



Growing with Our Customers

Sustainability Report 2022

Nouryon

Cautionary Statement. The information in this publication is believed to be accurate at the date of its publication and is given in good faith, but no representation or warranty as to its completeness or accuracy is made. Statements in this publication are merely views based on the best knowledge available to Nouryon. Some statements and in particular forward-looking statements, by their nature, involve risks and uncertainties because they relate to events and depend on circumstances that will or may occur in the future and actual results may differ from those expressed in such statements as they depend on a variety of factors beyond Nouryon's control.

In 2022, we updated our Scope 2 emissions calculations in alignment with the greenhouse gas (GHG) Protocol. This includes reporting market and location-based emissions, and applying the GHG Protocol's emission factor hierarchies. For market-based Scope 2 emission factors, in cases where energy attribute certificates, renewable contracts or supplier-based emissions factors are not available, we use eGrid for grid average emission factors in the US and for Europe, we use the residual grid factors from the Association of Issuing Bodies. Where residual grid factors are not available and in other regions, we use national electricity emission factors from the International Energy Agency (2020 estimate data).

In further alignment with the GHG Protocol, Sustainable Accounting Standards Board (SASB), and leading reporting standards, we updated our renewable energy percentage calculation of electricity to no longer be based on utility fuel mix data. Instead, we only track electricity from verifiable sources, for example: certified with renewable energy certificates (RECs), Guarantees of Origin (GO) retired on our behalf, direct connection, or onsite generation.

For Scope 3, we made significant improvements to the methodology vs. our estimates using 2020 data. The result is that 2022 data is not comparable vs. prior periods. This report only includes 2022 scope data using the new methodology. For more information, see page 43.

Our [reporting principles](#) are available on our website.



Contents

The purpose of this report is to explain how we partner with our customers, suppliers, employees, and other key stakeholders to deliver solutions and drive sustainable progress. This report documents Nouryon's Environmental, Social, and Governance (ESG) performance in accordance with the Sustainability Accounting Standards Board (SASB) Chemicals Industry Standard and Disclosure requirements with reference to the Global Reporting Initiative (GRI).



Click on the chapter title for the the first page of the corresponding chapter

Message from our Chairman and CEO

Growing with our Customers

I am pleased to present Nouryon's 2022 Sustainability Report and discuss our progress over the past year. From innovating and manufacturing solutions with sustainable benefits, to working with customers on developing new capabilities, we continued to grow and deliver on Nouryon's Company Purpose: Your partner in essential solutions for a sustainable future.

Our close attention to customer needs and societal trends, alongside our ability to translate these into business opportunities, has earned us to earn a place among the leading companies in our industry in terms of safety and sustainability. This approach has consistently resulted in strong business performance and profitable growth.

Nouryon's 2022 full-year performance highlights the resiliency of our specialty chemicals portfolio in a challenging macro environment. We continued to grow profitably, including in South America, China, and emerging markets such as Southeast Asia, India, and the Middle East. Full-year earnings before interest, taxes, depreciation, and amortization (adjusted EBITDA) were \$1.2 billion, and our 2022 revenue was \$5.8 billion, an increase of 17% year-over-year. Notably, 34% of our 2022 revenue came from our Eco-Premium Solutions.

Our Commitment to a Sustainable Future

As a leading global specialty chemicals company that is well positioned for ongoing growth, Nouryon continues to make progress through our strong partnerships, and we believe collaboration is key to our future success.

Nouryon works closely with customers and other partners to innovate, make strategic investments, and deliver sustainable solutions that answer customers' needs – today and in the future.

We do this by:

- continuously improving our safety and environmental performance;
- growing and innovating sustainable solutions that answer our customers' needs; and,
- engaging and partnering with our employees, customers, and suppliers to drive sustainable progress.

A few notable examples of our progress in 2022 include:

- We were recognized with an EcoVadis Platinum rating, up from Gold the year prior, placing Nouryon in the top 1% of companies then rated by the global sustainability ratings provider.
- We achieved a 79% process safety incident rate (PSE1 + PSE2) decrease between 2018 and 2022 and received 17 safety awards from the Texas Chemical Council (TCC) and Association of Chemical Industry of Texas.
- We established a greenhouse gas (GHG) emission reduction roadmap with tangible actions to achieve our 2030 targets.
- Approximately 77% of our research and development (R&D) product pipeline was focused on solutions with sustainability benefits¹ versus 69% in 2021.
- We introduced new products to our customers in our addressable end-markets, including several new products with sustainability benefits, such as Expancel[®] HP92 microspheres for the automotive industry and Bermocoll[®] FLOW cellulose ethers for both interior and exterior decorative paints.
- Between 2019 and 2022, we decreased our total

absolute Scopes 1 and 2 GHG emissions by 1.3%.

- Nouryon was awarded a Sustainability Leadership Award from the American Chemistry Council (ACC) for our Agrilan[®] 1015 biodegradable dispersant.
- Additionally, we received the Cosmetic & Toiletries Allé Award in the category of Base Ingredients for our SolAmaze[®] Natural.
- Our four employee-led Business Resource Groups (BRGs) grew to include more than 800 employee participants.
- We hosted our first-ever Global Month of Service, with an emphasis on providing school supplies and delivering STEM and safety education to underserved students and communities.



~77% of our R&D product pipeline is focused on solutions with sustainability benefits¹



34% of revenues from Eco-Premium Solutions²



We established a GHG emission reduction roadmap to reach our targets

¹ In 2022, we revised the definition used for R&D projects related to sustainability innovation to only include product innovations and exclude process innovations.

² Our Eco-Premium Solutions are products that offer significant sustainability benefits over mainstream alternatives in the market while providing the same or better functionality. For more information, see page 52-53.



Progress through Partnerships and Engagement

GRI 2-22

Sustainability is integral to everything we are and do – from our R&D to our operations – day in and day out. Everything we do, we do with our customers' success in mind and at the forefront. We understand that many of our customers, like us, also care deeply about our planet and its future. Therefore, we continually partner with them to innovate and develop solutions for a more sustainable future.

To continue to grow with our customers, we invested a record amount of capital in our Company, including in our green-chelates growth projects in Lima, OH, United States (US) and in Herkenbosch, the Netherlands. We also expanded our business operations to support our regional and emerging markets growth plans. Nouryon continued to build a leading portfolio for the pulp and paper industry, partnering with Suzano to support their new \$2.8 billion eucalyptus pulp mill in Brazil. We also acquired ADOB³, which expands our offerings in biodegradable micronutrients and specialty fertilizers.

Nouryon also continued to engage with our communities and build an inclusive and diverse work environment. We formed partnerships to advance inclusion in the areas of science, technology, engineering, and mathematics (STEM), and for our talent pipeline, including the Society of Women Engineers, a global professional organization that promotes progress for women in engineering and technology.

We supported societal progress and inclusivity through volunteerism, engagement, and corporate giving. Our first-ever Global Month of Service resulted in employee-led service projects at 24 locations across eight countries, which provided opportunities to engage with community organizations and inspired us to continue doing so individually. We pledged donations to the International Committee of the Red Cross and Global Giving Ukraine Relief Fund to support humanitarian aid for civilians affected by war in that country, and we provided volunteer and financial support to the Philadelphia Eagles Autism

Foundation, which is dedicated to innovative research and care programs for affected individuals and families.

I invite you to read more about these achievements and other sustainability updates in this report. As in previous years, we report relevant data, including a clear overview of our Environmental, Social, and Governance (ESG) metrics on pages 76-78. To conclude, I would like to thank our employees for their ongoing commitment and dedication in 2022 and our customers for their partnership and trust.



Charlie Shaver, Chairman and CEO

³ Closed in January 2023.

1. About Nouryon

Nouryon is a leading global customer solutions business that provides essential, specialty chemicals for diverse end-markets, customers, and geographies. We have a customer-centric business model focused on providing tailored solutions that improve the performance, quality, and sustainability of our customers' products across a variety of end-markets, including personal care, cleaning goods, crop protection, crop nutrition, paints, coatings, natural resources, polymers, and packaging.

Our portfolio of industry-leading brands and commitment to customer service yielded strong results in 2022, including:



\$5,774 million
revenue



\$1,241 million
Adjusted EBITDA



\$882 million
Free Cash Flow



Operating in
more than
80 countries⁴



11 Innovation
and Application
Centers globally



Approximately
7,900 employees
worldwide⁵



58 manufacturing
sites in regions
around the world⁶



Two business segments
serving customers and
markets worldwide



⁴ Headquartered in Amsterdam, the Netherlands

⁵ Headcount and similar metrics may differ slightly depending on exact collection date due to timing of reporting schedules, divestments, and acquisitions, as well as regular workforce fluctuations.

⁶ As of December 31, 2022, Nouryon had 58 manufacturing sites and approximated 7,450 employees. As of January 3, 2023, and the acquisition of ADOB, Nouryon has 60 manufacturing sites worldwide and approximately 7,900 employees.

1. About Nouryon

Innovative chemistry is key to a sustainable future. We partner with some of the world's most-innovative companies to create essential solutions, including many with sustainable benefits. That's why sustainability is integral to our Company Purpose, Strategy, and Values.

Over the course of our nearly 400-year journey, our close attention to customer needs and societal trends, alongside our ability to translate these into business opportunities, have earned us a place among the leading companies in our industry in terms of safety and sustainability. This has consistently resulted in strong financial performance and profitable growth.

Success Built on Partnerships

Nouryon builds strong relationships and believes that collaboration is key to our success, and we devote ourselves to understanding our partners' needs. We work collaboratively with a wide range of stakeholders, including partner companies, universities, and startups that help us become more sustainable and deliver more value to our customers. We partner with our customers, suppliers, and employees to deliver innovative solutions, drive progress, and create a safe and sustainable today and tomorrow for everyone.



Most of our customer relationships exceed 10 years



98% retention rate of top 250 customers over the past six years

1.1 Our Strategy for Growth

Nouryon's Strategy is centered on accelerating growth and driving performance improvement. We aim to grow our leading position in specialty chemicals by exceeding our customers' expectations with innovative and sustainable solutions that address customers' needs – today and in the future. We achieve this by focusing on customers and their requirements in attractive and growing end-markets. Sustainability is embedded in our Purpose, Strategy and Values.

Our business segments – Performance Formulations and Technology Solutions – continually innovate to contribute to a more-sustainable future in addressable end-markets by building on our customer offerings, and regularly adding new, sustainable solutions to our existing portfolio.

Our Strategy focuses on growing in new applications and geographies through acquisitions and partnerships; further expansion of our sustainable product offerings; and by maximizing the capacity, utilization, and flexibility of our production facilities to drive commercial and cost productivity.

Our Purpose



Your partner in essential solutions for a sustainable future

Three-Pronged Strategy to Drive Growth



Deliver innovative and sustainable solutions that answer customers' needs – today and in the future



Focus on attractive and growing end-markets as well as emerging markets



Drive commercial and cost productivity

Performance Formulations business lines and addressable end-markets:



Agriculture and Food

- Crop protection (includes adjuvants and formulation aids, as well as intermediates for pesticides)
- Crop nutrition (includes chelated micronutrients)
- Food performance (includes thickeners, emulsifiers, and antioxidants)
- Food nutrition (includes micronutrients such as fortified iron)
- Feed (includes animal feed and specific animal feed solutions)



Home and Personal Care

- Personal care includes skin care (cleaning, emulsions, emollients, and active specialties), hair care (conditioning and styling), and general personal care
- Home care (includes laundry, dishwashing, and preservatives applications in home hygiene and cleaning)
- Industrial and institutional (I&I) cleaning (includes surfactants, disinfectants, and other cleaning formulations for industrial, institutional and transportation uses)
- Pharma (includes excipients functioning as fillers, thickeners, coatings, and binders for the dosage of pharmaceuticals)



Natural Resources

- Oilfield production chemicals (includes chemicals to enhance oil/gas field production and mid/downstream formulation processes)
- Lubes and fuels (includes additives for transport lubricants, metalworking fluids, grease and fuel mainly driven by transportation and machinery markets)
- Mining chemicals (includes flotation collectors, demulsifiers and blasting emulsifiers)
- Water treatment (includes water treatment and desalination chemicals used in food and beverage, electric power generation, water, and sewerage and waste)
- Pulp and paper (includes paper and packaging chemicals used in pulp making, coatings and finishing, and associated water treatment)



Paints and Coatings

- Building and construction (includes additives for concrete production, sealants, and adhesives)
- Paints (includes specialty additives such as pigment dispersants and preservatives used in waterborne paints with strong penetration in architectural and decorative paints)
- Roads (includes non-polymeric asphalt additives and bitumen emulsifiers, adhesion promoters/antistrips, and warm-mix additives used in road construction and maintenance)





Technology Solutions business lines and addressable end-markets:



Polymer Specialties



Renewable Fibers

- Construction (includes window profiles, initiators for acrylic coating resins, essentials for insulation panels and high-performance inputs for insulated power cables)
- Packaging (includes food-delivery packaging and take-away)
- Transportation (includes lightweight solutions enabled by our curing agents for the composites industry and essential ingredients for new types of elastomers for electric vehicles)
- General (includes essential ingredients in electrification, lightweighting, and energy conservation)
- Sodium chlorate and hydrogen peroxide for a variety of applications, including:
 - Food packaging (made with renewable and biodegradable materials)
 - Tissue
 - Fluff (includes hygiene products such as diapers)
 - Paper (includes printing and writing paper)
 - Board (includes packing materials such as board and packaging paper)
 - Renewable textile fibers (both viscose and recycled textile fibers)

1.2 Ethical Conduct and Our Values

Ethical business conduct is a core element of Nouryon’s culture and our Strategy for growth and success. It’s also incorporated in our Company Values: ‘We aim high’, ‘We own it’, and ‘We do it right.’

We thrive on a culture of high performance, which includes being highly accountable, acting with integrity, and embodying ethical business practices. We expect each employee to learn about and comply with all Company policies, applicable laws, and the guiding ethical principles outlined in our Company [Code of Business Conduct & Ethics](#). We also continuously scrutinize our internal practices through internal and external assessments and have procedures for taking appropriate corrective action when we identify conduct that falls below our high standards. Similarly, we have high standards of business partners as evidenced in our [Business Partner Code of Conduct](#), which our partners agree to and are expected to adopt.

Our Values:



We aim high

We drive growth by collaborating with customers and colleagues to become more focused, faster, more efficient, and better every day.



We own it

We are accountable and deliver on our commitments to customers, investors, and each other.

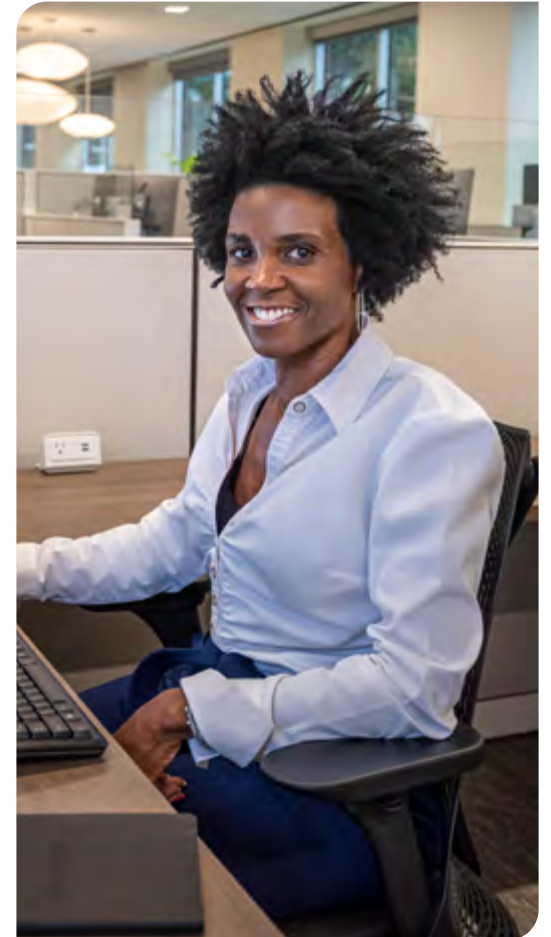


We do it right

We support our people, customers and communities through strong ethics, and with safety, integrity, and sustainability in mind.

2. Strong Governance and Risk Management

A crucial component of securing a sustainable future is ensuring that Nouryon continues to always operate ethically and responsibly. This means maintaining a sound decision-making process while fulfilling regulatory requirements, mitigating risks, and establishing and enforcing ethical standards – for our customers, suppliers, and our Company. Our robust Governance and Risk Management capabilities form the core of Nouryon’s operations.



Highlights



Board-level oversight of all ESG (Environment, Social, and Governance) areas



Corporate Responsibility Committee



Task Force on Climate-related Financial Disclosures (TCFD)



Carbon Disclosure Project (CDP)



Global Reporting Initiative (GRI)



Sustainability Accounting Standards Board (SASB)

2. Strong Governance and Risk Management

2.1 Governance

GRI 2-9, GRI 2-10, GRI 2-11, GRI 2-14, GRI 2-17, GRI 2-18

Nouryon's [Board of Directors](#) (Board) is charged with accountability and oversight of our Company's ESG (Environment, Social, and Governance) performance. The Company Leadership Team shares collective responsibility for the Company's ESG performance. Progress is reported to the Board on a quarterly basis. The Board is supported by the following committees:

- The Corporate Responsibility Committee provides Board-level oversight of sustainability, health, safety and environmental (HSE), product quality, social policies and programs, including inclusion and diversity, and other matters that may impact the Company's reputation.
- The Audit Committee is responsible for oversight of the integrity of our financial statements and effectiveness of our internal controls over financial reporting, as well as risk management, cybersecurity, tax, and ethical conduct.
- The Compensation Committee oversees the compensation of key employees and other matters related to our human capital.
- The Nominating & Corporate Governance Committee recommends the nomination of individuals to serve on our Board and is responsible for setting our corporate-governance practices. The Committee is responsible for selecting individuals qualified to become members of the Board with the goal of ensuring that the Board has the requisite expertise and that its membership consists of persons with sufficiently diverse and independent backgrounds, experiences, qualifications, knowledge, abilities, viewpoints, geographic background, gender, age, and ethnicity. The Committee is also ultimately responsible for identifying successor candidates and external candidates.

Charlie Shaver is Chairman of the Board as well as the Chief Executive Officer. His experience within the chemicals industry in this combined role helps cultivate a unified leadership structure and faster strategic decision-making. Ten out of the eleven directors are independent members, and their tenure was increased to three years in 2022. The Board is the highest governance body involved in risk management, in concert with our Risk Management Committee.

The Board receives updates about ongoing strategic priorities and initiatives. For example, in 2022, the Board received materials and briefing sessions from internal Company experts in the following areas: (a) key business lines of the Company, (b) South American, European, and emerging markets strategies; (c) carbon strategy; (d) enterprise risk management; (e) digital strategy; (f) asset-management overview and (g) people development and talent acquisition. The Audit Committee received further briefings on cybersecurity, tax matters, internal audit, risk management and internal controls, and the information-technology (IT) program.

Nouryon conducts an annual self-evaluation process in which Directors are asked to complete a self-evaluation form related to the Board's performance and effectiveness that are discussed in interviews with the General Counsel. The self-evaluations are anonymized, and results presented to the Nominating and Corporate Governance Committee and the Board; the Board can respond at its discretion. The Board and committees receive periodic briefings by management about our policies as well as quarterly briefings about compliance issues that arise. More information about our Board and its committees can be found on our [website](#).

Our sustainability strategy is implemented by the Corporate

sustainability team as well as all business lines of the Company and key functions. Sustainability focal points drive the implementation of our strategy across our organization.

We enlist internal and external auditors as part of our ESG governance efforts. In addition, our [policies](#) are reviewed annually, both internally and with external parties.



Case Study

Board of Directors visit Nouryon Sites in US and Sweden

In 2022, our Board conducted site visits and tours of some of our production facilities and innovation centers in the US and Sweden. During these visits, our Board members met with employees and were given presentations about our essential solutions, including recent innovations. In Sweden, the Board visited and toured with Johan Landfors, EVP Strategy and Technology Solutions. They also met with employees at our Bohus and Stenungsund manufacturing facilities, as well as with our Businesses, Functions and EMEA Customer Service team at the Nordic Business Center in Gothenburg.

Key ESG responsibilities:



[Charlie Shaver](#)
Chairman and Chief Executive Officer, overseeing all ESG responsibilities.



[Renier Vree](#)
Executive Vice President, Chief Financial Officer, is the Chair of the Disclosure Committee and oversees Financial reporting and tax, Enterprise Risk Management, and Cybersecurity.



Governance matters, including with respect to our Board, our Delegation of Authority policy, and Executive Compensation, are the responsibility of our Executive Vice President, Business Affairs and General Counsel, [Michael Finn](#). Michael shares executive responsibility of Inclusion and Diversity with Tift Shepherd.



Product Stewardship and Performance Formulations' sustainable product innovations and offerings to customers are overseen by our Executive Vice President and President, Performance Formulations and the Americas, [Larry Ryan](#)



Strategy and Asset Planning and Technology Solutions sustainable product innovations and offerings to customers are the responsibility of Executive Vice President Strategy and Technology Solutions and President Europe, [Johan Landfors](#).



Human Resources, including development and empowerment of our people is overseen by our Senior Vice President and Chief Human Resources Officer, [Tift Shepherd](#). Tift shares executive responsibility of Inclusion and Diversity with Michael Finn. In addition, she shares executive sponsorship of our Nouryon Women's Network Business resource Group (BRG) with Vivi Hollertt.



Operational and environmental, safety and sustainability is managed directly by the Integrated Supply Chain (ISC) function, under the responsibility of Senior Vice President and Chief ISC Officer, [Paresh Bhakta](#). This includes overseeing our safety performance, greenhouse gas (GHG) emissions and energy use, eco-efficiency program, and water-management strategy, which ensures that our sustainability performance is supported at all our manufacturing sites. Paresh is also the executive sponsor of our Nouryon Pride BRG.



Senior Vice President, South America and Global Carbon Business Leader Eduardo Nardinelli leads Nouryon's globally coordinated strategic planning to meet our GHG emission reduction goals.



Senior Vice President and Chief Technology Officer (CTO) [Philip Clark](#) is responsible for the Company's global technology and innovation strategies in alignment with the Company's sustainability and growth targets. He also serves as the business leader that builds research capabilities in support of the company's strategic direction.



Nouryon's global sustainability strategy is overseen by Vice President, Chief Sustainability and Communications Officer, [Vivi Hollertt](#). Vivi shares executive sponsorship of our Nouryon Women's Network BRG with Tift Shepherd.



Sustainable Sourcing is managed by our Vice President and Chief Procurement Officer, Stephen Hester.

2.2 Risk Management

Effective risk management is a key success factor for realizing our strategic objectives. Nouryon employs an Enterprise Risk Management (ERM) approach to identify potential rewarded and unrewarded risks in order to take appropriate mitigating actions. Within Nouryon, ERM is used to augment the decision-making process. Nouryon's approach to risk management and internal control is based on the Committee of Sponsoring Organizations of the Treadway Commission (COSO⁷) reference model and includes strategic, financial, IT, legal, business continuity, HSE, and security components. Transparency and accountability are confirmed through various cycles of monitoring and audits to ensure all mitigating actions are performed.

Our ERM approach allows us to identify and manage strategic, operational, financial, and compliance risks to which Nouryon is exposed, including climate-related risks. This approach guides how we work and underpins our clear, strong, and consistent culture of ethical and sound decision-making. It also enables us to improve effectiveness and efficiency in our operations, accurately report financial results, and ensure compliance with applicable laws and regulations. Taken together, these factors reinforce Nouryon's reputation and ability to be a consistently reliable business partner.

Nouryon's Board is ultimately responsible for oversight of our Risk Management and Compliance. Our ERM and internal control activities are organized in three lines:

- **First line:** all Business and Operations managers own and manage risk, which includes identifying and mitigating risks.
- **Second line:** oversight functions, such as Internal Control, Legal and Compliance, and the Risk Committee, support Business and Operations management and help ensure that the risks are identified, properly mitigated, and that monitoring control procedures are operating as intended. In addition, the second line has oversight of the complete risk program.

- **Third line:** Internal Auditing provides an independent, objective means to evaluate and improve the effectiveness of governance, risk management, and internal controls, including the way Business and Operations are led, as well as how oversight functions manage and control risk.

