

BACKGROUND  
PAPER

# BIODIVERSITY

LAST UPDATED: DECEMBER 2024

# MANAGEMENT SUMMARY

Biodiversity is essential for the stability of ecosystems, forming the foundation of human health, and a resilient global economy. As a global specialty chemicals company, we embrace our corporate responsibility and are committed to minimizing our environmental footprint.






Protecting biodiversity-sensitive areas is essential, as these regions play a critical role in maintaining ecological balance and supporting ecosystem services. To better understand the environmental implications of our operations, we conducted a detailed assessment of our production sites, evaluating their proximity to these sensitive areas and determining any potential negative effect. Our analysis confirmed that our operations do not negatively impact these biodiversity sensitive areas.

In addition, we assessed both our reliance on ecosystem services, such as clean water, energy, and natural protection against landslides and flooding in supporting our operations, as well as our potential impacts on those ecosystem services. While we do not face critical dependencies, we remain dedicated to understanding the broader implications of our activities and addressing them responsibly. Our key areas of impact include:

- Greenhouse Gas Emissions (GHG)
- Non-GHG Emissions
- Volume of Water Use
- Generation and Release of Solid Waste
- Pollution to Water

We have already integrated specific measures and targets into our sustainability strategy which address and mitigate the identified impacts on biodiversity. Our commitment extends beyond our operations - we also act along the value chain by managing our suppliers, raw materials, and product responsibility with great care.

In this paper, we describe our biodiversity impact and dependency assessment, our expectations of environmental stewardship, and the associated management approach. Further, we provide a detailed overview of our sustainability goals, actions, initiatives, and the progress we have made on environmental topics affecting biodiversity in the following publications:

-  LANXESS Corporate Policy
-  Background Paper Climate
-  Background Paper Water
-  Background Paper Value Chain Responsibility
-  Background Paper Product Portfolio

# CONTENT

## MANAGEMENT SUMMARY

## BIODIVERSITY AT LANXESS

4

### 1. LANXESS APPROACH TO ENVIRONMENTAL STEWARDSHIP

5

### 2. BIODIVERSITY ASSESSMENT

5

Proximity of our Sites to Key Biodiversity Areas and Protected Zones

5

Our Dependencies

6

Our Impacts

6

### 3. MEASURES AND TARGETS

7

Responsibility at our Sites

7

Sustainable Sourcing

9

Sustainable Product Portfolio

10

## GLOSSARY


12

# BIODIVERSITY AT LANXESS

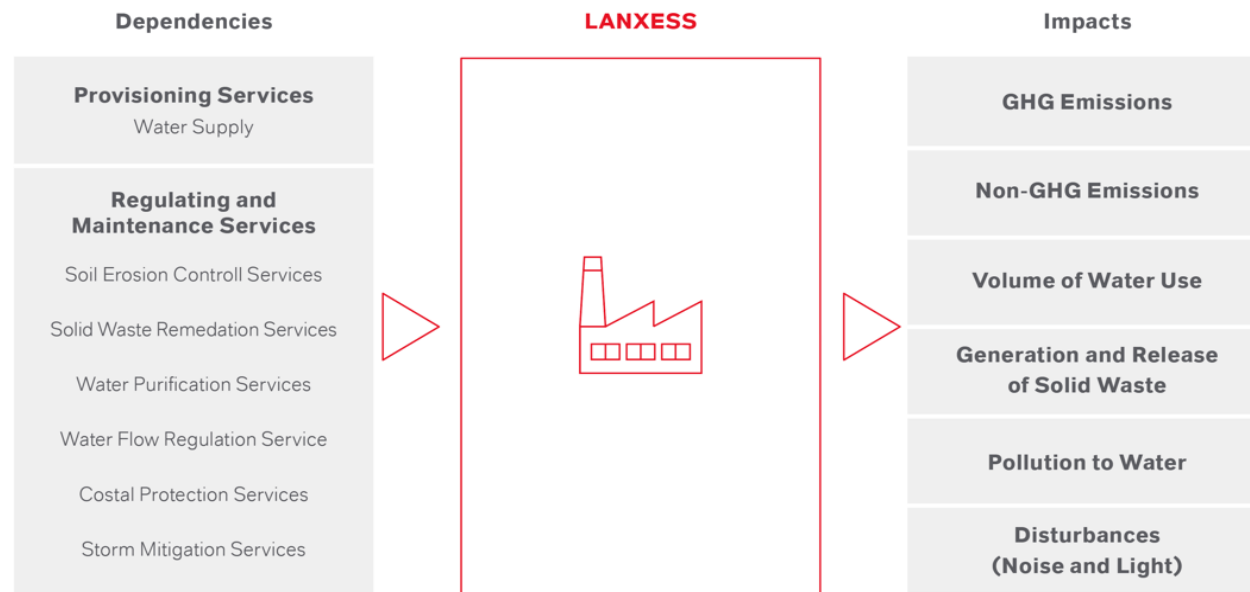
Biodiversity encompasses the vast variety of life forms on earth, including all species of plants, animals, fungi, and microorganisms, as well as the ecosystems they collectively form. The conservation of ecosystems is essential for maintaining the well-being of humans, animals, and plants, as highlighted in the Global Biodiversity Framework at the COP15 conference.

