MEB'S REPORT
N°56 JUIN 2025

FROM EVALUATION TO ACTION

NO-REGRET MEASURES TO MITIGATE AGRICULTURAL BIODIVERSITY RISKS

Table of content

PUBLICATION OF THE *MISSION ECONOMIE DE LA BIODIVERSITÉ*, FINANCED BY THE *BANQUE DES TERRITOIRES (CAISSE DES DÉPÔTS)*.

REFERENCE: CDC BIODIVERSITÉ & WORLD BENCHMARKING ALLIANCE (2025), FROM EVALUATION TO ACTION: NO-REGRET MEASURES TO MITIGATE AGRICULTURAL BIODIVERSITY RISKS, BONNET, J., GODEFROY, E., HARRIOTT, N., LEE, M., PIÑA, D., MISSION ÉCONOMIE DE LA BIODIVERSITE, PARIS, FRANCE, 44 P.

Foreword

Jenni Black
Nature Transformation Lead at WBA

There are a few things which unite everyone on the planet. But every single one of us needs food.

Biodiversity and ecosystem services underpin the long-term resilience of the global food and agriculture sector. For instance, healthy ecosystems provide 75% of global freshwater resources – a resource which the sector relies heavily upon. Likewise, 75% of global food crops rely on pollinators, contributing US$ 235–577 billion annually to global agricultural output (IPBES 2016).

At the same time, the sector itself is a leading driver of biodiversity loss. Food and Agriculture is currently responsible for up to 90% of global deforestation, and unsustainable practices including the excessive use of chemical inputs is driving the degradation of soil health.

This creates a dual challenge for companies operating across the food and agriculture value chain. There is evidence of growing awareness of the importance of biodiversity, such as the fact that there was a sharp increase in the number of businesses who attended CBD COP16 in Colombia in 2024, compared to the previous COP15 in 2022.

The path to a more resilient food system, however, requires more than just awareness - it demands action.

Leading companies around the world are already implementing biodiversity-positive practices - companies from almost every continent and part of the value chain feature among the top 25 in our latest Food and Agriculture Benchmark.

These efforts need to be scaled up urgently. To make evidence-based decisions, businesses must adopt robust risk assessments, set science-based targets aligned with global frameworks such as the Kunming-Montreal Global Biodiversity Framework, and incorporate environmental safeguards into their operations. These no-regret actions help to ensure long-term sustainability and resilience, while also meeting growing regulatory, consumer, and investor expectations.

This report offers actionable insights on the current performance and practice of food and agriculture companies, and how they can proactively address biodiversity risks and capitalise on the opportunities from a transition to more nature-friendly practices.

Biodiversity is not a peripheral issue. It is a core business consideration which until now has been mistakenly taken for granted.

Companies who act now, and commit to a comprehensive, structured approach that involves identifying high-risk commodities, setting quantifiable targets, and learning from and implementing leading practices, will be better positioned to navigate the transition to a nature-positive economy, enhance food security, and create long-term value for business and society.

A word from the chairwoman

Marianne Louradour
Chairwoman of CDC Biodiversité

Biodiversity and agriculture are deeply intertwined, with farming both relying on and impacting ecosystems. Its influence extends far beyond the food industry, affecting a wide range of sectors that depend on agricultural ingredients, including cosmetics, chemicals, and textiles. As we look toward the future, it is clear that the choices we make today in our agricultural practices will shape the sustainability of our planet for generations to come.

At CDC Biodiversité, the Food and Agriculture sector has long been a priority. Since our creation, we have dedicated resources and expertise to understanding and addressing its impact on biodiversity. The launch of the Global Biodiversity Score (GBS) in 2020 marked a significant step forward, providing transparent and accessible methodologies to assess the biodiversity footprint of crops and livestock (CDC Biodiversité 2020a; 2020b).

In 2023, we took another step forward through pilot programs led by UNEP-FI, working alongside Crédit Agricole S.A., Amundi Asset Management, and OFI Invest to test the Task Force on Nature-related Financial Disclosures (TNFD) framework. These pilots, focused on both farmers and food companies, reinforced our conviction that understanding and mitigating the sector's biodiversity impacts and dependencies is essential for a more sustainable future. This work expanded in 2024 with new projects with L'Oréal and Hermès, two companies facing significant upstream biodiversity challenges.

Beyond this work on impact measurement, the agriculture sector is also a priority for the Mission Économie de la Biodiversité (MEB), an initiative piloted by CDC Biodiversité to explore the key challenges connecting the economy and biodiversity. In June 2023, we launched AgriBEST®, a free and user-friendly application developed with La Coopération Agricole Ouest to help farmers assess their practices and biodiversity impact (CDC Biodiversité 2022; 2023a). This initiative reflects our ongoing commitment to providing practical, real-world resources that empower stakeholders at every level.

Looking ahead, 2025 will be a pivotal year for CDC Biodiversité, with an intensified focus on the Food and Agriculture sector. Our B4B+ Club, composed of over 50 companies, financial institutions and consultancies to share best practices around biodiversity footprint is dedicating additional resources to the sector this year. This notably includes thematic working groups and an updated sectoral factsheet, with key areas of focus such as certification labels and regenerative agriculture. Additionally, we will continue to refine and improve our crops and livestock methodologies to enhance the evaluation of sector-specific impacts.

As we share this publication, we are thrilled to offer tangible resources that provide concrete actions for various actors in the sector. Whether you are a company, a financial institution, or a public authority, we believe the insights and tools in this publication will guide you toward making meaningful contributions to the preservation of biodiversity.

Key insights

This publication serves as a practical guide to help stakeholders in the Food and Agriculture sector in their first steps toward biodiversity-related risks mitigation. By assessing high-risk sub-industries and commodities and providing a framework for risks evaluation, it aims to empower companies, investors and public authorities to identify their risks. Finally, best practices are provided to lay the foundations for robust biodiversity strategies in the Food and Agriculture sector.

Key messages

Food and Agriculture companies currently fail at addressing their biodiversity-related risks. The World Benchmarking Alliance's Nature and Food and Agriculture Benchmarks (World Benchmarking Alliance 2024a; 2024b) show that companies in the sector are falling short in effectively identifying and managing their physical and transition risks, which poses significant threats to their long-term viability. These findings emphasise the need for the sector to have access to relevant methodological resources to tackle these challenges.

The Food and Agriculture sector faces significant exposure to physical and transition risks due to its high dependency on ecosystem services and its biodiversity impacts. The highest dependencies are borne by the crop sub-sectors, whereas cattle-related activities have the greatest impact for equal sales. However, this result is strongly influenced by the impact of crops used to feed livestock. Each economic player should therefore give priority to actions on the crops requiring the most land use in its value chain, or failing that, the commodities that are used the most in it.

Identifying high risk commodities in regards with various biodiversity facets is crucial to manage the value chain of food companies. At global level, work needs to be done to maximise the condition of ecosystems in the fields of the most widely cultivated cereals, such as maize and wheat. Intensive monoculture, such as oil palm or sugar cane, should be studied for their interactions with regions of high biodiversity significance and home to numerous threatened species.

No-regret actions need to be implemented to reduce risks. These actions should be grounded in a thorough and robust risk assessment to ensure effectiveness. Setting clear, quantified targets aligned with global frameworks provides a strong foundation for success. Additionally, incorporating environmental safeguards is crucial to minimise unintended consequences and promote long-term resilience.

The complex overlap of biodiversity-related risks within the Food and Agriculture sector emphasises the importance of a structured approach for assessing and prioritising these risks. A framework to evaluate risks based on likelihood and magnitude is suggested to provide companies and financial institutions with resources to focus on the most critical threats and identify mitigation strategies. Concrete examples of risk evaluation demonstrate how such frameworks can be applied at operational level.

THE GLOBAL BIODIVERSITY SCORE (GBS) IN SHORT

This publication is based on numerous results obtained with the Global Biodiversity Score (GBS), a tool created by CDC Biodiversité. The GBS allows organisations to measure the biodiversity impacts and dependencies of operations and value chain. **This section aims to remind the GBS main features to readers already somehow familiar with it**. For a more comprehensive introduction, readers are invited to refer to the 2017, 2019, 2020, 2021, 2023 and 2024 reports (CDC Biodiversité 2017; 2019; 2020c; 2021b; 2023a; 2024).

Impact measurement

The GBS is a **biodiversity footprint assessment tool**: it can be used to evaluate the **impact** or **footprint** of companies and investments on biodiversity, more specifically on **ecosystem condition**. The results of assessments conducted with the GBS are expressed in the MSA.km² **unit** where MSA is the Mean Species Abundance, a **metric** expressed in % characterising the intactness of ecosystems, integrated on an impacted surface (in km²). MSA values range from 0% to 100%, where 100% represents an undisturbed pristine ecosystem.

In order to break down impacts across the value chain and avoid double-counting, the GBS uses the concept of **Scope**, or value chain boundary. To account for impacts lasting beyond the period assessed, GBS results are further split into **periodic gains/losses** or **dynamic** – occurring within the period assessed – and **accumulated negative** or **static** - persistent - impacts.

The GBS links **economic activity** to **pressures on biodiversity** and translates these pressures into biodiversity impacts, using state of the art and transparent scientific knowledge. The tool uses company specific data on turnover, purchases or pressure-related, such as land use changes or greenhouse gas emissions. The GBS currently covers direct operations and upstream impacts ('cradle to gate') on terrestrial and aquatic (freshwater) biodiversity.

How to interpret the results?

A terrestrial static impact of 10 MSA.km² means that the accumulated negative impact caused by the activity on terrestrial ecosystem is equivalent to the total destruction of 10 km² of natural ecosystems.

Dependency on ecosystem services

The Global Biodiversity Score also evaluates industries' dependency on biodiversity by **quantifying their reliance on 21 ecosystem services** (see in Appendix, p.40) and assigning a dependency score expressed as a percentage.

GBS relies on the ENCORE database to assess **direct dependency**, which measures the extent to which production processes depend on ecosystem services. **Upstream dependencies,** which take into account the dependency of a sector's entire supply chain on ecosystem services, are calculated by additionally integrating the EXIOBASE input-output model.

How to interpret the results?

A sector demonstrates varying dependency on each ecosystem service, ***with scores ranging from 0% (no known dependency) to 100% (very high dependency)****. The average dependency score represents the mean of these dependencies across all ecosystem services, providing a comprehensive measure of the sector's overall reliance.*

1 Introduction: the complex relationship between nature and agriculture

Our planet is currently witnessing a massive erosion of biodiversity. This decline poses **profound risks to economic activities**, as it disrupts ecosystem services that are indispensable across all sectors. The Food and Agriculture sector is **particularly vulnerable** as its activities are deeply intertwined with nature.

1.1 Dependencies on nature and contribution to biodiversity decline

The sector **relies heavily on ecosystem services** to sustain its operations, leading to high dependencies on nature. Especially, the industries in the cultivation of crops and animal production sector show very high dependency on various ecosystem services, including services linked to water supply, soil quality, climate regulation, biological control and more famously pollination.[1]

Alongside this dependency, the Food and Agriculture sector is **the leading driver of biodiversity loss**. The negative effects of agricultural production on ecosystems are widely documented, and driven by several pressures such as overexploitation, pollution, and land use change. For instance, agriculture accounts for 27% of global greenhouse gas emissions (WWF 2020) and 72% of freshwater withdrawals (FAO 2023a). In 2021, 37% of the world's land area was devoted to agriculture (FAO 2023b).

This translates into the total biodiversity impact of the sector: when measuring our global impact on ecosystem condition[2] using the Mean Species Abundance (MSA) metric, the Food and Agriculture sector is the **sector with the highest terrestrial accumulated negative impact**. With a Scope 1 impact of 28 million MSA.km², the sector is responsible for an impact equivalent to the total destruction of 20% of the world terrestrial surface, which is the size of South America and the United states combined, as illustrated in Figure 1.[3] This high impact makes it the biodiversity equivalent of the Oil and Gas sector for climate. However, unlike the Oil and Gas sector, **the world cannot transition away from needing food**: the Food and Agriculture sector will therefore need to transform how it operates to substantially reduce its impact.

(1) Source: GBS 1.4.10, CDC Biodiversité
(2) More information on ecosystem condition and the different facets of biodiversity to consider when assessing impacts is available in CDC Biodiversité's publication (CDC Biodiversité 2024).
(3) Source: GBS 1.4.8, CDC Biodiversité

Figure 1 - Surface equivalent to the terrestrial accumulated negative impact of the Food and Agriculture sector. Only Scope 1 impacts are considered here, to avoid double counting. The impacts due to metal ecotoxicity are excluded due to a greater uncertainty. Source: GBS 1.4.8, CDC Biodiversité

1.2 The dual nature of biodiversity risks: interlinked physical and transition risks

The sector is directly and intimately connected to the natural environment. It relies heavily on biodiversity for critical ecosystem services but agricultural activities are also a major driver of biodiversity loss. This **dual dynamic creates an intricate relationship** between the sector's impacts on biodiversity and dependencies upon ecosystem services: the areas most impacted by environmental degradation often coincide with those on which the sector most heavily depends for essential ecosystem services, **amplifying vulnerabilities** (see Figure 2).

