NOBIAN

SUSTAINABILITY REPORT 2023

GROW GREENER TOGETHER

Message from the CEO

Dear Reader,

Welcome to our third annual sustainability report.

Sustainability has become a central theme in our vision, values and operations and goes hand in hand with our overall performance, whether for shareholders, employees, customers or the communities we ultimately serve. We believe in a world where chemistry can become completely green and responsible. If you look at the long run and the climate challenge, there simply is no other way. Driven by our sustainability program, Grow Greener Together, launched in 2022, we are committed to delivering on our ambition to be one of the most sustainable chemical companies in Europe. Over the past two years, we have been on a journey to further shape Nobian's business and organization to rise to the challenge, and to become a true European leader in the field of sustainable chemical production. Through these efforts we have been able to stay on track to reach our Scope 1 and Scope 2 sustainability targets to become carbon neutral by 2040, with 100% renewable energy.

This year, the volatile energy market and uncertain economic conditions have created many challenges. Simultaneously, societal expectations are changing. Citizens, governments and our customers demand more of our focus and attention, with even higher expectations to keep delivering on our sustainability goals. We are ever aware that our products and activities must work in harmony, with our environment and the communities in which we operate.

In addition to becoming carbon neutral as Nobian, we will also continue to support building sustainable value chains. Through our role at the beginning of the value chain we support others to become more sustainable as well. We do this, for example, through our portfolio of green products, by producing green hydrogen, and by developing underground energy storage solutions.

I am proud that for the second consecutive year our sustainability performance was awarded a platinum EcoVadis rating, ranking us among the top 1% of the over 90,000 companies in the industry rated globally. This is an important recognition of our achievements. At the same time, it also provides us with a challenge to keep raising the bar. In this spirit, Nobian signed a Joint Letter of Intent with the Dutch government to accelerate the reduction of our Scope 1 CO_2 emissions in the Netherlands to almost zero by 2030. This is 10 years faster than planned and includes the large-scale electrification of our salt production. This cooperation shows how we are working to Grow Greener Together.

I would like to thank all our employees, our communities, our customers and our partners for their commitment to sustainability over the past year. Becoming truly sustainable carries universal benefit for our business and society; a process we acknowledge will continue. Every day, we will Grow Greener Together.

We hope you enjoy reading this report.

Michael Koenig

Chief Executive Officer
Nobian

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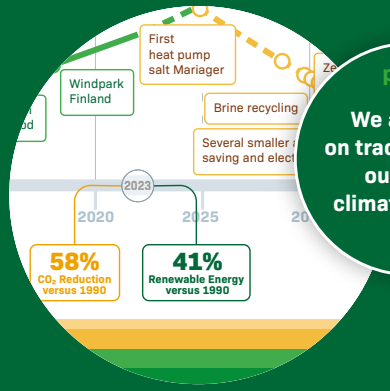

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Introduction
This is Nobian

At Nobian, we transform salt into essential chemicals to make everyday materials. Through salt extraction, electrochemistry and building energy storage capacity, Nobian wants to take a leading role in the energy transition, and to contribute to a sustainable society and living environment.

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Nobian, Frankfurt | © Nobian/Celine Paczkowski

As we believe in a world where chemistry is fully green and responsible, it is our ambition to be one of the most sustainable chemical companies in Europe. Being at the start of the chemical value chain, we are perfectly placed to support the transition towards green chemistry and green products. We want to 'Grow Greener Together' (see section 2.1).

Essential elements at the heart of industry, business and society

Nobian is the leading supplier of indispensable raw materials from which essential materials and products are made. Our chemicals also play an important role in the production of key materials for the energy transition, such as solar panels, batteries, insulation materials, LED lights and blades for windmills.

With our deep expertise in salt production, electrochemistry and developing energy storage caverns, we transform indispensable and strategic raw materials into products which are essential to everyday life.

We do this through integrated chemical clusters and our production sites in Rotterdam, Delfzijl, and Hengelo in the Netherlands, Frankfurt, Ibbenbüren and Bitterfeld in Germany, and Mariager in Denmark. Our 1,600 employees are dedicated to helping our business become safer, more efficient and more sustainable. In doing so, we aim to ensure our essential products will improve lives, through chemistry we can all rely on.

The value of salt

Nobian has a strong history of producing salt, dating back more than 100 years. Salt production, as ordinary as it seems, is essential for our modern society – now and in the future. Salt is an essential and irreplaceable raw material. Our high-purity salt is extremely suitable for chemical applications and the basis for many of the products we use every day. Salt is needed to produce sustainable technologies and prepare for a sustainable future. Salt extraction in the Netherlands and Denmark ensures that the Netherlands and Europe always have access to this indispensable raw material for both our industry and society, supporting independent value chains and economic autonomy in Europe.

Essential chemicals

The products and chemicals we supply are used in applications ranging from construction and cleaning to pharmaceuticals and water treatment. Our customers rely on us to keep their businesses running.

Chlorine is a key building block for the chemical and pharmaceutical industries. Nobian produces Chlorine through the electrolysis of salt brine with caustic soda and hydrogen. Around 55% of European chemical production is depending on this process, including many chemicals, plastics and medicines, which are an essential part of life as we know it.[1]

Nobian, Frankfurt | ©Nobian / Celine Paczkowski

Caustic soda is another essential chemical we produce, used in wastewater treatment, detergents and soaps, paper and board, construction materials, and many other applications.

Chloromethanes are used as intermediates in the production of pharmaceuticals, agrochemicals, refrigerants, silicone polymers, automotive parts, water treatment and electronics.

[1] Salt impact study. The societal and economic importance of sustainable salt mining in the Netherlands (2022), Roland Berger B.V. https://www.nobian.com/en/products/salt.

Energy and energy storage

As the leading European producer of salt and essential chemicals, we source, use, produce and store a large amount of energy, and will continue to do so in the future. By becoming more energy efficient and increasing our use of renewable energy, we will continue to reduce our greenhouse gas emissions.

Our activities are inherently energy intensive. Nobian produces high-purity vacuum salt through a solution mining process that requires steam (derived from gas, municipal waste and biomass) and electricity. Through electrolysis the salt is used to produce chlorine, caustic soda and hydrogen. We produce other derivatives such as chloromethanes, hydrochloric acid and ferric chloride. We also (re)sell gas, electricity and steam to co-located customers as part of our role as utility provider in several chemical clusters. Hydrogen is used to produce steam (replacing gas), and is delivered to customers and hydrogen distribution companies to be used in chemical production.