Identifying and Mitigating Risk to Harness Growth Opportunities

Our risk management capability and resources ensure that risk management is more closely aligned with Nouryon's strategic objectives. Sustainability-related risks and opportunities, including climate-related risks, are reviewed at three layers of strategy: macro (generic), meso (industry), and micro (Nouryon). These assessments cover strategic, financial compliance, and operational considerations.

The ERM process includes long-term sustainability risks. For example, the macro layer considers risks in the political and legal, sociocultural, ecological, demographic, technology, and economic environments.

Sustainability is therefore not only a pervasive topic within ERM but integral to every aspect of risk management, and ultimately to our growth. Our comprehensive ERM approach challenges us to continually ask ourselves whether we are acting appropriately to minimize risks and maximize growth opportunities.

⁷ COSO is a joint initiative of organizations that provides comprehensive frameworks and guidance on enterprise risk management. For more information: <https://www.coso.org>





Cybersecurity

Cybersecurity is a component of the overall risk management program, reducing the risk to systems and plant outages, or loss of sensitive information, which are essential to our business operations. Our Chief Information Security Officer and team of cyber specialists continue to strengthen Nouryon's digital defenses and cybersecurity foundation, enhancing our security operations, leveraging efficiencies, and continuously improving the Company's position to ensure sustained operations and business continuity. This is achieved through strategic prioritization, targeted technology improvements, employee awareness campaigns, and acquiring and retaining strong talent.



Task Force on Climate-related Financial Disclosures (TCFD): Our Approach to Assessing Climate-related Risks and Opportunities

Climate change is one of the most-pressing issues of our time, and the transition to a net-zero-carbon economy will create significant risks and opportunities. In 2021, we completed a comprehensive qualitative analysis using the TCFD framework. As our first TCFD analysis, we saw this as the beginning of our journey toward incorporating climate scenario analysis in reporting and planning, and we expect the guidance and tools to advance over time.

Our qualitative analysis included transition risks and opportunities as well as physical risks and referenced leading climate models and scenarios. We drew upon publicly available data from the United Nations Intergovernmental Panel on Climate Change peer reviewed climate models, and we considered a range of scenarios to identify potential risks and opportunities for the company. We considered potential risks over short, medium, and long-term time horizons, across our value chain – upstream, downstream, and in our direct operations.

These results are described in our 2022 Carbon Disclosure Project response, and other sections of this report also cover TCFD elements. In addition, we provide a summary table of how our results align with the TCFD framework. For more information on our approach to climate change, see [5.3 Mitigating Climate Change: Objectives and Opportunities](#).

Nouryon TCFD Index and Additional Information

Core element	Recommended disclosures	Reference to Nouryon 2022 Sustainability Report	Reference to Nouryon's CPD Climate Change 2022 questionnaire ⁸
Governance Disclose the organization's governance around climate-related risks and opportunities.	a) Describe the Board's oversight of climate-related risks and opportunities.	2.1 Governance 2.2 Risk Management	Governance C1.1a, C1.1b
	b) Describe management's role in assessing and managing climate-related risks and opportunities.	2.1 Governance 2.2 Risk Management	Governance C1.2, C1.2a
Strategy Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, Strategy, and financial planning where such information is material.	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Included in our TCFD project as mentioned in 3.6 Transparently Reporting our ProgressPlanet - climate change.	Risk and Opportunities C2.1, C2.1a, C2.1b, C2.2, C2.2a.
	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, Strategy, and financial planning.		Risk and Opportunities C2.3, C2.3a, C2.4, C2.4a Business Strategy C3.1, C3.2, C3.2a, C3.2b, C3.3, C3.4
	c) Describe the resilience of the organization's Strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	4.1 Our Ambitions and Targets 4.3 Alignment with UN SDGs Included in our TCFD project as mentioned in 3.6 Transparently Reporting our ProgressPlanet - climate change. 5.3 Mitigating Climate Change	Business Strategy C3.1, C3.2
Risk management Disclose how the organization identifies, assesses, and manages climate-related risks.	a) Describe the organization's processes for identifying and assessing climate-related risks.	2.1 Governance 2.2 Risk Management	Risk and Opportunities C2.1, C2.2, C2.2a.
	b) Describe the organization's processes for managing climate-related risks.	2.1 Governance 2.2 Risk Management	Risk and Opportunities C2.2
	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	2.1 Governance 2.2 Risk Management	Risk and Opportunities C2.2 Business Strategy C3.1, C3.3, C3.4
Metrics and Targets Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its Strategy and risk management process.	4.1 Our Ambitions and Targets 5.3 Mitigating Climate Change 5.4 Eco-Efficiency and Circularity	Risk and Opportunities C2.1b, Targets and Performance C4.5, C4.5a, Carbon Pricing C11
	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	4.1 Our Ambitions and Targets 5.3 Mitigating Climate Change 5.4 Eco-Efficiency and Circularity 5.5 Environmental Datasheet	Emission Methodology C5.1 Emission Data C6.1, C6.2, C6.3, C6.5, C6.10 For additional information on emissions breakdown, see CDP C7 and sub questions.
	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	4.1 Our Ambitions and Targets 5.3 Mitigating Climate Change 5.4 Eco-Efficiency and Circularity	Targets and Performance C4.1, C4.1a, C4.2, C4.2a

⁸ 2022 CDP climate change questionnaire was based on 2021 operations

3. Compliance and Ethics

Our global footprint exposes us to increasingly stringent laws and regulations on a broad range of subjects, such as: safe use of hazardous substances (see Chapter 5); operational impacts; historical soil and groundwater contamination; product liability; human rights concerns; economic sanctions; antitrust laws; and anti-corruption laws.

Relevant Policies and Programs

- Acceptable Use of Nouryon Systems and Devices Policy
- Anti-Corruption Policy
- [Animal Testing Policy](#)
- [Business Partner Code of Conduct and Ethics](#)
- [Code of Business Conduct and Ethics](#)
- Competition Law Compliance Policy
- Conflict of Interest Policy
- Employee Privacy Policy
- External Spend Policy
- Global Travel and Expense Policy
- [Inclusion and Diversity Commitment](#)
- Media Policy
- Meal, Gift and Business Entertainment Policy
- Quality, Health, Safety, Environment and Security Policy
- Record Retention Policy
- Sensitive Country Policy
- Social Media Policy
- [Sourcing Sustainable Palm Oil](#)
- SpeakUp! and Non-Retaliation Policy
- Sponsorship and Charity Policy
- [Statement on Sustainable Procurement](#)
- [Tax Strategy](#)

Highlights



SpeakUp! Hotline and Non-Retaliation Policy



Conflict-minerals risk assessment and due diligence



Code of Conduct and Business Partner Code of Conduct



Modern-slavery and forced-labor risk assessment



100% of our in-scope⁹ employees completed mandatory Compliance trainings



Shortlisted for Compliance Department of the Year in 2022 by The American Lawyer Industry Awards

⁹ Office-based employees and site management

3. Compliance and Ethics

Legal and Regulatory Compliance

GRI 2-23, GRI 2-27

Our internal subject-matter experts monitor compliance with laws and regulations and provide guidance and training as needed. We also set expectations for ethical behavior in our [Code of Business Conduct & Ethics](#), for which 100% of our office-based and site management employees receive training annually, as well as our [Business Partner Code of Conduct](#). As a global Company and employer, we follow local regulations including, among others, the General Data Protection Regulation (GDPR) in Europe.



100%
of in-scope
employees
completed
assigned
trainings

Emphasis on Ethics

GRI 2-23, GRI 205 3-3, GRI 205-2, GRI 2-23

Our Compliance program is built upon mandatory annual training, policies, and procedures; third party due diligence and monitoring; and investigating and remediating concerns of unethical, illegal, or inappropriate conduct. This approach helps our employees and other stakeholders understand and abide by Nouryon's high standards of ethical business conduct, comply with legal and regulatory requirements, and live our value 'We do it right.' We conduct audits of our operations on a regular basis. In addition, Nouryon office-based and site management employees review and acknowledge our high expectations by signing an Annual Policy Certification in addition to completing mandatory compliance training. As part of our anti-corruption measures, employees are also required to abide by our Meal, Gift & Business Entertainment Policy.

Our commitment to compliance and ethics is also supported at the highest levels of our Company, starting with our Chairman and CEO. The Executive Vice President and Chief Financial Officer, Executive Vice President, Business Affairs and General Counsel, and Senior Vice President and Chief Human Resources Officer provide executive oversight of our compliance performance through the Compliance Committee, which is chaired by our Chief Compliance Officer. The Board of Directors and Audit Committee receive regular updates on our Company's compliance program. Policy commitments within Nouryon are approved by the most-senior-level executives within the organization.

Employee Awareness

GRI 205-2, GRI 2-23

Nouryon's Code of Business Conduct & Ethics requires employees to always act ethically and in compliance with all applicable legislation, including anti-bribery, anti-corruption, antitrust and competition laws; anti-discrimination/harassment laws; data protection laws; and economic sanctions. It applies to all employees, and every in-scope¹⁰ employee completes compliance training related to ethical business conduct each year. In 2022, 100% of our office-based and site management employees completed assigned trainings that included anti-bribery/anti-corruption, data privacy/data protection, respectful workplace, and careful communications. This includes temporary workers, and part-time employees and contractors with Nouryon credentials including email addresses and badges. In 2022, Nouryon had zero substantiated complaints concerning breaches of customer privacy or losses of customer data.

Our Legal and our Compliance organizations review policies and training curriculums annually, and regularly report on and communicate with employees regarding related topics, while interacting with other parts of our business to fulfill regulatory and customer requirements. Policy-commitment updates and changes to policies are communicated via Leader Updates, Quarterly Ethics Newsletters or Global Compliance email communications. Owing to this approach, Nouryon was shortlisted for Compliance Department of the Year in 2022 by The American Lawyer Industry Awards.

¹⁰ Office-based and site management employees.



Compliant Partners

GRI 2-23, GRI 2-24

Our commitment to ethical business conduct does not end with our employees. We expect our business partners to adhere to Nouryon's Business Partner Code of Conduct, which covers compliance with laws and regulations; safety; standards for ethical and responsible business conduct and practices; treatment of individuals and fundamental human rights within supply chains; exclusion of conflict minerals; and fraud prevention. We only conduct business with suppliers, customers, and other business partners who share and support our standards. Certain third parties must also undergo a due-diligence process to provide information about their ownership, compliance programs, and any past relevant legal/regulatory issues, including economic sanctions. We continually monitor these third parties digitally for sanctions, regulatory fines, or adverse media. Any breach or violation can prompt Nouryon to reassess business relationships.

In 2022, we repeated our risk assessment regarding conflict minerals for all our suppliers and identified those that posed risks. Conflict minerals are tantalum, tin, tungsten, and gold (commonly referred to as 3TG), which are used in Central Africa to finance armed conflict, often fought with child soldiers. In our risk assessment, we ask our suppliers using any 3TG minerals in their supply chains to complete a questionnaire about their sourcing and controls to ensure that conflict zones and groups are avoided, so that in turn, we can be sure that Nouryon is not inadvertently contributing to such conflict and practices.

As a chemical company, our manufacturing operations generally require skilled labor with high education requirements and thus pose a lower risk of child or forced labor. We comply with all local labor laws, which require us to confirm the age of our employees when joining the company. We also evaluate potential forced labor and modern slavery in our supply chain through a risk assessment of inputs and suppliers and supplier questionnaires, and we follow-up appropriately on any concerns raised.

We also evaluate potential forced labor and modern slavery in our supply chain through scrutiny of suppliers with low skill, labor-intensive processes or products with risk assessments and supplier questionnaires, and we follow-up appropriately on any concerns raised.

Nouryon is committed to promoting a workplace and supply chain where workers are treated with respect and dignity and free from modern slavery and human trafficking.

Encouraging Everyone to SpeakUp!

GRI 2-25, GRI 2-26

When it comes to reporting any kind of concern, Nouryon employees, suppliers, customers, and other business partners can report all suspected policy violations, inappropriate behavior, and illegal or unethical practices through SpeakUp!, our global reporting hotline. To ensure that our employees and external parties are aware of SpeakUp!, we promote contact information on our intranet, on the Nouryon website, through periodic training and on posters in offices and manufacturing sites, and in our [Company Code of Business Conduct & Ethics](#) and [Business Partner Code of Conduct](#). We also have a Non-Retaliation Policy (whistleblower protection) for good faith reporting of concerns, which applies to all employees. We will not tolerate retaliation against any employee who makes such a report. SpeakUp! reports can be made anonymously and confidentially, via telephone hotline and email, as allowed under applicable law, in any of 30 languages. In 2022, all SpeakUp! concerns were registered and resolved within an average of 30 days.

4. Our Commitment to a Sustainable Future

Sustainability is a key business driver for Nouryon and integral to our operations and product offerings. We develop essential solutions for thousands of products people use every day, and we believe good chemistry is key to a sustainable future and that our actions as a company can contribute to this goal.

Fundamental to our Company Purpose is our Sustainability Commitment:



We partner with our customers, suppliers, and employees to deliver innovative solutions, drive progress, and create a safe and sustainable today and tomorrow for everyone.

Highlights



Aligned with and supporting United Nations Sustainability Development Goals (UN SDGs)



2030 targets on water and waste



Transparent annual disclosure



Independent Limited Assurance¹¹ by ERM Certification and Verification Services



2030 GHG emission reduction target and 2050 net-zero aspiration

Our 2022 Ratings



EcoVadis Platinum Rating



Carbon Disclosure Project B Rating Climate Change

Memberships and Partnerships



¹¹ Selected 2022 information and data in this report has been assured by ERM CVS. For more information, refer to the Independent Assurance Statement on page 82.

4. Our Commitment to a Sustainable Future

Nouryon's Purpose and Values are closely connected and reflect who we are and how we continue to strengthen our performance-driven culture, deliver on our growth strategy, and contribute to a sustainable future. Living these Values enables us to be a trusted partner, respected employer, responsible member of the communities in which we operate, and ultimately – an industry leader.

Our 'Commitment to a Sustainable Future' is based on three clear commitments to:

- **CONTINUOUSLY IMPROVE** our safety and environmental performance.
- **GROW AND INNOVATE** to create sustainable solutions, to answer our customers' needs.
- **ENGAGE AND PARTNER** with employees, customers, and suppliers to drive sustainable progress.

These commitments were developed following a [materiality assessment](#) (see page 23) and aim to support the objectives of the [United Nations \(UN\) Paris Agreement on Climate Change](#) and the [UN Sustainable Development Goals \(SDGs\)](#) (see pages 24-25).

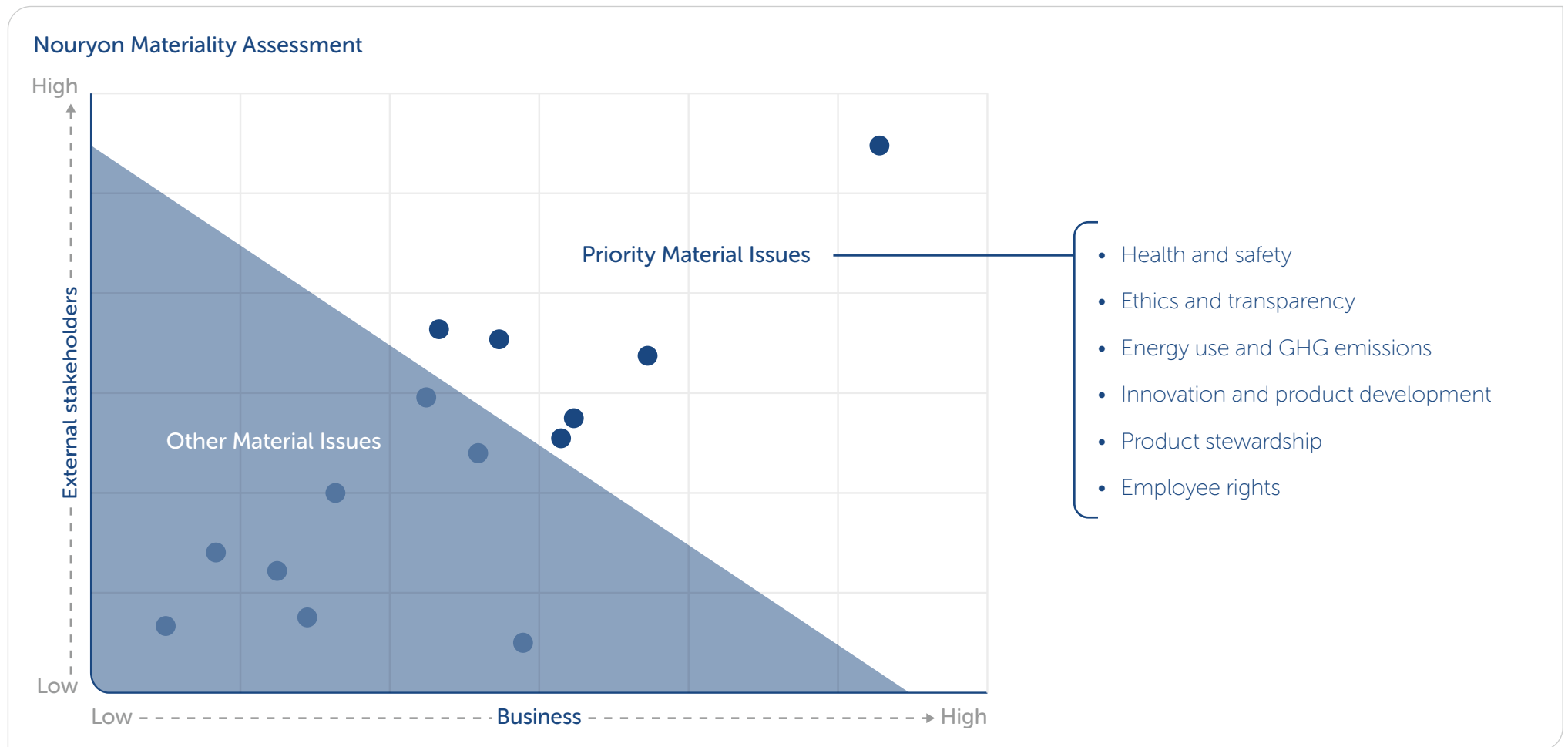
We track our progress and report metrics for the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB). For more information, including a full overview of ESG data as well as a GRI and SASB index, please see pages 79 or visit www.nouryon.com/company/sustainability.

		
<p>CONTINUOUSLY IMPROVE our safety and environmental performance</p>	<p>GROW AND INNOVATE to create sustainable solutions that answer our customers' needs</p>	<p>ENGAGE AND PARTNER with employees, customers, and suppliers to drive sustainable progress</p>
<p>Key Sustainable Development Goals:</p> 	<p>Key Sustainable Development Goals:</p> 	<p>Key Sustainable Development Goals:</p> 
  	 	  

4.1 Stakeholder Materiality

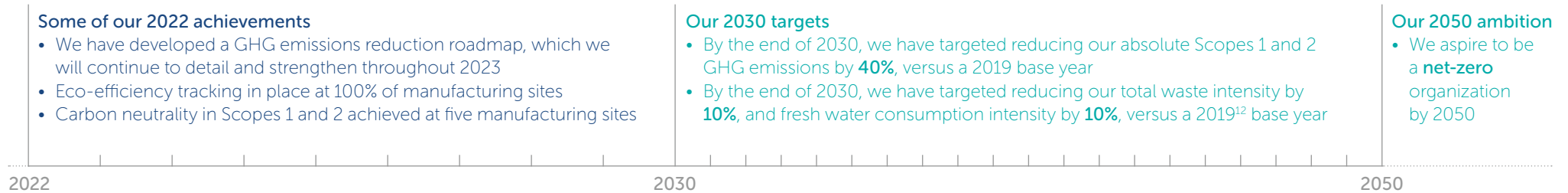
GRI 3-1, GRI 3-2

We conducted a [materiality assessment](#) in 2019 with the support of an independent consulting firm. The assessment identified [health and safety](#) in all aspects of our operations, as well as climate change, including [energy use and greenhouse gas emissions](#), as issues of key importance to our business. Other high-priority focus areas include [ethics](#), transparency, and [employee rights](#). This materiality assessment continues to help us identify our sustainability priorities and set goals. The structured process balanced a range of internal and external perspectives ensuring that the full range of critical issues for Nouryon have been identified and prioritized. The process consisted of: 1) interviews with Nouryon Leadership Team and experts; 2) surveys with suppliers, customers, Nouryon's Business Resource Groups, and senior management and 3) supplementary external viewpoints through additional desk-based research.



4.2 Our Targets and how We Aim to Achieve Them

GRI 2-25, GRI 305-1, GRI 305-2, GRI 305-3, GRI 305 3-3



We have set targets to improve our environmental performance. As the transition to a net-zero-carbon economy accelerates, we continue to challenge ourselves to reduce negative environmental impacts, mitigate risks, and harness growth opportunities related to climate change. To this end, we regularly review our operations and our products, which are also integral to the energy transition. To achieve this, we set 2030 targets to reduce absolute GHG emissions (Scopes 1 and 2) by 40%, total waste intensity by 10%, and fresh water consumption intensity by 10%, versus a 2019 base year. We aspire to be a net-zero organization by 2050. Our 2030 targets are aligned with the [UN Paris Agreement](#).

How we aim to achieve our GHG emissions reduction targets:

Our Carbon Business Strategy has a long-term horizon and is overseen by Global Carbon Business Leader Eduardo Nardinelli. In 2022, we established a GHG emissions reduction roadmap with tangible actions to achieve our 2030 targets. To inform this process, we assessed customer needs in strategic end-markets, and the regulatory and policy landscape.

We aim to reduce our GHG emissions and achieve our 2030 targets and 2050 aspiration by focusing on key areas: Carbon Operational Excellence, Energy Transition, Innovation and Value Chain Collaboration.

Scope 1: improving efficiency in our operations and optimizing our fuel mix. Achievements include:

- In Kvarntorp, Sweden, we are partnering with Adven to source steam produced from renewable wood pellets and avoid having to create steam on site using fossil fuels. Supply expected to start in the second quarter of 2023.

Scope 2: increasing our use of renewable energy through power purchase agreements (PPA), on-site renewables, and green utility programs. Achievements include:

- Our site in Mons, Belgium, is a leader for our Company, with one solar field in operation, another planned, and a wind farm under consideration.
- Our site in Guangzhou, China, runs on 100% electricity from renewable energy.
- Five manufacturing sites we operate in Brazil achieved carbon neutrality since 2021. See case study on page 27.

Scope 3: analyzing and reducing indirect GHG emissions from activities across our value chain. Achievements include:

- Evaluating potential lower-carbon raw materials with suppliers.

In addition, across all scopes, we intend to:

- Explore collaboration opportunities with our customers and suppliers.
- Evaluate and deploy innovative technologies such as those in the Icos Capital Fund III¹³, in which we are a strategic investor.
- Integrate net-zero and climate-change considerations into our strategy and planning.

Between 2019 and 2022, we reduced our absolute Scopes 1 and 2 GHG emissions by 1.3%. In 2022, 34% of our energy came from renewable sources such as hydro, wind, solar, biomass for power, and steam from waste biomass.

These are very positive developments, which will continue in 2023 and beyond. We have several projects in the pipeline across all regions, including:

- Signing the first on-site PPA in North America
- Transitioning to renewable electricity in China
- More solar panels and a wind turbine at our site in Mons, Belgium.

¹² The base year selected for Scope 1 and Scope 2 emissions is 2019, as it the first year Nouryon reported Environmental Health and Safety metrics as an independent company.