The impacts on biodiversity and the dependencies on ecosystem services are inherently linked to both transition and physical risks. The **impacts on biodiversity primarily drive transition risks** because the sector's negative effects on the environment—such as habitat destruction, pesticide use, and overexploitation of resources—are likely to attract increased regulatory scrutiny, consumer pressure, and market shifts towards more sustainable practices. On the other hand, the **sector's dependencies on ecosystem services are closely connected to physical risks**. If these services such as pollination, soil fertility, or water regulation are compromised due to biodiversity loss or ecosystem degradation, the sector faces direct physical risks in the form of reduced crop yields, more frequent extreme weather events, or the spread of pests and diseases. The more reliant the sector is on these services, the more exposed it is to physical risks.

- **Physical risks** represent the economic costs and financial losses stemming from the degradation of nature and the subsequent loss of ecosystem services that business rely upon (CISL 2021). These risks may be chronic – such as gradual declines in pollinator populations affecting crop yields or the loss of soil fertility – or acute, including extreme weather events and pest outbreaks.
- **Transition risks** result from a misalignment between an organisation strategy and management and the changing regulatory, policy or societal landscape in which it operates (NGFS 2021). These risks can lead to drive up production costs, restrict access to resources, alter market demand and require costly adaptation in practices, particularly for activities harmful to biodiversity, as they become subject to stricter regulations, shifting market dynamics, and evolving consumer expectations.

The interdependence between impacts and dependencies makes the sector highly vulnerable and intertwines the associated risks. Physical risks often act as catalysts for transition risks. For example, increasing water scarcity due to prolonged droughts may lead to stricter water usage regulations or necessitate costly adaptations in agricultural practices.

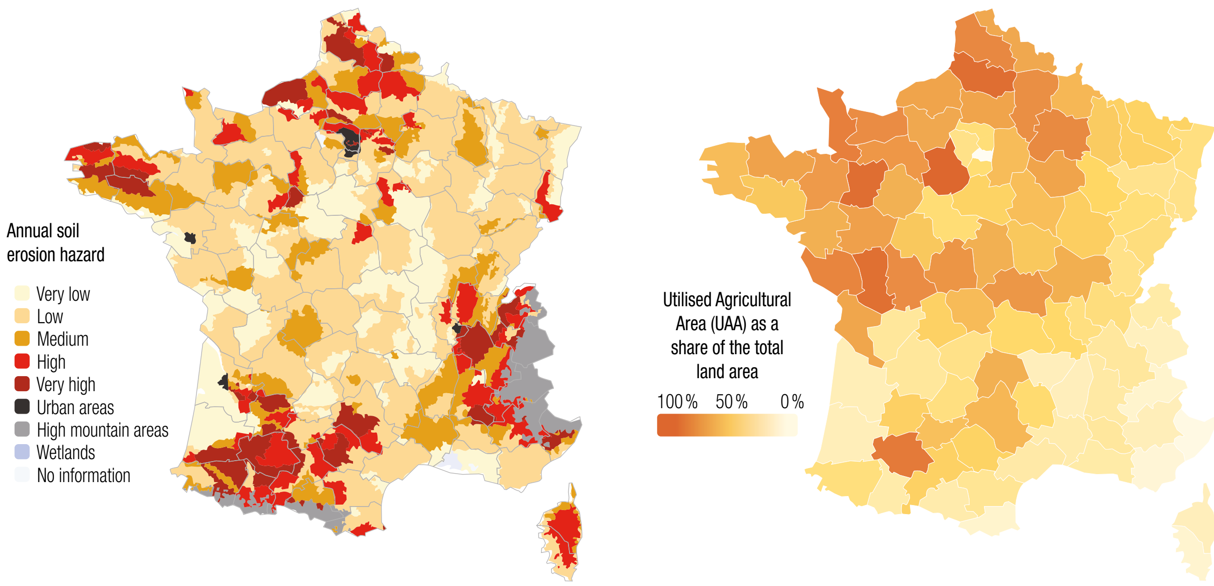


Figure 2 - On the left, the map shows the soil erosion hazard (Gis Sol 2011) and on the right, the proportion of land area used for agriculture in France (Agreste 2020). The regions most affected by the risk of soil erosion – due to factors such as monocultures, intensive ploughing or excessive use of chemical products – are also those with the highest concentrations of arable land, and therefore the most dependent on ecosystem services linked to soil quality (notably the north and the south-west of France).

1.3 Risk assessment and proposed action framework

Given these intertwined risks, evaluating the vulnerability of the sector is crucial for enhancing resilience. A **thorough risk evaluation** provides a clearer understanding of potential threats, allowing stakeholders to identify key challenges and take proactive steps to mitigate them effectively.

Several reports already analyse qualitatively the Food and Agriculture sector's impacts and dependencies on biodiversity, such as work from the TNFD (TNFD 2024), ENCORE or the SBTN. CDC Biodiversité's previous work on the sector was focused the quantification of these impacts and dependencies, for example through the Agriculture and Agrifood benchmark factsheet (CDC Biodiversité 2021a). This publication seeks to go one step further, by **proposing a risk assessment framework to initiate actions from companies, investors and public authorities**. This framework uses quantified impacts and dependencies to assess nature-related risks and their manifestations, define high-risk commodities and industries and analyse key physical and transition risks. **Each section ends on practical guidance** for taking effective actions, tailored to public authorities, financial institutions, and companies. The publication concludes with a proposal of four different steps to be followed to define a biodiversity strategy.

Finally, it is important to keep in mind that this publication covers the **challenges facing the sector from a biodiversity perspective**, and that the proposed actions based on biodiversity risks must be balanced against the risks to human health, food, local economy and farmers' incomes for example, aspects which are not included here. Moreover, no measure is ever perfect, especially in a domain as complex as biodiversity. However, the goal is **to enable pragmatic action for economic actors** by identifying no-regret measures to mitigate agricultural biodiversity risks.

© Petro Perutskyi

2 Identifying and managing risks: Food and Agriculture companies fall short

The World Benchmarking Alliance has assessed the performance of **350 of the world's most influential Food and Agriculture companies** in its Nature and Food and Agriculture Benchmarks (World Benchmarking Alliance 2024b; 2024a). Concerningly, the analysis shows that currently, **companies in the Food and Agriculture sector are falling short in addressing biodiversity-related risks**, which poses significant threats to their long-term viability. Despite the sector's heavy reliance on ecosystem services like pollination and soil fertility, only a small fraction of companies disclose meaningful actions on biodiversity restoration or assess their impacts and dependencies on nature. Similarly, gaps in water management and deforestation commitments highlight systemic weaknesses in sustainability strategies.

Even so, **the research reveals that change is possible**. Despite overall low performance, over 85% of the elements examined in the methodology have been met by at least one company, demonstrating that companies can make tangible, positive progress. Given that these leading companies span multiple continents and value chain segments, this analysis offers insights into how diverse stakeholders can drive transformation.

2.1 Partially assessed biodiversity-related risks by Food and Agriculture companies

As mentioned, biodiversity loss poses a significant threat to the sector through deforestation, habitat destruction, and ecosystem degradation which can undermine critical ecosystem services, that support agricultural production, such as pollination and soil fertility. However, only 20 companies (6%) were found to have targets towards improving soil health, and only one company assessed discloses quantifiable data on its impact on soil health or agrobiodiversity. Furthermore, **only 2% of companies assessed disclose their environmental impacts**, while no companies holistically address their dependencies on nature, reflecting systemic gaps in addressing biodiversity-related risks. Concerningly, results related to deforestation and ecosystem conversion also reveal significant blind spots. 13% of the assessed companies have a commitment towards zero ecosystem conversion, and only 6% have a time-bound target to achieve conversion-free (DCF) targets for their high-risk commodities, or across all material realms. **These results highlight a significant gap** despite the clear relevance for the Food and Agriculture sector.

Similar gaps could be found for other major issues. The Food and Agriculture sector is one of the largest contributors to global greenhouse gas emissions, creating increasingly important physical and transition risks for the sector. However, according to the Nature Benchmark assessment, only 39% of companies demonstrate reductions in Scope 1 and 2 emissions, while even fewer (16%) show supply chain (Scope 3) reductions, demonstrating insufficient effort in its climate strategies. Finally, water management remains a critical issue as agriculture consumes the majority of global freshwater resources and contributes significantly to water pollution. Water scarcity and tighter regulations present physical and transition risks, particularly in water-stressed regions. Despite this, the assessment indicates that only 31% of companies assessed report on its water-stressed withdrawals, exposing gaps in water risk management strategies.

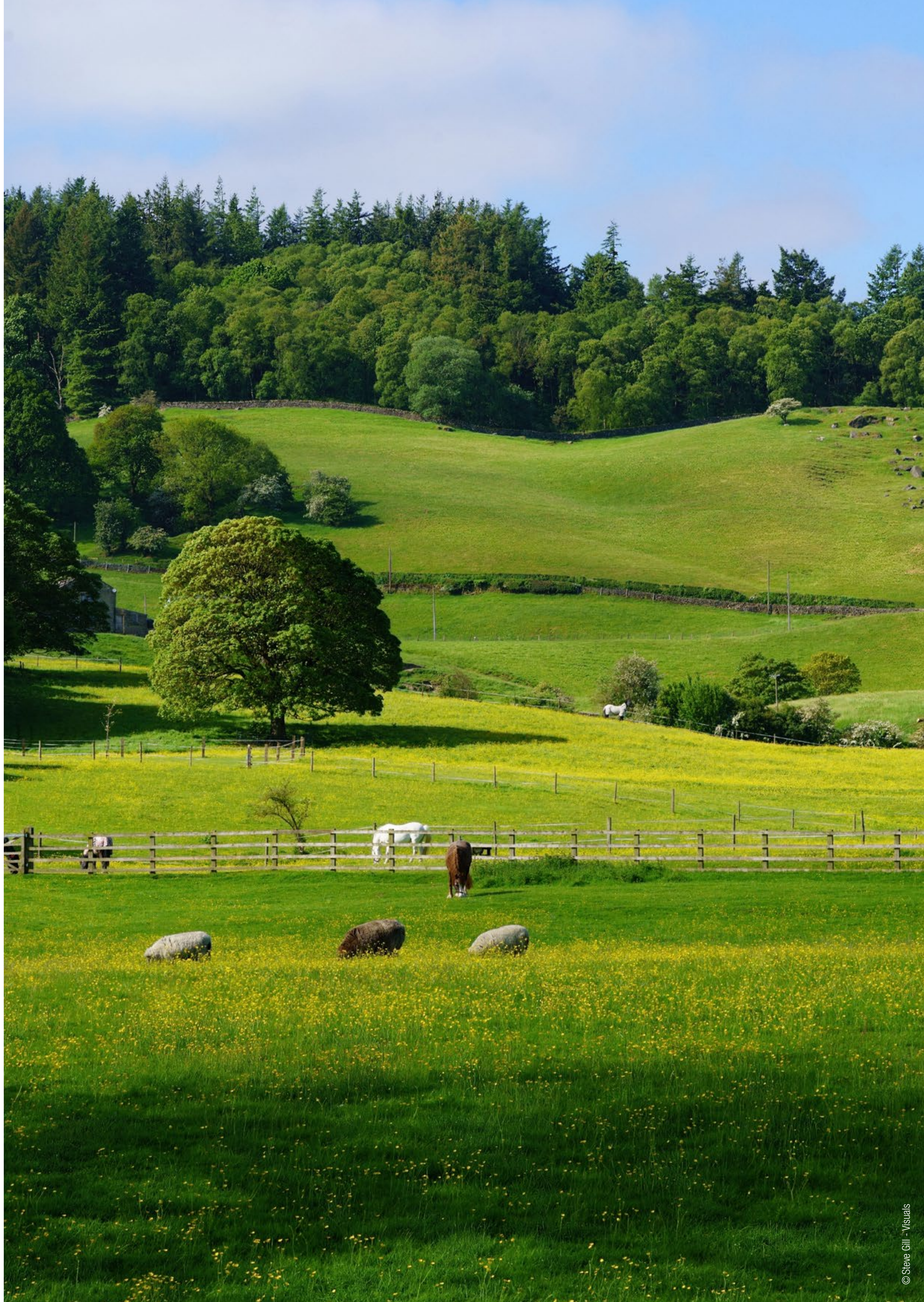
2.2 A lack of reporting, goals and governance on biodiversity-related risks

Sustainability risks have become an integral part of corporate risk management, as they directly influence financial returns and long-term value creation. Effective sustainability strategies are embedded into the business, and considers evaluating the company's impact on natural resources, implementing systems to track and manage sustainability risks, and leveraging sustainability as an opportunity for operational efficiency.