We work continuously to become more efficient by reusing energy streams from both our own production processes and those of our customers.

Although we produce large quantities of steam and electricity in our own activities, we also procure large amounts of energy from third parties. Increasingly, we are buying our energy from renewable sources, and will continue to do so. We have been and we still are involved in consortia with the aim to enable the development of new windparks. Around 50% of our energy consumption will originate from renewable sources by 2025.

We have in-depth knowledge and expertise in underground energy storage, which is critical to the future energy system. Our salt mining enables the creation of safe and reliable underground capacity to store renewable energy. Salt caverns are suitable for storing the large quantities of hydrogen that the Netherlands and Europe will need in the future, as well as for storing compressed air to supply and balance the electricity network with energy derived from wind and solar energy.

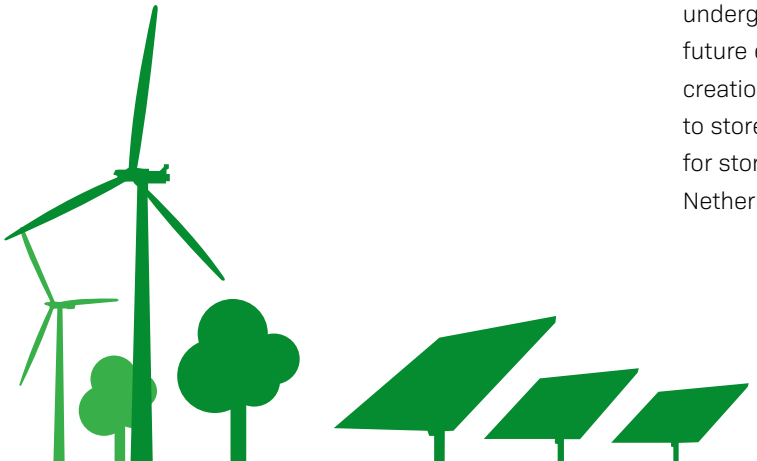
The storage of (green) energy plays an important role in energy resilience, reducing Europe's dependence on foreign countries for our energy supply. This strengthens our strategic autonomy and helps make the whole industry more sustainable.

Sustainability report 2023

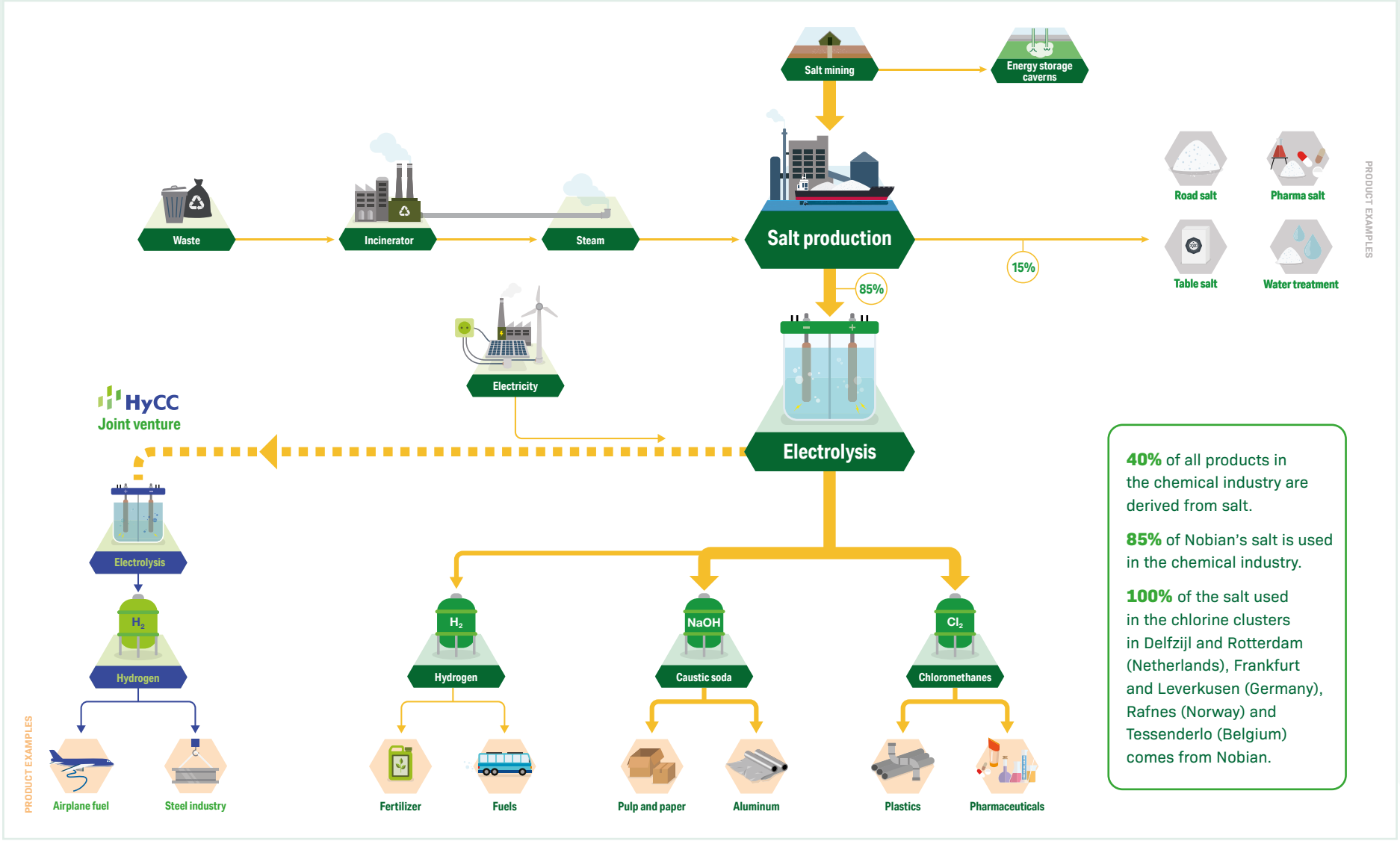
In this sustainability report we explain our environmental, social and governance (ESG) program and ambitions in more detail and report on our performance to date. We do this through tangible examples of our achievements and information on our activities and plans.
We are proud of our accomplishments.

Through collaboration and meaningful engagement with our people, stakeholders and communities, we are making progress towards becoming one of Europe's most sustainable companies and finding new ways to improve our performance. This is how we strive to Grow Greener Together every day.