Committing to biodiversity conservation aligns closely with the Sustainable Development Goals (SDGs), particularly SDG 14 (Life Below Water) and SDG 15 (Life on Land), which stress the sustainable use and protection of aquatic and terrestrial ecosystems. Furthermore, the preservation of biodiversity is essential for ensuring a resilient and prosperous economy.

According to the World Economic Forum, approximately 50% of the global economy relies on ecosystem services provided by nature, highlighting its indispensable role in supporting long-term economic sustainability and societal development<sup>1</sup>.

 Further information on LANXESS and the SDGs

## LANXESS depends on and at the same time influences ecosystems and thus biodiversity



As a chemical company, we rely on ecosystem services, such as clean water, energy, and natural protection against landslides and flooding, in supporting our operations. Ecosystem services are irreplaceable. In cases where substitution is necessary, it typically involves higher costs, lower quality, and greater negative effects on nature. Although these services are integral to our business and production processes, our reliance on them is not as critical as in sectors such as agriculture, where functions like pollination are essential for operational continuity.

However, we are aware that our activities can also have negative impacts on biodiversity, highlighting the need to implement responsible practices to minimize these effects.

We recognize and align our efforts with key global and regional biodiversity frameworks, including the Kunming-Montreal Global Biodiversity Framework, which sets global goals for halting biodiversity loss, and the EU Biodiversity Strategy for 2030, aimed at restoring ecosystems and promoting sustainability to ensure alignment with international efforts.

<sup>1</sup> Source: World Economic Forum, and PwC: Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy. January 2020.

## 1. LANXESS APPROACH TO ENVIRONMENTAL STEWARDSHIP


Sustainability is at the core of our approach, embedding ecological, social, and economic responsibilities into our operations to secure long-term success within natural and socially sustainable limits.

A cornerstone of this approach is environmental stewardship, reflecting our commitment to protecting ecosystems and minimizing our environmental footprint. Within this framework, biodiversity plays a crucial role as it supports ecosystem stability and ensures the sustainability of our operations.

By addressing interconnected challenges such as climate change, resource conservation, and ecological preservation, we inherently integrate biodiversity considerations into our management approach. This not only enhances our ability to achieve sustainability objectives but also strengthens the resilience of global value chains and contributes to the well-being of communities.

Our CEO and the Sustainability Committee, which he chairs, are responsible for monitoring and implementing our sustainability strategy. Biodiversity considerations, due to its interconnected nature, are addressed by the Health, Safety & Environment (HSE) Sub-Committee by specifically addressing health, safety, and environmental issues which are intrinsically linked to biodiversity conservation. In addition, the Climate & Energy Sub-Committee, as well as by the Value Chain Circularity & Product Stewardship (VCCPS) Sub-Committee, ensuring its integration into climate and supply chain strategies.

The Production, Technology, Safety & Environment (PTSE) department plays a crucial role in managing biodiversity-related initiatives by embedding these considerations into environmental management systems and operational processes. PTSE uses relevant site-specific data to inform decision-making and collaboration across departments ensuring a holistic and integrated approach to environmental sustainability.

 [More information on our committees and functions](#)

## 2. BIODIVERSITY ASSESSMENT

Conducting biodiversity risk assessments serves as a key starting point, helping to identify nature-related dependencies and impacts. To guide this process we rely on two primary tools: the WWF Risk Filter and ENCORE, both recognized as an industry standard and best practice for evaluating biodiversity-related considerations.

### Proximity of our Sites to Key Biodiversity Areas and Protected Zones

The WWF Risk Filter assesses location-specific biodiversity risks across various industries, including chemicals and materials production. We utilized this tool to assess biodiversity risks at all our sites, using 33 biodiversity-related indicators and taking into account the state of ecosystems in combination with the industry's impact and dependency.

While most of our manufacturing sites are in industrialized regions, some are near protected or key biodiversity areas (KBAs). KBAs are the most critical areas for species and their habitats, highlighting the importance of protecting these regions. Furthermore, 'protected areas' are legally designated spaces critical for biodiversity conservation, subject to various levels of protection depending on their legal status, such as national parks, nature reserves, and wildlife sanctuaries.

To enhance our understanding, we used the WWF Risk Filter to analyze the proximity of our sites to these areas. Combining these results with our site-specific process safety data, confirms that no significant environmental impacts have occurred at sites with elevated biodiversity risks in the reporting year, such as those near protected areas or key biodiversity areas.

