hand and, on the other hand, to determine perspectives and make recommendations. The “Results” section is divided into several sub-chapters: Fundamentals of biodiversity, Economic implications of biodiversity, Biodiversity risks for credit institutions, Opportunities for credit institutions from the consideration of biodiversity.

The scientific findings are thus supplemented by the practical experience of the author (a long-standing employee in the sustainability management at a globally active credit institution, located in Germany, “*Norddeutsche Landesbank*” [NORD/LB]) and provided with recommendations for the practical implementation of biodiversity aspects in credit institutions.

RESULTS

Fundamentals of biodiversity

Biodiversity fits into the general sustainability context of the three sustainability dimensions (Kropp 2018, 5). Biodiversity is categorised in the ecological sustainability dimension (alongside the economic and social sustainability dimension), as the preservation of nature is to be achieved through climate protection and the preservation of biodiversity, among other things (Wittig/Niekisch 2014, 535-536).

Biodiversity as a term was initially created as an artificial word by combining the two terms “biological diversity” and has a dual meaning. On the one hand, biodiversity describes the variety of life forms on earth; on the other hand, biodiversity is an asset worth protecting that is threatened by progressive loss. In the meantime, the protection, preservation and positive influence of biodiversity has become more present than it was a few years ago (Weber 2018, 6-8). The Convention on Biodiversity was adopted at the “United Nations Conference on Environment and Development” in 1992, and since then the concept of biodiversity has been scientifically consolidated and the frequency with which it is mentioned has increased significantly (Wittig/Niekisch 2014, 4).

Biodiversity thus describes the variability of all living organisms and the ecological complexes to which they belong. Biodiversity is divided into three levels: the diversity of ecosystems (e.g., habitats), the diversity of species and the genetic variability within these species (Stinglwagner/Haseder/Erlbeck 2016, 102).

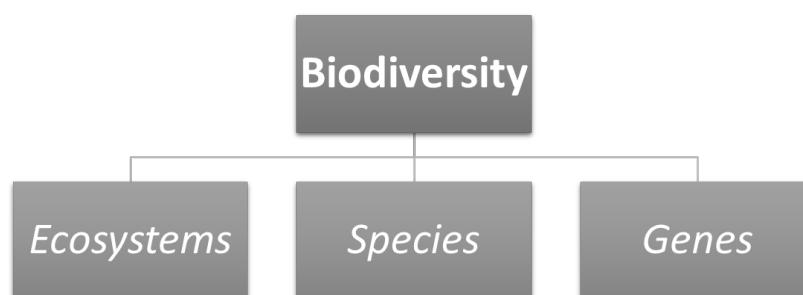


Fig. 1. The three sub-areas of biodiversity.

Furthermore, biodiversity is directly linked to climate change, as the two issues are mutually complementary and interdependent. The preservation of biodiversity is a fundamental prerequisite for the success of both climate protection and adaptation to the effects of climate change. Healthy ecosystems act as important carbon sinks and reduce the impact of extreme weather events. They also ensure the continuous provision of essential ecosystem services such as clean water and fresh air for the entire population. Biodiversity increases the likelihood that a sufficient number of species will find suitable

habitats even under changing climatic conditions. Thereby, healthy ecosystems are less vulnerable to the already present effects of climate change (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung 2022). Thus, the impacts of climate change have particularly strong effects on biodiversity conservation (Gies 2018,178).

Economic implications of biodiversity

Biodiversity is not only an ecological factor besides many others, but it also has far-reaching economic implications. The continuing loss of biological diversity has diverse impacts on the global economy. In fact, each loss of biodiversity is also accompanied by an economic loss, seen on a global scale. Although climate change has been by far the most prominent issue in the media and society for more than a decade and remains at the top of the global agenda for economic actors, the rising threat posed by the increasing loss of biodiversity is gaining more attention in the media, society and economy. According to the latest numbers of the World Economic Forum, more than half of the global gross domestic product depends on functioning ecosystems (Boston Consulting Group 2021, 3).