This is Nobian.



Nobian's products and value chain



40% of all products in the chemical industry are derived from salt.

85% of Nobian's salt is used in the chemical industry.

100% of the salt used in the chlorine clusters in Delfzijl and Rotterdam (Netherlands), Frankfurt and Leverkusen (Germany), Rafnes (Norway) and Tessenderlo (Belgium) comes from Nobian.

Our approach and progress towards a sustainable future

To realize our ambition to Grow Greener Together and become truly sustainable, we measure ourselves against a concrete and challenging set of KPIs and targets. They range from CO_2 reduction and increased use of renewable energy to more green products, recycling and a reduction in safety incidents.
All targets are based on one of our three sustainability pillars: Climate, Circular and Care.

GROW GREENER TOGETHER

Nobian, Frankfurt | ©Nobian/Celine Paczkowski

2.1. Grow Greener Together

In 2022 we launched our Grow Greener Together sustainability program. Our ambition is to become one of the most sustainable chemical companies in Europe. We plan to deliver on our climate targets ahead of the Paris Agreement goals, help our customers reduce their carbon footprints with our green products, accelerate growth in new and impactful markets, and build strong connections with the communities in which we are located as well as with our own employees.

Grow Greener Together is founded on three pillars: Climate, Circular and Care.

Each consists of three focus areas which have tangible key performance indicators (KPIs) and targets. These can be found in the table on page 12. We have aligned the pillars with the UN Sustainable Development Goals (SDGs) where we feel we can make the biggest impact; these can be found in section 2.2.

We want to play an important and material role in Europe's transition to a sustainable economy and Grow Greener Together is an integral part of this ambition. Together with our customers, industry partners, suppliers and governmental and non-governmental organizations, we are confident that we can realize this ambition.

Key Performance Indicators and targets[2]

Climate	CO_2 reduction	◆ Scope 1 and 2 reduction: 25% by 2025, 50% by 2030 and 100% by 2040 compared to 2020 ◆ Scope 3 reduction: 2% by 2025, 20% by 2030 and 50% by 2040 compared to 2020 ◆ Carbon neutral in Scope 1 and 2 by 2040
	Renewable Energy	◆ 50% share of renewable energy by 2025 ◆ 66% share of renewable energy by 2030 ◆ 100% renewable energy by 2040
	Energy Efficiency and Storage	◆ Increase automatic Frequency Restoration Reserve (aFrr) capacity from 10 to 20% by 2025 ◆ Run a pilot for industrial scale electricity storage at Delfzijl site in 2024
Circular	Green Products	◆ Be able to supply at least 40% of total sales volume with low carbon footprint products by 2025 ◆ Have Environmental Product Declarations (EPD®) available for all low carbon footprint products in 2024
	Water	◆ Fresh water consumption reduction: 8% by 2030; 15% by 2035, 35% by 2040 compared to 2020
	Recycling	◆ 100 kton salt is reused from salty residual streams by 2026 ◆ 10 kton CO_2 captured based products in our value chain by 2025 ◆ Circular methanol available as source for our chloromethane production by 2030
Care	Health & Safety	◆ Reduce safety incidents year on year towards zero people and process incidents ◆ Implement vitality program to increase focus on health (mental and physical) of our employees
	Community	◆ Maintain the active local community program at all sites ◆ Have an active local community program for all new salt mining projects from start of salt production
	People	◆ Perform employee engagement survey 2024 and act on outcome ◆ Act on the Nobian Inclusion and Diversity plan for 2024

[2] Updated in 2024.

Progress towards our targets

The strategic direction of our sustainability approach is defined by a set of Key Performance Indicators (KPIs) and targets, as shown in the table on the previous page. The sustainability KPIs and targets are reviewed and updated annually and approved by the Corporate Responsibility Committee. As part of the EU Corporate Sustainability Reporting Directive (CSRD) implementation process that we have initiated at the end of 2023, we will translate the KPIs and targets into CSRD proof targets and metrics based on our double materiality assessment. More information on our overall sustainability governance can be found in the Governance appendix.

The next three chapters of this report provide detailed information on our progress in 2023. A chapter is dedicated to each of the three pillars of Climate, Circular and Care, and the sections within each chapter cover all focus areas. Below is a brief summary of key achievements, highlights and changes.

In the pillar **Climate** we are fully on track with all of our targets. Two of the targets set at the start of our sustainability approach in 2021 have been achieved. The first target that has been achieved is 'Develop salt caverns for renewable energy storage. First one ready for use by 2026.' This has been removed from the KPI list. The second target that has been met is '25% of electricity-based production capacity available for grid stabilization by 2023'. This target has been replaced by a new one: 'Increase electricity-based production capacity available for automatic grid stabilization from 10% to 20% by 2025'. Detailed information on progress and achievements can be found in Chapter 3.

In the pillar **Circular** we are on track with all targets, except '100 kton salt is reused from salty residual streams by 2025'. A one year delay is anticipated here due to the complex permitting procedure. The target year has therefore been updated to 2026. In addition, we have introduced a new focus area, Water, and we have set specific targets to reduce our fresh water consumption. This new focus area replaces the previous *Carbon to chemicals* focus area. The associated *Carbon to chemicals* targets have moved to the focus area *Recycling*. Further details can be found in Chapter 4.

In the pillar **Care** we unfortunately did not reach our safety target of 'Zero people and process incidents by choice'. Details and our approach for improvement are outlined in section 5.1. We have updated our target here to 'Reduce safety incidents year on year towards zero people and process incidents' to reflect the approach. The other targets are on track or achieved and have been updated accordingly. More information on all focus areas in this pillar can be found in Chapter 5.


Nobian, Heiligerlee | ©Nobian/Studio Dijkgraaf

Reporting and independent validation

Our approach and data are independently verified and we are transparent when it comes to reporting our progress. We aim high from the outset by participating in three internationally recognized standards, namely EcoVadis,[3] the Science Based Targets Initiative,[4] and CDP.[5]

Our sustainability management system and performance are validated via EcoVadis and we are proud that in 2023 we extended our platinum rating, keeping us in the top 1% of best-rated companies.

We are committed to the Science Based Targets initiative to get our climate targets scientifically evaluated. In 2023 we issued our targets and underlying data for validation. Additionally, we participate in CDP, which means we are reporting our progress on both our climate ambitions and water management in detail.