Benchmarking results show that **a little over half** (53%) of the Food and Agriculture companies assessed **disclose a process for identifying and prioritising their most relevant impacts** in relation to their sustainability strategy. However, only 2% of companies report evidence of a comprehensive strategy, which is based on an assessment of their impact on the state of nature, that covers their contribution to the pressures on nature, and considers the links between nature and people and their livelihoods.

Setting sustainability-related goals is an important component of a sustainability strategy, as this serves to create metrics for accountability and helps companies to identify potential risks. However, results show that only 8% of companies have group-wide targets on key material topics. Setting targets can help create focus and unlock resources to manage sustainability risks. **The results show a correlation between target-setting and improving performance.** For example, 47% of companies which have set a robust target to reduce water withdrawal have reported quantitative reductions in their withdrawals. In contrast, only 26% of companies have reported quantitative reductions in their withdrawals among companies that have not set such targets.

Corporate governance plays a critical role in risk management. Companies must establish clear roles, responsibilities, and capabilities within their organisations to ensure consistent processes for managing risks across the business. Benchmark results indicate that **most companies in the industry are taking high level action** on these governance risk related metrics. 68% of the companies assessed disclose that specific people, teams or committees are responsible for the implementation of their sustainability strategy. Furthermore, 63% of the assessed companies report evidence of delegating decision making and oversight responsibility for their sustainability strategy to their highest governing body. However, there appears to be a **shortfall in the depth of sustainability integration in executive and governance mechanisms**. Only 9% of companies show evidence of linking executive remuneration to nature-related targets and objectives, which can be a useful lever to incentivise action. Likewise, only three companies – less than 1% - report that the highest governance body has expertise in the company's most material pressures on nature. This expertise is key to ensure informed decision-making, effective oversight and strategic management of key sustainability issues. As pressure mounts from investors, regulators, and consumers, companies are increasingly expected to develop oversight structures and integrate sustainability into decision-making at the highest levels. Linking executive remuneration to sustainability targets or assigning responsibility for sustainability oversight to governance bodies can drive further accountability and progress.


©Steve Gill - Visuals

3 First measure: identification of the high-priority sub-sectors and commodities

The previous section pointed out the significant lack of risk assessments and actions taken to address biodiversity challenges within the Food and Agriculture sector. To enhance this, it is essential to have the **right resources and tools to effectively identify these risks**, providing a foundation for targeted and impactful risk mitigation strategies.

This section offers insights for the initial step of this risk assessment: a materiality analysis. **This materiality analysis provides a broad assessment of the sector's impacts and dependencies** using the Global Biodiversity Score (GBS) with EXIOBASE 3.8.1 production data as an input. The analysis categorises economic activities into 25 sub-sectors, or "industries" in EXIOBASE nomenclature. These results focus on **identifying the most high-risk sub-sectors and commodities**, both within direct activities and value chains, to guide the focus of risk mitigation efforts.

3.1 Identifying the sub-sectors most dependent on ecosystem services

The first step for any stakeholder looking to take informed action is to identify the sub-sectors or activities that are most dependent on ecosystem services. The assessment of dependency on ecosystem services carried out in this section is based on the Global Biodiversity Score. All sub-sectors of the Food and Agriculture industry are assessed, and both direct and upstream dependencies are evaluated.

The Food and Agriculture sector displays dependency scores that are **consistently higher than the global averages** for all sub-industries (see Figure 3), emphasising the sector's significant reliance on ecosystem services. The high dependency scores highlight vulnerabilities across both agricultural production and food processing systems.

Agricultural sub-industries, whether livestock or crop, have some of the highest direct dependency scores, often exceeding 50%. **Cultivation industries are particularly heavily reliant on critical ecosystem services to sustain productivity**. These services include water supply which ensures clean water, with a reliable availability, soil quality which maintains fertility and crop health, biological control which mitigates pest and disease outbreaks. The higher dependency of the fruit and vegetable cultivation sector is mainly due to the very high dependency of this sector on the pollination service. Similarly, **animal farming depends heavily on water purification** to provide clean drinking water for livestock and biomass provisioning which supports feed production. Further details on these specific dependencies are presented in Appendix, p.38.

In contrast, **food processing sub-industries show higher upstream dependency scores** compared to their direct dependency scores, which are relatively moderate. This reflects their reliance on agricultural inputs from cultivation and livestock farming, which are themselves highly dependent on ecosystem services. **This cascading effect amplifies the risks faced by these industries**, as disruptions to upstream supply chains can quickly propagate into processing operations.

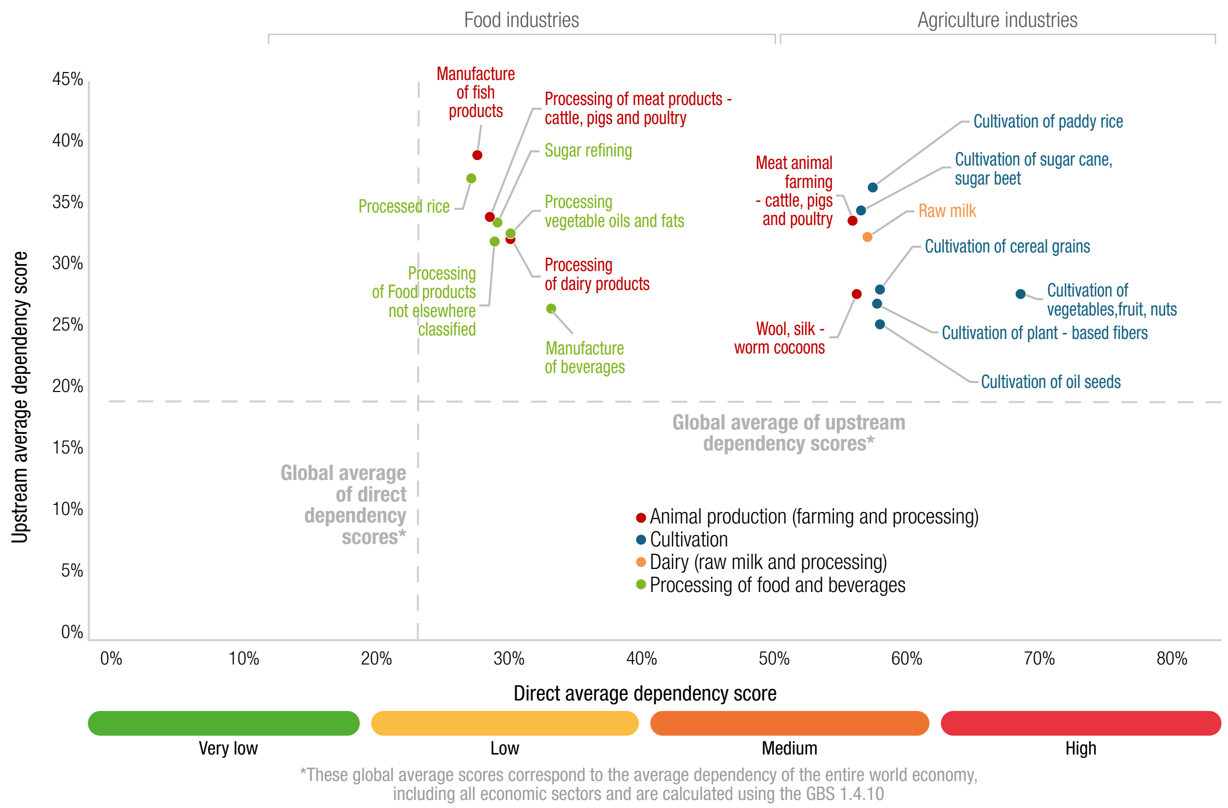


Figure 3 - Direct and upstream dependency score by sub-industry. Source: GBS 1.4.10, CDC Biodiversité*

* These dependency scores are calculated using the Global Biodiversity Score and are based on the ENCORE update 2024 version. Cultural ecosystem services are excluded from the calculation.

The reader's roadmap: how to take action?

PUBLIC AUTHORITIES	CORPORATES AND FINANCIAL INSTITUTIONS

The first step should be to focus on the sectors with the highest reliance on ecosystem services. Findings indicate that cultivation sub-sectors are the most exposed, whether through direct crop production or in their downstream value chain: food processing depends on raw materials and livestock farming on animal feed. These sectors should be the first to undergo risk assessments and mitigation planning. After cultivation, animal production and food processing should also be treated as high-priority sectors for intervention.

For a more precise analysis, actors with access to detailed data should go further by identifying the most high-stakes sub-sectors within these broader categories, such as vegetables, fruits, and nuts cultivation which may present greater vulnerabilities due to its high dependence on ecosystem services.

3.2 Identifying the sub-sectors with the most impacts on biodiversity

The second step of the materiality analysis is to identify the sub-sectors with the greatest impact on biodiversity, and therefore the highest priority.

The goal of this part is to provide materials for this prioritisation, with an assessment of impacts on biodiversity carried out with the Global Biodiversity Score. All sub-sectors of the Food and Agriculture industry are assessed according to their share of the global economy, as reported by EXIOBASE (Stadler et al. 2018). The results are expressed in MSA.km², an indicator of ecosystem integrity. While this analysis focuses on ecosystem condition, a comprehensive assessment should ideally consider multiple dimensions.(4) However, evaluating ecosystem condition still provides a strong proxy for the materiality analysis, offering valuable insights into the most critical sub-sectors.

Within the Food and Agriculture sector at global level, **the impacts are vastly different from one industry to the other**, depending both on the overall size of the industry (in terms of turnover for example), but also on its impact intensity, i.e. its impact per turnover or production. Figure 4 distinguishes the industries in four categories, depending on the sectors' absolute impacts and impact intensities.

Out of all the industries, **cattle farming and processing of meat cattle**, in the red zone in the figure**, represent the biggest impact on biodiversity**. The large spaces needed for grazing – about 26% of the world land area is dedicated to pasture (FAO 2020) – and the impact of animal feed – 33% of croplands are used for livestock feed production (FAO 2012) – explain such a high impact of the value chain of these sectors.

Furthermore, fourteen out of the twenty-five industries studied have an impact intensity higher than the high intensity threshold and are therefore exposed to important transition risks due to their highly impactful activities. These industries are condensed in the upper zones of the graph, and should be the main focus of companies and financial institutions: their **high intensities means that even a small share of activity in this industry can lead to a high absolute impact on biodiversity**.

Finally, public authorities should also focus on two additional industries which have a high absolute impact despite their lower impact intensities. Indeed, the important share of turnover (meaning the activities are greatly represented in our economy) in the **cultivation of vegetables and fruit sector and the processing of food products** explain quite high absolute impacts. These industries are included in the bottom-right quadrant, and very close to the high intensity threshold.

(4) A previous publication sets out all the elements that need to be measured to obtain a complete biodiversity assessment (CDC Biodiversité 2024): it should include measurements about ecosystem, genetic biodiversity, and biodiversity significance including the identification of key biodiversity areas, protected areas, endangered species, species richness and ecosystem services.

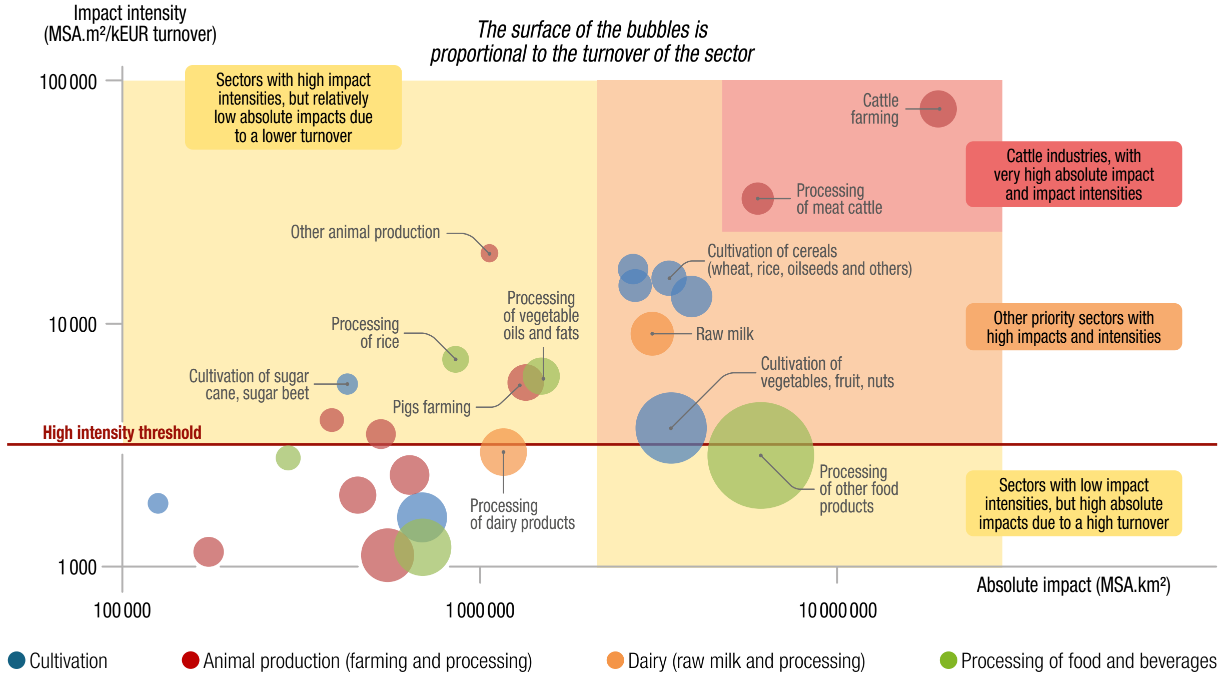


Figure 4 - Terrestrial static impact and intensity, by sector, logarithmic scale. Source: GBS 1.4.8, CDC Biodiversité.