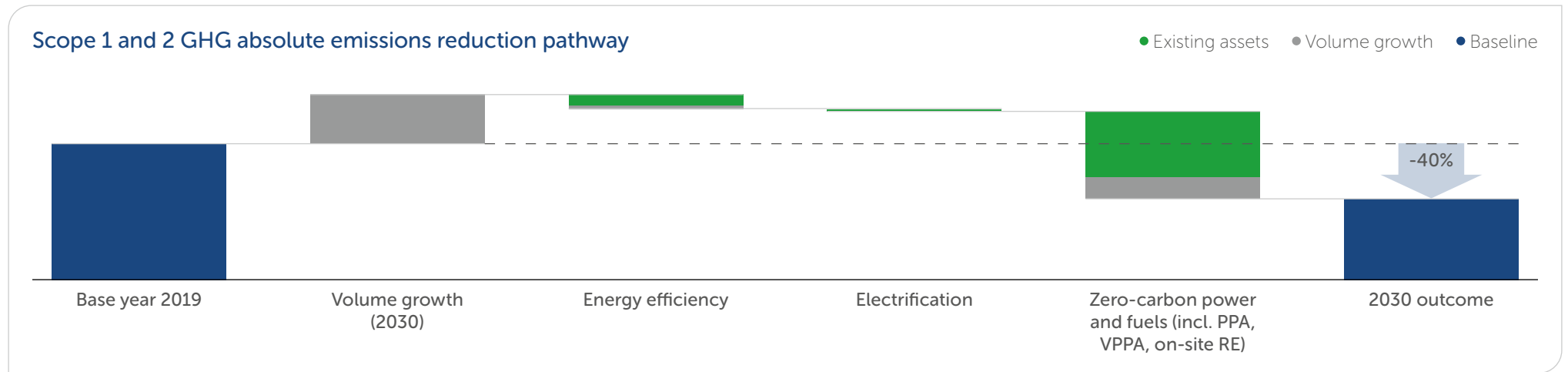
¹³ Nouryon is a strategic investor in Icos Capital Fund III, which supports startups, including those focused on software and process technologies for manufacturing in agriculture, food, and chemical industries. Icos Capital Fund III is included in Nouryon's financial reporting but ESG data is not included in the sustainability reporting as Nouryon is a co-investor in the fund.

The image below shows the pathway to achieving our 2030 GHG targets. The major driver is transitioning to electricity from renewable sources and investing in long-term PPAs, to reduce our Scope 2 emissions. We are also evaluating capital-light projects to reduce Scope 1 emissions at our plants – including equipment upgrades or replacements and design improvements, such as pre-heating, pressure and temperature optimizations, and energy recovery.

Realizing our goals on the pathway towards net zero relies on several considerations, including site evaluations, increased renewable energy, the rate of innovation, valuechain developments, and regulatory requirements.

How we will achieve our waste and water targets:
Between 2019 and 2022, we reduced our fresh water consumption intensity by 5%, with our sites in Oulu,

Finland, Ningbo, China and LeMoyne, US, being the main contributors to this reduction. While about half of our sites decreased their waste mainly by finding alternative uses for our waste streams and effectively turning waste into byproducts, our total waste intensity increased by 13%. We remain dedicated to achieving our 2030 water and waste targets and are in the process of putting a plan in place to ensure these targets are met.



4.3 Alignment with and supporting UN Sustainable Development Goals

GRI 2-6, GRI 305 3-3, GRI 405 3-3

Several societal trends are driving demand and presenting opportunities for Nouryon's sustainable solutions, which are aligned with the UN SDGs. These global trends include a growing population, an expanding and increasingly health-conscious middle class, climate change, and natural-resource preservation. Our solutions can help increase crop yields and improve their quality; make products that are more biodegradable or easier to recycle; contribute to making buildings and vehicles more energy efficient; and improve the durability of bridges and wind turbines.

Nouryon supports all 17 UN SDGs. We believe our Company and sustainable solutions contribute most to the following 10 SDGs:



2 ZERO HUNGER
End Hunger, Achieve Food Security and Improved Nutrition, and Promote Sustainable Agriculture

Agriculture is one of Nouryon's growth areas. We bring essential functionalities to our customers via a strong portfolio that includes crop nutrients, adjuvants, and non-flammable solvents, among which some are biodegradable and/or made from renewable resources. Our products help feed a growing population. They enable plants to grow by providing nutrients to safely increase agricultural productivity and crop yields using fewer resources. These products also improve overall soil health, which requires less plowing and results in less erosion over time. Our recent investments in ADOB and AGEYE (see pages 56 and 61) support this goal.



3 GOOD HEALTH AND WELL-BEING
Ensure Healthy Lives and Promote Well-Being for All, Regardless of Age

We prioritize health and safety in our operations and are an industry leader in people safety. We also offer a range of essential solutions for cleaning, personal care, pharmaceuticals, and food. Our products can be found in: safer, bio-based cleaning and personal care products; pharmaceutical excipients that contribute to the controlled release of active ingredients; media used in the purification of insulin; iron fortification in staple foods; and water treatment.



4 QUALITY EDUCATION
Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for Everyone

Nouryon's learning and development approach offers employees both short-term and long-term capability building. We offer internship programs at many locations and provide a broad range of opportunities for employees at all our locations worldwide, including on-the-job experience-based training, blended programs, online learning, specialist (virtual) classroom training, and mandatory compliance courses. Our employee-led Business Resource Groups (BRGs) are open to all employees and include the Nouryon Women's Network, Nouryon Veterans Network, Nouryon Pride (LGBTQ+), and BOOST (career development). A key focus area of our Corporate Social Responsibility (CSR) framework is science, technology, engineering, and mathematics (STEM) education, which we support in our communities through volunteerism, engagement, and corporate giving. Our Inclusion & Diversity (I&D) Network, responsible for activating inclusion and diversity initiatives throughout the year, has representatives from over 30 locations and across various functions, businesses, and seniority levels.

Mentorship Opportunities

Mentoring is an integral part of Nouryon's I&D approach, intended to cultivate and equip current and future leaders through the exchange of perspectives and insights. Mentoring involves a professional relationship between two individuals aimed at developing and achieving long-term personal and professional growth. At Nouryon, our mentorship opportunities allow those participating to:

- Gain new insights and perspectives;
- Develop new skills;
- Reflect on their accomplishments;
- Set new goals;
- Increase awareness of talent within Nouryon;
- Make connections that will support their careers.



Achieve Gender Equality and Empower All Women and Girls

Nouryon’s commitment to inclusion and diversity is codified in our Company Code of Conduct & Ethics, which states that we respect and value all employees, irrespective of age, gender, race, religion, or sexual orientation. We provide training on how to maintain a respectful and inclusive workplace and how to identify and report potential harassment and discrimination. In addition to offering equal opportunities for ongoing learning and professional development, we support diversity within our Company through initiatives such as our BRGs, which provide career development advice, learning opportunities, and the ability to foster global connections. Our largest BRG is the Nouryon Women’s Network, which is dedicated to connecting and supporting women in chemistry and manufacturing, has more than 500 members worldwide and, in 2022, established regional committees throughout the world to facilitate more-localized programming.



Affordable and Clean Energy

Nouryon leverages renewable¹⁴ energy and will continue to increase its use in the years ahead, in line with the targets we have set to reduce our GHG emissions. Additionally, our solutions are essential to the efficient use of energy as well as the transition to renewable energy sources. Solar panels, windmills and high voltage cables are all critical components to enable renewable energy production and the transition to a low carbon society. Our Polymer Specialty products are used in several production steps to give these products unique properties for transparency, durability, electrical, insulation, and strength.

¹⁴ Energy from sources that are inexhaustible and sustainable, such as wind, solar, hydroelectric, biomass, and others.



Promote Sustained, Inclusive and Sustainable Economic Growth, and Full, Decent, Productive Employment

Nouryon believes that business performance, safety, and sustainability are all related, and that growth leads to more employment opportunities. We work to empower employees and create a safe, high-performing, inclusive, and diverse workplace that reflects the global nature of our Company and customers.



Build a Resilient Infrastructure, Promote Inclusive and Sustainable Industrialization, and Foster Innovation

A sustainable future will require new products and processes. Nouryon develops innovative solutions, including bio-based and biodegradable ingredients for many end-products. Additionally, we develop ingredients that enhance infrastructure durability and energy efficiency, thereby contributing to a more sustainable society. Our solutions are also integral to products related to the transition to renewable energy sources such as wind turbines, high-voltage cables, and solar panels.



Reduce Inequality Within and Among Countries

As part of our Strategy, we aim to create sustainable growth, including in developing countries. We invest in our facilities and provide employment opportunities, safe working conditions and diverse workplaces that bring income to these communities and reflect the global nature of our Company and customers. We also participate in corporate giving initiatives to support communities in need.



Ensure Sustainable Consumption and Production Patterns

The chemistry sector plays a key role in enabling more sustainable and circular production, for which Nouryon continually innovates. Improving the eco-efficiency of our production facilities is a key component of our approach to sustainability and circularity. For example, we continue to expand our use of renewable feedstocks, such as cellulose, natural fats and oils instead of fossil-based sources. We can also co-locate with customers to minimize transport-related emissions and create shared resource models.



Take Urgent Action to Combat Climate Change and Its Impacts

Nouryon recognizes that climate change has a fundamental impact on the global environment, society, and business economics, and therefore we aim to reduce greenhouse gas emissions throughout our value chain in support of the UN Paris Agreement. Over the past decade, we reduced our carbon intensity, and are committed to reaching our GHG emission-reduction targets by adopting innovative technologies, more-efficient processes and sourcing more low-carbon energy, in alignment with our Carbon Business Strategy (see page 21). Aside from improving our own operational footprint, our products help our customers become more sustainable, for example, by decreasing weight and enhancing product durability and yield. This helps customers significantly reduce their energy, fuel, and resource consumption.

For more information on the 17 SDGs, visit <https://sdgs.un.org/>.

4.4 Memberships and Partnerships

GRI 2-28

Among other memberships, Nouryon is a member and signatory of the [UN Global Compact](#), the world's largest corporate sustainability initiative. An international program, it brings companies, UN agencies, and labor and civil society organizations together to support universal principles on human rights, labor, environment, and anti-corruption. Our Company Strategy, sustainability goals and Company Code of Conduct & Ethics are aligned with conducting business in a way that supports these principles.

We are a member of the [Roundtable on Sustainable Palm Oil](#) (RSPO) and [Responsible Care](#)[®], and partner with Swedish regional corporate cooperative [Hållbar Kemi](#) (Sustainable Chemistry). For more-comprehensive information about our memberships, please see page 74.



4.5 Industry-leading Ratings

We are very proud to have advanced to a Platinum Rating by EcoVadis, placing us in the year's top 1% of companies then rated. EcoVadis is a global provider of business sustainability ratings and is used by Nouryon as well as by many of our customers to track performance in supply chains. The rating is comprised of four dimensions: Environment, Labor and Human Rights, Ethics, and Sustainable Procurement.

We also consider the EcoVadis ratings of our suppliers in our own procurement process (see Chapter 7). In our role as a supplier, we also provide an annual submission to EcoVadis that includes an extensive questionnaire and evidence of our policies, procedures, actions, and results.

In 2022, we once again voluntarily responded to the Carbon Disclosure Project (CDP) climate questionnaire. We retained our B score, the details of which are available on the [CDP website](#).

Our 2022 Ratings:



EcoVadis
Platinum
Rating



CDP B Rating
Climate
Change



Case Study

Nouryon co-hosts Sustainability Innovation Event in Sweden

GRI 305

On September 27, 2022, Nouryon partnered with technology venture-capital company Icos Capital on the Swedish cross-sector Innovation Summit Accelerating Sustainability in Gothenburg, Sweden. Startups, corporations, and industry experts in climate tech came together to hear speakers and take part in discussions connected to carbon tech and circular materials such as textiles, as well as see pitches from exciting startups in these industries.

In cooperation with Icos Capital, we hosted a special session on sustainable chemicals and materials including bio-based and digital solutions. Nouryon's corporate partnership with Icos Capital dates to 2017 and has enabled several strategic partnership discussions and insights into innovation that is critical for us. We continually explore collaboration opportunities to evaluate and deploy new innovative technologies. With an annual commitment, we aim to invest in fast-growing industrial climate-tech companies with a focus on accelerating sustainability.

4.6 Transparently Reporting and Communicating Our Progress

Nouryon reports transparently and we are proud to share the latest steps of our sustainability journey in this annual Sustainability Report, which includes our [Environmental, Social, and Governance \(ESG\) fact sheet](#). We report metrics aligned with the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB) disclosure standards (see Index on page 79).

In addition, we reported to the [Task Force on Climate-related Financial Disclosures \(TCFD\)](#) (see page 15). Selected 2022 information and data in this report has been assured by ERM CVS. For more information, refer to the Independent Assurance Statement on page 82.

We utilize internal channels for communicating sustainability progress to our employees and executives, including:

- Corporate Responsibility Dashboard: includes key ESG metrics measured and tracked on a quarterly basis by the Corporate Responsibility Council and by the Corporate Responsibility Committee of our Board.
- Sustainability podcast series: Nouryon launched an internal podcast series, called 'Sustainable Future Focus', showcasing how we contribute to a sustainable future in a listen-on-the-go format. Hosted by Vivi Hollertt, Vice President, Chief Sustainability and Communications Officer, and other colleagues, 'Sustainable Future Focus' brings together our leaders and other colleagues across the company to discuss the importance of a sustainable future for Nouryon, our employees, customers, suppliers, other stakeholders, and society.
- Regular communications to employees, including townhalls, leader's updates, intranet, and e-mails.



Case Study

Five manufacturing sites operated by Nouryon are carbon neutral

Five of the manufacturing plants we operate in Brazil are carbon neutral: Imperatriz, Eunápolis, two sites in Três Lagoas, and Jacaréi. These are part of our Integrated Manufacturing Model (IMM), offering on-location sodium chlorate and/or chlorine dioxide production. The five sites have low Scope 1 GHG emissions, that were offset by purchasing carbon credits from renewable energy projects¹⁵, and reported zero Scope 2 GHG emissions. In the Eunápolis site, in 2022, we purchased limited electricity from the grid that was offset by the purchase of renewable energy certificates, created from renewable energy projects.

Modern pulp mills normally generate excess utilities (such as steam and water from the pulping process) that can be used as fuel in other manufacturing processes. Nouryon uses renewable energy from our customers, sourced primarily from biomass. These reused resources effectively lower the carbon footprint of the site significantly, while making production more efficient. Simultaneously, on-site production reduces transportation requirements.

¹⁵ Offsets for Scope 1 emissions certified by the Verified Carbon Standard (VCS), administered by Verra, and retired. For more information, see www.verra.org.

5. Continuously Improving Our Safety and Environmental Performance

Sustainability is at the core of Nouryon's operations. We are focused on continually improving our safety performance and further reducing our environmental footprint for the benefit of our customers, employees, contractors, communities, and the environment.

Key UN SDGs



Our Ambitions and Targets



Safety ambition: zero injuries and harm

- By the end of 2030, we have targeted reducing our absolute Scopes 1 and 2 GHG emissions by 40%¹⁶
- By the end of 2030, we have targeted reducing our total waste intensity by 10%, and fresh water consumption intensity by 10%¹⁶

- By 2050, we aspire to be a net-zero organization

2030

2050

Key Achievements



79% Process safety incident rate decrease between 2018 and 2022



Eco-efficiency tracking in place at 100% of manufacturing sites



Five carbon-neutral manufacturing sites operated by Nouryon

Current Performance



22% of organic raw materials are bio-based



34% of total energy is based on renewable sources



39% of total electricity is based on renewable sources

Relevant Programs

- Life-Saving Rules for all employees and contractors
- Safety training for all employees and contractors, including Frontline Leader Safety training
- Behavior-Based Safety (BBS) program
- Process Safety Management (PSM)
- Annual Safety Day
- Health, safety, environment, and security (HSE&S), including product stewardship

¹⁶ Versus a 2019 base year.

5. Continuously Improving Our Safety and Environmental Performance



CONTINUOUSLY IMPROVE
our safety and environmental performance

Key Sustainable Development Goals:



Nouryon's Integrated Supply Chain (ISC) function is responsible for our global supply network. ISC enables fast customer response and reduces complex logistical dependency, ensuring supply reliability and high product quality. Our ISC function does this by driving operational excellence via safety, productivity, and cost measures for profitable growth, maintaining our focus on customers and operational safety.

As a responsible operator and reliable supplier, we put safety first. Our goal is to sustain responsible operations by continuously improving our performance, with the ambition to reach zero injuries and harm by focusing on [people safety, process safety, and product safety](#). We reduced our process safety incident rate by 79%. In 2022, we reduced our process safety incident rate (PSIR). Our OSHA incident rate (OIR) increased, but performance remains in the top quartile based on the latest available ACC benchmark data¹⁷.

We are also committed to reducing our carbon footprint and energy consumption. We do this by increasing operational efficiency and increasing the sourcing of renewable energy. Of our 58 manufacturing sites¹⁸ worldwide, in 2022, 98% have certified Environmental Management Systems (EMS), e.g., ISO 14001 or RC 14001 equivalent.

Our ISC approach saw improved asset uptime of 1% (excluding lost time to weather events and global supply shortages) in 2022, delivering ~\$77M of combined reductions in operational and raw material costs, realigning resources for a more-agile organization.

—
Safety sits at the heart of Nouryon's success and it is essential for every one of us to take ownership of our own and others' safety.
—

Charlie Shaver
Chairman and CEO

¹⁷ Based on annual Total Occupational Safety and Health Administration (OSHA) recordable injury rates versus chemical industry peers in the American Chemistry Council. Source: Responsible Care® Benchmark Report 2021. 2022 benchmark data was not available at time of publication.

¹⁸ As of December 31, 2022, Nouryon had 58 manufacturing sites. As of January 3, 2023, and the acquisition of ADOB, Nouryon has 60 manufacturing sites worldwide.

58 Manufacturing Sites Worldwide



5.1 Continually Improving Our People and Process Safety

GRI 403-3

One of Nouryon's Values is 'We do it right' and this includes a culture of safety awareness to protect our employees, contractors, customers, communities, and the environment. Our goal is to continually improve our performance, with the ambition of achieving zero injuries and harm. We have set internal goals to eliminate workplace injuries and have several strategies in place to keep improving our safety performance, including our Behavior-Based Safety and Process-Safety Management programs. As a result of these strategies, from 2018 through 2022, we reduced our OSHA incident rate (OIR) by 12% and reduced our process safety incident rate (PSIR) by 79%. We continue to pursue improvements in our safety performance, for example, by focusing on leading indicators, emphasizing hazard recognition, and improving incident learning.

In 2022, Nouryon was recognized with a number of safety related awards. A summary of these is provided on page 33 in this report.

People Safety

GRI 2-25, GRI 403-3, GRI 403 3-3, GRI 403-1, GRI 403-2, GRI 403-4, GRI 403-5, GRI 403-9, GRI 403-10

Nouryon believes that safety must be embedded in our culture at every level and has leading management systems in place to drive continuous improvement. To increase awareness and strengthen our safety culture, we proactively report on leading parameters such as:

- **Near misses:** events that had no impact but did have the potential to result in injury, ill health, or damage to assets or the environment.
- **Hazards:** any condition or situation that could potentially harm people, products, or the environment.

We operate manufacturing sites around the world and value our relationships with communities. Our approach to community engagement starts with building and maintaining relationships with local stakeholders as required in our health, safety and environmental (HSE) Rule on Emergency Response and Community Awareness. Each site is audited to ensure that it has informed and involved the communities in which it operates. Every site conducts training and emergency drills on a regular basis – at least once per year – and document outcomes and lessons learned.

We conduct a risk assessment as part of each incident investigation, for which an impact sheet with the actual and potential situations is developed. All regional HSE managers hold a weekly call to review our focus events, including near misses. Occupational health and safety hazards are not differentiated between employees and temporary workers. Contractors must possess a work permit and prior to it being issued, we conduct a hazard analysis.

In addition, we use a Behavior-Based Safety (BBS) program at all locations to identify unsafe behaviors, train front-line leaders, and inspire behavioral change among employees and contractors to reduce potential hazards in the workplace. These observations are performed regularly and in a structured way. Improvement proposals and employee feedback are incorporated into the program and used for sites' continuous improvement programs. Several sites have promotional programs (smaller gifts, or competitions) to drive a positive safety culture, and BBS programs are regularly audited to check effectiveness.

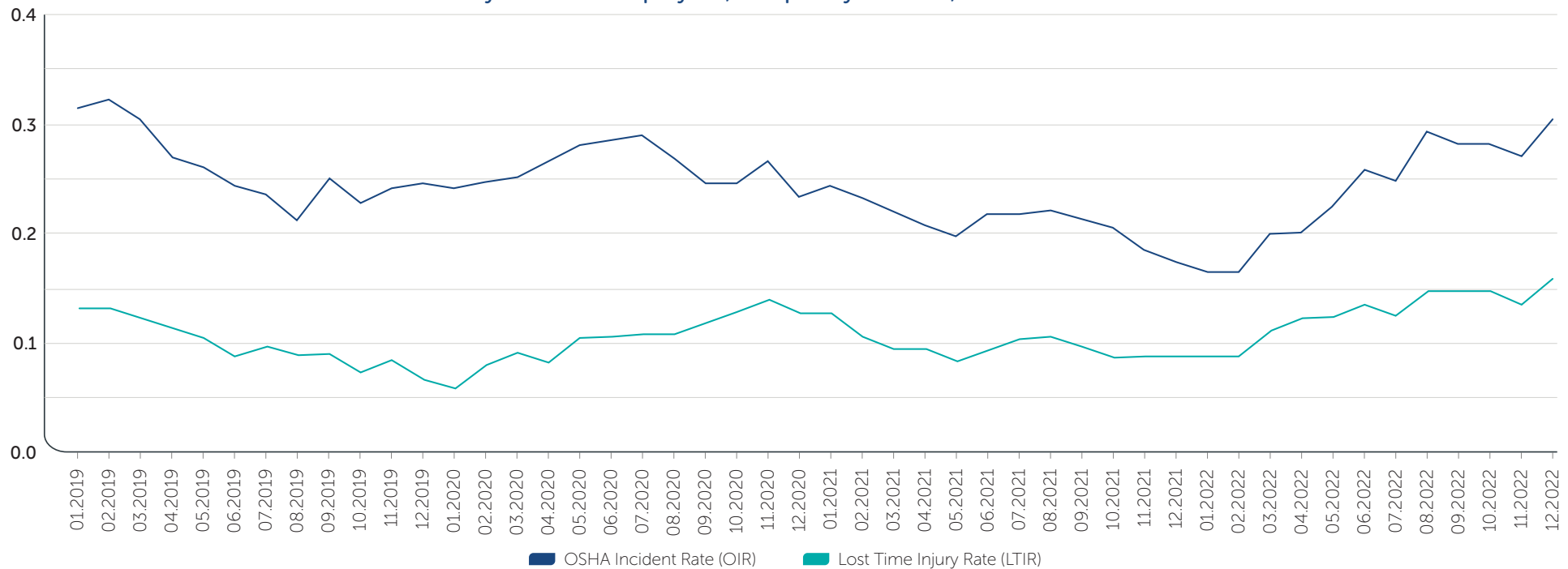
Every recordable injury is investigated to identify root causes and appropriate corrective actions to prevent future incidents. We conduct a workplace risk assessment of hazards and mitigation actions to prevent injuries. In our basic procedures, we describe the hierarchy of controls to mitigate potential hazards. We follow this hierarchy of controls in our design and operational procedures to ensure that we react at as early a stage as possible.

Chemical hazards are identified at each site location and a list of the chemicals and safety data sheets (SDS) used is mandatory.

We host an annual company-wide Safety Day to promote employee awareness and strengthen our global safety culture. For more information, see page 37. We conduct corporate internal audits for HSE&S including process safety in a three-year cycle at our production sites, and safeguard employee confidentiality in alignment with local regulations, including the General Data Protection Regulation (GDPR) in Europe. At sites where certificates for ISO 14001 and 9001 apply, the corporate audit includes the requirements for these and others: Nouryon HSE Procedures, ISO 9001, 14001, and 45001, RC 14001, OSHA PSM and RMP (US) and Seveso III (EMEA).