The monetary value of biodiversity significantly exceeds that of the global gross domestic product. Ecosystem services provided by intact biodiversity are estimated to have an annual value of 170 to 190 trillion US dollars. Economic activities are the primary drivers of biodiversity loss. The decline in biological diversity results in annual losses of up to 30 trillion US dollars. Particularly significant contributors to this loss, accounting for about 60 percent, include agriculture, forestry, infrastructure expansion, resource extraction, and industrial production. The value creation in the sectors of agriculture, forestry, and fisheries, which amounts to approximately 3.5 trillion US dollars globally, is critically dependent on functioning biodiversity for soil fertility, pollination, and resource provision (Naturschutzbund Deutschland 2020).

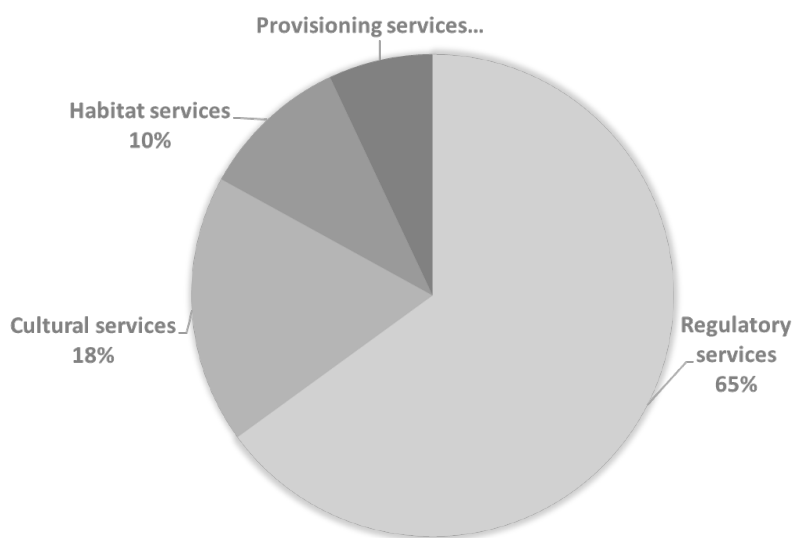


Fig. 2. Monetary value of ecosystem services.

Additionally, it is not only sustainability factors such as biodiversity that have an impact on the economy, but also vice versa companies can influence sustainability in the form of their corporate social responsibility. At the centre of corporate social responsibility is the sustainable action of economic players to solve social problems, as the implementation of sustainability also has positive economic implications (Schmidpeter 2012, 1). Thereby, especially financial institutions are exposed to risks associated with biodiversity loss through their investments, financing, and insurance activities. Any reduction in biodiversity, and consequently the ability of nature to provide ecosystem services, negatively impacts these institutions financially. This can manifest as increased insurance claims, investment losses, or loan

defaults (World Wide Fund for Nature 2023).

Biodiversity risks for credit institutions

As shown in the previous section, the progressive loss of biodiversity is leading to increasing risks for credit institutions. Thus, the worsening biodiversity crisis is making banks aware of their high dependence on ecosystem services. However, this has so far hardly been reflected in the risk banks, however, has so far hardly or mostly insufficiently recognised. Biodiversity risks can have an impact on existing risk types and cause financial losses. Nevertheless, the level of knowledge and implementation on the topic of biodiversity at financial companies in Germany still has considerable room for improvement.

The risks associated with an increasing loss of biodiversity for financial institutions can be categorized as follows (Price Waterhouse Coopers/World Wide Fund for Nature 2022, 8–39).