The impact intensities are compared to a high intensity threshold. This high intensity threshold is based on previous work by CDC Biodiversité, notably in its benchmark factsheets, and is derived from the biodiversity planetary boundary. In the benchmark factsheets, the intensity compatible with the planetary boundary is defined at a global level, and the threshold is estimated at 320 MSA.m²/kEUR of turnover for all sectors. A threshold was then determined for the Food and Agriculture sector, using the formula below:

$$\begin{aligned} &High\ intensity\ threshold\ for\ the\ agrifood\ sector \\ &= \frac{global\ terrestrial\ static\ impact\ compatible\ with\ the\ planetary\ boundary * share\ of\ impact\ by\ the\ agrifood\ sector}{global\ turnover\ of\ the\ agrifood\ sector} \\ &= \frac{28\%MSA * global\ emerged\ land\ surface * share\ of\ impact\ by\ the\ agrifood\ sector}{turnover\ of\ the\ agrifood\ sector} = 3700\ MSA.m^2/kEUR \end{aligned}$$

A grandfathering approach was used here to allocate the share of responsibility of the agriculture sector, meaning a proportional allocation to the terrestrial static impact of the sector. However, other methodologies could be used to allocate the responsibility between sectors.

The reader's roadmap: how to take action?

PUBLIC AUTHORITIES

Public authorities can take decisive actions by prioritising activities with the highest absolute impact, such as food processing and crop cultivation.

Sectors with high impact intensities, including cereal cultivation, dairy production, and various animal farming and processing activities, should also be key targets. Notably, cattle farming and meat processing fall into both categories, making them a top priority.

These criteria provide a clear basis for directing mitigation efforts toward the most impactful sectors, ensuring targeted and effective action at global level.

CORPORATES AND FINANCIAL INSTITUTIONS

Companies and financial institutions can drive meaningful change by focusing on activities with high impact intensities, which are likely to account for a significant share of their overall impact. Key sectors include cattle farming, meat processing, cereal cultivation, and dairy production.

To ensure a comprehensive approach, this focus should be complemented by assessing sectors that make up a substantial portion of their operations or portfolios, preventing to overlook impact sources.

This prioritisation serves as a foundation for more detailed risk assessments and targeted mitigation strategies.

3.3 Identifying high risk commodities

After identifying the high-risk sub-sectors in terms of both dependencies on ecosystem services and impacts on biodiversity, the next step is to refine the analysis by focusing on key commodities. **Crop cultivation alone accounts for 43% of the sector's terrestrial accumulated negative impact** on ecosystem condition and is key to the entire sector. Crops serve as a primary input for animal feed in livestock production and are essential to food and beverage manufacturing. This section aims to **identify and analyse high-risk products**, enabling a more comprehensive evaluation of the risks they present to biodiversity. By understanding the contributions of different crops, stakeholders can prioritise actions that balance agricultural production with ecosystem preservation.

Figure 5 explores the terrestrial static impact of 48 commodities, chosen based on their inclusion in the High Impact Commodity List (HICL) of the SBTN (SBTN 2024), their significant absolute impact, and their high impact intensity.[5] The figure includes:

- A horizontal axis with the absolute terrestrial static impact in MSA.km² of each crop types, allowing to pinpoint which crop has the most impact on biodiversity at global level.
- A vertical axis with the impact intensity in MSA.km²/tonne. This allows a better comparison between different crop types without taking into account the total quantity produced.
- The impact intensity of chicken and beef to provide the reader with reference points.[6]
- Finally, the size of the bubble is proportional to the quantity produced, allowing to identify the most produced crops worldwide: sugarcane, maize, rice and wheat.

(5) The results presented in this section are calculated using the GBS version 1.4.8. The impacts related to phytosanitary products were not computed. Only terrestrial impacts are presented here for simplification, but the tendencies are similar for aquatic impacts.
(6) The impact intensity of chicken and beef is shown in the figure for informational purposes. However, a more relevant comparison between meat and plant-based alternatives would consider their nutritional value, such as impact per gram of protein. Since the goal of this section is to compare crops with one another rather than to contrast them with meat, all impact intensities are presented per tonne.

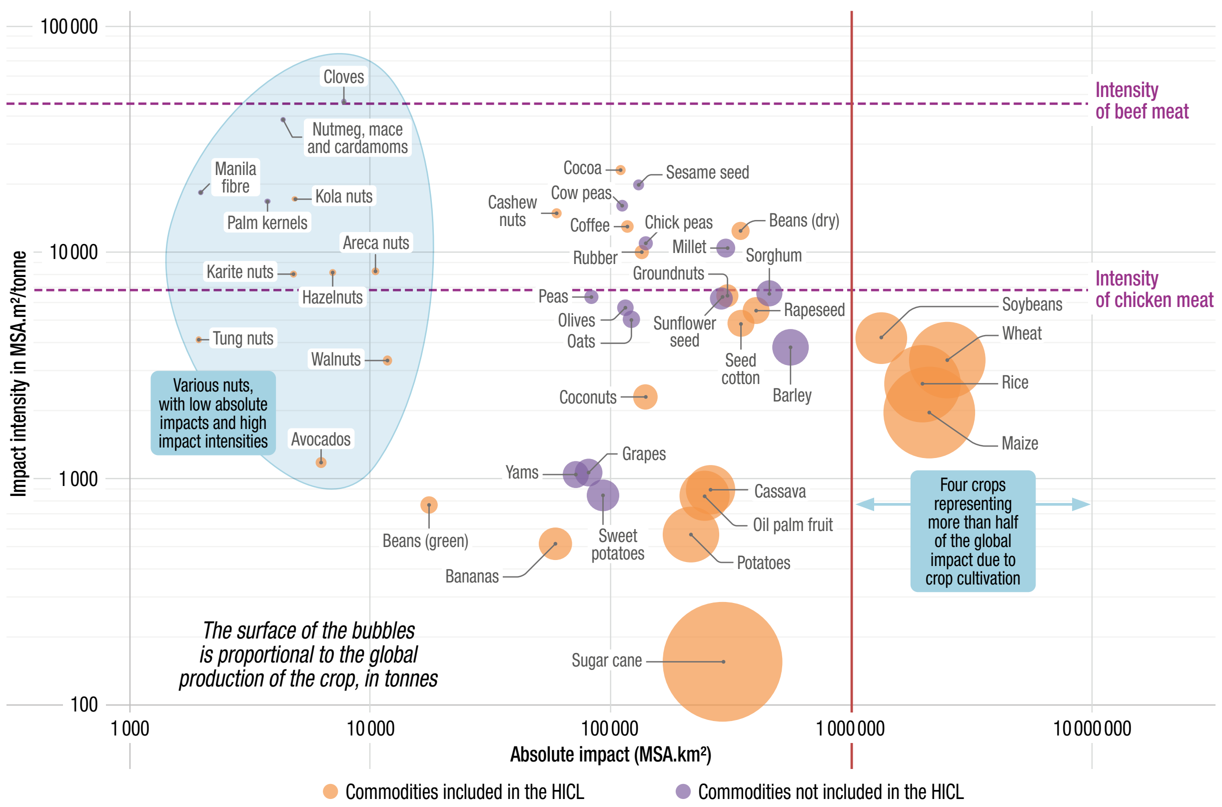


Figure 5 - Terrestrial static impact and intensity, by crop type, logarithmic scale. Source: GBS version 1.4.8, CDC Biodiversité

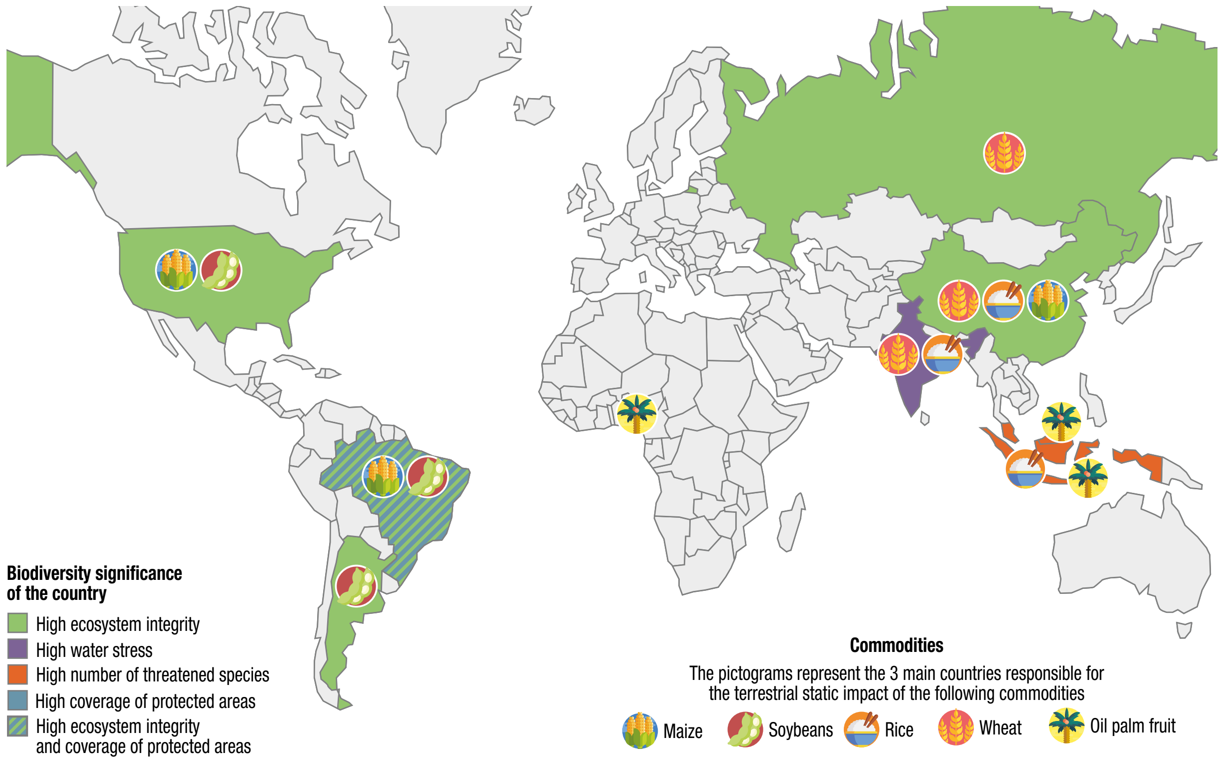


Figure 6 - Main producers of five different commodities, with related biodiversity significance of the country.
The biodiversity significance thresholds are defined as follow:
- *High ecosystem integrity: over 20% of the country has a high ecosystem condition (remaining MSA higher than 75%). Calculated using the MSA layer by CDC Biodiversité (CDC Biodiversité 2023b).*
- *High water stress: high level of water stress according to the Aqueduct tool of the World Resource Institute.*
- *High number of threatened species: on average, more than 20 threatened species are present at all locations. Determined using the IUCN Red List of Threatened Species.*
- *High coverage of protected areas: over 30% of the country consists of protected areas.*

At global level, **four crops account for 51% of the terrestrial static impact caused by cropland cultivation: wheat, maize, rice and soybeans.** Their significant contribution is due to their high production volumes combined with relatively low yields. These 4 main crops are positioned in the right-hand side of the graph and collectively contribute to a terrestrial static impact of 7,9 million MSA.km², equivalent to the destruction of natural ecosystems across an area the size of Australia. Conversely, crops like nuts, coffee, cocoa and various specialty products have relatively low absolute impacts due to smaller production volumes but exhibit high impact intensities. Finally, the comparison between HICL and non-HICL products reveals that some excluded crops, such as sorghum and barley, still exhibit relatively high impacts and intensities. The terrestrial impact of all crops is predominantly driven by the pressure on land use.