Safety Statistics: Employees, Temporary Workers, and Contractors



Safety Training

GRI 403-5

We conduct regular health and safety training beyond initial new-joiner training. For example:

- Instructions and skills training are provided to line management and employees on specific health hazards at work (e.g., training tools for dust, noise, ergonomics, chemical safety, and health risk assessments). This includes a Quarterly Safety Focus Area, which we introduced in 2022.
- All site managers must also complete HSE Leadership and Process Safety Fundamentals training, and safety drills are conducted at least every year.
- To manage key hazards and to reinforce our Life-Saving Rules (LSRs), each site must have mandatory Life-Critical Procedures (LCPs) among its local ones. Additional operational procedures, such as those covering maintenance and inspection plans, machine guarding, and electrical safety and lifting, also enhance our LSRs. All employees and contractors exposed to potential risks associated with LCPs must be trained on site-specific procedures. Employees must demonstrate the required level of competence through testing and validation, and refresher training is provided.
- When changing assets, a formal management of change (MOC) process must be employed and documented, which also results in specific training requirements.
- We offer many online courses on safety through our learning platform, which are available to all employees.
- We conducted Crisis Communication Training for 72 of our spokespeople in 2022. This training is provided to spokespeople every three years.
- We also provide tools to improve our hazard recognition capabilities, such as our HSE&S Good Practices tool to increase awareness and improve learning.
- In 2022, we established a Training Council to set global fundamentals related to safety and update our training with the most-relevant topics for the Company.
- New mandatory trainings are made available to all employees via our training portal.

Our Life-Saving Rules

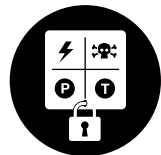
The purpose of our Life-Saving Rules (LSRs) is to ensure a safe work environment and safe behavior among our employees, contractors, and visitors.



Golden Principle:
Stop work if conditions
or behaviors are unsafe



Work with a valid
work permit when
required



Check equipment is
isolated before work
begins



Use fall protection
when working at
height



Obtain authorization
before disabling
safety equipment



Obtain a permit for
entry into a confined
space



Wear a seatbelt in
motor vehicles when
provided



Make sure moving
machinery is guarded



Do not use alcohol
or drugs at work



Case Study

17 Safety awards for Nouryon in Texas

Nouryon operations in Texas won numerous Texas Chemical Council (TCC) and Association of Chemical Industry of Texas (ACIT) awards in 2022. Our sites in Battleground, Pasadena, Fort Worth, and Houston were each honored with TCC Caring for Texas awards. Notably, the Battleground and Pasadena sites each received an exclusive Excellence in Caring for Texas award.

In addition to the TCC Caring for Texas Awards, Nouryon's sites in Battleground, Pasadena, Fort Worth, and Houston each received TCC Occupational Safety Distinguished Service awards, as well as TCC Zero Incident Contractor awards for having no recordable contractor injuries. Three Texas sites were also honored with the following awards:

- Zero Incident Employee (no recordable employee injury or illness): Pasadena, Fort Worth, Houston
- Dr. Sam Mannan Award for Zero Process Safety Incidents (no Tier 1 or Tier 2 incidents): Fort Worth
- Texas A&M - Mary Kay O'Connor Process Safety Center Award for Distinguished Process Safety Initiative (no Tier 1 or Tier 2 incidents) and a written essay detailing key process safety initiative: Houston

Contractor Safety

Our Business Partner Code of Conduct requires compliance with our safety rules and regulations. We evaluate contractor safety during the tendering process, using the ISNetworld database in the US. All contractors must successfully complete training on our LSRs and applicable LCPs and must also be familiar with the Permit to Work system of their location or project site. In addition to LSRs and training during the tendering process, we require refresher training to be conducted regularly and training records be maintained. Training includes HSE&S procedures, safe work systems, procurement practices, and local regulations. Specific requirements must also be completed prior to starting any work (as defined in our contractor safety management procedure).

Incidents

Each safety incident is investigated through a formal process to identify root causes and implement the appropriate corrective actions. In addition, Nouryon has an internal platform for learning from incidents, the purpose of which is to improve hazard awareness and reduce risk tolerance at all sites. Incidents are reviewed weekly by the global HSE organization and monthly by the ISC organization, including site leadership and the ISC leadership team. These sessions review and discuss incidents and analyze root causes, with the aim of raising awareness, sharing best practices to reduce recurrences across all our sites. The shared learnings help Nouryon to improve people and process safety by allowing each site to assess the selected incidents and their root causes and implement action items that reflect scenarios similar to those at incident sites.

Safety Performance Awards and Recognition

As in previous years, Nouryon's strong safety performance was acknowledged in 2022 by external organizations around the world. The awards included 17 awards from the Texas Chemical Council (TCC) and Association of Chemical Industry of Texas (ACIT) in recognition of our US efforts in continuous improvement in safety, emergency response, security, and environmental stewardship during the previous year. We are very proud of our teams in Texas for consistently meeting or exceeding safety standards and environmental performance. The annual TCC-ACIT awards recognize the programs Nouryon has in place to protect the communities in which we operate and keep our employees safe. For more information, see page 33.

— Maintaining strong safety and environmental stewardship performance are top priorities for Nouryon, and employee teamwork is essential for meeting our Values of 'We aim high, We own it, We do it right'.

Paresh Bhakta

Senior Vice President &
Chief Integrated Supply Chain Officer



Process Safety

We strive to deliver leading performance in HSE&S. Nouryon established a Process Safety Management (PSM) program for all operations in 2015, in alignment with industry standards and best practices. Our PSM framework is designed to prevent incidents and keep our facilities and people safe. PSM applies a management system and controls at our manufacturing sites, so that hazards are assessed, understood, and managed. In 2022, we continued to raise awareness and improve reporting of process safety indicators. As our performance in process safety has improved, we have shifted our focus to leading indicators. We review all incidents and near misses on a weekly basis. The total number of incidents involving a (Levels 1 and 2) process safety event (PSE) decreased by 83% between 2018 and 2022.

Our Global Central Engineering Center of Excellence – an essential element of process safety and overall safety – supports our equipment and application integrity across Nouryon’s global operations. A core group of engineering and environmental experts are responsible for global oversight of:

- Rotating equipment, such as pumps and compressors
- Fixed equipment, including pressurized and relief vessels
- Instruments and electrical components
- Turnarounds

Our team of maintenance, reliability and environmental technology experts is tasked with establishing and maintaining global engineering standards and ensuring their alignment across our Company. The resulting enhanced equipment integrity is anticipated to bring greater efficiency, reliability, and consistency, and ultimately, improved safety – as well as profitability.

Continuously Improving Our Transportation Safety

We continue to closely monitor Nouryon logistics regarding both environmental impact and safety. Transportation, including handling and storage remain priority focus areas in this exercise. A central function conducts gap analysis in our warehouses, terminals and depots as well as our processes and associated technology. As a result, additional investment in resourcing and IT has been allocated for the ongoing evolution of our transportation strategy, while accelerating safety performance in this area.



Case Study

Tennessee site celebrates 28 years without a lost-time injury

Our Chattanooga, TN, US, site celebrated a milestone of 28 years without a lost-time injury. This is a significant milestone in our Company’s global journey toward zero work-related injuries and illnesses.

Programs such as RC14001, Life-Saving Rules (LRS), Exposure Reduction Initiative, Chemical of the Month reviews, hazard/near miss reporting, behavior-based safety, face-to-face training, and health, safety and environmental (HSE) alert sharing have provided a firm foundation for the strong safety culture at the Chattanooga site. Implementing corporate safety initiatives that focus on specific safety aspects and considerations has helped enhance these programs.

	Unit	2018	2019	2020	2021	2022	Absolute Change 2021-2022
People Safety							
Total OSHA incident rate (OIR) for employees, temporary workers and contractors	Per 200,000 hours worked	0.34	0.26	0.23	0.17	0.30	0.13
Lost time injury rate (LTIR) for employees, temporary workers and contractors	Per 200,000 hours worked	0.15	0.07	0.13	0.09	0.16	0.07
Total OSHA incident rate (OIR) for employees, temporary workers	Per 200,000 hours worked	0.28	0.23	0.27	0.21	0.31	0.10
Total OSHA incident rate (OIR) for contractors	Per 200,000 hours worked	0.51	0.33	0.13	0.05	0.29	0.24
Lost time injury rate (LTIR) for employees, temporary workers	Per 200,000 hours worked	0.15	0.04	0.17	0.11	0.17	0.06
Lost time injury rate (LTIR) for contractors	Per 200,000 hours worked	0.14	0.16	-	-	0.12	0.12
Number of transport incidents	# of incidents				6 ¹⁹	20	
Lost time injury severity rate for direct workforce ²⁰	Per 200,000 hours worked					8.25	
Process Safety							
Process Safety Incident Count (PSIC)	# of incidents PSE1	11	20	4	5	3	-2.00
	# of incidents PSE2	70	40	20	13	11	-2.00
	# of incidents combined (PSE1+PSE2)	81	60	24	18	14	-4.00
Process Safety Total Incident Rate (PSTIR) PSE1 + PSE2	Per 200,000 hours worked	0.75	0.59	0.25	0.20	0.16	-0.04
Process Safety Total Incident Rate (PSTIR) PSE1	Per 200,000 hours worked	0.10	0.20	0.04	0.05	0.03	-0.02
Process Safety Incident Severity Rate (PSISR)	Per 200,000 hours worked	0.10	0.20	0.04	0.09	0.08	-0.01

¹⁹ Reporting started in Q3 of 2021 and only reflects partial year results.

²⁰ Number of days lost due to injuries x 1,000 / total hours worked

GRI 403-9



Know Risks No Regrets



Case Study

Nouryon Global Safety Day 2022

Safety is essential to Nouryon, and we dedicate one day each year to focus on safety together in order to share ideas, experiences, and best practices. In the run-up to our Safety Day, our health, safety, environment, and security (HSE&S) team works with other areas of our business to evaluate key safety trends and improvement opportunities, and the results are translated into an annual safety awareness and engagement campaign, which is launched on Safety Day and continues throughout the year. In 2022, Safety Day was observed on September 21 in our locations around the world with the theme — Know Risks. No Regrets. — about risk awareness and hazard recognition.

As part of last year's Safety Day, Nouryon employees and contractors worldwide shared their safety stories online about effective actions that prevent incidents. Employees also participated in various offline event activities, including training workshops, interactive mobile games and quizzes, hazard hunts, safety award ceremonies, emergency-response planning drills, and more. Together, these were a reminder that when we are connected and support one another, we can collectively stay more focused on the job, improve our safety performance, and create a stronger, more-sustainable safety culture and safer workplace, while driving success and growth.

5.2 Product Stewardship Throughout the Value Chain

GRI 416 3-3, GRI 416-1

We recognize that we have an important role to play in the drive toward a more sustainable society, beyond ensuring regulatory compliance in every region in which we operate. Nouryon therefore creates business value by providing safer and more-sustainable solutions for our customers through our product stewardship programs. It also enhances our ambition to develop and deliver our Eco-Premium Solutions to our customers and the market.

Our global product-stewardship process comprises eight elements (see table below) and is monitored at each of our manufacturing sites through the Nouryon Assessment Tool (NAT).

We are dedicated to managing our products safely along the entire supply chain, from raw materials to product end of life, and to continuously minimizing impact on human health and the environment.

For Nouryon, this means:

- Ensuring that customers are provided with adequate safety information regarding our products via SDS.
- Having processes in place to ensure that HSE aspects are considered in our new product development and design.
- Having a program in place designed to manage priority substances in advance of legislation and taking a proactive global approach to the review and management of hazardous substances in our products and processes, which could lead to phase-out and substitution in cases where safe use and handling cannot be ensured.

Nouryon uses a global monitoring system to keep track of regulatory developments in order to prepare for advocacy and implementation activities at an early stage. Nouryon supports the aims of the European Green Deal, the [European Union \(EU\) Chemical Strategy for Sustainability](#)²¹, and the US Toxic Substances Control Act²² legislation, among others. We participate in the development of chemicals management legislation around the world through our membership in industry associations.

²¹ For more information: https://ec.europa.eu/environment/strategy/chemicals-strategy_en

²² For more information: <https://www.epa.gov/tsca-inventory>

Elements of Product Stewardship		Responsibilities	
		Lead function	Support function
1. Leadership		Nouryon Leadership Team (NLT)/Product Stewardship and Regulatory Affairs (PSRA)	NLT/PSRA
2. Product design and development		Research and Development (R&D)	PSRA
3. Product manufacture, distribution, use and disposal by customers	3a – Product manufacture	ISC Manufacturing	PSRA
	3b – Product distribution	ISC Logistics	PSRA
	3c – Product use and disposal by customers	Marketing and Sales	PSRA
4. Purchase of materials, equipment and services, including toll conversion		ISC Procurement	PSRA
5. Materials inventory and hazard data for substances in produced products		PSRA	PSRA
6. Product regulation and advocacy/hazard, exposure and risk assessment	6a – Product regulation and advocacy	PSRA	Government Affairs
	6b – Hazard, exposure and risk assessment	PSRA	HSE
7. Consumer information/product liability		Marketing and Sales	PSRA
8. Business integrity and managing reputation-related issues		NLT	Communications / PSRA

Keeping Our Customers and Their Products Safe

We train our customers and other stakeholders to work with and handle our products safely. For example, our Innovation Center in Deventer, the Netherlands, has always been a place where some of the best scientists in the world develop innovative molecules that meet new requirements for plastics and rubbers, make chemicals that are safer for our customers to handle, and minimize environmental impact. Our Deventer Innovation Center features a world-class Safety Testing Laboratory where products and processes are tested on their safety performance in use as well as during transportation and handling. The lab capabilities are coupled with expert training for our employees as well as customers.



Hazard Assessment and Communication

We handle more than 4,000 unique substances²³, including raw materials used in our production and R&D samples. Of these, 2,200 are sold and used throughout the world and have been subjected to a hazard assessment. In 2022, 85% of Nouryon's net revenue came from products containing substances that are classified as Globally Harmonized System (GHS) Categories 1 and 2 Health and Environmental Hazards²⁴.

Our core competencies are in complex and hazardous chemistries and the [handling of highly reactive chemicals](#). All substances are carefully managed to ensure they are used safely at our production sites and by our customers. Our company-wide procedure ensures that all substances manufactured by, or toll manufactured for, Nouryon have undergone a hazard assessment which is based on physical chemical, toxicity, ecotoxicity and environmental fate data. This data is stored in a global central database, which is used for creation of labels and SDSs²⁵. New regulatory information is continually uploaded into the central database. The system generates the labels and SDSs in line with other requirements for each shipment, including in the language and format of the country the product is being shipped to.

Nouryon is committed to not using any vertebrate animal testing unless it is legally required. Nouryon supports the development of animal-free testing methods and has established an animal testing policy. When vertebrate animal testing is required, Nouryon fully supports and applies the principles of the '3Rs' to Replace, Reduce, and Refine animal testing.

EU REACH

GRI 416 3-3

Nouryon continuously works to ensure that our products can be safely used in alignment with REACH (Regulation (EC) No 1907/2006), which aims to improve the protection of human health and the environment from the possible risks posed by chemicals. REACH stands for Registration, Evaluation, Authorization and Restriction of Chemicals and includes established procedures for collecting and assessing information on the properties and hazards of substances. One of the obligations in REACH is the registration of all substances imported/manufactured above one ton in the EU. Nouryon uses REACH chemical hazard, exposure, and risk assessment, and communicates safe uses through an extended safety data sheet, e-SDS, in accordance with REACH regulations. In the European Economic Area, we require new suppliers of raw materials to provide e-SDS documentation (together with other necessary data). Our site and procurement teams collaborate in this process, and our PSRA teams advise on REACH aspects and perform regulatory checks.

In 2019, Nouryon joined the European Federation of the Chemical Industry's (CEFIC) REACH Action Plan for Review/Improvement of Registration Dossiers. Nouryon is also active in the new chemical regulations similar to REACH and we are preparing for registrations in Taiwan, South Korea (K-REACH), Turkey (KKDIK) and Great Britain (UK-REACH).

²³ This includes raw materials for our manufactured products, intermediates and R&D samples from innovation projects. This does not include products and materials purchased that are not directly employed in our manufacturing processes, e.g. lubricants or laboratory reagents.

²⁴ GHS category 1.1 Health hazards include the following criteria: Acute Toxicity, Skin Corrosion/Irritation, Serious Eye Damage/Eye Irritation, Respiratory or Skin Sensitization, Germ Cell Mutagenicity, Carcinogenicity, Reproductive Toxicology, Target Organ Systemic Toxicity – Single Exposure, Target Organ Systemic Toxicity, or Repeated Exposure Aspiration Toxicity. GHS category 1.2 environmental.

²⁵ <https://echa.europa.eu/safety-data-sheets>



Managing Substances of Concern

GRI 416

Substances of concern (SoCs) are chemicals that have severe hazard classifications and could cause long-term effects on human health and the environment. Typical classifications such as CMR category 1A and 1B, PBT, vPvB belong to this category.

Nouryon has developed a Priority Substance program to proactively identify and manage substances requiring specific attention. This program includes a risk assessment using a similar methodology as in EU-REACH to determine how these substances can be used safely. The management measures may include substitution, restriction to certain uses and/or specified and mandatory handling instructions. Examples of substitutions because of the phasing out of hazardous substances are provided later in this chapter.

Our proven success in safely handling hazardous materials is a result of our long-term commitment to safety. Our products have been safely handled on a commercial scale for many years despite the hazards associated with their reactivity.

As an additional safeguard, in the unlikely case our customers are confronted with an emergency, we offer a 24/7 year-round service to provide them with adequate advice in local languages. We now also offer interactive online customer training in 12 languages that covers the newest safety practices for handling our thermoset, crosslinking, organic peroxides, metal alkyls and Expancel® thermoplastic microsphere products, covering hazardous properties, proper storage techniques and safe use. More about Nouryon's Safety Services can be found on our [website](#).

In 2022, 4% of Nouryon's net revenue came from products containing SoCs (>0.1% by weight). Of our net revenue, 0.8% is on the REACH Annex XIV (Authorization) list, and 0.3% is on the REACH Annex XVII (Restriction) list. As described above these substances are carefully managed to ensure they can be manufactured and used safely. All have undergone a risk assessment according to the REACH methodology.

Developing Alternatives Through Innovation: Product Substitution Examples

The demand for more sustainable alternatives to SoCs is growing. Nouryon has a proven track record when it comes to substitutions for SoCs for our addressable end-markets. In recent years, Elfan® AT84, Redicote® E-47 NPF, and a safer alternative to Di-cyclo hexylphthalate (DCHP) are just some of the substitutions we have offered to address evolving customer and regulatory needs.

For the cleaning market, we introduced innovations such as chelating agent, Dissolvine® GL. Wetting agent AG 6206, and Berol® 260 are part of Nouryon's [low dioxane portfolio](#), along with degreasers and cleaners from the Berol® and Ethylan® surfactant product lines. These are produced using a proprietary process that reduces the amount of 1,4-dioxane created as a by-product. Our innovative process also makes formulating more cost effective for our customers and offers the possibility of optimizing raw material purchases, reducing inventories, and simplifying production. All products within our low-dioxane portfolio are also listed in the CleanGredients database, meeting the US Environmental Protection Agency (EPA) Safer Choice standard. They include:

- Berol® 226 SA: synergistic surfactant blend for optimized cleaning and easy handling
- Berol® 260 and 266: primary-surfactant performance degreasers
- Berol® 609: nonyl-phenol ethoxylate-free surfactant
- Berol® 611: nonyl-phenol ethoxylate-free surfactant
- Berol® DR-B1: performance cleaner for outside usage, qualified for direct release into the environment
- Ethylan® 1005: low-foam, low-aquatic-toxicity primary-surfactant degreasers

5.3 Mitigating Climate Change

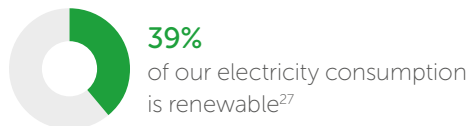
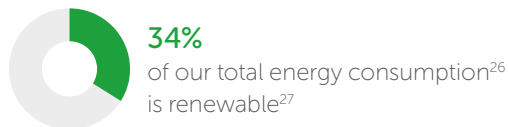
Objectives and Opportunities

GRI 305 3-3

Nouryon recognizes that climate change has a significant impact on the global environment, society, and economic systems, and we aim to reduce GHG emissions across our value chain. As the transition to a net-zero-carbon economy accelerates, we continue to raise the bar on how we can reduce climate-related impacts, mitigate risks, and harness growth opportunities.

We have identified targets to continue minimizing the environmental impact that we have on our planet. To support and accelerate Nouryon's path toward achieving these goals, we further elaborated our Carbon Business Strategy in 2022 by developing a roadmap with tangible actions.

Current Performance



²⁶ Includes fuel, electricity, and purchased steam.

²⁷ Energy coming from sources such as wind, solar, hydro and from biomass.

Our Carbon Business Strategy

GRI 305 3-3

Our focus is on further reducing GHG emissions while growing revenues. Nouryon sees carbon not as a challenge but as a business opportunity and is working towards company-wide alignment on GHG reduction targets and initiatives. This includes exploring innovative solutions and partnerships to reduce GHG emissions across our value chain.

We will reduce these emissions through a wide range of actions, with a focus on Carbon Operation Excellence, Energy Efficiency and Innovation, and additionally, Value Chain Collaboration on Scope 3.

Scope 1: improving efficiency in our operations and optimizing our fuel mix.

Scope 2: increasing our use of renewable energy through power purchase agreements, on-site renewables, and green utility programs.

Scope 3: analyzing and reducing indirect GHG emissions from activities across our value chains.

Our Carbon Business Strategy has a long-term horizon and is overseen by Global Carbon Business Leader Eduardo Nardinelli. For more information, including how we will achieve our targets, see page 21.



Case Study

Nouryon's Mons site sources 100% renewable electricity

Our Mons, Belgium site purchases 100% renewable electricity. In 2021, we shifted 15% of the site's electricity needs to solar cells located at our site. In 2022, we started developing an additional project to increase this by a further 15%, as well as securing plans to source more renewable electricity from a wind turbine within the next two years. Further plan in development to continue increasing renewable electricity source via solar panels. We also invested in a regenerative thermal oxidizer (RTO), which connects all 70 volatile organic compounds (VOC) emission points through pipes for on-site treatment. Mons is also recycling sulfuric acid by re-concentrating it and reusing the purified acid in our processes, which reduces the primary waste stream.

Measuring and Reporting Our Greenhouse Gas Emissions

Nouryon reports greenhouse gas emissions in CO₂ equivalents at three levels: emissions from our own operations (Scope 1)²⁸, emissions from purchased energy (Scope 2)²⁹, and emissions across our value chain (Scope 3, upstream and downstream).

We calculate our GHG inventory (Scopes 1 and 2) as well as other energy and environmental metrics on a quarterly basis and report results to our CR Council and CR Board Committee. This allows us to measure progress against our targets. We also developed dashboards with GHG and eco-efficiency data so that each of our sites worldwide can track their performance, using a site-at-a-glance tool. Furthermore, we have developed internal reports and guidance procedures that describe our calculation methodology so we can ensure year-to-year consistency.

To support our customers, Nouryon uses life-cycle assessment (LCA) to assess and improve the environmental performance of our products in the value chain. A product carbon footprint (PCF) is one of the many environmental impact categories resulting from the LCA. It calculates total GHG emissions – CO₂, and other greenhouse gases (expressed as CO₂ equivalent) – generated by a product during its life cycle. PCFs provide our customers with valuable information for assessing greenhouse gas emissions and provide transparency regarding GHG emissions, associated with our products.

²⁸ 'Scope 1' absolute GHG emissions refers to the total direct emissions CO₂ equivalent (for example, CO₂ emissions due to combustion of fuel at our production facilities to generate steam) and is calculated as the sum of direct CO₂ emissions and CO₂ related to non-biomass fuels.

²⁹ 'Scope 2' absolute GHG emissions refers to the total indirect emissions CO₂ equivalent (for example, CO₂ emissions at a power plant delivering electricity to our production facilities) and is calculated as the sum of indirect CO₂ related to purchased electricity steam and hot water.



Reducing customers' GHG emissions

GRI 305-5

Our solutions can also contribute to GHG emissions reductions for our customers. For example, making packaging lighter with our Expancel® microspheres drives transportation fuel efficiency and reduces transportation-related emissions. Similarly, our solutions are essential to renewable energy related products such as lightweight composite parts in wind turbines and insulation for high-quality, high-voltage cables, and for helping to make solar panels durable and highly efficient.



Case Study

Sustainability Leadership Award for Agrilan® 1015

The American Chemistry Council (ACC) conferred its 2022 [Sustainability Leadership Award](#) in the category of Product Safety, Innovation and Transparency on our Agrilan® 1015 biodegradable liquid dispersant, recognizing the value it delivers to growers around the world in need of more-sustainable formulations to protect their crops.