Table 1. Biodiversity risks for financial institutions

Biodiversity Risk Categories			
<p><u>Physical Risks:</u> These involve damage to assets and infrastructure, as well as negative impacts on supply chains and business processes</p>	<p><u>Transition Risks:</u> These arise from changes at the regulatory, legal, technological, or market level due to the loss of biodiversity, leading to legal and reputational risks</p>	<p><u>Systemic Risks:</u> The decline in biodiversity and associated ecosystem services can pose a threat to the stability of the entire financial system</p>	<p>Legal Risks: Legal disputes relating to biodiversity loss and violations of the underlying legal framework and, among other things, potential greenwashing risks</p>

Biodiversity risks are at least as important as climate risks in terms of their potential impact on financial stability. Therefore, it is essential to address these risks within the internal risk management of financial institutions. A significant challenge is that, unlike climate risks, which are often measured by CO2 emissions, there is no dominant metric for measuring and managing biodiversity risks. Instead, multiple factors, such as nitrogen or phosphorus pollution and greenhouse gas emissions, play similarly important roles. For regulatory authorities, biodiversity risks currently play a less significant role compared to climate risks. However, the European Central Bank and the Network for Greening the Financial System have indicated that these risks will be treated with similar importance to climate risks in the future, with the ECB aiming for this by the end of 2024 (Dietz 2023, 216).

In the future, regulatory requirements and stakeholder expectations will require greater consideration of biodiversity aspects unavoidable for financial companies (Price Waterhouse Coopers/World Wide Fund for Nature 2022, 8)

In addition to the risks, it is also important to present the potential opportunities of biodiversity-positive change for credit institutions.

Opportunities for credit institutions from taking biodiversity into account

Insofar as credit institutions consistently take biodiversity aspects into account, there are various opportunities to align financial flows with biodiversity objectives and thus exert a positive influence on the protection and restoration of biodiversity. Financial opportunities exist, among other things, in the context of realigning the biodiversity impact of credit institutions by increasing efficiency and reducing costs if transitory opportunities are utilised. Credit institutions can and must finance the necessary economic transformation and channel cash flows in a targeted manner in order to achieve a nature-positive

economy. In addition, credit institutions have opportunities in product development that strategically incorporate biodiversity (Naturschutzbund Deutschland 2022, 50–55).

In order to utilise opportunities, biodiversity aspects generally require biodiversity management that formulates and addresses the opportunities based on the risks. In exemplary biodiversity management, the risks from biodiversity must first be recognised and then the effects on biodiversity must be evaluated and compensatory measures taken. Not only the company's own operations, but all business activities are included in the scope of the measures. Formulating biodiversity targets from the perspective of what needs to be done to avoid risks allows opportunities to be seized from the implementation of biodiversity aspects (Imboden/Moczek 2015, 10).

When dealing positively with biodiversity aspects in credit institutions in order to generate opportunities, it is important to mention that offsetting measures and mitigation should not be the means of choice for credit institutions. Rather, it is about the biodiversity-positive alignment of their own business model and business activities as well as minimising the negative effects of these on biodiversity. The biodiversity-positive business operations of credit institutions should be embedded in a generally fully ecologically sustainable business operation (Carroll/Bayon/Fox 2008, 223).

In general, the realisation of a nature-positive economy opens up various opportunities for banks. However, banks are lagging behind when it comes to corresponding initiatives and product developments. Ten trillion US dollars in annual market volume is associated with the transformation to a nature-positive economy, according to the World Economic Forum. One focus is on more sustainable agriculture. In addition, also biodiversity-focussed financial products (e.g., funds, bonds, insurance solutions) are being created (Price Waterhouse Coopers/World Wide Fund for Nature 2022, 8).

FINDINGS/DISCUSSION

It can be seen that biodiversity and the ongoing loss of biodiversity have arrived in the economy, even though climate change continues to be the dominant topic in the implementation in the economy and in credit institutions. The impact of biodiversity loss on credit institutions and the influence of credit institutions on a biodiversity-positive economy can be high, although implementation in credit institutions could be faster and more consistent than is currently the case. Focusing solely on the issue of climate change leads to significantly higher risks in the long term than would be/is the case if biodiversity were taken into account at an early stage. Thereby, the measures implemented by the credit institutions can have a mostly positive influence on climate change and thus vice versa on the progressive loss of biodiversity or reduce it. Nevertheless, some measures implemented by banks that have a positive impact on climate change also have a negative impact on biodiversity (e.g., the large-scale construction of onshore and offshore wind farms and the associated land-use change).