One of the most **surprising findings in this figure is the relatively low impact intensity of several intensive monoculture** crops such as oil palm fruit, sugar cane, banana, and coconut. Such crops are often characterised by intensive agricultural systems, with high yields and therefore an important productivity, leading to relatively low impact intensities.[7] This is notable because these

(7) Additionally, as mentioned in a previous footnote, the impact of such intensive crops is underestimated here due to the exclusion of ecotoxicity impacts from phytosanitary products.

products, and especially palm oil, are frequently criticised for their significant impact on biodiversity and are central to numerous environmental controversies. Indeed, **these crops raise concerns due to their interaction with areas of high biodiversity significance**[(8)]. For example, palm oil plantations are heavily concentrated in Indonesia and Malaysia, home to numerous threatened species.

The example of palm oil illustrates **the importance of also considering locations when assessing high-priority commodities.** At global level, the biodiversity impact of crop cultivation is highly concentrated in a small number of countries with significant agricultural production. Notably, six countries, highlighted in Figure 6, condense about half of the terrestrial static impact: China, India, the United States, Brazil, Russia and Indonesia. **Indonesia, Malaysia, and Nigeria together concentrate more than 80% of the terrestrial static impact from oil palm fruit cultivation**, emphasising the associated risks for food supply chains.

In addition to these concentrated impacts, **the biodiversity significance of these countries further exacerbates transition risks.** Many of them are home to ecosystems with high ecological integrity or face other environmental challenges. For example, China, Russia, the United States, and Brazil each have over 20% of their land covered by high-integrity ecosystems, with Brazil also protecting over 30% of its territory. Malaysia and Indonesia harbour many threatened species, while India experiences high water stress. These factors compound the risks associated with sourcing commodities from these regions.

(8) Biodiversity significance represents the varying importance of certain areas or species in terms of their contribution to biodiversity. This includes aspects such as protected areas, Key Biodiversity Areas and threatened species. More information are available in a previous publication (CDC Biodiversité 2024).

The reader's roadmap: how to take action?

PUBLIC AUTHORITIES	CORPORATES AND FINANCIAL INSTITUTIONS
Public authorities can use the HICL as an initial filter to prioritise commodities with the highest risks. Additionally, more than half of the terrestrial impact on ecosystem condition is driven by four crops: wheat, maize, rice, and soybeans. Targeting actions toward these key commodities is essential to promote more sustainable practices on existing fields.	Companies and financial institutions can use the HICL as a first filter to prioritise commodities but should complement it with company-specific commodities with high impact intensities and a significant share in their value chain. Additionally, companies should seek to locate the origin of these priority commodities in their value chains and link this information with indicators of biodiversity significance.

For all actors, the main challenge with commodities involved in numerous environmental controversies, such as oil palm fruit and sugarcane, is the dynamic impact of deforestation caused by plantation expansion in biodiversity-rich areas. Targeted strategies must be implemented to halt deforestation, particularly in regions of high biodiversity significance.

4 Second measure: risk assessment based on the analysis of impacts, dependencies and commodities

The second step in the process is to **conduct a risk assessment** based on the previous analysis results of impacts, dependencies and commodities. The risk evaluation is to be adapted to the specific perimeter being studied, whether it concerns a single business, a portfolio, or a macro-level analysis. **By tailoring the assessment to the context, organisations can ensure that the risks identified are relevant and actionable, turning it into the no-regret first measures.**

4.1 Identifying biodiversity-related risks thanks to impacts and dependencies analysis

Risk identification is a first essential step that aims to identify threats likely to impact the activities.

The Food and Agriculture sector's reliance on ecosystem services highlights its vulnerability to physical risks arising from biodiversity loss and ecosystem degradation. First, analysing **dependencies on ecosystem services** helps assess how much an activity relies on specific natural processes. Then, **physical risks associated with the disruption of these services** can be identified. Resources presented in the Table 2 p.38 provide a list of key physical risks associated with the disruption of ecosystem services most crucial for the Food and Agriculture sector.

Next, it is essential to **incorporate transition risks**, which stem from regulatory, economic and societal changes. The significant biodiversity impacts associated with the Agriculture and Food sector can lead to considerable transition risks. However, these impacts differ depending on the sub-industries (see Figure 4), the specific pressures exerted, the types of commodities involved and the geographic areas concerned (see Figure 6). Consequently, **the identification of transition risks must be tailored to each sector, taking these specificities into account**. A sector's transition risks are closely linked to its impact on biodiversity: the greater the impact, the higher the likelihood that the sector be required to implement adaptive measures to align with a sustainable future. The global impact on biodiversity of some sub-sectors or of some pressures can therefore serve as a good indicator. For instance, large-scale soy production is a key driver of deforestation, causing extensive land use changes. In response, regulations are being introduced to restrict imports of soy linked to deforested land or to require deforestation-free certification. Companies in the livestock industry that rely on soy-based feed may face supply chain disruptions, increased costs to source certified soy, or restrictions on market access if they fail to comply, posing significant transition risks. Table 3 p.39 provides examples of transition risks in the cattle farming sub-sector.

Finally, **risks can be identified by using external resources**. In its LEAP assessment framework, the Taskforce on Nature-related Financial Disclosures (TNFD 2023) provides generic examples of biodiversity-related physical and transition risks, while the sector guidance presents illustrative risks specific to the Food and Agriculture sector (TNFD 2024), which can be used as a basis for identifying risks.

4.2 Assessing biodiversity-related risks with a structured framework

Once the risks have been identified, prioritisation is crucial to focus efforts on those with the highest potential impacts. While this process may be complex, in particular because of the interrelationship between the various risks,

a structured framework can help prioritise risks and be a starting point to identify and address the sector's most pressing challenges.

The framework provided by the Taskforce on Nature-related Financial Disclosures (TNFD 2023) offer a systematic methodology to evaluate biodiversity-related risks. It enables organisations to break down the complexity of interconnected risks and assign priority levels based on their likelihood and potential impact. By adopting this kind of structured approach, stakeholders can better focus their efforts on the most critical vulnerabilities and identify opportunities for mitigation. In this framework, risk evaluation involves two critical dimensions: **likelihood** and **magnitude**.

4.2.1 Magnitude

Magnitude reflects the **potential consequences or impact of a hazard event**, should it occur. This dimension assesses the scale of damage or disruption, particularly in relation to a sector's dependency on ecosystem services. Sectors with a high dependency on ecosystem services face significantly greater impacts if those services are compromised.

For **physical risks**, magnitude is closely tied to dependency. The more critical a service is to operations, the greater the potential risk. For instance, a high dependency on water availability for irrigation leads to increased risk when water supplies are strained.

For **transition risks**, magnitude can be measured by the scale of change required to mitigate harmful practices. For example:

- A sector with high pollution pressure (e.g., intensive pesticide use) may face substantial regulatory and reputational impacts, resulting in elevated transition risk.
- Industries with significant biodiversity impacts, such as cattle farming, often experience higher overall transition risks.

4.2.2 Likelihood

Likelihood assesses **the probability of a hazard occurring**. This dimension depends on the stability of local ecosystems and the resilience of ecosystem services. Poor ecosystem health signals a higher probability of disruption, increasing the likelihood of risk events. Factors such as **geographic location or specific activity characteristics** provide critical insights into the likelihood of ecosystem disruptions, e.g., areas prone to water scarcity or regions experiencing deforestation are more likely to face disruptions.

This is why it is challenging to systematically evaluate the likelihood of risks at a sector-wide level. Such assessments are **better conducted at the corporate or even farm level**, considering the unique geographic characteristics of each area and the existing mitigation strategies that may already be in place. These localised efforts, such as water conservation measures or sustainable agricultural practices, can significantly reduce the probability of risks materialising.

4.2.3 Final risk

The risk is presented as:

Risk = Likelihood x Magnitude

A structured approach involves **qualitatively assessing both likelihood and magnitude** and assigning numerical values to these dimensions. This approach allows organisations to compare, prioritise, and effectively manage risks.

For instance, regarding physical risks, a low dependency on ecosystem services (e.g., <40%) can result in lower magnitude scores while a high dependency (e.g., >80%) corresponds to higher magnitude scores.

The table below illustrates how risk scores can be derived based on combinations of likelihood and magnitude. Examples of how this framework can be applied are provided in Section 4.3.

		LIKELIHOOD		
		Low (1): The event is unlikely to occur (e.g., a pest outbreak occurs once every 10 years)	**Medium (2)**: The event is moderately likely to occur (e.g., soil erosion in the next 5 years)	**High (3)**: The event is highly likely to occur (e.g., water scarcity in the next 1-2 years)
MAGNITUDE	**Low (1)**: The impact is minor and easily mitigated (e.g., the activity is only slightly dependent on the associated ecosystem service – dependency score < 40% or the activity has a very low impact on biodiversity)	1	2	3
	Medium (2): The impact is moderate, requiring some adaptation (e.g., the activity is only moderately dependent on the associated ecosystem service – dependency score between 40% and 80% or the activity has a moderate impact on biodiversity)	2	4	5
	High (3): The impact is severe, causing long-term damage (e.g., the activity is highly dependent on the associated ecosystem service – dependency score > 80% or the activity has high impact on biodiversity)	3	5	6

4.3 An example of risk evaluation for a farm combining animal and crop production

The following example illustrates **how this approach can be used to evaluate risks for a mixed farming operation**, showcasing how dependency and exposure to specific risks can vary based on activities, location, practices, and supply chain characteristics. While this case study focuses on a granular approach, a more macro-level assessment can also be conducted, particularly for public authorities seeking to evaluate risks across an entire sector or geographic region.

4.3.1 Physical risks

Each risk is assessed based on a **cross-analysis of available resources presented in the publication and contextual data**. For instance, in the case of the risk Aquifer depletion and irrigation water shortage, the magnitude of the risk is rated as high since the farm is entirely dependent on ground water and surface water ecosystem services (see Table 2 p.38). However, the probability of occurrence is relatively low, given that the farm is located in a region with regular rainfall and uses rainwater harvesting. As a result, the final risk is moderate.

Conversely, for the risk of Increased flood vulnerability due to the loss of natural barriers, both the magnitude and probability of occurrence are high. The farm heavily depends on flood protection services, and it is situated in a flood-prone area where land use changes have further exacerbated these risks. This makes it a high-priority concern.

This method provides an approach to physical risk assessment by **analysing ecosystem services individually**, ecosystem by ecosystem. However, these risks are **highly interconnected**. For example, soil erosion causes reduced soil fertility, affects water retention and increases the risk of water shortages. Similarly, the loss of pollinators due to pesticide use can lead to increased reliance on monocultures, which further degrade soil quality and exacerbate climate change impacts. While these cascading effects between ecosystem services are important, they are difficult to model accurately. Therefore, it is preferable to **manage and evaluate risks on an ecosystem-by-ecosystem basis**, which allows for a clearer and more manageable understanding of each risk in isolation, while **acknowledging their interdependencies**.

4.3.2 Transition risks

Regarding transition risks, the impact analysis shows a **high risk for biodiversity in the cereal growing and livestock sub-sectors**. Soy, which is used by the farm to feed animals, is on the list of high-risk commodities. This results in a high magnitude risk since stricter regulations on deforestation-linked imports could significantly affect operations. The probability of occurrence is also high, given stricter regulations and public awareness of deforestation, making new trade restriction likely.

Another example involves potential bans or restrictions on agricultural inputs, such as pesticides and fertilisers. Since the farm already follows organic farming practices, these restrictions would have minimal impact on its operations. The magnitude of this risk is therefore low. However, the probability of occurrence is higher, due to the ongoing regulatory push to reduce harmful chemical use in agriculture.

Table 1 - Example of application of risk assessment for a farm engaged in cattle farming and cereal production. The farm operates in a temperate region with consistent rainfall, utilising rainwater harvesting to manage water resources. It practices a mixed farming system, combining both animal farming and crop production. The farm focuses on organic farming methods, including crop rotation, composting, and minimal tillage, to maintain soil health and fertility. Livestock on the farm are fed imported soy.