This multipurpose, non-persistent biodegradable solution is used for aqueous crop protection and seed-treatment applications to help active ingredients dissolve more easily and enhance the profile of formulations. In addition, it does not contain risk or classified ingredients and is a non-endocrine disruptor. Regulations play an important role in agrochemical formulation design and Nouryon is focused on delivering [crop protection and nutrition solutions](#) that meet the challenges of tomorrow.

5.4 Eco-Efficiency and Circularity

The chemical sector plays a key role in enabling more sustainable and circular production. Improving the eco-efficiency of our facilities is a key component of our approach to sustainability.

Our global HSE procedures establish requirements to help promote environmental protection at all sites. For example: site management continuously looks for ways to reduce environmental impact, waste generation, and energy consumption through objective plans and targets in the site's Improvement Plan. Each site management team is responsible for maintaining an Environmental Management System that identifies significant environmental impacts and ensures they are properly managed.

In alignment with with Company goals, each location establishes annual targets for energy reduction and considers the best available technologies. Each site completes a water balance assessment and is aware of the sustainability issues associated with the water supply at the

facility. In addition, sustainability reviews, including carbon efficiency, are conducted for capital-expenditure projects above a certain monetary threshold.

Nouryon uses a dashboard to track eco-efficiency parameters, including GHG emissions. Our sites track these in order to gauge performance. We are also constantly innovating to create more sustainable and circular products. This includes using renewable feedstocks such as cellulose instead of fossil-based feedstocks, and circular production methods, such as co-locating with customers to minimize transport and create shared resource models. We use bio-based steam in our [Integrated Manufacturing Model \(IMM\)](#) sites in Brazil.

From 2019 through 2022, we reduced sulfur oxide (SOx) emission intensity by 6%. We increased nitrogen oxide (NOx) emission intensity by 13%. The intensity of our fresh water consumption decreased by 5%, and our total waste intensity increased by 13%. Between 2019 and 2022, we decreased our total absolute Scopes 1 and 2 GHG emissions by 1.3%.

Products from Recycled and Bio-Based Feedstock

To help meet the growing demands of our customers for increased product sustainability, we develop products using bio-based raw materials partly or fully derived from natural sources. Sustainably produced bio-based sources enable a more-circular economy and can also have a lower-carbon footprint versus alternatives across their life cycle, reducing greenhouse gas emissions.

We also use co-product materials as inputs for higher-value products, including tallow, cotton linters, and others. For example, we make rheology modifiers for the paint industry, based on cellulose made from cotton linters.



Nouryon's Integrated Manufacturing Model Concept

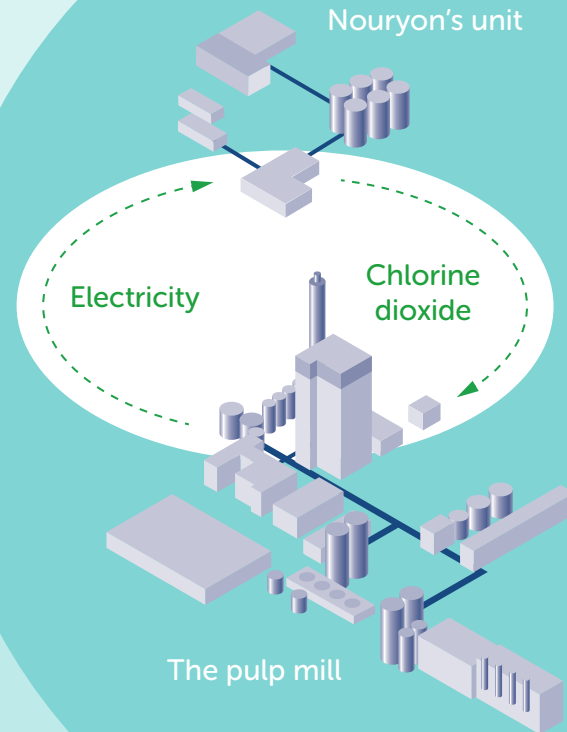
Our [Integrated Manufacturing Model](#) (IMM) helps deliver products directly on our customers' sites in Brazil to bleach pulp as raw material for tissue products. We receive electricity from our customers that is generated with renewable biomass (eucalyptus) as fuel. We use this electricity in our electrochemical processes for making bleaching products. This on-site production eliminates the need for transport, thereby reducing emissions related to transportation.

In 2021, five of these sites achieved carbon neutrality. For more information, see page 27. We also signed a long-term supply agreement with Suzano, a leading global eucalyptus pulp producer, for a new IMM in Mato Grosso do Sul, Brazil. Details about the partnership, which comprises one of the largest private-sector investments currently under development in Brazil, are provided in the related case study in Chapter 6.

The five carbon neutral sites in Brazil operated by Nouryon (Imperatriz, Eunápolis, Três Lagoas (2) and Jacareí), offer on-location sodium chlorate and/or chlorine dioxide production.



- Nouryon uses renewable energy from our customers sourced primarily from biomass.
- Reused resources effectively lower the carbon footprint of the site.
- On-site production reduces transportation requirements.



Improving Recyclability

Our products can help our customers improve the recyclability of their products. For example, we offer polymer catalysts that can adjust the properties of mechanically recycled polymers, allowing them to be upscaled and used in applications currently reserved for new virgin polymer streams. Our products also help retain high quality in finished products made from recycled plastics.

Reducing Waste Through Green Shipping

In addition to product design, we look for opportunities to reduce waste in our value chain. For example, in our Asa site in Japan, our customers return empty containers for products, so that these can be reused or recycled. In 2022, the Asa site received close to 171,000 containers from our customers for reuse or recycle.

We also use onsite expansion of our Expancel® thermoplastic microsphere product and point-of-use mobile expanders to reduce shipping volumes and costs. Each truckload of material our customers expand onsite, saves 30 to 40 truckloads.

We continually look for ways in which we can ship more efficiently to save costs and reduce our impact. This includes utilizing warehouses closer to customers and reusable dunnage, which provides a dual benefit by reducing packaging waste and eliminating the need for special cleaning at customer sites.

Waste

Whilst about half of our sites decreased their waste by finding alternative uses for our waste streams and effectively turning waste into by-products, our total waste intensity increased by 13% between 2019 and 2022. We remain dedicated to achieving our 2030 total waste intensity target and are in the process of putting a plan in place to ensure this target is met.

Water

Nouryon conducts an annual water risk assessment. We utilize the WRI Aqueduct tool³³ every three years, and annually survey all sites globally. This forms the basis of our assessment of sites with high water stress, as reported in our environmental data. We previously identified two sites – Ningbo and Boxing, in China – as water stressed, and other sites to be monitored. This process also informs potential improvement opportunities. These two sites are exploring opportunities to improve their water management by reviewing projects in order to include reuse or recovery of wastewater or wash water, reduction of water consumption, improved washing efficiency using less water, and the use of alternative types of water.

Between 2019 and 2022, we reduced our fresh water consumption intensity by 5%, with our sites in Oulu, Finland, Ningbo, China and LeMoyne, US, being the main contributors to this reduction. We remain dedicated to achieving our 2030 fresh water consumption intensity target and are in the process of putting a plan in place to further reduce our fresh water consumption.

³³ <https://www.wri.org/aqueduct>

Separately, other sites not identified as 'in water stressed areas' are also pursuing initiatives to improve water management by reducing water use or using alternative sources to water. For example, our Salisbury, NC, US, site is recycling certain wastewater in processes to be used again as opposed to sending it to wastewater treatment. Our Fort Worth, TX, US, site has taken steps to improve water management including:

- Longer production cycles to reduce water consumption in the spray dryer.
- Reducing the quantity of water added to in-process material to minimize the amount of water required to be dehydrated to achieve the desired finished-production solid concentration.
- Reducing process temperatures to lessen water evaporation in cooling towers.
- Increasing the target solid concentration for certain products to minimize dehydration rate and water addition during production.
- A new filtration system, which reduces the frequency of changes and the quantity of water required to clean the filtration and lessens water discharge.

5%
reduction of
our fresh water
consumption
intensity

between 2019
and 2022



5.5 Environmental Data Sheet³⁴

GRI 305, GRI 305-1, GRI 305-2, GRI 305-3, GRI 305-4, GRI 305-7

	Unit	2009	2018	2019	2020	2021	2022	Progress toward target ³⁵
Company carbon footprint								
Total absolute direct and indirect emissions market-based (Scopes 1 and 2)	Kton CO ₂ -eq	1,194	1,329	1,451	1,427	1,403	1,432	-1.3%
Carbon intensity (Scopes 1 and 2 combined)	Kg CO ₂ -eq/ton of production	454	371	420	428	406	422	n/a
Direct absolute emissions (Scope 1) ³⁶	Kton CO ₂ -eq	526	533	545	554	569	583	n/a
Direct emissions (Scope 1) intensity	Kg CO ₂ -eq/ton of production	200	149	158	166	165	172	n/a
Indirect emissions market-based (Scope 2): including allocated RECs ^{36,37}	Kton CO ₂ -eq	668	796	906	872	835	849	n/a
Indirect emissions market-based (Scope 2) intensity	Kg CO ₂ -eq/ton of production	254	222	262	262	242	250	n/a
Indirect emissions location-based (Scope 2)	Kton CO ₂ -eq			1,267	1,186	1,190	1,244	n/a
Estimated Scope 3 total absolute emissions ³⁸	Kton CO ₂ -eq						4,427	n/a
Total absolute emissions (Scope 1, Scope 2 market-based, and Scope 3)	Kton CO ₂ -eq						5,859	n/a
Direct emissions, covered by emissions-limiting regulations	% of direct emissions		26%	24%	27%	27%	28%	n/a
Energy Management								
Total energy consumption ³⁹	Mln GJ	23.0	29.1	30.0	30.3	32.2	32.9	n/a
Total energy consumption intensity ³⁹	GJ/ton of production	8.74	8.12	8.67	9.09	9.33	9.70	n/a
Percentage renewable energy ⁴⁰	%			30%	38%	38%	34%	n/a
Percentage energy from grid electricity	%		70%	62%	61%	60%	60%	n/a
Unbundled RECs	MWh						40,312	n/a
Total self-generated electricity	Mln GJ	-	-	-	-	-	-	n/a
Air Quality								
NOx absolute emissions	Ton	889	497	460	466	496	509	n/a
NOx emission intensity	Kg/ton of production	0.34	0.14	0.13	0.14	0.14	0.15	n/a
SOx absolute emissions	Ton	5,286	3,264	3,413	2,995	3,111	3,143	n/a
SOx emission intensity	Kg/ton of production	2.01	0.91	0.99	0.90	0.90	0.93	n/a
VOC absolute emissions	Ton	717	789	669	1,172	1,938	1,792	n/a
VOC absolute emission intensity	Kg/ton of production	0.27	0.22	0.19	0.35	0.56	0.53	n/a
Hazardous air pollutants	Ton					374	357	n/a
Hazardous air pollutants intensity	Kg/ton of production					0.11	0.11	n/a

³⁴ For all figures, minor corrections to historical data may be made to improve accuracy or based on methodology updates.

³⁵ Percentage change 2019-2022.

³⁶ Scope 2 emissions calculations for 2019 until 2022 are based on the Green House Gas Protocol. Prior period calculations were based on electric utility fuel mix data.

³⁷ In addition to RECs retired on our behalf for utility supplied renewable electricity and other utility contractual instruments.

³⁸ The estimated Scope 3 total GHG emissions reported include estimates for categories 2, 8, and 15 representing approximately 1.7% of the total Scope 3 emissions we report. These categories of emissions were excluded from ERM CVS Assurance engagement.

³⁹ Energy consumption is expressed in mln GJ, which is the sum of the actual consumed by the sites. The energy consumption for 2009 was derived from the consumption expressed in Fuel Equivalents that year by applying a factor expressing the relation between direct consumption in GJ and Fuel Equivalents for 2018, 2019, 2020, 2021, and 2022.

⁴⁰ Renewable-energy data include renewable fuels like biomass, purchased renewable steam, and renewable electricity from solar, wind, and hydro power. This does not consider certifications for biomass and hydro power, which are not currently tracked.

5.5 Environmental Data Sheet Continued

	Unit	2009	2018	2019	2020	2021	2022	Progress toward target ⁴¹
Emission to Water – Chemical Oxygen Demand (COD)⁴²								
COD absolute emissions to surface water	Ton	968	1,134	845	768	896	854	n/a
COD emission intensity to surface water	Kg/ton of production	0.37	0.32	0.24	0.23	0.26	0.25	n/a
COD absolute emissions to external waste water treatment	Ton			15,245	16,503	17,905	18,435	n/a
COD emission intensity to external waste water treatment	Kg/ton of production			4.41	4.96	5.18	5.43	n/a
Water Management								
Absolute fresh water intake	1,000 m ³	162,148	142,953	134,721	147,122	161,482	153,211	n/a
Fresh water intake intensity	M ³ /ton	61.7	39.9	39.0	44.2	46.7	45.2	n/a
Percentage in regions with high water stress	%	0.3%	1.8%	2.3%	2.0%	1.6%	2.0%	n/a
Absolute fresh water consumption ⁴³	1,000 m ³	14,552	15,551	15,280	14,639	14,179	14,302	n/a
Fresh water consumption ⁴³ intensity	M ³ /ton	5.5	4.3	4.4	4.4	4.1	4.2	-4.7%
Percentage in regions with high water stress	%			20%	20%	18%	18%	n/a
Waste Management								
Total absolute waste	Ton	47,746	51,365	53,328	50,872	53,068	59,040	n/a
Total waste intensity	Kg/ton of production	18.2	14.3	15.4	15.3	15.4	17.4	12.8%
Absolute non hazardous waste	Ton	33,306	34,562	36,109	33,329	32,194	31,722	n/a
Non hazardous waste intensity	Kg/ton of production	13	10	10	10	9	9	n/a
Absolute hazardous waste	Ton	14,440	16,802	17,219	17,543	20,874	27,317	n/a
Absolute hazardous waste to landfill	Ton	1,615	312	417	465	268	548	n/a
Hazardous waste reused	%	39%	20%	24%	28%	33%	22%	n/a
Production								
Performance Formulations	Kton		1,844	1,792	1,708	1,725	1,645	n/a
Technology Solutions	Kton		1,740	1,662	1,622	1,729	1,747	n/a
Sustainable Sourcing								
Suppliers screened using Risk IQ ⁴⁴	% of spend					96%	94%	n/a
Suppliers measured on Ecovadis performance ⁴⁵	% of spend					50%	60%	n/a
Suppliers acknowledging our Business Partner Code of Conduct ⁴⁶	% of spend					98%	100%	n/a
% of bio-based raw materials (portion of organic materials)	% of organic portion (by mass)			20%	21%	22%	22%	n/a
Management Systems⁴⁷								
% of manufacturing sites with ISO-14001/RC-14001 certifications	%				Per April, 2021	Per February 28, 2022	Per March 23, 2023	
					77%	84%	98%	n/a
% of manufacturing sites with ISO-9001 certifications	%					88%	88%	n/a

⁴¹ Percentage change 2019-2022.

⁴² Until 2018, only COD discharge to surface water was measured.

⁴³ Total fresh water consumption (excluding once through cooling water intake) [1,000m³]

⁴⁴ In terms of all external spend (product, non-product, energy, logistics, etc.) The Risk IQ tool considers industry segment risk, country risk and Ecovadis scores from the complete Ecovadis database. Based on 2022 spend.

⁴⁵ Based on policies, actions, results. For more information: <https://ecovadis.com/>

⁴⁶ Tracked by acceptance of a Nouryon Purchase Order or a signed Nouryon contract

⁴⁷ Our ISO certification percentage metric includes sites that have been in our portfolio for one year. This is to allow sufficient time required for activities reviewed by the certification process (e.g., pre-start up safety reviews, management reviews, production, and/or internal audits if relevant). Any exceptions will be identified.

6. Growing Our Sustainable Solutions Through Innovation

Our commitment to a sustainable future is deeply embedded in our business. Megatrends and customer demand drive growth for our sustainable solutions and, as a leading global specialty chemicals provider, we are dedicated to helping our customers achieve their sustainability goals and growing our addressable end-markets. These end-markets are areas in which we have a strong position, and we pursue them by investing resources via our Innovation and Application Development Centers, and through our talent and capacity.

Relevant Policies & Programs

- Quality, Health, Safety, Environment and Security Policy
- HSE&S Rules and Procedures

Key UN SDGs



Our R&D Product Pipeline



Approximately 77% is focused on solutions with sustainability benefits in 2022⁴⁸

Highlights



34% of revenues from Eco-Premium Solutions



11 strategically located Innovation and Application Centers



Chief Technology Officer (CTO) appointed



Retention rate of more than 98% over the past six years of our top 250 customers

⁴⁸ In 2022, we revised the definition used for R&D projects related to sustainability innovation to only include product innovations and exclude process innovations.

6. Growing Our Sustainable Solutions Through Innovation

6.1 Megatrends Driving Opportunities in Our End-Markets

Our addressable end-markets are driven by megatrends and the associated trends influencing our customers, among them, increasing demand for: compliant, eco-friendly, and more-natural, bio-based products; renewable energy and raw materials; biodegradable solutions; reduced carbon emissions, and recycling improvements.



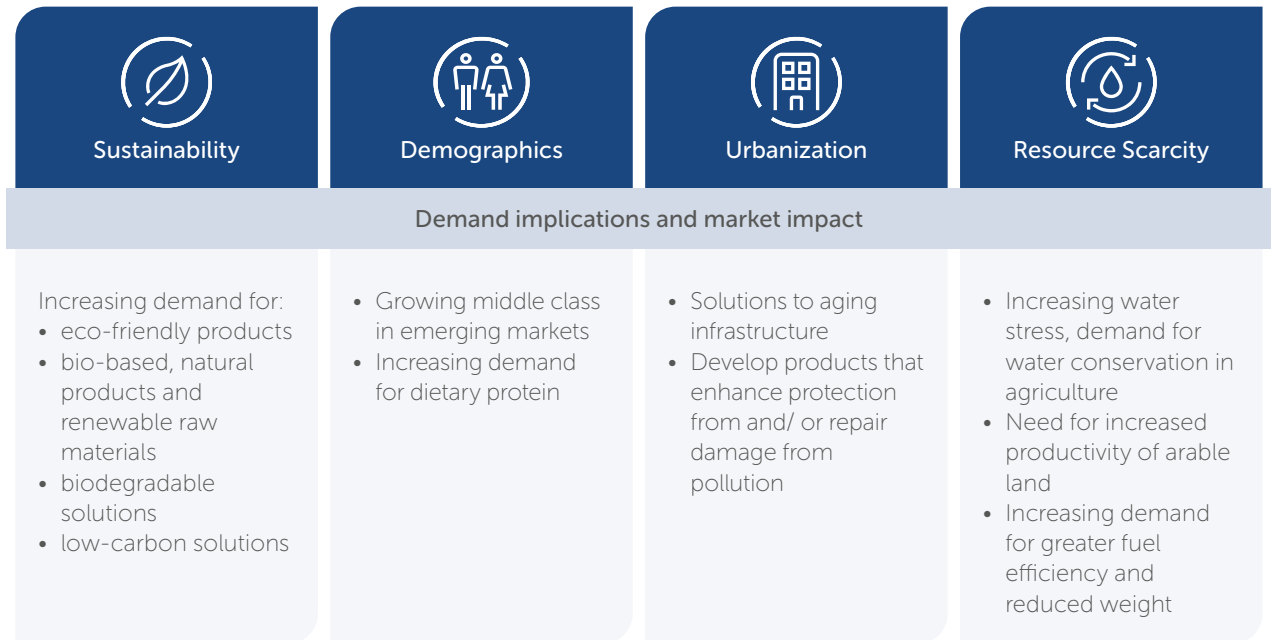
GROW AND INNOVATE

to create sustainable solutions that answer our customers' needs

Key Sustainable Development Goals:



Megatrends drive growth opportunities with higher performing and more-complex solutions



6.2 Innovating our Essential Solutions

GRI 2-6

In close partnership with our customers, we develop innovative, tailored solutions designed to meet end-use application performance specifications, sustainability requirements, regulatory requirements, and environmental laws and regulations. To support this, Philip Clark was appointed as Senior Vice President and Chief Technology Officer (CTO) to lead our global technology and innovation strategies in alignment with Nouryon's sustainability and growth targets.

Our goal is to deliver desired functionality and improved sustainability performance for our customers, while minimizing waste and emissions to air and water, increasing yields, and reducing energy consumption in our manufacturing processes (see Chapter 4). We use our expertise and collaboration with customers, suppliers, universities, and other partners to develop innovative, high-performing, and sustainable solutions that meet the needs of our customers and society. To meet the growing demand from our customers for life-cycle product data, we conduct many life-cycle assessments (LCAs) needed to estimate, for example, product carbon footprints (PCF) and environmental product declarations (EPD).

Natural Demand

Our product innovations are increasingly focused on bio-based, biodegradable, and circular solutions, including natural polymers in Home and Personal Care and cellulose-based raw materials in Paints and Coatings. Other innovations include our range of biodegradable and bio-based products, such as chelating agents, surfactants, and polymers based on natural materials. Many of the products we offer are recognized in our industry for product safety and sustainable benefits, including by EU Ecolabel, Nordic Swan, COSMOS approved, and US EPA Safer Choice.

In 2022, we received the Cosmetic & Toiletries (C&T) Allé Award in the category of Base Ingredients for our SolAmaze[®] Natural, a novel bio-based, readily biodegradable⁴⁹ product containing a film-forming polymer that offers superior water resistance and pleasing aesthetics for a broad spectrum of sunscreen applications. Find out more about the product's award-winning combination of versatility and sustainability on page 61.

⁴⁹ Per OECD 301D

A Selection of Our Industry-leading Brands

Adsee™

 Dissolvine[®]
master the elements

Agrilan[®]

eka[®]

AKUCCELL[®]
CELLULOSE GUM

Ethylan[®]

Amaze[®]

Expancel[®]

 ARQUAD[®] PC

 Ferrazone[®]
This Iron Works

 Bermocoll[®]

LumaTreat™

BEROL[®]

MicrOx™

6.3 Eco-Premium Solutions

Central to our innovation philosophy are Eco-Premium Solutions that offer significant sustainability benefits over mainstream alternatives in the market, while still providing the same or better product performance. In 2022, 34% of revenue came from our Eco-Premium Solutions. The sustainability benefits of our Eco-Premium Solutions can include one or more of the following:

- Improved energy efficiency (consumption)
- More efficient or lower use of natural resource/raw materials
- Lower emissions and waste
- Lower toxicity
- Reduced risks (for accidents during production, transportation etc.)
- Lower land use
- Improved health/wellbeing effects

When an impact can be quantified, we classify our products as Eco-Premium Solutions if an underlying sustainability benefit demonstrates at least a 10% lower impact on a given criteria when assessed along the total product life cycle. For example, products that help customers lower their energy consumption may represent Eco-Premium Solutions based on reduced energy or fuel use. We also assess whether Eco-Premium Solutions have significant adverse effects on the rest of our classification criteria to make sure they do not.

Some examples of our Eco-Premium Solutions are included on the following page.



Case Study

Expancel® HP92 microspheres innovation reduces weight, withstands high pressure

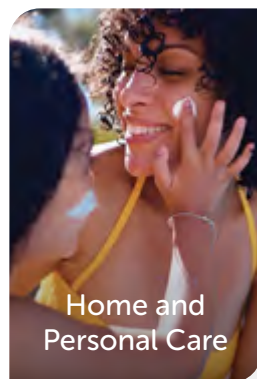
Lightweight materials are in high demand from automotive manufacturers to meet increasingly strict emission regulations and strong consumer interest in fuel-efficient vehicles that do not compromise on performance or passenger comfort. Our new Expancel® HP92 microspheres solution is breaking boundaries for thermoplastic microsphere fillers in high-pressure manufacturing of underbody coatings and sealants for the automotive industry, with up to four times better volume recovery to original shape after pressurization compared to an older grade of thermoplastic microsphere.

Our technology is aimed at combining and optimizing the pressure resistance associated with glass microsphere grades with the lightweight of thermoplastic microspheres fillers in one refined solution. As a result, Expancel® HP92 thermoplastic microspheres not only improve fuel efficiency but enhance acoustics, seal for harsh weather conditions, and support the reduction of carbon-dioxide emissions.