Our sustainability report and ESG data are in accordance with the Sustainability Accounting Standards Board (SASB)[6] and our ESG data and sustainability report are independently assured by DNV.[7]

In addition to these reporting standards and ratings, we have started a comprehensive project to implement the new EU Corporate Sustainability Reporting Directive (CSRD). Nobian is required to comply with this directive from 1 January 2025. This includes a double materiality assessment, which is being explained in section 2.3.

[3] https://ecovadis.com/
[4] https://sciencebasedtargets.org/
[5] https://www.cdp.net
[6] https://www.sasb.org/
[7] DNV Business Assurance Germany GmbH

2.2. UN Sustainable Development Goals

With our values and plans, Nobian wants to contribute to the prosperity and well-being of a sustainable society. We therefore support the UN's SDGs; the six on the right are where we believe we can make the biggest impact.

Progress towards SDGs

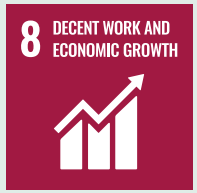
As an integral part of our sustainability approach, we have reported our progress against these SDGs in the relevant sections of this report.

In particular, there has been significant progress or continued good performance on *Affordable and clean energy* and *Climate action* (Chapter 3), *Decent work and economic growth* via our renewable energy and green products approach (sections 4.1 and 5.3), *Responsible consumption and production* and *Good health and well-being* via our engagement with communities (section 5.2).

UN Sustainable Development Goals (SDGs) where we can make the biggest impact[8]

Human health and safety are at the heart of our operations and are among our top priorities. We continuously work to reduce pollution from our operations to minimize the impact on our workplace, the environment and our surroundings. We actively engage with the communities around our production facilities, sharing our knowledge and supporting local initiatives.

As an energy-intensive company, we have taken substantial steps to help increase the availability and share of renewable energy. We are actively involved in the development of new wind farms, helping to stabilize the grid and reduce energy consumption. Our unique processes and expertise enable us to produce green hydrogen and store renewable energy.



We firmly believe that business performance and sustainability go hand in hand. To this end, we invest in renewable energy and green products that can deliver sustainable growth and create new meaningful jobs. We work hard to empower our employees and create a high-performing, diverse and inclusive workplace that reflects our values and the nature of our company.

To reach our sustainability targets we are embracing innovation and new ways of working. We are working with our partners across the value chain to maximize these opportunities. And, to develop and commercialize pioneering solutions, we are investing in state-of-the-art technologies for renewable energy storage, and battery chemicals production, as well as novel approaches to make the cement industry more sustainable.

We actively seek to create circularity both in our own production and upstream and downstream in our value chain. We are investing in research to convert CO_2 into useful chemicals, and we are continuously working to become more efficient by reusing residual and energy streams from both our own and our customers' production processes.

We recognize that we have a significant role to play in reducing our CO_2 emissions. We believe in leading by example and our actions clearly demonstrate our commitment to reducing greenhouse gas emissions. We have a commendable record of reducing emissions since 1990 and are well on track to meet our near- and long-term targets.

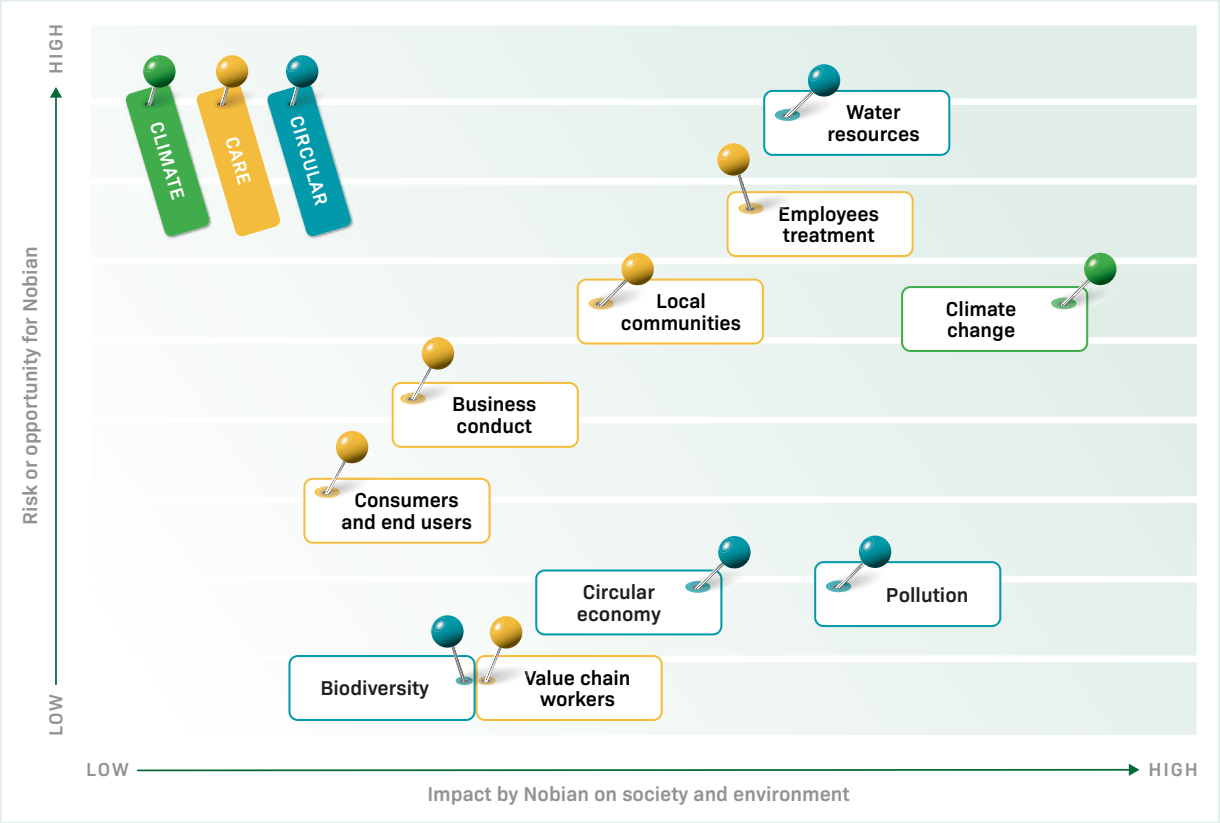
[8] UN SDGs not part of assurance by DNV.