To understand whether the natural environment around our sites remains intact and connected, it is important to assess the condition of the ecosystems at our sites. Our analysis, based on the WWF Risk Filter and specifically the Land, Freshwater, and Sea Use Change indicator, confirmed that our operations do not significantly contribute to habitat destruction or fragmentation.

Furthermore, protecting endemic species is vital, as they are often the most vulnerable to habitat changes. The Range Rarity Indicator from the WWF Risk Filter evaluates the risk to these species based on their degree of endemism at production sites. Our analysis identified no sites with very high or high risk scores, confirming that our activities do not threaten endemic species in the assessed locations.



Lastly, evaluating land use is crucial for understanding how industrial activities affect habitat availability and quality. According to the ENCORE framework, the chemical industry and its operations has a "low" materiality rating for land use, highlighting its minimal influence on land degradation, desertification, and soil sealing. Unlike sectors such as agriculture or mining, chemical production is mainly concentrated in established industrial areas, requiring little land conversion and avoiding significant environmental impacts.

### Our Dependencies

As a chemical company, our operations rely on several key ecosystem services. To gain a comprehensive understanding of the specific dependencies of the chemical industry, we employed the ENCORE tool, which focuses on the connections between economic activities and ecosystem services.

ENCORE assigns a materiality rating to each dependency, facilitating the identification and prioritization of critical ecosystem services. The findings indicate that LANXESS' dependencies on ecosystem services generally fall within the lower range, rated as medium at best and can be categorized into two primary areas: provisioning services (goods obtained from ecosystems) and regulating and maintenance services (benefits derived from the regulation of ecosystem processes).

### Provisioning Services

- › **Water Supply:** Water supply services reflect combined ecosystem contributions around water and ensure a reliable supply of water for our chemical operations.

### Regulating and Maintenance Services

- › **Soil Erosion Control Services:** Soil erosion control services provided by vegetation help stabilize soil, reducing sediment loss and supporting our operations by protecting the environment and water supply. Additionally landslide mitigation services also stabilize soil and prevent damage to our facilities and infrastructure from landslides, ensuring the safety and continuity of our operations.
- › **Solid Waste Remediation Services:** Solid waste remediation services transform harmful organic and inorganic substances through the action of micro-organisms, algae, plants, and animals. This process mitigates the negative effects of waste.
- › **Water Purification Services:** Water purification services help maintain the quality of surface and groundwater by removing pollutants.
- › **Water Flow Regulation Service:** Baseline flow maintenance services ensure a steady water supply for our chemical operations by regulating river flows and groundwater levels. Peak flow mitigation services protect our facilities from flooding by absorbing and storing excess water, reducing the impact of extreme water-related events.
- › **Coastal Protection Services:** Coastal protection services (e.g. sand banks) are crucial for safeguarding facilities from tidal surges and storms. These natural barriers help prevent damage to the infrastructure and reduce operational disruptions.
- › **Storm Mitigation Services:** Vegetation, including hedgerows and tree lines, helps protect our chemical facilities from wind and sand storms, reducing operational disruptions and ensuring safety.

### Our Impacts

Beyond our dependencies on ecosystem services, it is crucial to consider the impacts we, as a chemical company, can have on these ecosystems.

Using the ENCORE tool, we conducted an industry-specific analysis of the chemical sector to understand how our activities might influence the health and stability of ecosystems.

- › **GHG Emissions:** Chemical operations contribute to the release of greenhouse gases like CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, which in turn contribute to climate change.
- › **Non-GHG Emissions:** Chemical manufacturing sites release non-GHG pollutants such as particulate matter (PM2.5), non-methane volatile organic compounds (NMVOCs) and nitrogen oxides.
- › **Volume of Water Use:** Our operations use water for cooling, process purposes and in the form of steam. Water usage can negatively impact ecosystems by reducing the availability of water for natural habitats.
- › **Generation and Release of Solid Waste:** Solid waste from chemical production, including hazardous and non-hazardous materials, can lead to environmental contamination, increased disposal costs, and potential regulatory violations.
- › **Pollution to Water:** Discharges of substances, like hazardous organic chemicals, could pose severe risks to ecosystems, human health, and biodiversity.

Noise and light pollution are additional factors that could potentially impact local ecosystems and wildlife. These disturbances can disrupt animal behavior, and affect local communities. Our materiality analysis has revealed, that our operations have no significant impact on noise or light levels and we continually assess compliance with regulations and industry standards to manage these potential environmental risks.

In line with our sustainability approach, LANXESS has already developed strategies and targets to address the majority of the identified relevant impacts.

### 3. MEASURES AND TARGETS

We recognize our dependencies and impacts on biodiversity. For many years we have implemented targeted measures and set goals to address our key impact categories, striving to minimizing negative effects.

We have focused our actions on our production sites, where our impact is most significant, while also addressing the upstream and downstream value chain through supplier management and product responsibility initiatives.