Furthermore, it can be seen that the coverage of biodiversity on the risk side is significantly more advanced than the coverage and consideration on the opportunity side in the credit institutions. One of the reasons for this is that regulation always plays a formative and influential role for credit institutions at an early stage and the opportunities arising from the proactive implementation of biodiversity aspects in credit institutions have not yet been highlighted to the same extent as the risks. One reason for this is that the business and use cases for biodiversity are not yet available in the same form as for the topic of climate. If the topic of biodiversity is to be implemented in credit institutions in an opportunity-orientated manner, targets and metrics are required, as are already available for the topic of climate.

CONCLUSION

Biodiversity is an issue that is gradually taking on added importance in the shadow of climate change – in society, in the economy and in general, whereby the significance and consequences of the ongoing loss of biodiversity must be clearly emphasised. The economic implications of biodiversity loss are enormous, as the economy is highly dependent on ecosystem services. This dependence in turn has an impact on the financing portfolio of credit institutions, which finance customers dependent on ecosystem services. Credit institutions can and must have a steering effect in the direction of a biodiversity-positive economy through their lending in the form of transformation financing. The risks of biodiversity loss

manifest themselves directly in the form of various types of risk in the portfolios of credit institutions, whereby it is foreseeable that the regulatory requirements for credit institutions will also increase in this context. In addition to the risks, the opportunities arising from a proactive approach to biodiversity must be emphasised for credit institutions, although these must be more clearly highlighted and addressed in the future.

In addition, it is clear that it is not only the regulator or the supervisory authority that is required to monitor the topic of biodiversity in general and in particular in credit institutions more closely and to support it through appropriate regulation, but that politicians must also send a clear signal in the direction of a biodiversity-positive economy (e.g., through subsidies or support programmes), which supports credit institutions in financing the biodiversity-positive transformation of the economy in order to emphasise the potential opportunities of implementing biodiversity aspects at the outset.

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БИОРАЗНООБРАЗИЕ – ВЪЗМОЖНОСТИ И РИСКОВЕ ЗА КРЕДИТНИТЕ ИНСТИТУЦИИ

Резюме: Устойчивостта и прилагането на аспектите на ESG придобиват все по-голямо значение не само като цяло, но и в частност – поради обществения интерес и корпоративната отговорност на дружествата – в икономиката. В допълнение към темата за климата/климатичните промени, която в момента е безспорно най-важната, темата за биоразнообразието или за постепенната му загуба постепенно преминава във фокуса на икономическите участници. Прилагането на аспектите на устойчивото развитие и свързаната с тях трансформация на бизнес моделите на компаниите изискват достатъчно време и финансови ресурси. За да се гарантира, че икономическата трансформация напредва не само по темата за климата, но и че темата за биоразнообразието също се разглежда в достатъчна степен, кредитните институции, в качеството си на финансисти на икономическата трансформация, трябва да играят ключова роля. Така че, от една страна, кредитните институции са повлияни от намаляването на биоразнообразието и последиците от него, а от друга страна, могат да играят влиятелна роля в посока на икономика, която е положителна за биоразнообразието. Въз основа на научни изследвания са представени основите на биоразнообразието и статуквото на темата за биоразнообразието, включително икономическите последици от него. След това научните открития се използват, наред с другото, за определяне на възможностите, произтичащи от отчитането на биологичното разнообразие, и на рисковете, свързани с биологичното разнообразие, за кредитните институции, включително за формулиране на практически препоръки за действие.

Ключови думи: биоразнообразие, кредитни институции, управление на възможностите и риска, устойчивост

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