2.3. Double materiality assessment

In preparation for the EU Corporate Sustainability Reporting Directive (CSRD), we started a comprehensive implementation project in 2023. Nobian must comply with the new regulations by our 2025 fiscal year. Part of our project is to perform a double materiality assessment.[9] This is an analysis focused on identifying sustainability topics that are key, or 'material', for the company to include in its sustainability strategy, action and reporting.

The materiality of various ESG topics is studied from two perspectives: inside-out (the effect of the company on society and the environment) and outside-in (the risks and opportunities ESG topics can have on the performance of the company). The first step is a high-level assessment at impact, risk and opportunity level. We completed this in January 2024, assessing what external and internal stakeholders see as the most important (positive or negative) ESG topics for Nobian.

We consulted stakeholder groups including investors, public authorities, non-governmental organizations (NGOs), suppliers, customers and employees. The risks and opportunities assessment we performed is an integral part of our enterprise risk management (ERM) process. The sessions gave insight into how our company is impacted by specific ESG topics, as displayed in the figure above.



Materiality assessment.

See the appendix 'Impacts, risks and opportunities' for details on how the assessment was performed, including some material impacts, risks and opportunities identified.

[9] Double materiality assessment not part of assurance by DNV.

Climate

Reducing our environmental footprint

We are well on track to achieve our target of a 25% reduction in Scope 1 and 2 CO_2 emissions by 2025 and become carbon neutral by 2040. We have already reduced our carbon footprint by 58% since 1990 and increased our use of renewable energy to 40.8% over the same period.
We are now working with the Dutch government to bring forward our goal of reducing our Scope 1 CO_2 emissions in the Netherlands to zero within 10 years, by 2030.
A key element of this collaboration is the large-scale electrification of Nobian's production processes, reducing both emissions and the use of natural gas.

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Climate KPIs and targets

Climate

CO_2 reduction

- Scope 1 and 2 reduction: 25% by 2025, 50% by 2030 and 100% by 2040 compared to 2020
- Scope 3 reduction: 2% by 2025, 20% by 2030 and 50% by 2040 compared to 2020
- Carbon neutral in Scope 1 and 2 by 2040

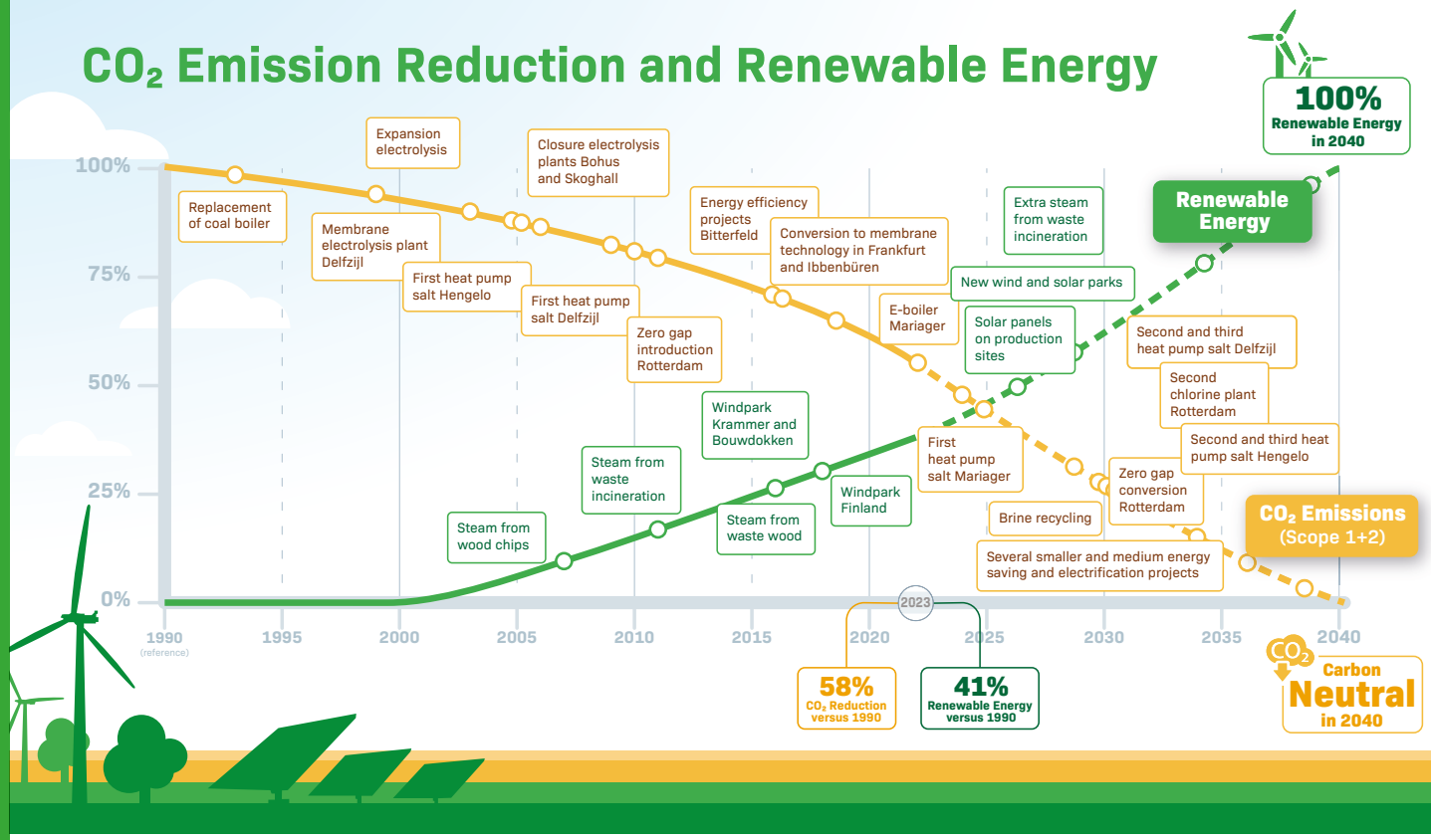
Renewable Energy

- 50% share of renewable energy by 2025
- 66% share of renewable energy by 2030
- 100% renewable energy by 2040

Energy Efficiency and Storage

- Increase automatic Frequency Restoration Reserve (aFrr) capacity from 10 to 20% by 2025
- Run a pilot for industrial scale electricity storage at Delfzijl site in 2024

CO_2 Emission Reduction and Renewable Energy



Since the 1990s Nobian has been working on reducing CO_2 emissions and increasing the use of renewable energy sources. And the journey continues with concrete plans for the future.