#### Responsibility at our Sites

##### GHG Emissions

The release of GHG emissions impacts biodiversity by driving climate change leading to temperature shifts, extreme weather events, and habitat loss threatening countless species. Additionally, rising CO<sub>2</sub> levels contribute to ocean acidification which disrupts marine ecosystems and endangers species reliant on stable pH levels.

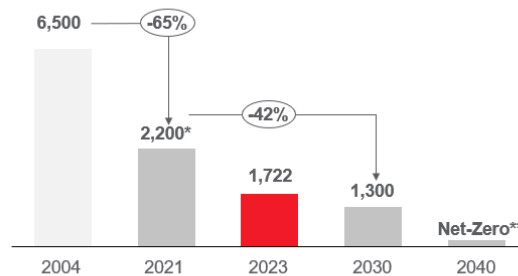
As a responsible company, we are committed to protecting the climate and limiting global warming. This is why we have made it our mission to become climate-neutral by 2040, ahead of the EU's 2050 target. Furthermore, we aim to eliminate indirect emissions in the up-stream and down-stream value chain by 2050. Our ambition is in line with the goals of the Paris Climate Agreement to limit global warming to 1.5 °C. This was confirmed by the Science Based Target Initiative (SBTi).

As described in our Background Paper on Climate – we are working on three main levers to achieve climate neutrality by 2040:

- Launch major impact projects for climate protection
- › Decouple emissions and growth (impact on the company's carbon footprint has become an investment criterion for organic growth and acquisitions.)
- › Strengthen process and technological innovations

 Background Paper Climate

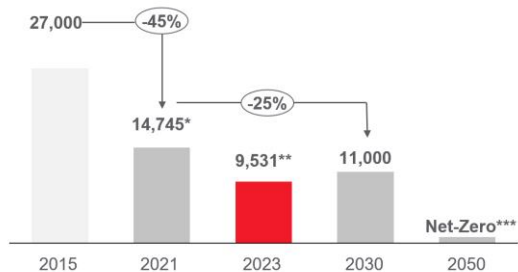
**Our path to climate neutrality**  
in thousand of metric tons of CO<sub>2</sub>e



\* Adjusted to present portfolio

\*\* Climate neutrality as per SBTi Corporate Net-Zero Standard (10% residual emissions versus 2021 baseline will be reduced by compensation measures)

**Our journey towards "Net Zero Value Chain"**  
in thousand of metric tons of CO<sub>2</sub>e



\* Adjusted to present portfolio

\*\* 2023 distorted due to the low utilization

\*\*\* Climate neutrality as per SBTi Corporate Net-Zero Standard (10% residual emissions versus 2021 baseline will be reduced by compensation measures)

##### Non-GHG Emissions

Non-GHG emissions, such as particulate matter, nitrogen oxides, and non-methane volatile organic compounds can harm the biosphere. These emissions can cause acid rain, eutrophication and physical damage to ecosystems, leading to habitat degradation and species loss, either directly or indirectly.

We take responsibility for these air pollutants by identifying them at our locations, regularly measuring their levels, conducting external audits, and publishing the results. Our Group-wide "Environmental Protection Management" guideline outlines our approach to managing and continuously reducing these emissions. We have set goals to reduce emissions of volatile organic compounds, and already achieved a reduction of over 85% compared to base year 2015, with further reductions targeted. Thermal air purification is employed to remove non-GHG emissions and especially to remove nitrous oxide (laughing gas).

 Background Paper Value Chain Responsibility

##### Volume of Water Use

Freshwater is essential for ecosystems, biodiversity, and human health, yet water scarcity and pollution pose significant threats to aquatic ecosystems and biodiversity. As our assessments show, water is a needed resource for LANXESS. We rely on its availability at our sites for our operations such as process cooling as well as for transportation purposes.

To address these interdependencies and manage our impact responsibly, LANXESS has implemented a comprehensive global water management program. This includes transparent reporting on water use, wastewater discharge, and ecosystem impacts, as well as monitoring water consumption to ensure that our activities do not adversely affect biodiversity.

In terms of water quantity, we aim to decouple economic growth from water withdrawal and consumption to reduce pressure on local ecosystems. We prioritize the use of rainwater and treated wastewater to protect natural water sources and biodiversity. Additionally, we have set clear year-on-year reduction targets for water consumption worldwide.

Local water stress is a key factor in sustainable water management. Identifying water risk sites and assessing their ecological impacts is crucial for guiding local action plans. Over 90% of our water withdrawal occurs in low-stress areas, with only 2% in high-stress regions. We assess water risks by considering both local stress levels and operational factors, identifying four risk sites in India, Italy, and China. For these sites, we have set specific withdrawal reduction targets and are implementing water stewardship programs, including more efficient cooling systems and increased water recycling to mitigate negative impacts on local ecosystems. Furthermore, we developed site-specific strategies to conserve water and enhance local ecosystem health.