RISK DESCRIPTION		MAGNITUDE		LIKELIHOOD		FINAL RISK
Physical	Aquifer depletion and irrigation water shortage	●●●	100% dependency on Ground Water and Surface Water ecosystem services for animal farming and crop production	●	The farm is in a temperate region with consistent rainfall, with low stress water risk, and uses rainwater harvesting.	3
Physical	Increased flood vulnerability due to loss of natural barriers	●●●	80% and 100% dependency on the Flood and storm protection ecosystem service for the animal farming and crop production industries	●●●	The removal of natural barriers, combined with the farm's location in a flood-prone area, increases the probability of flooding.	6
Physical	Soil fertility decline	●●●	80% and 90% dependency on the Soil quality ecosystem service for the animal farming and crop production industries	●●	The farm prioritises soil health through organic practices, including crop rotation, composting, and minimal tillage. These methods ensure the long-term maintenance of soil fertility, making the probability of decline moderate.	5
Transition	Shift in consumer preferences toward plant-based products	●●	Even though meat production accounts for a significant proportion of the business, the farm's mixed farming system provides it with greater resilience, allowing it to adapt. The magnitude of the risk is therefore moderate.	●●	The meat industry is among the sectors with the most significant impact on biodiversity (see Figure 4), which could make the risk particularly likely to occur.	4
Transition	Dependency on high-risks products for biodiversity (e.g., linked to imported deforestation)	●●●	The farm depends on imported soy for livestock feed, much of which is linked to deforestation and biodiversity loss in South America.	●●●	As global awareness of deforestation increases, scrutiny on supply chains is growing, making it very likely that this risk will materialise soon.	6
Transition	Bans or restrictions on certain agricultural products (e.g. pesticides, fertilisers)	●	Since the farm already follows organic practices and avoids synthetic chemicals, it would not be significantly affected by any bans or restrictions on pesticides and fertilisers.	●●●	There is increasing regulatory pressure to reduce the use of harmful agricultural chemicals. Although existing bans are limited, the likelihood of stricter regulation in the near future is quite significant.	3

Some identified risks can also present **opportunities for the sector**. For example, the shift in consumer preferences toward plant-based products, while threatening the profitability of cattle farming, can also encourage diversification in agricultural activities and the development of sustainable alternatives. By anticipating these changes and adjusting their practices, farmers and food industry businesses can **turn the risks they are facing into opportunities** to adopt sustainable practices.

5 Rising to the challenge: implementing ambitious strategies and setting targets

The Section 2 on the Nature and Food and Agriculture benchmarks highlighted significant shortcomings in biodiversity risk management for companies studied. Building from the results and methodologies proposed in this publication in Section 3 and Section 4 to identify, assess and prioritise physical and transition risks, companies should then focus on **integrating nature into their strategies and decision-making**. The World Benchmarking Alliance identifies **four key steps** to include when defining a biodiversity strategy, presented here with concrete examples and recommendations.

5.1 Conduct a robust materiality assessment

Companies and financial institutions should identify and prioritise their sustainability impacts by **carrying out materiality analysis** that involves different types of internal and external stakeholders. The **work of this publication aims to be the basis of such materiality assessment**. First, by identifying quantitatively their high-risk activities and commodities throughout the value chain using the results from Section 3, actors can prioritise their efforts towards highly impactful or highly dependent activities. Then, using the methodology proposed in Section 4, actors can assess and prioritise their transition and physical risks.

5.2 Set clear targets

Companies should then **set targets to manage those impacts** that are most significant to the business and nature. These targets should include actions to reduce the impact of the main pressures of the sector on biodiversity. They can include the decrease of pesticide use and chemical fertilisation, the reduction of water used in irrigation especially in regions of high water stress, and setting targets to eliminate deforestation or increase regenerative agriculture practices. BOX 1 provides a short focus on regenerative agriculture targets, and the main safeguards that should be used when taking such engagements.

When setting targets, companies should **include a baseline and timeframe,** and regularly report their progress. Further guidance can be found in various frameworks, such as the ACT-D framework (Assess, Commit, Transform and Disclose), which serves as a foundation for disclosing nature-related information and transforming corporate relationships with nature, or the SBTN (Science Based Target Network) for example. These targets should align with global goals on nature: BOX 2 presents an example on how to set and monitor a target compatible with the Global Biodiversity Framework.

Several initiatives are underway to explore and propose **global pathways for achieving a bending-the-curve scenario**, depending on the policies implemented and the progress toward GBF targets. These initiatives often involve systemic changes to the food system, including dietary shifts and reduced consumption of livestock products. Such research can support public authorities in defining actions and setting priorities for their biodiversity strategies. For instance, the Netherlands Environmental Assessment Agency (PBL) recently published a study assessing the ambition of the Kunming-Montreal Global Biodiversity Framework (Kok et al. 2024).

5.3 Collaborate with the supply chain to measure outcomes

Companies should build on the findings from Section 3.3 by identifying high-risk commodities and enhancing traceability within their value chains to **minimise the risk of natural ecosystem conversion**. Key actions include identifying the country of origin for high-risk commodities, to determine if they originate from regions with **high biodiversity significance**. In such cases, companies should either adapt sourcing practices or ensure that these commodities are not contributing to the conversion of natural ecosystems. This can be achieved by **increasing traceability** and adopting measures to **ensure zero conversion**.

Additionally, when investing in solutions such as regenerative agriculture, companies should work closely with farmers to collect evidence and increase transparency regarding how they measure the outcomes of their sustainable agriculture practices.

5.4 Set up appropriate governance structures supported by expert bodies

Companies should assign clear oversight and accountability for the sustainability strategy to their **highest governance bodies**, which normally falls on Boards of Directors. Senior decision makers should be trained or recruited to ensure they have adequate knowledge on nature-related risks. This function can also be supported by internal sustainability committees that can leverage the expertise of different company departments. Finally, companies should establish effective incentive mechanisms, such as linking the remuneration of senior executives to sustainability performance.

BOX 1 – THE EXAMPLE OF REGENERATIVE AGRICULTURE: CURRENT COMMITMENTS AND BEST PRACTICES

Harmful agricultural practices can drive biodiversity loss and disrupt the ecosystem services that underpin our food system. On the other hand, if done right, **regenerative agriculture practices** can be an important lever to restore soil health, increase climate resilience, protect water resources and biodiversity, and enhance farmers' productivity and profitability. For Food and Agriculture companies, this presents a significant opportunity to **adopt sustainable production practices**, collaborate with farmers, and implement local solutions that address broader, global systemic challenges.

Encouragingly, 51% of benchmarked companies reference regenerative or sustainable agriculture programmes, in specific countries or locations or related to specific commodities. Leading companies have backed this up with concrete targets.

However, most companies do not disclose **evidence of tangible action**, such as setting measurable targets and reporting on progress. This is particularly true with regards to fertiliser and pesticide use. For instance, although 51% of assessed companies reference working on regenerative agriculture, less than 10% disclose data on optimising the use of fertilisers, and only around 4% disclose data on minimising the use of pesticides. Concerningly, only 2% of companies have established a target to optimise the use of fertilisers or pesticides and report progress against it.

Part of the challenge lies in the **inconsistent understanding of 'regenerative agriculture'**, the practices it involves and the outcomes it can achieve. The lack of clarity, combined with insufficient data and inconsistent reporting metrics – particularly at the farm level – creates challenges in accurately measuring the environmental impact of regenerative agriculture solutions. However, significant progress has been made towards establishing an outcome-based framework for regenerative agriculture. WBCSD and the One Plant Business for Biodiversity (OP2B), in collaboration with Regen10, have launched an initiative aimed at consolidating outcomes and metrics for corporate reporting at the farm, landscape and global levels. There is growing consensus that companies could report on measurable indicators such as soil erosion or soil organic carbon content. Yet, only one benchmarked company currently does so, reporting on carbon sequestration and demonstrating its ability to measure the impact and associated benefits of its regenerative agriculture practices. The remaining companies are yet to show how they measure and evaluate the impact of their regenerative agriculture programmes.

BOX 2 – SETTING TARGETS ALIGNED WITH THE GLOBAL BIODIVERSITY FRAMEWORK, THE EXAMPLE OF TARGET 7

Defining targets is a key step in constructing an integrated biodiversity strategy. Ideally, these metrics should be contextualised and aligned with reference points. The Global Biodiversity Framework stands out as the framework to follow at international level and provides guidelines through its 23 targets. NBSAPs may then help understand how the GBF targets apply at the national level. However, **translating these to individual locations and organisations is not always straightforward, and different interpretation of the targets can often be made.** Nevertheless, the GBF targets and monitoring framework can **provide inspiration for the metrics and targets** that an organisation could deploy.

This case study aims at giving an example of translation of a GBF target, from a global objective to a target applied at farm level. Here, the Target 7 on pollution is selected, more precisely the following requirement "Reduce pollution risks and the negative impact of pollution from all sources by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services, considering cumulative effects, including: [...] (b) by reducing the overall risk from pesticides and highly hazardous chemicals by at least half [...]". (CBD 2022)

The construction of such a target goes through the following stages:

How can progress towards the targets be measured and monitored?

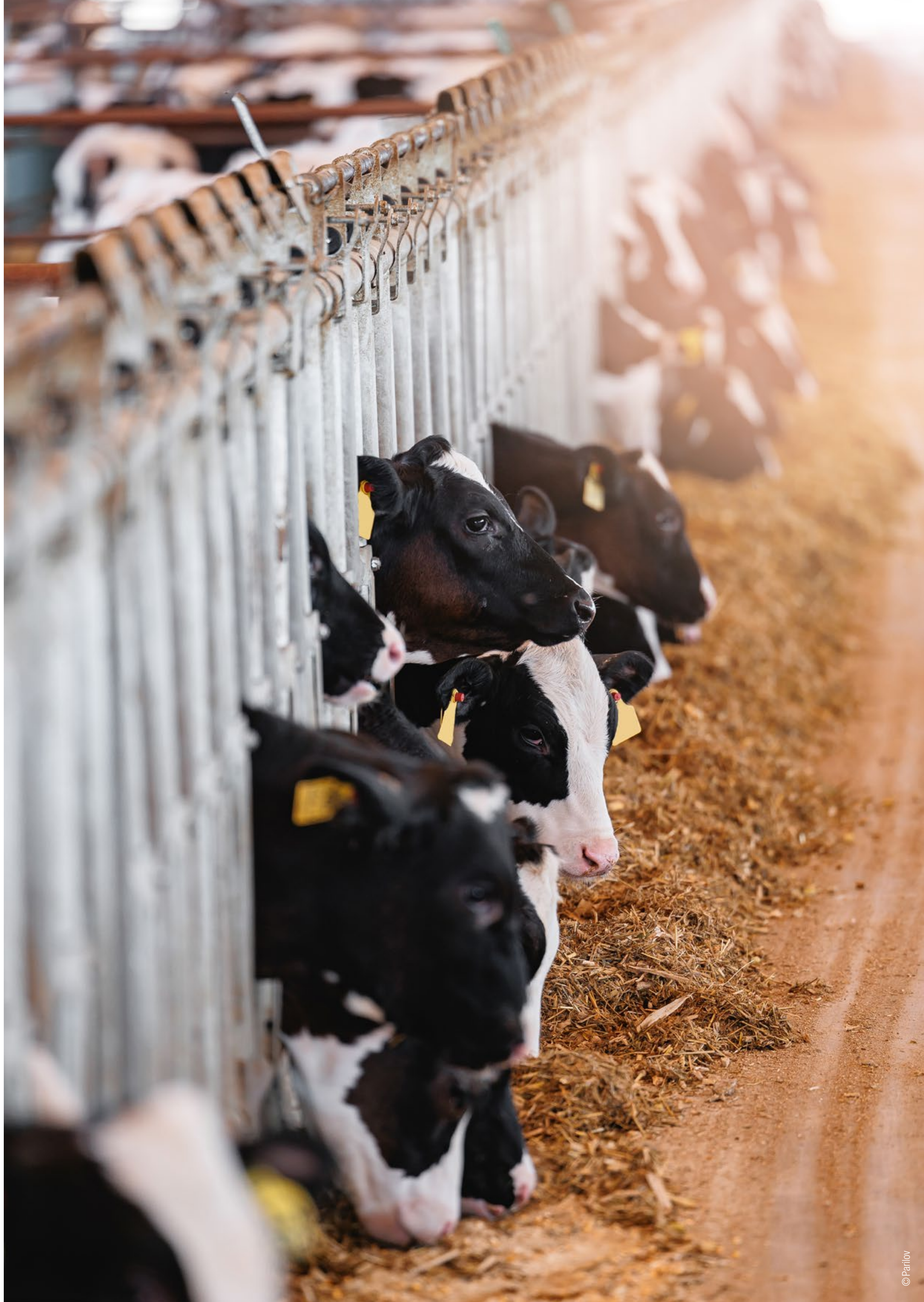
The first step is to identify an indicator that can be collected at farm level and used to monitor the target. This indicator, known as the control variable, can be defined at several levels, *i.e.* at national level and at farm level. Here, the variable selected is the Treatment Frequency Index (TFI), an indicator for monitoring the use of plant protection products (pesticides) on a farm. The TFI calculates the number of reference doses used per hectare over the course of a crop year. This indicator can be calculated for a parcel, a farm or a region.