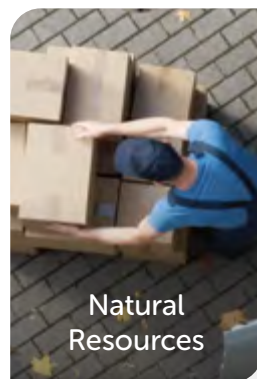
We are responding to continued growth in customer sustainability demands with our innovative solutions



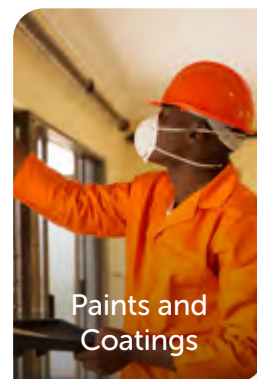
Agriculture and Food



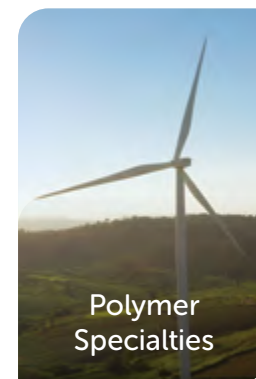
Home and Personal Care



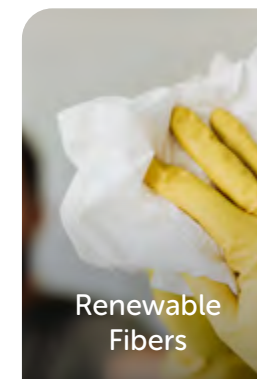
Natural Resources



Paints and Coatings



Polymer Specialties



Renewable Fibers

Customer sustainability drivers

- | | | | | | |
|--|---|--|--|---|--|
| <ul style="list-style-type: none"> • Biodegradable • Lower carbon footprint • Bio-based | <ul style="list-style-type: none"> • Biodegradable • Bio-based • Fossil-free • Lower carbon footprint | <ul style="list-style-type: none"> • VOC-free • Biocide-free • Reduced environmental impact | <ul style="list-style-type: none"> • VOC-free • Biocide free paint • Lower carbon footprint | <ul style="list-style-type: none"> • Circular strategies (using recycled or renewable materials) | <ul style="list-style-type: none"> • Lower carbon footprint |
|--|---|--|--|---|--|

How we are responding

- **Innovations:** sustainable innovation pipeline focused on increasing share of biobased and biodegradability, resulting in new product launches
- **Start-ups:** investing in emerging and sustainable technologies
- **Product data:** responding to increasing customers demand lifecycle assessment (LCA) requests. Piloting LCAs, aligned with new "Together for Sustainability" standards⁵⁰
- **Acquisitions:** recent acquisitions expand our sustainable product offerings
- **Ratings:** EcoVadis Platinum and CDP B. Customers representing ~22% of Nouryon revenue request our EcoVadis score

Innovation examples

Agrilan®	SolAmaze®	 Witbreak® NEO	 Bermocoll® Flow	 Perkadox® PM Trigonox® 501	Partnership with Renewcell on sustainable textile recycling
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⁵⁰ Together for Sustainability is an industry consortium of chemical companies, with combined annual sales over €500 billion, focused on supply chain sustainability. In 2022, TFS launched new guidelines that will require more LCA reporting.

6.4 Research and Development (R&D) Focused on Sustainable Innovation

Nouryon continually invests in the innovation of solutions with more sustainable benefits. In 2022, 77% of our R&D product pipeline⁵¹ focused on solutions with sustainability benefits versus 69% in 2021.

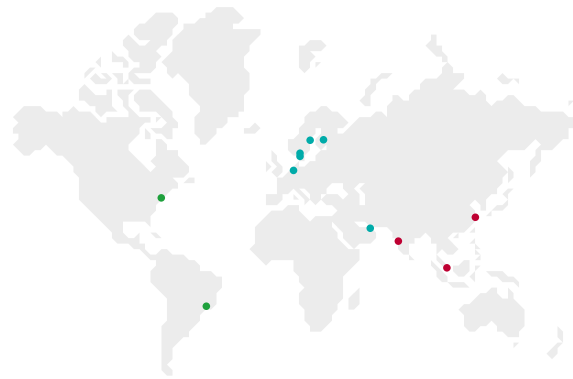
Nouryon's product development processes are designed to drive continuous sustainability improvement in the overall portfolio as products are updated or replaced. Eco-Premium Solutions are a fundamental driver of our sustainability agenda for creating more value from fewer resources, of the products we sell, and of the processes we use to manufacture them.

Nouryon's Eco-Premium Solutions include, among others:

- Bio-based polymers
- Dissolvine® M and GL – readily biodegradable chelating agents for more sustainable detergents
- High-performance chelated micronutrients that deliver essential metals to plants, increasing agricultural productivity and crop quality
- Proven high-quality products for asphalt applications, which lower energy consumption for our customers.
- Expancel® microspheres, which allow paper & board manufacturers to dose a higher content of recycled fibers without losing bulk in the board
- Levasil® colloidal silica, which works exceptionally well as a stabilizer, durability enhancer, and strength developer in construction applications

⁵¹ In 2022, we revised the definition used for R&D projects related to sustainability innovation to only include product innovations and exclude process innovations.

11 Innovation and Application Centers Worldwide



Americas: 2
EMEA: 6
Asia-Pacific: 3

- Innovation Centers provide for larger, global platform development while Application Development Centers are regional in order to allow us to tailor solutions to local market and customer needs.
- This dispersion improves our resiliency and allows us to continually innovate our solutions to meet customer needs today and in the future.
- As customers favor local supply chains and are moving away from single-source suppliers, this approach also improves our ability to serve our customers and develop localized solutions.

Nouryon also invests in external development opportunities. Consequently, in 2022, we acquired a stake in AGEYE Technologies, which is developing an automation platform for indoor farming. For more information, see page 61.

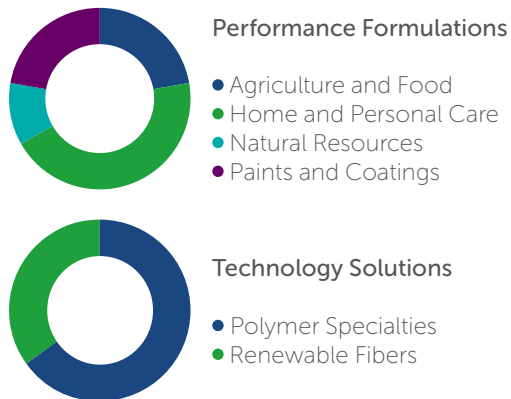
We announced plans in 2021 to expand production capacity at our Levasil® colloidal silica production facility in Green Bay, WI, US, to meet increasing demand from North America. Construction was completed in the second half of 2022. Levasil® colloidal silica products are very versatile and support several end-markets. A product of two natural ingredients – sand and water – Levasil® colloidal silica enhances and improves key functionalities and sustainability profiles of other products and manufacturing processes.

Nouryon also announced the intention to invest further in order to meet increasing global demand for innovative and sustainable additives for the rapidly growing Paints and Coatings market. The focus of our future investment will be to expand our Bermocoll cellulose ether business, which supplies ethyl hydroxyethyl cellulose (EHEC) and other essential ingredients to customers. Demand for Bermocoll cellulose ether continues to increase as consumption of water-based and odorless paints rises and the demand for Paints and Coatings grows.

6.5 Two Business Segments Focused on Growing and Innovating

The Performance Formulations and Technology Solutions business segments are enabling innovation through significant research and development, with distinct strategies to capture market share. Together, they deliver market-focused, innovative solutions with sustainable benefits to answer our customers' needs, contributing to a retention rate of more than 98% over the past six years for our top 250 customers.

Revenue split by business lines per business segment



Case Study

ADOB acquisition adding to our innovative crop-nutrition portfolio

GRI 2-6

In 2022, Nouryon acquired Poland-based ADOB⁵², a leading supplier of chelated micronutrients, foliars, and other specialty agricultural solutions. This investment will further strengthen our offerings in chelated micronutrients and expand our portfolio of products in crop nutrition and other specialty agricultural solutions.

The acquisition includes ADOB business operations along with two manufacturing sites located in the Polish cities of Poznań and Wroctaw and comprises approximately 450 employees. The acquisition of ADOB reflects our continued commitment to Agriculture and Food and allows us to expand our services and product offerings for customers in the industry.

⁵² Completed in January 4, 2023.



Case Study

Our global alkoxylation network expanded with addition of Singapore plant

In late 2022, we expanded our global footprint to Southeast Asia for specialty surfactant alkoxylation through an asset purchase on Jurong Island, Singapore. The acquired plant will enhance Nouryon's ability to serve growing regional customer demand in crop protection, personal care, cleaning goods, natural resources, paints, and coatings.

The new site adds to Nouryon's manufacturing operations in Southeast Asia as well as to our existing alkoxylation network of manufacturing facilities in China, Sweden, and the US. It supports our Company's emerging markets growth strategy and is backed by a leadership and business team based in Singapore.

Performance Formulations

The Performance Formulations segment provides tailored solutions for many everyday products. These solutions help our customers be more sustainable. They support, among others, large multinational corporations as well as regional market leaders and distributors aligned with our addressable end-markets related to Home and Personal Care, Agriculture and Food, Paints and Coatings, and Natural Resources. Performance Formulations revenue grew 20% in 2022 over 2021.

Performance Formulations is a globally balanced business with a proven track record in renewable and biodegradable offerings. Additionally, 47% of Home and Personal Care product sales that are organic (carbon containing) are either biodegradable and/or bio-based (containing more than 50% renewable-carbon content). This business line also holds the number two position worldwide for green chelate production in our industry. Within our Paints and Coatings business line, we target the faster-growing applications, including cool roof coatings. These innovations are driven by the push for more efficient and sustainable solutions.

Our Performance Formulations innovations include water-soluble polymers, biodegradable laundry polymers, and green⁵³ demulsifiers. These can be found in biodegradable washing pods and binders, silicon-free products, among others used in personal care, mining, food, and pharmaceutical products.

Last year, we doubled our Dissolvine® green chelates capacity with a new production site in Herkenbosch, the Netherlands. Nouryon supplies Dissolvine® M or MGDA (Methylglycine N, N-diacetic trisodium salt), Dissolvine® GL or GLDA (Glutamic acid, N, N-diacetic tetrasodium salt) and other essential ingredients to a variety of multinational and regional customers. This expanded capacity will enable us to meet increasing global demand for innovative and sustainable chelates for the rapidly growing consumer cleaning industry and will complement our existing plants in Ningbo, China and Ohio, US. For more information, see page 58.

We also expanded our global alkoxylation capacity by acquiring a plant on Jurong Island, Singapore last year. This will enhance our ability to serve growing regional customer demand in the Home and Personal Care, Agriculture and Food, Paints and Coatings, and Natural Resources business lines. For more information, see page 56.

Nouryon acquired ADOB, a leading supplier of chelated micronutrients, foliars, and other specialty fertilizers. The acquisition will enable us to expand our product portfolio and broaden our offerings for customers in the crop-nutrition market. For more information, see page 56.

Performance Formulations makes an impact by providing solutions, including the following:

Home and Personal Care (~33% Eco-Premium Solutions):

- Naturally-based and biodegradable products used in cleaning and personal care solutions
- Cleaning products for homes, hospitals, and more
- Natural ingredients for hair and skin care

Agriculture and Food (~26% Eco-Premium Solutions):

- Crop protection, including green solvents
- Crop nutrition
- Diet fortification
- Food and beverage preservation
- Improved crop yield
- Water conservation

Paints and Coatings (~46% Eco-Premium Solutions):

- An environmentally friendly antimicrobial agent that enables the formulation of a robust and tintable anti-viral paint
- Low volatile organic compounds (halogenated and non-halogenated)
- Expandable microspheres that increase solar reflectance performance of cool-roof coatings

Natural Resources (~34% Eco-Premium Solutions):

- Natural materials over fossil-based
- Lightweighting
- Lube additives (lower emissions, increased fuel efficiency)
- Recyclability/secondary use
- Water management



Recent Eco-Premium Solutions introduced to the market

GRI 2-6

In 2022, we launched Bermocoll® FLOW cellulose ether, an innovative and sustainable new product that combines the flow and leveling properties of an associative synthetic thickener with the stability properties of a cellulose thickener. Read more about this new product's performance and properties in the case study provided at the end of this chapter.

We also introduced Expancel® HP92 microspheres, an innovation that is breaking boundaries for thermoplastic microsphere fillers in high-pressure manufacturing processes for the automotive industry. On Page 53, find out how this innovative new solution is helping our customers reduce the weight of materials. These lightweighting solutions are in high demand from automotive manufacturers, to meet increasingly strict emission regulations and strong consumer interest in fuel-efficient vehicles that do not compromise on performance or passenger comfort.

Our LumaTreat® tagged polymer products, launched in 2021, also enjoyed increased attention last year with the granting of a US patent.

⁵³ Green products are bio-based, with biodegradable properties, or both, or which offer other benefits to the environment (e.g., low ecological toxicity or lower energy).



Case Study

Meeting global demand with new biodegradable-chelates production facility in the Netherlands

Nouryon is a leading producer of high-performing, biodegradable chelates worldwide. In 2022, Nouryon completed its latest production facility to meet increasing global demand for innovative and sustainable chelates for the rapidly growing consumer cleaning industry.

The new production facility in Herkenbosch will complement our existing plants in Ningbo, China, and Ohio, US. It is expected to double our Dissolvine® green chelates capacity by supplying Dissolvine® M or MGDA (Methylglycine N,N-diacetic trisodium salt), Dissolvine® GL or GLDA (Glutamic acid, N,N-diacetic tetrasodium salt) and other essential ingredients, strengthening our global footprint to supply customers in Asia, Europe, and North America.



Did you know?

Nouryon's Dissolvine® GL (GLDA) and Dissolvine® M (MGDA) green chelating agents are the best replacements for phosphates in most cleaning applications and they outperform alternatives such as citrates, gluconates, and zeolites because they form stronger bonds with metal ions.

Dissolvine® GL and Dissolvine® M combine excellent performance with a superior ecological profile, because they are readily biodegradable and largely biobased.



Technology Solutions

Technology Solutions is an innovator of unique molecules and systems and essential components that allow customers to build and advance their products with targeted chemical reactions critical to their end-use applications. Our Technology Solutions segment contributes positively to sustainability through both product and process innovations. Revenue in Technology Solutions increased 11% in 2022 compared to the previous year.

Our new product innovations promote benefits for our customers and the environment. Our process innovations reduce waste, wastewater, and emissions to air, and we continually strive to increase yields and reduce energy consumption. Nouryon signed a long-term supply agreement with Suzano, a leading global eucalyptus pulp producer, and will commission its Integrated Manufacturing Model (IMM) for their new eucalyptus pulp mill located in Mato Grosso do Sul, Brazil. For more information, see page 62.

Focusing on Polymer Specialties and Renewable Fibers, Technology Solutions' leading expertise enables sustainable solutions in the following applications:

Polymer Specialties (~32% Eco-Premium Solutions):

- PVC (polyvinyl chloride) window profiles
- High-voltage cables
- Paint resins
- Insulation panels
- Solar panels
- Recycling enabler to plastics
- Composites for end-products such as wind turbines

Renewable Fibers (~49% Eco-Premium Solutions):

- Recyclable packaging
- Pulp, paper, and packaging products
- Textiles and apparel

Technology Solutions enables sustainability benefits, including:

- Renewable energy: solutions for solar panels with long durability and high efficiency; lightweight composite parts in windmills for renewable electricity; insulation for high-quality, high-voltage cables.
- Circularity and recycling: renewable fibers transforming the textile industry; improved plastics recycling through upgraded polymer properties; and efficient and circular IMM facilities.

In 2021, Nouryon signed an agreement with Renewcell, a company with a unique textile recycling technology, for their new plant in Sundsvall, Sweden. Operations began at the facility – which recycles textile waste, including items such as worn jeans and production scraps – in the first half of 2022. We provide Renewcell with specialty chemicals and engineering solutions to help develop their recycling chemistry.



Our Solutions are Essential to many Everyday Products

Chelated micronutrients for improved plant nutrition replacing inorganic nutrients

Adjuvants and green solvents for improved crop protection

Light-weight components for cost-efficient windmills

Bio-based additives to optimize paint flow and dry time

Sensory materials for skin care

Separation products used in pharmaceutical production

Bio-based hair care polymers and naturally derived ingredients

Crosslinking agents to increase durability of solar panels



Bio-based polymers for sun care applications

Additives used in food preservation, texture modification and fortification

Reduced moisture absorption as well as shrinkage in food packaging

Formulations for biodegradable cleaning goods

Sustainable solutions for laundry detergents and softeners

Optimization of lithium ion **battery performance**

Fabric softeners used on bedding and furniture

Lightweighting of shoe soles and other consumer goods

Metal surface treatment and cleaning



Case Study

Investing in agricultural artificial intelligence with AGEYE

Nouryon continuously assesses investment opportunities in emerging and sustainable technologies that have the potential of becoming a disruptive force in our addressable end-markets, including those of our Agriculture and Food business line. In late 2022, we invested in AGEYE Technologies, a company with offices in Raleigh, North Carolina, US, and Bangalore, Karnataka, India, that is developing an automation platform for indoor farming with potential to transform the sector.

AGEYE's next-generation digital platform uses artificial intelligence to turn visual inputs into crop-growth-development insights and autonomous actions that improve the predictability and profitability of harvests for growers. It combines the principles of plant eco-physiology and precision farming to maximize plant growth rate, development, morphology, physiology, and ultimately improvement of crop yield, phytochemical content, and flavor. We will bring our extensive global reach in serving fertigation and hydroponics applications with micronutrients and specialty fertilizers as well as our expertise in crop protection and crop nutrition to the collaboration. These will further enhance AGEYE's precision farming technology to optimize indoor growing at scale for growers, supported by our shared vision of advancing the sustainability of the rapidly growing market of indoor farming.

Did you know?

Industry award for our SolAmaze® Natural polymer

In 2022, we received the Cosmetic & Toiletries Allē Award for our innovative SolAmaze® Natural polymer in the category of 'Most Significant Sun/Light Protection Base Ingredient,' with particular praise for its sustainability and safety profile as well as its multifunctionality.

SolAmaze® Natural solution is a novel bio-based, readily biodegradable⁵⁴ product containing a film-forming polymer that offers superior sustainability and performance characteristics (water resistance and pleasing aesthetics) in challenging applications such as high-SPF emulsion sunscreens. Achieving this award is a testament to the innovative approach of our Research and Development team, which is inspired by strong customer demand for sustainable ingredients that do not compromise on performance.

⁵⁴ Per OECD 301D



SolAmaze®

Did you know?

Bermocoll® FLOW cellulose ether introduced as natural alternative paint thickener

Nouryon's innovative and sustainable new addition to the Bermocoll® family combines the flow and levelling properties of an associative synthetic thickener with the stability properties of cellulose. Our innovative technology enhances application and finished paint properties while providing sustainability benefits and a low-carbon footprint for our customers. It was developed for launch in 2022 and commercially introduced on April 5, 2022, at the [American Coatings Show \(ACS\)](#), in Indianapolis, Indiana.

As a natural alternative to associative synthetic thickeners for rheology control of decorative paints, [Bermocoll® FLOW](#) can deliver little to no spatter through proper flow behavior. It is well-suited for low-volatile organic-compound paint formulations and airless spray applications. This new type of hydrophobically (water-soluble) modified [cellulose ether](#) bridges the gap in thickeners, thus creating a product that goes on smoother with less sagging in both interior and exterior decorative paints.



Case Study

Supplying Suzano via new Nouryon Integrated Manufacturing Model (IMM)

Under a 15-year agreement signed in 2022, Nouryon will commission its IMM for the world's leading producer of eucalyptus pulp. This will be Nouryon's sixth IMM site in Brazil since 2005, to support the country's fast-growing pulp industry. The new \$2.8 billion pulp mill in Mato Grosso do Sul is one of the largest private-sector investments currently under development in the country and anticipated annual production capacity is 2.55 million tons per year.

The concept provides Suzano with tailor-made on-site solutions to manage essential raw materials needed in pulp production. Nouryon will invest in a manufacturing facility that uses renewable electricity from Suzano's new pulp mill to produce sodium chlorate. On-site facilities reduce transportation of raw materials, improve overall safety, and provide for circularity by design. The production process will also generate green hydrogen, which can provide important sustainability benefits.

Nouryon, is committed to providing our customers with innovative and sustainable solutions while continuously optimizing our own operations and environmental footprint. Supplying both hydrogen peroxide and sodium chlorate in the region for the first time strengthens our leading position in specialty chemicals and underscores our commitment to growing with our customers.

7. Engaging and Partnering with Employees, Customers, and Suppliers to Drive Progress

Nouryon actively engages and partners with our employees, customers, and suppliers to drive progress. We empower our people to successfully deliver on our Company Purpose and Strategy through our Values: 'We aim high', 'We own it', and 'We do it right'. These form the backbone of our performance-driven culture.

Key Achievements



36% gender and ethnic diversity represented on our Board of Directors⁵⁵



23% of mid-level managers and above are female⁵⁶



Global Inclusion & Diversity Network⁵⁷



94% of suppliers were assessed for CSR risk using the EcoVadis Risk IQ tool⁵⁸



Global Mentoring Program



Four Business Resource Groups (BRGs)⁵⁹

Key UN SDGs

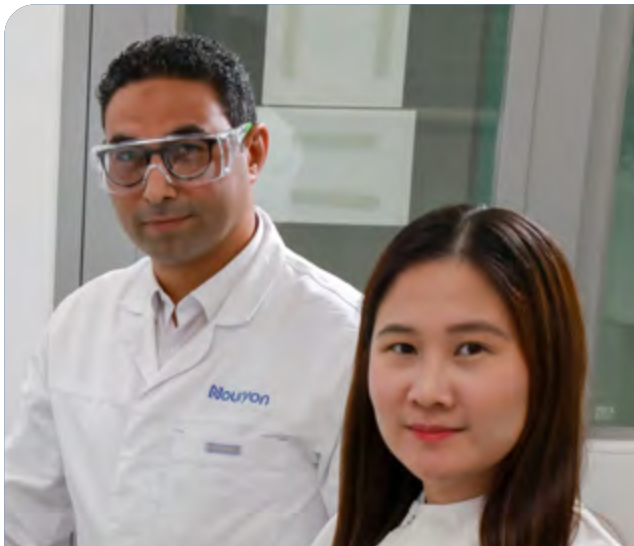


Relevant Policies & Programs

- [Code of Conduct, including anti-discrimination and anti-harassment](#)
- [Anti-corruption, anti-bribery](#)
- [Business Partner Code of Conduct, including suppliers](#)
- Quality, Health, Safety, Environment and Security Policy
- [Palm Oil Statement](#)
- [Sensitive Country Policy](#)
- [Sustainable Sourcing Statement](#)

⁵⁵ Board Members who are female and/or of a US racial/ethnic minority.
⁵⁶ Mid-level managers are defined as the management paygrade below the first senior executive level. Source data, December 2022.
⁵⁷ With 50 representatives from 35 Nouryon locations, to localize and activate Inclusion and Diversity (I&D) initiatives.
⁵⁸ In terms of all external spend (product, non-product, energy, logistics, etc.) The Risk IQ tool considers industry segment risk, country risk and EcoVadis scores from the complete EcoVadis database. Based on 2022 spend.
⁵⁹ Nouryon Women's Network, Pride, Veterans, and Boost.

7. Engaging and Partnering with Employees, Customers, and Suppliers to Drive Progress



ENGAGE AND PARTNER

with employees, customers, and suppliers to drive sustainable progress

Key Sustainable Development Goals:



We strive for a safe, diverse and inclusive work environment that reflects all employees' unique experiences, perspectives, and potential. We firmly believe in providing our employees with the necessary resources to develop leadership capabilities and advance their careers. In addition to providing opportunities for specialized learning, we train our employees on our Values.

Nouryon is committed to building an inclusive culture that allows diverse perspectives and ideas to be shared, heard, and translated into better business results. Our [Inclusion & Diversity \(I&D\) Approach](#) helps us achieve strategic priorities, such as fostering innovation and attracting and retaining top talent. We have also identified key learning institutions and universities around the world with which we collaborate and connect for internships, talent acquisition (including diverse talent), and research, in addition to learning and development opportunities for our current employees.