 Background Paper Water

### Generation and Release of Solid Waste

Solid waste is a significant issue for biodiversity as the improper disposal and accumulation of solid waste can disrupt natural habitats, pollute ecosystems, and harm wildlife through ingestion, entanglement, or habitat degradation. To address this, we aim to minimize waste generation at our sites, which helps reduce the burden on ecosystems, lower pollution, and mitigate negative effects on biodiversity.

We focus on minimizing both hazardous and non-hazardous waste, working to decouple growth from waste generation. Our goal is to achieve a continuous reduction in total waste

generation over time, improving waste efficiency and minimizing overall waste generation.

In particular, we are addressing landfilled waste, striving to increase external recycling for waste flows. By ensuring more waste is recycled, less material ends up in landfills, benefiting ecosystems and biodiversity. We also aim to significantly reduce the amount of waste sent to landfills by focusing on diversion strategies and enhancing recycling and reuse efforts. Additionally, recycling waste chemically or using it as an energy source reduces our reliance on virgin resources, helping preserve natural habitats and minimizing the need for extraction activities that could harm biodiversity.

 Background Paper Value Chain Responsibility

#### Info box: Sustainable Synergies

At our three largest "Verbund" sites in Leverkusen, Dormagen, and Krefeld-Uerdingen, we work with Currenta, the chemical park operator which provides essential services like fire brigade and occupational health support, on waste reduction strategies. These sites enable sustainable practices through closed-loop material cycles with neighboring companies, reducing waste, raw material use, and protecting local habitats.

Example of optimized material flows at our sites:

**Ammonia water (Leverkusen):** Diluted ammonia water generated during resin production by Liquid Purification Technologies is reused as a raw material by a neighboring production plant, replacing the need for fresh ammonia.

 Background Paper Value Chain Responsibility

### Pollution to Water

Building on our commitment to preventing environmental incidents and ensuring the safety of ecosystems surrounding our operations, we focus on water quality as one critical element of environmental stewardship. Recognizing the essential role of clean water for both ecosystems and communities, our water strategy incorporates clear targets to minimize pollution.

These objectives include actively monitoring and reducing wastewater pollutants such as Total Organic Carbon (TOC), nitrogen, and heavy metals to protect aquatic ecosystems. We are committed to ensuring all wastewater is treated effectively to prevent contamination of nearby freshwater habitats and to minimize harmful discharges, supporting both biodiversity and water quality.

To reinforce these efforts, we have set an ongoing target of a 2% annual reduction in specific TOC levels in wastewater, underscoring our dedication to safeguarding aquatic ecosystems.

 Background Paper Water


Furthermore, we are aware that spills or accidental release of harmful substances into the environment can cause long-term damage to ecosystems and wildlife. To address this risk, we prioritize safe and sustainable operations and workflows, which we improve on an ongoing basis. This includes inherently safe construction and safety infrastructure, such as secondary containment systems, warning systems, fire protection measures, and emergency shut-off mechanisms. These are tailored to meet or exceed statutory requirements based on comprehensive hazard assessments.



**Info box: Ensuring Safe Water for People and Nature**

Not only are we continuously working to reduce water emissions at our production sites but our products help our customers achieve the same goal. For example our **Lewatit® ion exchange resins** offer a highly-efficient solution for wastewater treatment and even remove PFAS (Per- and Polyfluoroalkyl Substances) from drinking water. These substances, commonly referred to as "forever chemicals," are resistant to degradation and can accumulate in ecosystems, posing serious risks to both human health and biodiversity.

Our technology works by targeting and removing these harmful compounds, significantly improving water quality. This not only helps safeguard aquatic life but also supports the preservation of freshwater ecosystems. For example, in Belgium, LANXESS equipped De Watergroep's mobile system with **Lewatit® TP 108 DW** ion exchange resins. The modular container system can treat up to 190,000 liters of drinking water per hour, providing an effective solution for large-scale PFAS removal.

 [Landing Page Lewatit®](#)

To uphold these high standards, we leverage our global risk management system, which ensures compliance with international standards like ISO 14001 and ISO 45001, alongside local regulations. Regular audits are conducted depending on the risk potential of each facility ensuring that higher-risk sites are reviewed at least every three years. Our global process and plant safety directives establish clear responsibilities and practices to minimize hazards and maintain facility integrity. Regular training and strict maintenance protocols further reinforce these measures.

Additionally, a 24/7 global emergency support process provides rapid assistance in the event of an incident, supporting stakeholders and mitigating potential impacts.

We systematically track process safety incidents (PSI) globally, analyzing every event, regardless of severity, and implementing corrective actions to prevent recurrence. Continuous improvement is supported by clear targets to reduce both process and environmental incidents. In 2023, no incidents with relevant environmental impacts were recorded, reflecting the effectiveness of our comprehensive approach.