What is the target value?

Once the control variable has been defined, the next step is to adapt the GBF target to make it quantified by the indicator identified in step 1, specific and adapted to the agricultural context, and harmonised with the requirements of the regulatory framework in force at country or Region level. Here, the target was harmonised with the regulation at European and French level.

As part of the European Green Deal, two objectives have been set for reducing the use of phytosanitary products: 1/ To reduce the use and risk of chemical pesticides by 50% and 2/ 50% of this reduction must concern the use of the most dangerous pesticides. This directive has been transposed in France in the Ecophyto plan. These regional targets are aligned with the Target 7 of the GBF. The selected target was therefore to reach a farm-wide TFI level of less than 50% of the reference TFI, compared to a 2022 baseline.

This methodology can be applied to various GBF targets, enabling their translation from the global level to the organisational level. This approach ensures that the targets are both robust and aligned with relevant global, regional, or national regulations.


© Pavlov

References

Agreste. 2020. « Recensement agricole 2020 ».

CBD. 2022. « Kunming-Montreal Global Biodiversity Framework ». https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf.

CDC Biodiversité. 2017. « Global Biodiversity Score: Measuring a Company's Biodiversity Footprint ». 11. Biodiv'2050 Outlook. https://www.cdc-biodiversite.fr/wp-content/uploads/2023/02/N11-TRAVAUX-DU-CLUB-B4B-INDICATEUR-GBS-UK-BD.pdf.

———. 2019. « Global Biodiversity Score: A Tool to Establish and Measure Corporate and Financial Commitments for Biodiversity ». 14. Biodiv'2050 Outlook. CDC Biodiversité. https://www.cdc-biodiversite.fr/wp-content/uploads/2023/02/Cahier-Biodiv2050-n%C2%B014.pdf.

———. 2020a. « GBS Review: Crops CommoTool ». Final version. https://www.cdc-biodiversite.fr/wp-content/uploads/2023/01/Crops-CommoTool.pdf.

———. 2020b. « GBS Review: Livestock husbandry and grass CommoTools ». Final version. https://www.cdc-biodiversite.fr/wp-content/uploads/2023/01/Livestock-husbandry-and-Grass-CommoTool.pdf.

———. 2020c. « Measuring the contributions of business and finance towards the post-2020 global biodiversity framework - 2019 technical update ». 15. Les Cahiers de BIODIV'2050. Paris. https://www.cdc-biodiversite.fr/download/global-biodiversity-score-2019-technical-update/?wpdmdl=6376&refresh=642663ce803d71680237518.

———. 2021a. « Factsheet - Agriculture and Agrifood ». 1.0. https://www.cdc-biodiversite.fr/wp-content/uploads/2022/05/Fiche-benchmark-Secteur-Agriculture-et-agroalimentaire.pdf.

———. 2021b. « Global Biodiversity Score: Establishing an ecosystem of stakeholders to measure the biodiversity performance of human activities. 2021 update. » 18. Biodiv'2050 Outlook. Paris, France. https://www.cdc-biodiversite.fr/wp-content/uploads/2022/07/N18-TRAVAUX-DU-CLUB-B4B-GBS-UK-MD-WEB.pdf.

———. 2022. « Accompagner la transition agroécologique, l'exemple d'AgriBEST® ». https://www.cdc-biodiversite.fr/wp-content/uploads/2022/09/DOSSIER-MEB-41-AGRIBEST-MD-WEB.pdf.

———. 2023a. « AgriBEST® – développement technique d'un module consacré aux services écosystémiques ». https://www.cdc-biodiversite.fr/wp-content/uploads/2023/06/DOSSIER-MEB-45-AGRIBEST-MD-WEB.pdf.

———. 2023b. « Global Biodiversity Score: Accounting for Positive and Negative Impacts throughout the Value Chain ».

———. 2023c. « MSA layer ». 27 septembre 2023. https://drive.google.com/drive/folders/1Uudt5DLGG_kl-G7KuTsBIc7owOV0mNDL7.

———. 2024. « Bridging finance and nature: the role of the Global Biodiversity Score ». https://www.cdc-biodiversite.fr/publications/2024-dossier50_bridging-finance-and-nature-the-role-of-the-global-biodiversity-score/.

CISL. 2021. « Handbook for nature-related financial risks: key concepts and a framework for identification ». https://www.cisl.cam.ac.uk/system/files/documents/handbook-for-nature-related-financial.pdf.

FAO. 2012. « Livestock and landscapes ».

———. 2020. « Are grasslands under threat? Brief analysis of FAO statistical data on pasture and fodder crops ».

———. 2023a. « Biennial Theme 2024-25: Water resources management for the four betters: better production, better nutrition, better environment and better life, to achieve Agenda 2030 and the Sustainable Development Goals ». https://openknowledge.fao.org/server/api/core/bitstreams/4eb091d7-c09d-44f7-a1fb-7854b20e8259/content.

———. 2023b. « World Food and Agriculture – Statistical Yearbook 2023 ». FAO. https://doi.org/10.4060/cc8166en.

Gis Sol. 2011. « L'état des sols de France ». Groupement d'intérêt scientificique sur les sols. https://www.gissol.fr/rapports/Rapport_HD.pdf.

IPBES. 2016. « The Assessment Report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on Pollinators, Pollination and Food Production ». Zenodo. https://doi.org/10.5281/zenodo.3402857.

Kok, Marcel, Alexandra Marques, Michel Bakkenes, Jonathan Doelman, Jelle Hilbers, Roos Immerzeel, Christoph Krüger, et Aafke Schipper. 2024. « A Prospective Evaluation of the Ambition of the Kunming-Montreal Global Biodiversity Framework: A Contribution to the CBD Review Process », octobre. https://www.pbl.nl/system/files/document/2024-10/pbl-2024-Policy-brief-COP_16-5361.pdf.

NGFS. 2021. « Biodiversity and financial stability: building the case for action ».

SBTN. 2024. « High Impact Commodity List (HICL) v1.1 ». 2024. https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fsciencebasedtargetsnetwork.org%2Fwp-content%2Fuploads%2F2024%2F07%2FHigh-Impact-Commodity-List-v1-1.xlsx&wdOrigin=BROWSELINK.

Stadler, Konstantin, Richard Wood, Tatyana Bulavskaya, Carl-Johan Södersten, Moana Simas, Sarah Schmidt, Arkaitz Usubiaga, José Acosta-Fernández, Jeroen Kuenen, et Martin Bruckner. 2018. « EXIOBASE 3: Developing a time series of detailed environmentally extended multi-regional input-output tables ». Journal of Industrial Ecology 22 (3): 502-15.

TNFD. 2023. « Guidance on the identification and assessment of nature-related issues: The LEAP approach - Version 1.0 ». https://tnfd.global/wp-content/uploads/2023/08/Guidance_on_the_identification_and_assessment_of_nature-related-issues_The_TNFD_LEAP_approach_v1.pdf?v=1695138163.

———. 2024. « Additional sector guidance - Food and Agriculture ». https://tnfd.global/wp-content/uploads/2024/06/Additional-Sector-Guidance-Food-and-Agri.pdf?v=1719526279.

World Benchmarking Alliance. 2024a. « 2023 Food and Agriculture Benchmark - Insight Report ». https://assets.worldbenchmarkingalliance.org/app/uploads/2024/04/2023-Food-and-Agriculture-Insights-Report.pdf.

———. 2024b. « Nature Benchmark 2023 - Insight report ». https://assets.worldbenchmarkingalliance.org/app/uploads/2024/03/Nature-Benchmark-2023-Insights-Report.pdf.

WWF. 2020. « Bending the Curve: The Restorative Power of Planet-Based Diets ». https://files.worldwildlife.org/wwfcmsprod/files/Publication/file/7b5iok5vqz_Bending_the_Curve__The_Restorative_Power_of_Planet_Based_Diets_FULL_REPORT_FINAL.pdf.pdf.


© Ivan Vasylyev

Appendix 1 – Key physical risks for the Agriculture and Food sector

This section presents the key ecosystem services that are critical to Food and Agriculture activities, including cultivation, animal farming and food processing. For each of the ecosystem services, Table 2 describes the risks associated with its potential disruption. The magnitude of these risks is assessed based on the level of direct dependency on each service calculated using the Global Biodiversity Score, as higher reliance on a service implies that its degradation would result in greater impacts for the activity.

It is important to note that the dependencies presented in the table focus solely on direct dependencies, *i.e.*, the immediate reliance of farming and processing activities on ecosystem services. However, the broader risks associated with disruptions in upstream industries can also be evaluated by examining the risks faced by the upstream industries: the direct dependency on the pollination service for fruit and vegetable cultivation can affect the value chain of food and beverage processing industries that depend on pollinated raw materials (e.g., fruit juices or almond milk).

Table 2 - Dependency scores on ecosystem services for the sector and associated physical risk. Source: GBS 1.4.10, CDC Biodiversité

ECOSYSTEM SERVICE[1]	RISK MAGNITUDE			PHYSICAL RISKS ASSOCIATED WITH THIS ECOSYSTEM SERVICE	RISK DESCRIPTION
	Cultivation	Animal farming	Processing of food & beverages		
Water purification	● Very high	● Very high	● Very high	Water quality degradation	Fertiliser and pesticide runoff from cultivation, manure from animal farming, and wastewater from industries lead to nutrient loading and toxic pollution in water bodies. This degrades water quality, threatens aquatic biodiversity, and reduces the availability of clean water for irrigation, livestock, and processing needs.
Water supply	● Very high	● High	● High	Aquifer depletion and irrigation water shortage	Over-extraction of groundwater and surface water can lead to depletion of aquifers, jeopardising water availability for irrigation.
Water flow regulation	● High	● High	● High	Water flow disruption	Over-extraction and land use change can disrupt the natural hydrological cycle leading to irregular water flows, which can affect water availability for crop and livestock production.
Soil and sediment retention	● High	● High	● Low	Increased soil erosion	Intensive farming, overgrazing and deforestation can reduce vegetation cover, increasing soil erosion. Soil erosion and depletion of organic matter can lead to lower agricultural productivity but also threatens the agricultural buildings foundations.
Flood control	● High	● Medium	● Medium	Increased flood and storms vulnerability due to loss of natural barriers	The conversion of wetlands, forests, and other natural barriers for farming and processing facilities increases vulnerability to flooding and their ability to buffer storms. Severe floods and storms damage crops, livestock, food processing infrastructure, and exacerbate soil erosion.
Storm mitigation	● Medium	● Medium	● Medium		
Local climate regulation	● High	● High	● Low	Climate change intensification	Land-use changes from farming *(loss of forests and wetlands due to agricultural expansion)* and methane emissions from livestock can exacerbate climate change, causing more frequent weather events *(e.g. droughts, storms)* and affect regional rainfall patterns that disrupt agricultural activities.
Global climate regulation	● High	● High	● Very low		
Rainfall pattern regulation	● Very high	● Very high	● Very low		
Biomass provisionning	● Very high	● Very high	● Very low	Overexploitation of biological resources	Overexploitation of fibers from plant species *(e.g., cotton)* or animals *(e.g., wool)* can harm species populations and reduce genetic diversity, threatening long-term supply chains in the agriculture and food sector.
Soil quality	● Very high	● High	● Very low	Soil fertility decline	Intensive farming, monocultures and deforestation can degrade soil health, reducing its fertility and ability to retain water. Erosion and depletion of organic matter can lead to lower agricultural productivity and loss of biodiversity in soil ecosystems, affecting plant and microbial life.
Biological control	● High	● Medium	● Very low	Increased chemical dependency due to pest control disruption	The systematic use of pesticides, herbicides and fungicides disrupts populations of beneficial insects, animals and other microorganisms necessary to hold pests and diseases in check. The decline of natural predators or disease-resistant species increases the need for chemical intervention, which can further harm ecosystems.
Solid waste remediation	● Low	● Medium	● Medium	Ecosystem natural remediation and filtration failure	Degradation of ecosystems that provide natural filtration and that break down contaminants leads to an accumulation of pollutants from agricultural runoff, such as pesticides and fertilisers, in soil, water, and air. This overwhelms natural processes that would otherwise filter and break down these pollutants, resulting in contaminated water and reduced soil fertility, which harm crops, livestock, and biodiversity.
Pollination	● Medium	● Very low	● Very low	Pollinator population decline	The decline of pollinator populations due to habitat loss, pesticide use, and climate change threatens crop yields for pollinator-dependent species *(e.g., fruits, vegetables, and nuts)*.