Our Corporate Social Responsibility (CSR) framework is another fundamental element of our sustainability approach. Practical in nature and based on volunteerism, engagement, and corporate giving, it allows us to support community engagement initiatives.



Recognizing Our Suppliers Nouryon's 2022 Supplier of the Year Awards

These awards acknowledge suppliers who share and support our high sustainability standards as measured in the EcoVadis CSR platform. Our 2022 winners were:

- Innovation:** Hapag-Lloyd, Hosokawa Micron, Oleon
- Reliability:** Exsif, Indorama Ventures, Heraeus Group, Sumitomo Chemical
- Sustainability:** Deutsche Bahn, Evonik

Our second Supplier of the Year Award event to honor the winners was held in Rome, Italy in January 2023.

7.1 Human Resources: Attracting, Developing, and Retaining Talent

Our global Human Resources (HR) team is tasked with making process improvements and setting priorities against the backdrop of the highly competitive labor market in the specialty chemicals industry. These initiatives include advancing our high-performance culture, clearly articulating and communicating our value proposition to candidates and employees, continuously improving our talent acquisition approach, and evolving our development and performance framework for a more-fulfilling employee experience.



Attracting New Talent

In 2022, Nouryon welcomed approximately 1,350 new hires worldwide, representing an increase of nearly 30% over 2021. Our Employee Referral Program accounted for over 125 of them. Our ability to hire new talent is evidence of our appeal in the market as a young and growing company with a high-performance culture characterized by purpose, shared values, strong leadership, and a sense of community and accountability. To emphasize that appeal, we took the step of articulating those leading aspects in a new Employee Value Proposition (EVP), being introduced this year to support Nouryon's employer brand and recruitment activities. Our EVP reflects our Company culture and Values, giving candidates a view on opportunities and reasons to join Nouryon, alongside other elements of our recruitment process, like remuneration and learning and development offerings.

We also aim to enhance our talent and expertise further, actively monitor our progress, and continually challenge ourselves to make improvements. Last year, we continued collaborating with several universities and organizations for talent attraction purposes, and in addition as diversity partners, working with these partners to identify, recruit and retain employees who reflect the communities and markets in which we operate. We are also proud of our partnerships with the Society of Women Engineers, National Society of Black Engineers, and Society of Hispanic Professional Engineers. These relationships resulted in multiple new hires in 2022.



A strong onboarding process supports new hires in their integration into our Company. Our employees, who are early in their careers and have fewer than seven years at Nouryon, are invited to join Global BOOST, a Business Resource Group that offers community and support for new employees. In Nouryon France, internal mentors from various departments oversee initial employee training and competency validation.

Employee Value Proposition, Compensation and Benefits

GRI 2-7, GRI 2-8, GRI 2-30

Our Employee Value Proposition is expressed through our employer brand campaign and places the opportunity for employees to make a positive change, including through innovation and sustainable progress, at its very heart. Nouryon's #Changemakers employer brand campaign will appeal to candidates that want to make a positive impact in our industry by helping to provide solutions that are essential to everyday products around the world. It is supported by imagery and testimonials of our own employees around the world who are working in roles in our production facilities, innovation centers, and offices, highlighting their diverse backgrounds, expertise, innovative spirit, and dedication to a sustainable future.

Supporting our EVP, Nouryon strives to offer competitive compensation, in alignment with local market and industry standards, offering additional benefits when and where possible. For example, benefits in Italy include paid parental leave, paid leave for medical consultations (20 hours per year), and paid leave for blood or bone-marrow donation. In Belgium, employees approaching retirement receive additional salary support for reduced hours. We also apply a pay-for-performance approach, in which outstanding results are rewarded. The percentage of employees that are covered by a Collective Bargaining Agreement is 60%.

Retaining and Developing Our Existing Talent

Nouryon's growth strategy and commitment to a sustainable future drives all aspects of our HR approach. One of the key elements of our talent acquisition and retention strategy is the continuous development of our employees and leaders. Our continued success depends on our ongoing ability to recruit and retain talented leaders that engage their teams to serve our customers and to meet and exceed their expectations.

We support both short-term and long-term capability building and help and encourage our employees to live our Values, learn continuously, and learn from one another. We offer favorable employment terms that are aligned with market practices. This includes arrangements that encourage a healthy work-life balance. To help us define priorities in 2022, we introduced a voluntary employee exit survey to help us generate executable plans in support of outcomes and improvement.

We also have developed a three-year rotational program for engineers in our Integrated Supply Chain (ISC) function known as the Engineering and Developmental Program. It identifies and develops high-potential early-career engineers under consideration for a variety of manufacturing leadership roles across multiple sites and disciplines.

Learning, Leadership, and Development

GRI 2-7, GRI 2-8, GRI 2-29, GRI 2-30

To sustain Nouryon's performance and growth, we encourage our employees and leaders to regularly gain new knowledge and skills so that they can continually contribute to our success. We offer a broad range of learning activities, such as our Senior Leadership Program (SLP), on-the-job experiences, blended programs, online learning, (virtual) classroom training, and mandatory compliance courses. Our global digital learning environment helps employees find relevant training more quickly, enroll in scheduled offerings, and provides 24/7 access to online training,

enabling at-home learning with flexibility.

In 2022, we continued a two-part program for all new commercial 'growth' employees to help them focus on strengths and build relationships. During the initial phase of this new sales curriculum, the program explored self-awareness, how to recognize pitfalls that can impede success, and how to develop strategic approaches. The second phase focused on stakeholder management and value-based selling. Our SLP will train a new group of managers in 2023.

Our 18-week digital, global leadership experience, LEAP, was completed by 46 participants in 2022. The program focuses on leadership skills, and includes coaching on awareness of personal biases, and cultivating a culture of inclusion. All topics are linked to the Nouryon Values, Strategy, and focus areas to help our leaders apply learnings in their daily work.

Following a successful launch in 2021, a new leadership-development training, JUMP, was continued for aspiring leaders who are not currently managers. Fifty-two participants were instructed on how to increase self-awareness and improve coaching and networking abilities. We also repeated our STEPS training in 2022, for all leaders with direct reports. The training covers required knowledge on people processes and systems, and counted 108 participants.

In 2022, for our Information Management staff, we continued offering a training curriculum of 21 core information management competencies designed around the broader topics of: security and compliance; connecting people; ensuring delivery; driving productivity; using data and reporting; and catalyzing growth.

Nouryon also encourages informal opportunities for knowledge sharing, particularly at the local level. An example of this is our site in Ambès, France, which communicates regular employee updates about site or company-wide developments.

Performance Management

To sustain the performance and growth of our employees and our Company, we use a Continuous Performance Management process to set dynamic objectives, hold regular check-ins, and give employees feedback throughout the year. This allows us to help our employees and leaders stay engaged and deliver high performance. In 2022, 93% of our staff participated in the full annual performance-management cycle.



Case Study

Internship and Mentoring Opportunities

Nouryon offers an Internship Program at many locations, and Mentoring is an integral part of Nouryon. These are intended to provide valuable experience and cultivate and equip current and future leaders through the exchange of perspectives and insights. Nouryon's interns present findings and recommendations back to Company leaders based on their specific focus at the end of their internship.



Headcount ⁶⁰	Gender				
Region	Female	%	Male	%	Grand Total
Asia-Pacific	432	25%	1,296	75%	1,728
Europe	353	22%	1,271	78%	1,624
Nordics	609	33%	1,256	67%	1,865
North America	415	25%	1,261	75%	1,676
South America	207	20%	809	80%	1,016
Grand Total	2,016	25%	5,893	75%	7,909

Headcount ⁶⁰	Full-Part Time ^{61,62}				
Region	Full Time	%	Part Time	%	Grand Total
Asia-Pacific	1,727	100%	1	0%	1,728
Europe	1,426	88%	198	12%	1,624
Nordics	1,831	98%	34	2%	1,865
North America	1,674	100%	2	0%	1,676
South America	1,016	100%		0%	1,016
Grand Total	7,674	97%	235	3%	7,909

⁶⁰ Data includes regular employees, expatriates and interns.

⁶¹ Full/part-time is defined as: less than one FTE is part time, otherwise full-time.

⁶² Temporary staff is defined as employees having a 'Fixed Term Contract' contract type.

Case Study

Making an Impact Against Hunger in Houston

The Houston Center of Excellence (HCE) Community Engagement Team is collaborating with local community resources to deepen the relationship between Nouryon and the Houston, TX, US area we serve to make a positive impact.

Since March 2022, the HCE Community Engagement Team has been volunteering at the Houston Food Bank every other month. More than 30 volunteers from our Houston office and their family members have contributed their time since the program commenced, removing and sorting food from pallets, weighing products, and assembling boxes for over 7,000 meals provided to area residents in need.

7.2 Inclusion and Diversity

Nouryon fosters a safe, diverse and inclusive work environment to unlock the full potential of our global workforce, drive collaboration and innovation, and understand the unique needs of our customers. Our inclusive culture begins with our employees and is rooted in our Values and Code of Business Conduct & Ethics, which remind us to 'Aim high' and 'Do it right' as we continuously pursue an environment, in which every person feels welcomed and invited to share ideas and question the status quo. This ensures employees are continually reminded of their commitment to treating one another equally, regardless of age, race, national origin, gender identity, and sexual orientation, and to treating people with courtesy, dignity and respect as we work together to achieve results for our customers.



I&D initiatives are based on employee needs and most are originated and led by employees, with the support of senior leaders. For example, our I&D Network, which consists of 50 representatives of the business and functions from 35 Nouryon locations around the world, introduces and leads initiatives at our locations. In addition to acting as liaisons for employee questions, ideas and suggestions, I&D Network representatives also take an active role in promoting our Business Resource Groups (BRGs) and their events and initiatives.

Our Business Resource Groups

Nouryon has four company-wide, employee-led BRGs that provide employees with opportunities to connect with colleagues, learn about Nouryon's businesses and functions, and hear from internal and external speakers. Collectively, our four BRGs have more than 800 members: Nouryon Women's Network, Nouryon Veterans Network (US), Nouryon Pride Network (LGBTQ+), and Global BOOST (career development and those new to Nouryon). Our BRGs are open to all employees.

In 2022, our BRGs hosted 45 employee events, virtually and in person, in a variety of languages, time zones, and geographies, all geared towards connecting employees and supporting their professional development and growth. In March, the Nouryon Women's Network led the Company in celebrating International Women's Day, hosting events at 10 locations across five countries, in partnership with the I&D Network. In June, Nouryon Pride took the lead in Company acknowledgment of Pride month, using digital content to raise awareness.

The Nouryon Veterans Network creates community for service members, former service members, and their families. It also helps all of Nouryon understand how military experience adds to our work and exemplifies our Company Values. In 2022, it expanded to 17 US locations and established 12 Veteran Network Advocates who will lead its members at a local level. On US Veterans Day 2022, the

Veterans Network honored its 125 members with Challenge Coins inscribed with Nouryon's Values and a message of gratitude from a US Army chemical corps veteran, a process engineer at our Houston site who uses Nouryon's "We Do It Right" value as everyday motivation to a US Navy submarine veteran who exemplifies "We Own It" value.

Closely related to the Veterans Network is Nouryon's partnership with American Corporate Partners (ACP). Approximately 25 Nouryon leaders serve as a mentor for post-9/11 veterans and spouses. In 2022, our Chairman and CEO, Charlie Shaver and Executive Vice President and President, Performance Formulations and the Americas Larry Ryan, spoke during ACP's online forum, 'A Conversation with Nouryon Executives,' about professional transitions and the importance of hiring veterans.

Mentorship Program

Mentorship is an integral part of our I&D at Nouryon. Open to all employees, Nouryon's global mentorship program helps employees expand their networks, gain fresh perspectives and experiences, learn new skill sets, such as critical thinking techniques, and meet new colleagues, while bolstering employee engagement and belonging. In 2022, our global mentorship program increased from 200 to 400 participants and added a learning series covering goal setting, professional development, and working across cultures. Read more about our Internship and Mentoring Programs on page 66.

Inclusion and Diversity Progress

GRI 405 3-3, GRI 405-1

Employees with diverse backgrounds, experiences, and perspectives are essential to Nouryon's success, helping us to understand, anticipate and meet the needs of our global customers, today and in the future. Nouryon is committed to increasing workforce diversity across all levels of our organization and fostering inclusion to support our multicultural workforce and unlock the maximum potential of every employee. With 36% gender and racial/ethnic diversity representation on our Board of Directors⁶³ and 23% female representation in our mid-level managers and above⁶⁴, we continue making progress.

In 2022, we began providing inclusive leadership training to leadership teams and to our emerging leaders through our Senior Leadership Development Program. We also began providing I&D training and updates to employees through a variety of channels.

We took steps to further understand the current levels of diversity throughout our organization, relying on data collection and analysis to measure and track our progress. Additionally, in 2022, we supported a number of initiatives related to the inclusion of women in STEM fields, including:

- Supporting the growth of the Nouryon Women's Network, which aims to connect and support women in chemistry with networking and professional-development opportunities.

- Recognizing International Women's Day and International Day of Women and Girls in Science.
- Partnering with the Society of Women Engineers to provide career opportunities to female engineering students and professionals.

Nouryon also continues to actively recruit diverse candidates in STEM fields by partnering with the National Society of Black Engineers and the Society of Hispanic Professional Engineers to provide career opportunities to Black and Hispanic engineering students and professionals. See page 65 for more details.

⁶³ Board Members who are female and/or of a US racial/ethnic minority.

⁶⁴ Mid-level managers are defined as the management paygrade below the first senior-executive level. Source data December 2022.



7.3 Engaging Our Communities and Employees

Our Corporate Social Responsibility (CSR) framework focuses on volunteerism, engagement, and corporate giving to positively impact the communities in which Nouryon operates. As a global organization, it is important for us to work with diverse populations and develop partnerships with companies that share our philosophy of inclusion, collaboration, sustainability, and giving back to our communities.

Many of the above aspects came together in Nouryon's first-ever Global Month of Service, which took place in September 2022. Our employees around the world teamed-up to drive progress in their communities. For more information, see the case study on this page.

Nouryon also contributed financially to a number of causes, including corporate donations to:

- The International Committee of the Red Cross and Global Giving Ukraine Relief Fund to support humanitarian aid for civilians in that country who were impacted by the war.
- The Philadelphia Eagles Autism Challenge. For more information, see page 71.
- Since its inception in 2018, Pasadena's Fill the Bus Program has aimed to provide school supplies to students.
- Young students in Amsterdam who benefited from backpacks and sports bags filled with donated school supplies and other useful items during Nouryon's Global Month of Service.



Case Study

Inaugural Employee Global Month of Service

Throughout September 2022, Nouryon hosted a global opportunity to connect, grow personally, and do good for the communities in which we operate. For the first time, over the course of one month, our employees around the world worked closely with local partners and nonprofit organizations that share our philosophy of inclusion, collaboration, sustainability, and volunteerism. This resulted in 24 projects across eight countries, with more than 500 volunteers and countless service hours. The work, which included preparing and donating back-to-school supplies and providing access to Science, Technology, Engineering and Math (STEM) and safety education, benefited underserved children in communities around the world. Twenty community partners/non-profits were supported, including:

- [Kids in Need Foundation](#) (US), which partners with teachers and students in under-resourced schools to provide the support needed for teachers to teach and learners to learn.
- [Ajax Foundation](#) (the Netherlands), which organizes projects and events related to sports, health, education, and social integration for vulnerable children and youth in Amsterdam and in Capetown, South Africa.
- [Göteborgs Atlet- och Idrottssällskap \(GAIS\)](#) (Sweden), the Gothenburg football team's social initiatives to support children in need through organized sporting activities.
- [Pastoral de Atendimento e Integração do Menor \(PAIM\)](#) (Brazil), a non-profit assistance and integration program for children, youth, and families in Jundiaí, focusing on social assistance and solidarity, culture, sports and media.
- Sunshine School (India), promoting social integration and independence among differently abled children and adults in Mumbai by providing personalized quality education in nurturing environment, as well as family guidance.



Case Study

\$300,000 for Autism Research and Care

As part of our pledge to engage and partner with our communities, Nouryon supports the Philadelphia-based Eagles Autism Foundation, which has been at the forefront of funding innovative research and fostering an environment that promotes inclusion, compassion, and acceptance – values that Nouryon is also committed to.

One in 44 people living in the US is on the autism spectrum⁶⁵. While it has become one of the fastest-growing developmental disorders in the US, autism has historically been underfunded, misunderstood, and under-researched. The Eagles Autism Foundation prioritizes needs and serves as a voice for the US autism community. Since its inception, the Eagles Autism Challenge has raised more than \$12 million, with 100% of participant-raised funds benefiting institutions that conduct autism research and care. The Eagles Autism Challenge has supported 56 research projects and community grants.

Nouryon's donation – the largest matching gift in the foundation's five-year history - comprised a \$50,000 sponsorship and \$250,000 participant match for the fifth annual Eagles Autism Challenge, held on May 21, 2022, in Philadelphia, PA, US. The fundraising event is a one-day bike ride and family-friendly 5K run/walk for the community and is joined by the entire Philadelphia Eagles football franchise. This year, Nouryon employees also participated.

⁶⁵ The Centers for Disease Control and Prevention



7.4 Sustainable Sourcing

We ask our suppliers to partner with us for a sustainable future, so that as Nouryon and our customers become more sustainable, they do, too. All business partners, including our suppliers and customers, must adhere to our [Business Partner Code of Conduct](#), which sets expectations regarding compliance, safety, ethics, human rights, fraud prevention, and support for sustainability. In 2022, we increased the amount of spend evaluated for sustainability by EcoVadis to 60% from 50% the previous year.⁶⁶

Driving Sustainability with Our Suppliers

We use EcoVadis and EcoVadis Risk IQ⁶⁷ to measure and track the sustainability performance and risk of suppliers across multiple categories – environment, labor and human rights, ethics and sustainable procurement – based on policies, actions, and results. If specific performance criteria are not met, a corrective action process is implemented with non-compliant suppliers to drive improvement or seek alternative sourcing where necessary. In 2022, we identified approximately 100 suppliers to be engaged in this process. Non-compliant suppliers that do not improve above our defined threshold are identified for phasing out. For more information, see our [sustainable procurement statement](#).

This approach gives us an opportunity to engage our suppliers on sustainability and drive improvement. In 2022, we continued to train Nouryon category managers on sustainable sourcing and supplier requirements, including our sustainability strategy goals, with new training opportunities planned. Goals and metrics supporting our EcoVadis sustainability assessment and rating are also included in our Procurement team’s individual employee-performance objectives.

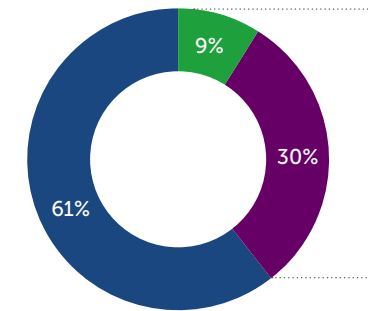
In 2022, 94% of suppliers were assessed for CSR risk using the EcoVadis Risk IQ tool (% of external spend), and 60% of suppliers were measured on their CSR performance by EcoVadis score⁶⁸ (% of external spend). This enables us

to drive sustainability in our supply chain and serve our customers credibly and confidently.

Based on this supplier assessment, we are also able to reward compliance with our sustainability standards, taking their EcoVadis raw materials score in addition to exceptional partnership in sustainability, reliability, and special-event support into consideration. Our 2022 Supplier of the Year Award recognized Deutsche Bahn and Evonik for sustainability excellence, among other awards and winners. For more information, see page 64.

In 2022, we also evaluated lower-carbon alternative raw materials. We will continue this practice as we further advance our Carbon Business Strategy.

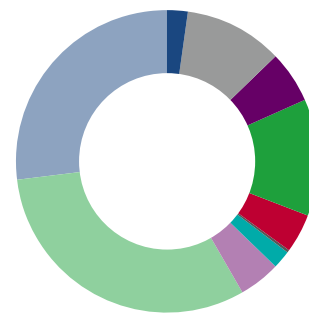
Share of Total Raw Materials



22% of organic raw materials are from renewable sources

- Organic: renewable, bio-based
- Organic: fossil-fuel derived (petrochemicals)
- Inorganic (e.g. salt, minerals, clay)

Bio-Based Raw Materials Purchased by Nouryon



- Castor (oil): 0.5%
- Coconut (fatty acid): 2.3%
- Coconut or palm kernel (capric and lauric acid): 1.2%
- Fermentation based (ethanol, sugars, monosodium glutamate, alanine)⁶⁹: 2.7%
- Not defined (vegetable fats and oils)⁷⁰: 0.9%
- Palm oil: 0.1%
- Rapeseed (erucic and fatty acid): 0.4%
- Soyabean (oil): 1.0%
- Tallow (fatty & stearic acid)⁷¹: 6.8%
- Wood derivatives⁷²: 5.8%

⁶⁶ The EcoVadis assessment of these suppliers includes requesting evidence on supplier actions related to energy efficiency, GHGs, renewable energy, offsets, waste heat recovery/ CHP, fuel switching, CCS, response to CDP- and employee training on these topics – as well as activities to reduce GHG emissions in suppliers’ own supply chains.

⁶⁷ In terms of all external spend (product, non-product, energy, logistics, etc.) The Risk IQ tool considers industry segment risk, country risk and EcoVadis scores from the complete EcoVadis database. Based on 2022 spend.

⁶⁸ Based on policies, actions, results. For more information: <https://ecovadis.com/>

⁶⁹ Ethanol (crop depends on region, but ~70% of world production is derived from sugar cane, sugar beets, and molasses); monosodium glutamate; alanine (from sugar beets, sugar cane, tapioca, molasses, and corn); sugars (glucose and others, from corn, rice, wheat, cassava, corn husk, and sago); acids (dimer, gluconic, citric, sebacic, tartaric, etc., from various sources)

⁷⁰ Other fatty acids (e.g. in surfactants, from coconut, cotton seed, soybean, sunflower, dehydrated castor, linseed, tung, palm, tall oil (TOFA), and other sources); glycerin (mainly a by-product from bio-diesel; biodiesel can be made from a variety of vegetable oils and animal fats, including soybean, rapeseed, palm, jatropha, sunflower, algae, used cooking oil, tallow, etc.); fatty alcohols (from plant sources such as palm and coconut trees)

⁷¹ Stearic acid is predominately produced from tallow; however, it can originate from other fats and oils.

⁷² Cellulose, tall oil, gum rosin, etc.

Genetically Modified Organisms (GMOs)

Nouryon does not manufacture GMOs. We do not sell products that use GMOs to provide any specific functionality, nor do we use GMOs in manufacturing processes to impart any specific variability. Certain raw materials that we use are derived from crops produced from GMOs prior to our use, for example, soybean oil and cotton linter cellulose. These materials are used in products that make up roughly 6% of our products by revenue in 2022. Nouryon continually monitors the ongoing debate around GMO usage and will act upon any new findings, as appropriate.



Supporting Responsible Palm Oil

Palm oil is a key bio-based feedstock in our operations. We endorse the industry standard for palm oil sustainability, the [Roundtable on Sustainable Palm Oil \(RSPO\)](#), and hold [RSPO Mass Balance \(MB\) certification](#) at five of our sites. We use processed palm oil products, which means that we do not have direct contact with palm mills or plantations. However, through ongoing interaction with our supply base, we aim to use sources that do not contribute to further deforestation or infringe on the rights of workers and local communities. We believe that palm oil can be cultivated in a responsible way and will continue to focus on using options not linked to environmental or social issues in the supply chain.

7.5 Policy Engagement and Memberships

We engage with legislative and regulatory bodies, industry and trade associations, and non-governmental organizations in our key markets, as well as participate in policy discussions on sustainability within our industry via trade associations. We share our expertise and solutions on topics such as energy, carbon reduction, water, waste, product and process safety, and circular chemistry.

Our engagements involve a diverse set of stakeholders focused on chemicals-related issues, including climate mitigation and adaptation issues. These topics include product design for energy efficiency, material safety, energy management in business and manufacturing operations, and industry collaboration to influence climate policy.