3.1. Greenhouse gas emission reduction

Because our production processes are energy intensive, reducing our Scope 1 and 2 emissions will enable us to make the biggest and fastest impact on climate change. Our aim is to be carbon neutral in both scopes by 2040, ahead of the Paris Agreement goals. Our targets are being scientifically evaluated by the Science Based Targets initiative.

The infographic on page 18 shows what we have done so far, along with our plans for the future. To reduce our CO_2 emissions even faster than our current 2040 target, we are working with the Dutch government on a tailor-made agreement aiming to accelerate our plans to reduce our Scope 1 emissions to zero in the Netherlands by 2030, 10 years faster than planned (see page 21).

In 2023 we achieved a 24.7% reduction in Scope 1 and 2 emissions compared to our reference year 2020, keeping us firmly on track and bringing us close to reaching our short-term target of a 25% reduction by 2025.

Our main source of Scope 1 emissions – the greenhouse gases we produce ourselves – is the combustion of natural gas that generates steam and electricity in our boilers and combined heat and power plants. Compared to the previous year, our Scope 1 emissions decreased in 2023. The decrease is mainly due to a reduction in production levels, the operational start-up of our new e-boiler at our Mariager site and the installation of two new brine preheaters in Delfzijl. On the other hand we produced more electricity for the Dutch grid at our gas fueled Delesto-2 power plant in Delfzijl compared to previous year, increasing the emissions for this plant. The net result, however, was an overall reduction in our Scope 1 emissions of 77 kton.

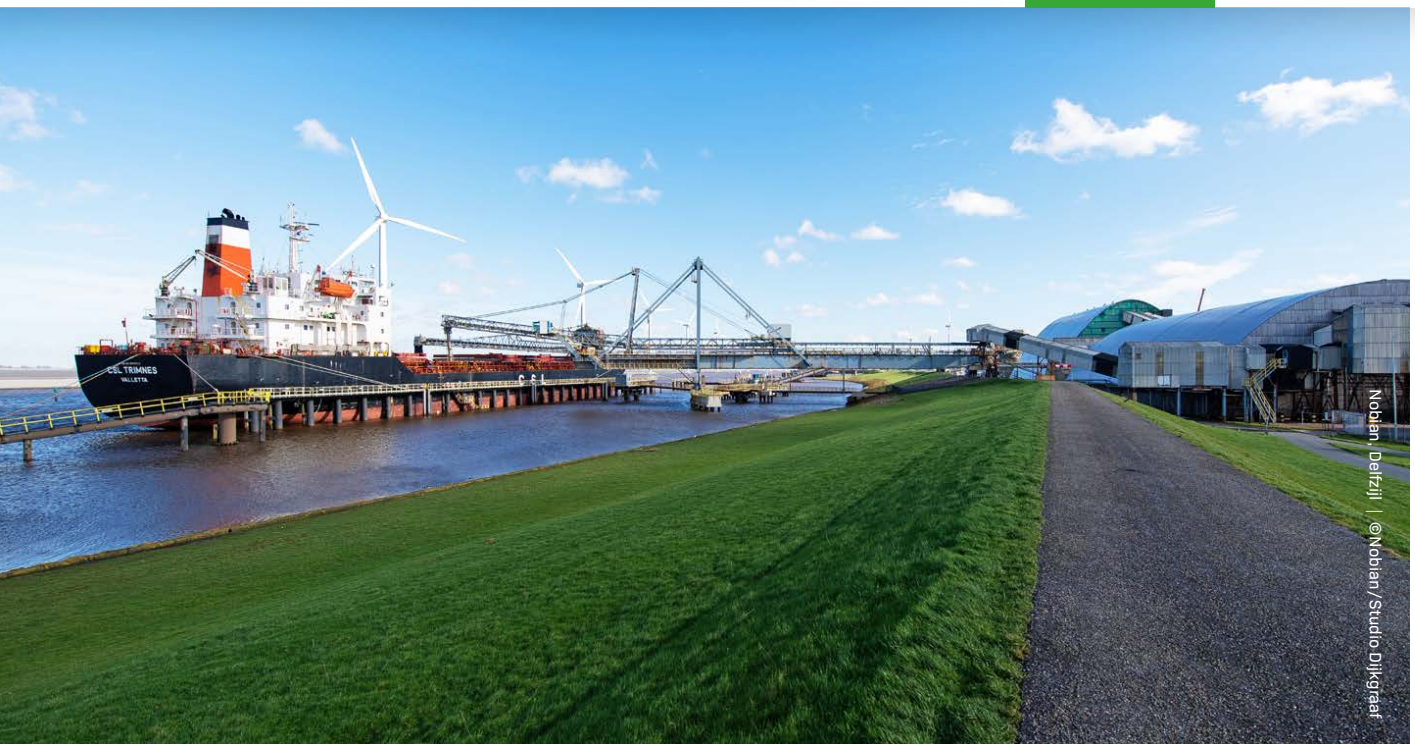
Despite not yet operating at full capacity, the new e-boiler at our Mariager site (pictured on the right) contributed about 12 kton to the reduction of our Scope 1 CO_2 emissions, while at the same time playing a significant role in helping to stabilize the Danish power grid.

We aim to further reduce gas-powered steam production at our Hengelo site in the Netherlands. We installed a small back-up boiler to facilitate potential future increases of renewable steam from a neighboring waste and biomass incineration plant, operated by Twence. We envision this to be operational in 2024.

The considerable reduction in Scope 2 emissions is mainly due to the amount of contracted renewable energy, in line with our targets, combined with lower demand from our electrolysis plants. As a result, the share of renewable electricity compared to fossil fuel-based electricity, has increased.

We also reduced our Scope 3 emissions for the third consecutive year, bringing us close to our reference year 2020. The net reduction of more than 6% (87 kton) compared to the previous year is a combination of increases and reductions in the various categories.

Nobian, Mariager | ©Nobian



Nobian Delfzijl | ©Nobian/Studio Dijkgraaf

The biggest increase we saw in Category 3 *energy and fuel related*. The Ecoinvent database emission factors for this category were updated in 2023. They now include gas flaring and fugitive methane emissions in natural gas production, as well as an increase of the share of imported liquefied natural gas. Next to this, fuel combustion was included in the calculation of transmission and distribution losses. This was not accounted for in previous years. In this report we have updated the calculations including the figures for the previous years. Further we saw an increase in Category 9 *downstream transport* caused by improved coverage and accuracy of data and an increase in Category 2 *capital goods,* due to higher investments in our mining operations and a new heat pump at our site in Mariager.