To support ongoing improvement, we have set continuous targets to reduce both facility and process safety incidents, as well as environmental incidents.

 [Background Paper Value Chain Responsibility](#)

**Info box: Local Initiatives to preserve Biodiversity**

**USA, Charleston:**

- › Support for the Coastal Conservation League to preserve South Carolina's coastal ecosystems.
- › Focus on protecting biodiversity and sustaining vital coastal habitats.

**Canada, Elmira – G2G Rail Trail:**

- › Funding for the G2G Rail Trail, a conservation corridor of natural, historical, and cultural significance which promotes habitat connectivity and community engagement in biodiversity conservation.

**Canada, Elmira – TWEEC Partnership:**

- › Collaboration with the Township of Woolwich Environmental Enhancement Committee (TWEEC) on various restoration projects.

**Sustainable Sourcing**

We do not limit our focus on environmental and biodiversity impacts to our own operations but also act along our value chain. We promote sustainability and transparency along our supply chains and expect our suppliers to uphold socially, environmentally, and economically sustainable practices.


**Supplier Management**

Our Business Partner Code of Conduct requires suppliers to comply with applicable laws, minimize environmental impacts, and adhere to sustainability standards. Violations may lead to the termination of business relationships. To assess risks early, we use detailed analyses, evaluating suppliers' economic, regulatory, social, and environmental practices.

We acknowledge our responsibility as an actor in various value chains and seek to obtain comfort that our suppliers are avoiding deforestation through certifications, assessments or audits. We provide guidance to our partners on how to manage sustainability e.g. with regard to product carbon footprint methodologies.

Our supplier screening incorporates "Together for Sustainability" (TfS) reports, including EcoVadis ratings and independent audits, which evaluate and promote suppliers' performance in key areas like environmental management, ethics, and sustainable procurement. These assessments are integrated into strategic processes, such as contract negotiations or renewals for purchases over €5 million, via our XCORE framework.

 [Background Paper Value Chain Responsibility](#)

 [More information on the "Together for Sustainability" initiative](#)

### Transportation

Every chemical spill along the value chain poses a threat to the environment and biodiversity. Therefore, safety is a critical factor in selecting our transportation solutions, alongside economic and environmental considerations. To ensure high standards, we regularly review the sustainability, safety, and quality criteria of our transportation service providers, typically every three years, using the established Safety and Quality Assessment for Sustainability. We maintain a strong focus on reducing transportation incidents through proactive safety measures. Notably, there were no reportable transportation incidents in fiscal year 2023.

 Background Paper Value Chain Responsibility

### Sustainable Product Portfolio

We are committed to minimizing risks to both human health and the environment throughout the entire lifecycle of our products. This commitment encompasses safe practices in procurement, manufacturing, storage, logistics, use, and disposal. Continuously improving product sustainability safety is a fundamental part of our Corporate Policy.

 LANXESS Corporate Policy

### Safe and Sustainable Products

Our primary tool for aligning our portfolio with sustainability goals is the LANXESS Sustainability Monitor. This tool enables us to assess risks and identify opportunities for improvement, considering environmental, social, and economic impacts. In addition to indirect contributors to biodiversity loss, such as climate change, water use, and waste efficiency, we also evaluate direct environmental risks, including aquatic and environmental toxicity associated with chemical end products.



#### Info box: Vulkanox®

Antidegradants like the **Vulkanox® line** are crucial for protecting rubber products, such as tires, from external damage and deterioration due to factors like oxidation and cracking. As these chemicals can enter the environment in the form of tire wear particles, it is essential to address their environmental impact. As 6PPD, the major antidegradant, can negatively affect groundwater and ecosystems through tire debris, we committed to innovation to develop a safer, more sustainable alternative.

Our new product, **Vulkanox® 4060**, is a potential 6PPD replacement candidate, which offers significant environmental advantages:

- › **Safer degradation products:** Not acutely toxic to aquatic life, unlike those of 6PPD, which are harmful to species like coho salmon.
- › **Efficient biodegradation:** Breaks down more efficiently, with over 60% biodegradation within 28 days (OECD 301D), which reduces long-term environmental impact.

 Vulkanox® 4020

Using the LANXESS Sustainability Monitor, our portfolio is categorized into groups ranging from those with outstanding characteristics (Energizers and Performers) to those requiring improvements (Transitioners) or presenting significant concerns (Roadmap and Phase-Out products).

This classification reflects each product's current status, focusing on enhancing sustainability through innovation, risk management, and replacing critical substances with safer alternatives. Our Product Stewardship group evaluates the entire product portfolio once a year. Products with significant sustainability concerns, such as those containing more than 0.1% of substances of very high concern (SVHCs), are managed through our roadmap process. Our approach prioritizes the substitution of hazardous substances with sustainable alternatives, leveraging innovation and circularity. If substitution proves unfeasible, the product is phased out and withdrawn from the market.