Managing Engagement on Policy

We manage our direct and indirect engagements with policy makers and related organizations. The scope and business impact of specific policy issues is considered in our annual business review meetings and our Enterprise Risk Management assessment process. This ensures that any activities that influence public policy are consistent with our business strategy. If activities are inconsistent, they are promptly flagged for action by the Government Affairs team to the relevant businesses and functions within Nouryon.

In line with the [Nouryon Company Code of Conduct & Ethics](#) and our Company policies, Nouryon typically does not provide any financial contributions or endorsements to political parties or politicians. Nouryon does not have a political action committee (PAC) in the US, nor does the Company contribute to the PACs of industry and trade associations of which we are a member.

We seek to engage constructively with governments, regulators, and legislators on the development of proposed policy that is relevant to our business. These policies can be relevant to us in a wide range of areas, from tax and employment issues to safety and chemicals management policy. We seek to support policy that is sufficient, clear, stable, predictable, comprehensive, economically efficient, and well designed to deliver society's goals at the lowest cost. We also seek to support policies that align with and support our positions, including our sustainability ambitions.

In the US, we are a member of the American Chemistry Council (ACC), and we have voluntarily contributed to the development of ACC's sustainability metrics.

In Europe, as a member of European Federation of the Chemical Industry (CEFIC), we have actively engaged within industry and trade associations to take a constructive and proactive approach to the EU Green Deal and the EU Chemicals Strategy for Sustainability. We not only focus on the risks and challenges these new proposals have for our industry, but also focus on opportunities via new business models and innovation, and have been a driver of a value-chain approach.

In China, we are actively engaged in the advocacy efforts of industry and trade associations related to the ongoing development of Chinese legislation on chemicals management and a cap-and-trade system for carbon emissions.



Partnering to Offset CO₂ with Reforestation

In partnership with [Tree-Nation](#), a non-profit organization that allows citizens and companies to plant trees around the world and offset CO₂ emissions, 7,462 trees were planted. This has resulted in six hectares reforested and a total of 2,295 tons CO₂ captured.

Our memberships

GRI 2-28

Americas

American Chemistry Council (ACC); American Cleaning Institute (ACI); Council of Producers & Distributors of Agrotechnology (CPDA); American Coatings Association (ACA); Texas Chemistry Council (TCC); Association of Water Treaters (AWT); American Composites Manufacturing Organization (ACMA); Chemistry Industry Association of Canada (CIAC); Brazilian Association of the Chemical Industry (ABIQUIM).

Asia

China Petroleum and Chemical Industry Federation (CPCIF); Association for International Chemical Manufacturers in China (AICM); EU Chamber of Commerce in China (EUCCC); American Chamber of Commerce in Shanghai (AmCham Shanghai); China Cleaning Industry Association; Ningbo Petrochemical and Chemical Industry Association; Taizhou Energy Saving Technology Development Association; Suzhou Society of Environmental Science; Suzhou Chemical Industry Association; Singapore International Chamber of Commerce (SICC).

Europe

European Federation of the Chemical Industry (CEFIC); European Committee of Organic Surfactants and their Intermediates (CESIO); European Biocidal Products Forum (EBPF); Association for the German Chemical Industry (VCI); Association of the Dutch Chemical Industry (VNCI); Confederation of Netherlands Industry and Employers (VNO-NCW); Dutch Association for Energy, Environment and Water (VEMW); Samenwerkende Bedrijven Eemsmond (SBE – 'Cooperation of businesses in the Eemsmond area'); Association for Innovation and Chemical Industries in Sweden (IKEM); Chemical Industry Federation of Finland.

Nouryon executives holding board-level positions with trade associations include:

- **Larry Ryan**, our Executive Vice President and President, Performance Formulations and Americas, serves as a board member of the American Chemistry Council (ACC).
- **Johan Landfors**, our Executive Vice President Strategy and Technology Solutions and President of Europe, serves as a board member of the executive committee of the European Chemical Industry Council (CEFIC), and a board member of the Association for Innovation and Chemical Industries in Sweden (IKEM).
- **Egbert Henstra**, our Senior Vice President, Transformation and Strategy Performance Formulations, serves as a board member of the Association of the Dutch Chemical Industry (VNCI).



Closing Word from Our Chief Sustainability and Communications Officer

Thank you for taking the time to read about Nouryon's ongoing sustainability commitment and related initiatives and partnerships with our customers, communities and employees. We continued to make progress together in 2022.

We are proud to share the data behind last year's stories. I invite you to view the fact sheets and tables on the following pages, which quantify our sustainability progress and provide supporting data points. Should you wish to learn more about Nouryon, please visit nouryon.com, where you will find extensive information about our initiatives around the world as well as our product offerings and specifications.

Once again, thank you for your interest in Nouryon's sustainability programs and initiatives. Whether you read our 2022 Sustainability Report as an employee, candidate, customer, business partner, or community stakeholder, we are proud to be your partner in essential solutions for a sustainable future.

Best regards,

Vivi Hollertt

Vice President, Chief Sustainability and Communications Officer



ESG Fact Sheet⁷³

Environment

	Unit	2009	2018	2019	2020	2021	2022	Progress toward target ⁷⁴
Company carbon footprint								
Total absolute direct and indirect emissions market-based (Scopes 1 and 2)	Kton CO ₂ eq	1,194	1,329	1,451	1,427	1,403	1,432	-1.3%
Carbon intensity (Scopes 1 and 2 combined)	Kg CO ₂ eq/ton of production	454	371	420	428	406	422	n/a
Direct absolute emissions (Scope 1) ⁷⁵	Kton CO ₂ eq	526	533	545	554	569	583	n/a
Direct emissions (Scope 1) intensity	Kg CO ₂ eq/ton of production	200	149	158	166	165	172	n/a
Indirect emissions market-based (Scope 2): including allocated RECs ^{75,76}	Kton CO ₂ eq	668	796	906	872	835	849	n/a
Indirect emissions market-based (Scope 2) intensity	Kg CO ₂ eq/ton of production	254	222	262	262	242	250	n/a
Indirect emissions location-based (Scope 2)	Kton CO ₂ eq			1,267	1,186	1,190	1,244	n/a
Estimated Scope 3 total absolute emissions ⁷⁷	Kton CO ₂ eq						4,427	n/a
Total absolute emissions (Scope 1, Scope 2 market-based, and Scope 3)	Kton CO ₂ eq						5,859	n/a
Direct emissions, covered by emissions-limiting regulations	% of direct emissions		26%	24%	27%	27%	28%	n/a
Energy Management								
Total energy consumption ⁷⁸	Mln GJ	23.0	29.1	30.0	30.3	32.2	32.9	n/a
Total energy consumption intensity ⁷⁸	GJ/ton of production	8.74	8.12	8.67	9.09	9.33	9.70	n/a
Percentage renewable energy ⁷⁹	%			30%	38%	38%	34%	n/a
Percentage energy from grid electricity	%		70%	62%	61%	60%	60%	n/a
Unbundled RECs	MWh						40,312	n/a
Total self-generated electricity	Mln GJ	-	-	-	-	-	-	n/a
Air Quality								
NOx absolute emissions	Ton	889	497	460	466	496	509	n/a
NOx emission intensity	Kg/ton of production	0.34	0.14	0.13	0.14	0.14	0.15	n/a
SOx absolute emissions	Ton	5,286	3,264	3,413	2,995	3,111	3,143	n/a
SOx emission intensity	Kg/ton of production	2.01	0.91	0.99	0.90	0.90	0.93	n/a
VOC absolute emissions	Ton	717	789	669	1,172	1,938	1,792	n/a
VOC absolute emission intensity	Kg/ton of production	0.27	0.22	0.19	0.35	0.56	0.53	n/a
Hazardous air pollutants	Ton					374	357	n/a
Hazardous air pollutants intensity	Kg/ton of production					0.11	0.11	n/a

⁷³ For all figures, minor corrections to historical data may be made to improve accuracy or based on methodology updates.

⁷⁴ Percentage change 2019-2022.

⁷⁵ Scope 2 emissions calculations for 2019 until 2022 are based on the Green House Gas Protocol. Prior period calculations were based on electric utility fuel mix data.

⁷⁶ In addition to RECs retired on our behalf for utility supplied renewable electricity and other utility contractual instruments.

⁷⁷ The estimated Scope 3 total GHG emissions reported include estimates for categories 2, 8, and 15 representing approximately 1.7% of the total Scope 3 emissions we report. These categories of emissions were excluded from ERM CVS Assurance engagement.

⁷⁸ Energy consumption is expressed in mln GJ, which is the sum of the actual consumed by the sites. The energy consumption for 2009 was derived from the consumption expressed in Fuel Equivalents that year by applying a factor expressing the relation between direct consumption in GJ and Fuel Equivalents for 2018, 2019, 2020, 2021, and 2022.

⁷⁹ Renewable-energy data include renewable fuels like biomass, purchased renewable steam, renewable electricity from solar, wind, and hydro power. This does not consider certifications for biomass and hydro power, which are not currently tracked.

Environment Continued

	Unit	2009	2018	2019	2020	2021	2022	Progress toward target ⁸⁰
Emission to Water – Chemical Oxygen Demand (COD)⁸¹								
COD absolute emissions to surface water	Ton	968	1,134	845	768	896	854	n/a
COD emission intensity to surface water	Kg/ton of production	0.37	0.32	0.24	0.23	0.26	0.25	n/a
COD absolute emissions to external waste water treatment	Ton			15,245	16,503	17,905	18,435	n/a
COD emission intensity to external waste water treatment	Kg/ton of production			4.41	4.96	5.18	5.43	n/a
Water Management								
Absolute fresh water intake	1,000 m ³	162,148	142,953	134,721	147,122	161,482	153,211	n/a
Fresh water intake intensity	M ³ /ton	61.7	39.9	39.0	44.2	46.7	45.2	n/a
Percentage in regions with high water stress	%	0.3%	1.8%	2.3%	2.0%	1.6%	2.0%	n/a
Absolute fresh water consumption ⁸²	1,000 m ³	14,552	15,551	15,280	14,639	14,179	14,302	n/a
Fresh water consumption ⁸² intensity	M ³ /ton	5.5	4.3	4.4	4.4	4.1	4.2	-4.7%
Percentage in regions with high water stress	%			20%	20%	18%	18%	n/a
Waste Management								
Total absolute waste	Ton	47,746	51,365	53,328	50,872	53,068	59,040	n/a
Total waste intensity	Kg/ton of production	18.2	14.3	15.4	15.3	15.4	17.4	12.8%
Absolute non hazardous waste	Ton	33,306	34,562	36,109	33,329	32,194	31,722	n/a
Non hazardous waste intensity	Kg/ton of production	13	10	10	10	9	9	n/a
Absolute hazardous waste	Ton	14,440	16,802	17,219	17,543	20,874	27,317	n/a
Absolute hazardous waste to landfill	Ton	1,615	312	417	465	268	548	n/a
Hazardous waste reused	%	39%	20%	24%	28%	33%	22%	n/a
Production								
Performance Formulations	Kton		1,844	1,792	1,708	1,725	1,645	n/a
Technology Solutions	Kton		1,740	1,662	1,622	1,729	1,747	n/a
Sustainable Sourcing								
Suppliers screened using Risk IQ ⁸³	% of spend					96%	94%	n/a
Suppliers measured on Ecovadis performance ⁸⁴	% of spend					50%	60%	n/a
Suppliers acknowledging our Business Partner Code of Conduct ⁸⁵	% of spend					98%	100%	n/a
% of bio-based raw materials (portion of organic materials)	% of organic portion (by mass)			20%	21%	22%	22%	n/a
Management Systems⁸⁶								
% of manufacturing sites with ISO-14001/RC-14001 certifications	%				Per April, 2021	Per February 28, 2022	Per March 23, 2023	n/a
% of manufacturing sites with ISO-9001 certifications	%				77%	84%	98%	n/a
						88%	88%	n/a

⁸⁰ Percentage change 2019-2022.

⁸¹ Until 2018, only COD discharge to surface water was measured.

⁸² Total fresh water consumption (excluding once through cooling water intake) [1,000m³].

⁸³ In terms of all external spend (product, non-product, energy, logistics, etc.) The Risk IQ tool considers industry segment risk, country risk and Ecovadis scores from the complete Ecovadis database. Based on 2022 spend.

⁸⁴ Based on policies, actions, results. For more information: <https://ecovadis.com/>

⁸⁵ Tracked by acceptance of a Nouryon Purchase Order or a signed Nouryon contract.

⁸⁶ Our ISO certification percentage metric includes sites that have been in our portfolio for one year. This is to allow sufficient time required for activities reviewed by the certification process (e.g., pre-start up safety reviews, management reviews, production, and/or internal audits if relevant). Any exceptions will be identified.

Social

	Unit	2018	2019	2020	2021	2022
Workforce Data⁸⁷						
Global headcount Nouryon employees	#	10,395	10,389	9,730	7,771 ⁸⁸	7,909
% female in workforce	%	23%	24%	23%	25%	25%
% female mid-level managers and above ⁸⁹	%	26%	25%	24%	24%	23%
Employee turnover rate (voluntary and involuntary)	%	12%	17%	14%	14%	15%
Safety						
Total Recordable Incident Rate (TRIR) – Nouryon Employees, temporary workers and contractors	Per 200,000 hours worked	0.34	0.26	0.23	0.17	0.30
Lost Time Incident Rate (LTIR) – Nouryon Employees, temporary workers and contractors	Per 200,000 hours worked	0.15	0.07	0.13	0.09	0.16
Management Systems						
% of manufacturing sites with OHSAS-18001/RC-18001 and ISO45001 certifications	%			Per April 2021	Per February 28, 2022	
				39%	39%	44%

Governance

	Unit	2018	2019	2020	2021	2022
Board						
		Per December 31, 2018	Per December 31, 2019	Per December 31, 2020	Per December 31, 2021	
Directors	#	9	9	10	11	11
Average director tenure (years)	#	0	1	2	2	3
Independent directors	#	8	8	9	10	10
Independent directors (%)	%	89%	89%	90%	91%	91%
Board Diversity						
		Per December 31, 2018	Per December 31, 2019	Per December 31, 2020	Per December 31, 2021	
Women on the Board	#	1	0	1	3	3
Women on the Board (%)	%	11%	-	10%	27%	27%
Board members of racial/ethnic minority	#	1	0	0	1	1
Board members of racial/ethnic minority (%)	%	11%	-	-	9%	9%
Board diversity	%	11%	-	10%	36%	36%
Board Coverage of ESG Issues						
Frequency of Board updates on ESG issues		Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
Board oversight of climate strategy? (Y/N)		Y	Y	Y	Y	Y
Policies and Statements						
Code of Conduct, anti-discrimination, anti-harassment		N	Y	Y	Y	Y
Anti-corruption, anti-bribery		N	Y	Y	Y	Y
Business Partner Code of Conduct, including suppliers		N	Y	Y	Y	Y
Health, Safety, Environment and Security (HSE&S), including product stewardship		N	N	Y	Y	Y
Palm oil statement		N	N	Y	Y	Y
Sensitive Country Policy		N	N	Y	Y	Y

⁸⁷ Workforce data prior to 2021 includes Nobian employees (Nobian's separation from Nouryon occurred in 2021). 2021 workforce data excludes Nobian employees.

⁸⁸ Headcount and similar metrics may differ slightly, depending on exact collection date, due to timing of reporting schedules, divestments, and acquisitions, as well as regular workforce fluctuations.

⁸⁹ Mid-level managers are defined as the management paygrade below the first senior executive level. Source data, December 2022.

Sustainable Accounting Standards Board Index

Sustainable Industry Classification System® (SICS®) RT-CH | Sector: Resource Transformation | Industry: [Chemicals](#)

Topic	Metric ⁹⁰	Code	Page
Greenhouse gas emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	RT-CH-110a.1	76
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	RT-CH-110a.2	22
Air quality	Air emissions of the following pollutants: (1) NOx (excluding N2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) hazardous air pollutants (HAPs)	RT-CH-120a.1	48
Energy management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable, and (4) total self-generated energy	RT-CH-130a.1	48
Water management	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	RT-CH-140a.1	49
	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	RT-CH-140a.2	zero
	Description of water management risks and discussion of strategies and practices to mitigate those risks	RT-CH-140a.3	45
Hazardous waste management	Amount of hazardous waste generated; percentage recycled	RT-CH-150a.1	49
Community relations	Discussion of engagement processes to manage risks and opportunities associated with community interests	RT-CH-210a.1	64
Workforce health and safety	(1) Total recordable incident rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees	RT-CH-320a.1	78
	Description of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	RT-CH-320a.2	31
Product design for use-phase efficiency	Revenue from products designed for use-phase resource efficiency	RT-CH-410a.1	53
Safety and environmental stewardship of chemicals	(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment	RT-CH-410b.1	38
	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	RT-CH-410b.2	40
Genetically modified organisms	Percentage of products by revenue that contain genetically modified organisms (GMOs)	RT-CH-410c.1	73
Management of the legal and regulatory environment	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	RT-CH-530a.1	73
Operational safety, emergency preparedness, and response	Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR)	RT-CH-540a.1	36
	Number of transport incidents	RT-CH-540a.2	36
Production by reportable segment		RT-CH-000.A	49

⁹⁰ Metrics are based on available data.

GRI Standards Disclosure Summary

Statement of Use: Except where stated otherwise, Nouryon has reported the information cited in this GRI content index for the period of January 1 through December 31, 2022, with reference to the GRI Standards.
GRI 1 used: GRI 1: Foundation 2021
 Management of Nouryon has reviewed and approved the GRI reported information, including the organization's material topics. For additional information contact communications@nouryon.com. For additional information on our metrics, see the basis of our reporting document.

General Disclosures 2021

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Material Topic Specific Disclosures

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	% Bio-based raw materials	72

Independent Assurance Statement

GRI 2-4, GRI 2-5

ERM Certification and Verification Services Limited ("ERM CVS") was engaged by Nouryon Speciality Chemicals BV ("Nouryon") to provide limited assurance in relation to the selected information set out below and presented in the Nouryon Sustainability Report 2022 (the "Report").

Engagement summary

Scope of our assurance engagement	Whether the 2022 information and data for the following selected disclosures are fairly presented in the Report, in all material respects, in accordance with the reporting criteria.	Reporting period	1 st January 2022 – 31 st December 2022
	Environment <ul style="list-style-type: none"> Total Scope 1 GHG emissions [kton CO2e] Total Scope 2 GHG emissions [kton CO2e] – location-based Total Scope 2 GHG emissions [kton CO2e] – market-based Total Scope 3 GHG emissions [kton CO2e] from the following categories: <ul style="list-style-type: none"> Category 1 Purchased goods and services Category 3 Fuel – and energy-related activities Category 4 Upstream transportation and distribution Category 5 Waste generated in operations Category 6 Business travel Category 7 Employee commuting Category 9 Downstream transportation and distribution Category 12 End-of-life treatment of sold products Unbundled RECs [MWh] Total energy consumption [million GJ] Energy intensity [GJ/ton of production] Renewable energy (as % of total energy use) NOx absolute emissions [Ton] NOx emissions intensity [Kg/Ton of production] SOx absolute emissions [Ton] SOx emissions intensity [Kg/Ton of production] Total freshwater use (excl. cooling water) [1000m3] Total freshwater use intensity (excl. cooling water) [1000m3/Ton of production] Total waste [Ton] Hazardous waste [Ton] Non-hazardous waste [Ton] Total waste intensity [kg/Ton of production] 	Reporting criteria	<ul style="list-style-type: none"> WBCSD/WRI GHG Protocol Corporate Accounting and Reporting Standard (2004, as updated January 2015) and GHG Protocol Scope 2 Guidance Nouryon's internal reporting criteria and definitions
	Safety <ul style="list-style-type: none"> Total OSHA incident rate (OIR) for employees and temporary workers [Per 200,000 hours worked] Total OSHA incident rate (OIR) for contractors [Per 200,000 hours worked] Lost time injury rate (LTIR) employees and temporary workers [Per 200,000 hours worked] Lost time injury rate (LTIR) contractors [Per 200,000 hours worked] 	Assurance standard and level of assurance	We performed a limited assurance engagement, in accordance with the International Standard on Assurance Engagements ISAE 3000 (Revised) 'Assurance Engagements other than Audits or Reviews of Historical Financial Information' and in accordance with ISAE3410 for Greenhouse Gas data issued by the International Auditing and Standards Board.
	Other <ul style="list-style-type: none"> Sites certified to ISO 14001 [%] Suppliers acknowledging our Business Partner Code of Conduct [% by spend] Female workers (global employees) [%] <p>Our assurance engagement does not extend to information in respect of earlier periods or to any other information included in the Report.</p>	Respective responsibilities	<p>The procedures performed in a limited assurance engagement vary in nature and timing from and are less in extent than for a reasonable assurance engagement and consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.</p> <p>Nouryon is responsible for preparing the Report and for the collection and presentation of the information within it, and for the designing, implementing and maintaining of internal controls relevant to the preparation and presentation of the Selected Information.</p> <p>ERM CVS' responsibility is to provide conclusions to Nouryon on the agreed scope based on our engagement terms with Nouryon, the assurance activities performed and exercising our professional judgement. We accept no responsibility, and deny any liability, to any party other than Nouryon for the conclusions we have reached.</p>

Our conclusions

Based on our activities, as described below, nothing has come to our attention to indicate that the 2022 data and information for the disclosures listed under 'Scope' above are not fairly presented in the Report, in all material respects, in accordance with the reporting criteria.

Our assurance activities

Considering the level of assurance and our assessment of the risk of material misstatement of the Selected Information a multi-disciplinary team of sustainability and assurance specialists performed a range of procedures that included, but was not restricted to, the following:

- Assessing the appropriateness of the reporting criteria for the Selected information.
- Interviews with management representatives responsible for managing the selected issues.
- Interviews with relevant staff to understand and evaluate the relevant management systems and processes (including internal review and control processes) used for collecting and reporting the selected disclosures.
- A review at corporate level of a sample of qualitative and quantitative evidence supporting the reported information.
- An analytical review of the year-end data submitted by all locations included in the consolidated 2022 group data for the selected disclosures which included testing the completeness and mathematical accuracy of conversions and calculations, and consolidation in line with the stated reporting boundary.
- In-person site visits to Nouryon facilities/production sites Herkenbosch (Netherlands) and Le Moyne (USA), as well as a virtual visit to Alby (Sweden) and desktop reviews of Morris, Magog and Moses Lake (USA), to review source data and local reporting systems and controls.
- Confirming conversion and emission factors and assumptions used.
- Reviewing the presentation of information relevant to the scope of our work in the Report to ensure consistency with our findings.

The limitations of our engagement

The reliability of the assured information is subject to inherent uncertainties, given the available methods for determining, calculating or estimating the underlying information. It is important to understand our assurance conclusions in this context.

Our independence, integrity and quality control

ERM CVS is an independent certification and verification body accredited by UKAS to ISO 17021:2015. Accordingly we maintain a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements. Our quality management system is at least as demanding as the relevant sections of ISQM-1 and ISQM-2 (2022).

ERM CVS applies a Code of Conduct and related policies to ensure that its employees maintain integrity, objectivity, professional competence and high ethical standards in their work. Our processes are designed and implemented to ensure that the work we undertake is objective, impartial and free from bias and conflict of interest. Our certified management system covers independence and ethical requirements that are at least as demanding as the relevant sections of Parts A & B of the IESBA Code relating to assurance engagements.

The team that has undertaken this assurance engagement has extensive experience in conducting assurance on environmental, social, ethical and health and safety information, systems and processes, and provides no consultancy related services to Nouryon in any respect.



Gareth Manning
Partner, Corporate Assurance

London, United Kingdom
4 May 2023

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About Nouryon

Nouryon is a global, [specialty chemicals leader](#). Markets and consumers worldwide rely on our essential solutions to manufacture everyday products, such as personal care, cleaning goods, paints and coatings, agriculture and food, pharmaceuticals, and building products. Furthermore, the dedication of approximately 7,900 employees with a shared commitment to our customers, [business growth](#), [safety](#), [sustainability](#) and innovation has resulted in a consistently strong financial performance. We operate in over 80 countries around the world with a portfolio of industry-leading brands. Visit our [website](#) and follow us [@Nouryon](#) and on [LinkedIn](#).

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