A major decrease in Scope 3 emissions can be seen in Category 1 *purchased goods and services* and Category 12 *end-of-life treatment,* due to lower volumes of purchased raw materials and tolling materials in 2023. For a number of raw materials, we also included a number of supplier-specific emission factors, substantiated through life-cycle assessments (LCAs). A secondary decrease is seen in upstream transport, which is again due to the lower volume of purchased raw materials.

3.2. Renewable energy

We use our own combined heat and power plants to produce steam and electricity, but we also procure a significant part of our energy from third parties. We are more and more sourcing this external energy from renewable projects. We purchase steam from waste incinerators and biomass plants, and we have concluded several power purchase agreements (PPAs) to procure wind and solar electricity. In 2023, 40.8% of our energy consumption came from renewable sources.

In 2023 we succeeded in expanding our portfolio of renewable energy projects with several new PPAs. They are for solar and wind projects but we have also managed to close a first contract for the supply of offshore wind. We intend to close more PPAs in the coming years to cover our expected increase in electricity demand based on our ambition to step away from using fossil fuels by further electrification of our plants.

Case study

Nobian signed Joint Letter of Intent with Dutch Government to accelerate CO_2 reduction by 10 years

With the signing of a Joint Letter of Intent with the Dutch government, Nobian reached another important milestone for our ambition to reduce our CO_2 emissions faster. In this Joint Letter of Intent, together with the Dutch government and the provinces, we set out the details of our sustainability plans. These could allow us to accelerate the reduction of our Scope 1 CO_2 emissions in the Netherlands to almost zero by 2030. Our Scope 1 emissions in the Netherlands account for more than 90% of Nobian's total Scope 1 emissions.

The associated gas savings could be equivalent to the consumption of around 250,000 households, about the size of The Hague, and we could almost completely eliminate our nitrogen emissions. By saving energy, Nobian would also free up capacity on the Rotterdam power grid, equivalent to the electricity consumption of 50,000 households, and enable more flexible use of electricity, helping to balance the grid and reduce congestion.

Furthermore, part of the Joint Letter of Intent is a project to develop large-scale underground energy storage, which is crucial for the energy transition. In addition to reducing natural gas use and nitrogen emissions, there may be other positive impacts such as more efficient fresh water use. The next step is to conclude the tailor-made agreements per project and to get certainty about the subsidy awards.

Michael Koenig, CEO Nobian, and Minister Micky Adriaansens, of Economic Affairs & Climate.

Case study[10]

Environmental Product Declarations

To be fully transparent about the environmental profile of our products, we perform life-cycle assessments (LCAs) on almost all our products. The LCAs we completed in 2023 are now available to our customers and other stakeholders. Their scope includes everything from raw materials through to delivery of the product to our customers.

For our low carbon products, we go one step further. For three of the four products we have obtained Environmental Product Declarations (EPD).[11] For the fourth product we are currently working to also obtain an EPD. EPDs are independently verified LCAs, carried out by a certified third party and in accordance with the strictest ISO standards for calculating the environmental footprints of products. This offers full confidence in the published data. The products involved are: Chlorine ISCC+ certified, Caustic Soda Lye 50% ISCC+ certified and Hydrogen certified under the CertifHy Green Hydrogen Scheme.

We are also proud that the EPD validation process has confirmed that our Chlorine ISCC+ is compliant with the EU taxonomy classification system, and is considered environmentally sustainable under the EU taxonomy regulation.[12]

For all our other products, we have started the process of independent verification to ISO 14040/44. The first externally reviewed documents are now available, and we aim to complete the review for all products by the end of 2024.

EPD®
THE INTERNATIONAL EPD® SYSTEM

[10] Not part of assurance by DNV.
[11] The EPDs can be downloaded via the international EPD system https://environdec.com
[12] https://ec.europa.eu/sustainable-finance-taxonomy/

© Robin Alysha Clemens

His Majesty the King Willem-Alexander (5th from the left) and German Minister-President Hendrik Josef Wüst of North Rhine-Westphalia (4th from the left) visited the zero-emission ship that will transport salt for Nobian. They were given a guided tour by the ship's owner, Harm Lenten, in Duisburg. The tour was part of the King's visit to several hydrogen-related companies and institutes in North Rhine-Westphalia. Other guests included Nobian's CEO Michael Koenig (3rd from the left) and Hans Vijlbrief (3d from the right), the Dutch State Secretary for the Extractive Industries.

Case study

World's first newly built hydrogen-powered barge to transport salt for Nobian

The hydrogen-powered barge, named MS Antonie, the first 135 meter long hydrogen-electric inland ship, has made its maiden voyage in late 2023. The barge will soon transport around 3,700 tons of salt at a time for Nobian from Delfzijl to the Botlek plant in Rotterdam, the equivalent of 120 trucks.

Greening the transport of our products is an important step towards our goal of carbon neutrality by 2040 and contributes to reducing our Scope 3 emissions. The MS Antonie will be powered by Nobian's green hydrogen, which is produced in Rotterdam and Delfzijl. Sailing on hydrogen is completely emission-free, unlike using fossil fuels such as diesel.

The project is a partnership between Nobian, NPRC, Energy TransStore, Lenten Scheepvaart, Concordia Damen, and Nedstack. The Dutch Ministry of Infrastructure and Public Works, province of Zuid-Holland and the EU are making significant contributions to cover the additional costs of building and developing the vessel. This project shows that with the right cooperation and innovation, it is possible to take tangible steps towards the greening of inland shipping.


Nobian, Bitterfeld | ©Nobian/Celine Paczkowski

3.3. Energy efficiency and storage

Energy efficiency

We strive for maximum energy efficiency at all our production sites. Our processes are energy intensive, so we are continuously looking for opportunities to optimize our energy use. Nobian has an ambitious and standardized energy efficiency program in place with clear governance. Our portfolio of energy saving projects is monitored at our headquarters, discussed monthly with all sites and reported to Nobian's Leadership Team.

Some key achievements are the installation of a new and improved heat exchanger in our salt plant in Delfzijl and improved steam control in Hengelo. Furthermore, we are working on a pilot project together with Gradyent, as follow up of the 2022 Grow Greener Together Innovation Challenge, to develop a digital twin of our steam network in Rotterdam to further improve operations and reduce losses.