### Climate-neutral and Circular Products

We aim to contribute to a resource-efficient, climate-neutral society by producing products with a reduced CO<sub>2</sub> footprint, working toward climate-neutral products.

A significant part of reducing our Product Carbon Footprint (PCF) is addressing Scope 3 emissions from purchased goods, particularly raw materials, which often account for over 50% of emissions in chemical products. We are committed to promoting low-carbon solutions and collaborating with suppliers to reduce emissions from purchased goods. We plan to transition from fossil-based to bio-based, recycled, or Power-to-X materials, which use renewable energy to convert CO<sub>2</sub> into chemicals.

However, the use of bio-based organic raw materials also entails challenges and potential conflicts, such as the competition for food production or impacts on biodiversity. We take these factors into account in strategic decisions about raw materials. When procuring biomass for direct use, we work with our suppliers to ensure that the biomass we use is produced in a sustainable manner and does not compete with food production, cause biodiversity loss or lead to deforestation.

Further, when using sustainable raw materials we use the ISCC+ Certification to certify the sustainable origin of the raw material.

Our goal is a climate-neutral product portfolio by 2050, recognizing that closed-loop technical cycles will be increasingly vital to achieving this target and support the use of circular raw materials from all recycling options.

### **Safe Use and Handling**

As a chemical company, ensuring the safe use of our products throughout the value chain is essential to protecting people, ecosystems, and minimizing environmental risks. This includes preventing the release of harmful substances that could threaten biodiversity.

Safe product use and regulatory compliance are core to our global guidelines and Group-wide management systems. We label our products according to GHS (Globally Harmonized System) standards to mitigate environmental and health risks. We also provide proactive training, guidance, and safety information to our customers and partners, ensuring they handle our products without causing environmental harm.

Through continuous monitoring of our products in the market, we identify and address potential risks to human health and the environment.

 Background Paper Value Chain Responsibility

 Background Paper Product Portfolio

### **Sustainability by Design**

Lastly, we strive to develop products that are sustainable by design, ensuring they do not harm biodiversity in the short or the long term. This approach considers the entire lifecycle of our products, starting from development to their eventual end-of-life and disposal or reuse. Avoiding waste and pollution, such as plastic loss or solid waste, is crucial to safeguarding ecosystems and biodiversity. This approach is at the heart of the circular economy.

We identify two main cycles:

**1. Technical Cycles (Recycling):** Products enter technical cycles after use, meaning we must ensure they are fully recyclable. As we primarily produce additives incorporated into products in small quantities to optimize their physical properties, recycling these additives is often impractical due to their minimal mass percentage. Therefore, it is crucial that they are suitable for recycling within either technical or biological cycles, depending on the product they are used in.

**2. Biological Cycles:** If products enter biological cycles, they must be fully biodegradable. This involves natural processes where organic materials decompose and return to the ecosystem, supporting regeneration and sustainability. Our active ingredients, such as disinfectants and agricultural chemicals, cannot be recovered for technical recycling due to their usage patterns. Instead, they enter the biological cycle and natural regeneration processes directly. Thus, ensuring their biodegradability is essential.

# GLOSSARY

**EcoVadis:** Issues sustainability ratings for companies. The rating helps track and improve a company’s global environmental, social and ethical performance.

**ENCORE:** The ENCORE (Environmental and Social Risk Analysis) tool developed by the Taskforce on Nature-related Financial Disclosures (TNFD), is a framework developed to help businesses assess their environmental and social impacts, including those on biodiversity. It allows companies to evaluate the risks and dependencies of their operations on natural resources and ecosystems.

**European Green Deal:** This outlines a comprehensive EU growth strategy for a climate-neutral and resource-conserving economy. The primary aim is to achieve EU-wide climate neutrality by 2050 through measures such as climate, environmental and biodiversity protection, mobility, industrial policy and requirements relating to energy, agricultural and consumer protection policy.

**Europe Strategy 2030:** The Europe Strategy 2030 is a long-term plan adopted by the European Union to drive sustainable growth, enhance environmental protection, and improve social well-being. It sets ambitious targets for reducing greenhouse gas emissions, promoting renewable energy, and advancing digital and green transitions, with the goal of making Europe the first climate-neutral continent by 2050.

**Global Biodiversity Framework (GBF):** An international framework adopted during the 15th Conference of the Parties (COP15) to the Convention on Biological Diversity (CBD) in 2022. The GBF provides a strategic plan to halt biodiversity loss and restore ecosystems by 2050, with interim goals set for 2030. It includes targets to protect 30% of the planet’s land and ocean, reduce pollution, and ensure sustainable use of natural resources, aligning with global efforts to address biodiversity challenges and support ecosystem health.