LEGEND — Dependency score: ● Very low – 0% to 20% · ● Low – 20% to 40% (Magnitude = 1) · ● Medium – 40% to 60% · ● High – 60% to 80% (Magnitude = 2) · ● Very high – 80% to 100% (Magnitude = 3)

(1) Ecosystem services definitions are provided in Appendix 3 p.40.

Appendix 2 – Key transition risks for the cattle farming sector

The cattle industry is used to illustrate examples of transition risks and how they can affect operations. The insights of this focus on a sub-sector are transferable to other industries of the Food and Agriculture sector.

Table 3 - Example of transition risks for the cattle farming sector

Market Risks	Shift in consumers preferences toward organic or sustainably labelled products	Consumers increasingly demand responsible products that align with certifications like organic or sustainable labels. For cattle farmers, failing to meet these standards may result in a loss of market share and reduced competitiveness
Market Risks	Shift in consumer preferences toward plant-based products	A growing preference for plant-based diets due to environmental concerns is leading to a decline in meat consumption. This trend risks reducing the profitability of cattle farming. Over time, it could necessitate a reorientation of farming activities to align with changing consumer demands.
Regulatory Risks	Transition to low-carbon energy sources to meet greenhouse gas reduction targets	Cattle farming relies heavily on energy for operations such as housing and agricultural machinery. The transition to low-carbon energy sources may require significant investments in energy-efficient technologies, increasing operational costs.
Regulatory Risks	Bans or restrictions on certain agricultural products (e.g., pesticides, fertilisers)	Restrictions on or bans of specific agrochemicals can raise production costs. Farmers might need to adopt more expensive crop protection methods to compensate for the reduced efficacy of prohibited products.
Regulatory Risks	Water withdrawal restrictions	Livestock farming heavily depends on water for animal hydration and cleaning facilities. Water use restrictions can impose operational challenges, increased costs, and necessitate long-term changes in practices, such as adopting water-efficient systems or switching crop varieties.
Regulatory Risks	Relocation of production areas due to protected areas expansion	Global biodiversity frameworks aim to protect at least 30% of land and sea by 2030. Expanding protected zones could force farms located in these areas to relocate, disrupting operations and increasing costs.
Regulatory Risks	Dependency on high-risks products for biodiversity (*e.g.*, linked to imported deforestation)	Cattle farming often depends on products like soy for animal feed, which could become subject to stricter biodiversity regulations. Non-compliance by suppliers could result in increased costs or supply shortages, further complicating operations.
Reputational Risks	Sector stigmatisation	Growing criticism of the cattle farming industry, particularly regarding its environmental and ethical implications, poses reputational risks. Negative perceptions could lead to decreased demand or necessitate additional expenditures to comply with stricter standards and rebuild public trust.
Technological Risks	Challenges in adopting biodiversity-friendly solutions	New environmental regulations may require farmers to implement advanced solutions, such as precision agriculture. This involves using data to optimise inputs like water and fertilisers. While these practices can reduce environmental impacts, the initial costs of adopting such technologies could be prohibitive.

Appendix 3 – Ecosystem services definition

Biological control services: Pest control services are the ecosystem contributions to the reduction in the incidence of species that may prevent or reduce the effects of pests on biomass production processes or other economic and human activity. This may be recorded as a final or intermediate service. Disease control services are the ecosystem contributions to the reduction in the incidence of species that may prevent or reduce the effects of species on human health. This is most commonly a final ecosystem service

Biomass provisioning services: Biomass provisioning services include the ecosystem contributions to the growth of the following: cultivated plants that are harvested by economic units for various uses including food and fibre production, fodder and energy; grazed biomass that is an input to the growth of cultivated livestock; cultivated livestock and livestock products (e.g., meat, milk, eggs, wool, leather); animals and plants (e.g. fish, shellfish, seaweed) in aquaculture facilities that are harvested for various uses; trees and other woody biomass in both cultivated (plantation) and uncultivated production contexts that are harvested for various uses including timber production and energy; fish and other aquatic biomass that are captured in uncultivated production contexts for various uses; wild animals, plants and other biomass that are captured and harvested in uncultivated production contexts for various uses. Biomass provisioning services are final ecosystem services (except the grazed biomass provisioning services, which may also be an intermediate service to livestock provisioning services).

Flood mitigation services: Coastal protection services are the ecosystem contributions of linear elements in the seascape, for instance coral reefs, sand banks, dunes or mangrove ecosystems along the shore, in protecting the shore and thus mitigating the impacts of tidal surges or storms on local communities. This is a final ecosystem service. River flood mitigation services are the ecosystem contributions of riparian vegetation which provides structure and a physical barrier to high water levels and thus mitigates the impacts of floods on local communities. River flood mitigation services will be supplied together with peak flow mitigation services in providing the benefit of flood protection. This is a final ecosystem service.

Global climate regulation services: Global climate regulation services are the ecosystem contributions to the regulation of the chemical composition of the atmosphere and oceans that affect global climate through the accumulation and retention of carbon and other GHG (e.g., methane) in ecosystems and the ability of ecosystems to remove (sequester) carbon from the atmosphere. This is a final ecosystem service.

Local (micro and meso) climate regulation services: Local climate regulation services are the ecosystem contributions to the regulation of ambient atmospheric conditions (including micro and mesoscale climates) through the presence of vegetation that improves the living conditions for people and supports economic production. Examples include the evaporative cooling provided by urban trees ('green space'), the role of urban water bodies ('blue space') and the contribution of trees in providing shade for humans and livestock. This may be a final or intermediate service.

Pollination services: Pollination services are the ecosystem contributions by wild pollinators to the fertilisation of crops that maintains or increases the abundance and/or diversity of other species that economic units use or enjoy. This may be recorded as a final or intermediate service.

Rainfall pattern regulation services: Rainfall pattern regulation services are the ecosystem contributions of vegetation, in particular forests, in maintaining rainfall patterns through evapotranspiration at the sub-continental scale. Forests and other vegetation recycle moisture back to the atmosphere where it is available for the generation of rainfall. Rainfall in interior parts of continents fully depends upon this recycling. This may be a final or intermediate service.

Soil and sediment retention services: Soil erosion control services are the ecosystem contributions, particularly the stabilising effects of vegetation, that reduce the loss of soil (and sediment) and support use of the environment (e.g., agricultural activity, water supply). This may be recorded as a final or intermediate service. Landslide mitigation services are the ecosystem contributions, particularly the stabilising effects of vegetation, that mitigates or prevents potential damage to human health and safety and damaging effects to buildings and infrastructure that arise from the mass movement (wasting) of soil, rock and snow. This is a final ecosystem service.

Soil quality regulation services: Soil quality regulation services are the ecosystem contributions to the decomposition of organic and inorganic materials and to the fertility and characteristics of soils, e.g., for input to biomass production. This is most commonly recorded as an intermediate service.

Solid waste remediation: Solid waste remediation services are the ecosystem contributions to the transformation of organic or inorganic substances, through the action of micro-organisms, algae, plants and animals that mitigates their harmful effects. This may be recorded as a final or intermediate service.

Storm mitigation services: Storm mitigation services are the ecosystem contributions of vegetation including linear elements, in mitigating the impacts of wind, sand and other storms (other than water-related events) on local communities. This is a final ecosystem service.

Water flow regulation services: Baseline flow maintenance services are the ecosystem contributions to the regulation of river flows and groundwater and lake water tables. They are derived from the ability of ecosystems to absorb and store water, and gradually release water during dry seasons or periods through evapotranspiration and hence secure a regular flow of water. This may be recorded as a final or intermediate ecosystem service. Peak flow mitigation services are the ecosystem contributions to the regulation of river flows and groundwater and lake water tables. They are derived from the ability of ecosystems to absorb and store water, and hence mitigate the effects of flood and other extreme water-related events. Peak flow mitigation services will be supplied together with river flood mitigation services in providing the benefit of flood protection. This is a final ecosystem service.

Water purification services: Water purification services are the ecosystem contributions to the restoration and maintenance of the chemical condition of surface water and groundwater bodies through the breakdown or removal of nutrients and other pollutants by ecosystem components that mitigate the harmful effects of the pollutants on human use or health. This may be recorded as a final or intermediate ecosystem service.

Water supply: Water supply services reflect the combined ecosystem contributions of water flow regulation, water purification, and other ecosystem services to the supply of water of appropriate quality to users for various uses including household consumption. This is a final ecosystem service.

The World Benchmarking Alliance (WBA) is an international not-for-profit organisation based in the Netherlands since 2018. Our mission is to measure how businesses impact people and planet, so that together we can hold companies accountable for contributing to sustainable development. We assess the 2000 most influential global companies on their contribution to the Sustainable Development Goals (SDGs) and other global agendas, such as the Paris Agreement and the Global Biodiversity Framework. These companies have the potential to advance or hinder systems change – they make up half of the entire global economy, hold $36.5 trillion in revenue and employ 97 million people across 85 countries. Our benchmarks focus on seven system transformations needed to achieve the SDGs: Energy and Decarbonisation; Food and Agriculture; Nature; Digital; Urban; Social; and Finance.

WBA's Alliance comprises over 450 global, regional, and local organisations from civil society, business and industry platforms, reporting frameworks and standards-setters, multilateral organisations, research and academic institutions, sustainability consultancies, and financial institutions, including investors representing $15 trillion in assets under management.

CDC Biodiversité is a French consulting and engineering firm specialised in positive actions for biodiversity, biodiversity sustainable management, and measurement of corporate biodiversity footprint. It is a private subsidiary of the *Caisse des Dépôts et Consignations* Group, the biggest public financial institution in France. The *Mission Economie de la Biodiversité (MEB)*, a research initiative of the *Banque des Territoires* dedicated to the links between economy and biodiversity, translates its work through publications and various communications.

From 2012 to 2021, the MEB's work was published in two collections (*BIODIV'2050* and *Cahiers de BIODIV'2050*), but since 2022, it publishes its work within a single unified collection, the "MEB's reports". All of this work can be found on CDC Biodiversité's website.

Report's details

EXECUTIVE DIRECTOR: MARIANNE LOURADOUR

EDITOR IN CHIEF: VIOLETTE PRADÈRE

REDACTION (IN ALPHABETICAL ORDER): JULIE BONNET, EMMA GODEFROY, NICKI HARRIOTT, MICHAEL LEE, DANIEL PIÑA

WITH CONTRIBUTION FROM: JOSHUA BERGER, JENNIFER BLACK, ARTHUR CAMPREDON, AMANDINE KEMMEL, VIOLETTE PRADÈRE, GABRIEL ROBIN, PATRICIA ZHANG

COORDINATION AND EDITION: MISSION ÉCONOMIE DE LA BIODIVERSITE

ARTWORK: JOSEPH ISIRDI – www.josephisirdi.fr

CONTACT: GBS@CDC-BIODIVERSITE.FR

COVER PHOTO: ©OTICKI SHUTTERSTOCK

PUBLICATION OF THE MISSION ECONOMIE DE LA BIODIVERSITE, FINANCED BY THE BANQUE DES TERRITOIRES (CAISSE DES DEPOTS).

REFERENCE: CDC BIODIVERSITÉ & WORLD BENCHMARKING ALLIANCE (2025), FROM EVALUATION TO ACTION: NO-REGRET MEASURES TO MITIGATE AGRICULTURAL BIODIVERSITY RISKS, BONNET, J., GODEFROY, E., HARRIOTT, N., LEE, M., PIÑA, D., MISSION ÉCONOMIE DE LA BIODIVERSITE, PARIS, FRANCE, 44 P.

Mission Économie de la Biodiversité

CDC Biodiversité

141 avenue de Clichy
75017 PARIS

Phone +33 (0)1 76 21 75 00
https://www.cdc-biodiversite.fr/publications/

How can businesses, investors, and public authorities identify and mitigate biodiversity-related risks in the Food and Agriculture sector? What are the key industries most exposed to nature-related risks, and how can they take action?

This publication is a practical guide designed to support stakeholders in their first steps toward integrating biodiversity considerations into their risk management strategies. By providing a structured risk assessment framework, it enables companies, financial institutions, and policymakers to evaluate their dependencies and impacts on nature. The guide highlights high-risk sub-industries and commodities, examines key physical and transition risks, and offers concrete methodologies for risk evaluation.

Each section concludes with tailored recommendations, offering actionable insights for public authorities, financial institutions, and businesses alike. These guidelines help stakeholders translate risk assessment into effective decision-making and strategic planning.

With a focus on practical solutions, this guide equips stakeholders with the knowledge and tools necessary to take concrete steps toward reducing biodiversity risks.

MISSION ÉCONOMIE DE LA BIODIVERSITÉ

CDC BIODIVERSITÉ | Caisse des Dépôts GROUPE

THE *MISSION ECONOMIE DE LA BIODIVERSITÉ*
IS FINANCED BY:

BANQUE des TERRITOIRES | Caisse des Dépôts GROUPE