**Greenhouse gases (GHGs):** GHGs are gases that contribute to the greenhouse effect through the absorption of infrared radiation. GHGs include carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), fluorinated hydrocarbons (HFCs), perfluorocarbons (PFC) and sulfur hexafluoride (SF<sub>6</sub>).

**Key Biodiversity Area (KBA):** KBAs are geographical regions identified as being of international importance for biodiversity conservation. The WWF Risk Filter identified KBAs using BirdLife International’s World Database.

**Kunming-Montreal Global Biodiversity Framework:** The Kunming-Montreal Global Biodiversity Framework, adopted in 2022, is a global agreement aimed at reversing biodiversity loss and ensuring the conservation and sustainable use of biodiversity. It sets ambitious targets for the protection of ecosystems, the reduction of pollution, and the equitable sharing of biodiversity benefits, with the goal of halting the degradation of nature by 2030 and achieving a sustainable future for biodiversity.

**Paris Climate Agreement:** The legally binding Paris Agreement sets a global framework for limiting global warming to well below 2 °C – though preferably below 1.5 °C – compared with pre-industrial levels. The Agreement was reached in 2015 at the Paris Climate Conference (COP21) and is a continuation of the 2005 Kyoto Protocol, which expired in 2020 and defined for the first time a set of binding targets for the emission of GHGs. The Paris Climate Conference was the 12th “Conference of the Parties” (COP) since the targets defined at the United Nations Framework Convention on Climate Change entered into force in 1994.

**Protected Area:** Protected Areas, as defined by the UNEP-WCMC World Database of Protected Areas (WDPA), include regions safeguarded under IUCN Categories I–IV, as well as uncategorized zones. The WWF Biodiversity Risk Filter uses IBAT (Integrated Biodiversity Assessment Tool) data to assess coverage of terrestrial and marine areas and classifies them into five risk-score categories. Conserved areas are excluded due to limited global data availability.

**Scope 1 emissions:** These are all direct GHG emissions from sources owned or controlled by the company. These are above all process emissions and emissions from self-generated energy. Our Scope 1 emissions include carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>) and fluorinated hydrocarbons (HFC) emissions, which are calculated in the form of CO<sub>2</sub>equivalents (CO<sub>2</sub>e). Perfluorocarbon (PFC) and sulfur hexafluoride (SF<sub>6</sub>) emissions are also counted as GHG emissions, but are not relevant to LANX-ESS.

**Scope 2 emissions:** These are all indirect GHG emissions resulting from the generation of purchased electricity and steam as well as from purchased heating and cooling energy that is used by a company. Our Scope 2 emissions mainly comprise CO<sub>2</sub> emissions. Since 2016, in accordance with the guidelines set out in the Greenhouse Gas Protocol, companies have been required to be more explicit in how they indicate their Scope 2 emissions. A distinction is made between two different recording methods:

- Market-based: Market-based figures relate to the emission factors of the energy supplier or an individual energy product.
- Location-based: Location-based figures relate to the average emission factors of the region in which the energy is consumed. The nationwide average is usually used as a basis here.

**Scope 3 emissions:** These are all indirect GHG emissions from activities along the value chain, originating from sources that are not owned or controlled by the company. These generally account for the majority of the carbon foot-

print and include emissions generated during purchasing, transportation, waste disposal and business trips.

**Sustainable by Design:** A holistic approach pursued by the European Commission that integrates the following aspects: safety, circular economy, energy efficiency, and functionality of chemicals, materials, products, and processes throughout their entire lifecycle, aiming to minimize the ecological footprint.

**Sustainable Development Goals:** The 17 Sustainable Development Goals are political targets set by the United Nations (UN). They were adopted in 2015 and are intended to ensure sustainable development worldwide on an economic, social and ecological level.

**Together for Sustainability (TfS):** Together for Sustainability is a joint initiative of chemicals companies established in 2011. It focuses on encouraging sustainability practices in the chemical industry supply chains.

**Total Organic Carbon:** A measure of the total amount of carbon in organic compounds present in a sample, typically used to assess the level of organic pollution in water, soil, or air. TOC is an important parameter in environmental monitoring and industrial processes, as it provides insights into water quality, contamination levels, and the presence of biodegradable and non-biodegradable organic

**WWF Biodiversity Risk Filter:** The WWF Risk Filter is a tool designed to help companies assess the environmental risks of their operations, particularly in relation to biodiversity. It enables businesses to identify sites with potential negative impacts on critical ecosystems, such as protected areas or Key Biodiversity Areas (KBAs). The tool provides a risk assessment based on factors like proximity to these sensitive areas and helps companies prioritize actions to mitigate their environmental footprint, supporting more sustainable practices and biodiversity conservation.



**PUBLISHER**  
**LANXESS AG**

50569 Cologne, Germany  
[www.lanxess.com](http://www.lanxess.com)

**LANXESS**  
Energizing Chemistry