E-Flex

Over the past two years, we have invested in making our electrolysis plants more flexible to increase our role in stabilizing the electricity grid. This has resulted in an increase from 15% to 25% of production capacity being available now for grid stabilization in a 15-minute timeframe. To achieve this, the three chlor-alkali plants where we already had E-flex capacity (Rotterdam, Delfzijl and Bitterfeld) have been made more flexible. Furthermore, we have added a chlor-alkali plant in Frankfurt and two salt production plants (Delfzijl and Mariager) that are now providing E-flex capacity to the grid.

A new ESG target has been set for E-flex, to switch from manual to automatic activation. The grid provider can then automatically ramp down our plants. A faster response is also required: 5 minutes instead of 15. This is now possible for 10% of total power consumption, with the aim to increase this to 20% by 2025. The electrolysis plants in Rotterdam, Frankfurt and Bitterfeld have had a direct connection to the grid since the end of 2023, enabling automatic ramp down.

We aim to further optimize the existing plants and connect the remaining electrolysis and salt plants in Delfzijl, Ibbenbüren and Mariager.

Batteries

With the EU expected to ban the production of fossil fuel cars, battery production for electrical vehicles in Europe is a potential growth market. At the same time there is a growing drive in Europe to depend

less on raw material supply. Nobian has a natural role to play in the battery value chain supplying our current chemicals. Next to that, using our extensive electrolysis and crystallization knowledge, we aim to improve the refining process for producing lithium hydroxide, the active compound used in batteries sought by many car manufacturers in Europe. In the implementation of that we are also seeking collaborating with partners that extract lithium chloride from for instance underground aquifers.

Simultaneously, research into alternative technologies to lithium – such as so-called sodium-based batteries – is ongoing. We are collaborating with startups and others active in this space. Given our plans for developing battery materials and applying batteries on our sites, we have recently joined a Dutch consortium that has had a significant subsidy proposal approved on batteries for the Dutch Growth Fund (Groeifonds).

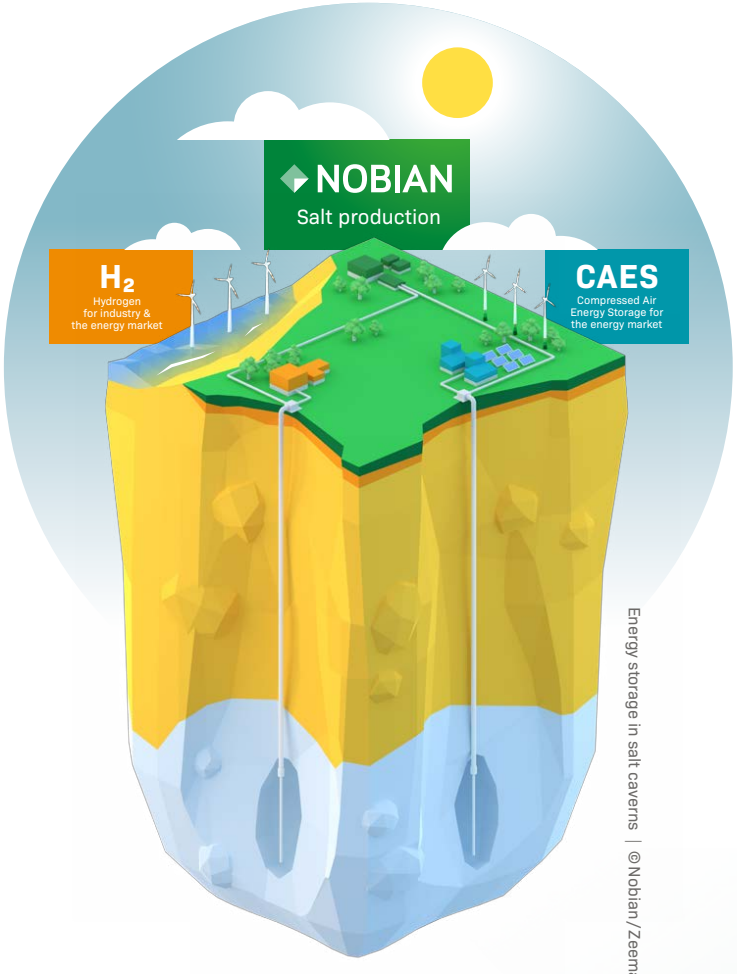
We are running a battery pilot program to determine the appropriate technology, size and operational requirements for on-site energy storage. This aims to identify the optimal battery solution for our production sites that can efficiently provide grid support services and increase the use of green energy. We started business case analysis and project preparation in 2023 and plan to start a first pilot project at one of our sites in Delfzijl in late 2024. The pilot aims to analyze the performance of the battery storage system and gather data for future developments.

Renewable energy storage in salt caverns

Our vast knowledge and experience in salt mining, coupled with our salt concession rights and salt manufacturing assets in the Netherlands and Denmark, means Nobian is well positioned to develop salt caverns for energy storage.

Renewable energy production, from wind and solar, requires large-scale storage solutions at times when there is a surplus of wind and solar energy. The stored energy can be used to balance actual supply and consumption when there is a low supply of sun or wind energy.

Large-scale energy storage ensures a stable supply for every hour of each day of the year and for flexibility in the grid. Renewable energy can be converted into different carriers like green hydrogen and compressed air, which can both be stored; and underground salt caverns are considered the most promising solution, both technically and economically.[13]



Energy storage in salt caverns | ©Nobian/Zeeman+Beemster

[13] Large-scale compressed hydrogen storage as part of renewable electricity storage systems, International Journal of Hydrogen Energy 46 (2021).


Nobian, Delfzijl | ©Nobian/Studio Dijkgraaf

In Zuidwending, the Netherlands, we have already developed several caverns for natural gas storage for energy network operator Gasunie. We are planning to do the same with renewable energy, developing suitable caverns for hydrogen storage to act as a buffer for demand in the Netherlands and more widely in Europe. Green hydrogen also plays a key role in the decarbonization of the chemical industry. It can be used as raw material for new forms of green chemistry.

At present, our project to develop four caverns suitable for the storage of green hydrogen in Zuidwending is progressing. The first cavern is leached and kept stable and therefore technically complete. Next step is the further development and preparation for renewable energy storage. We are working intensively toward the necessary permits for cavern development. An important part of the permit process is having an open dialogue and discussion with the local residents and authorities about the impact and benefits for the area (see page 46).

In addition, we are working with Corre Energy to develop salt caverns for compressed air energy storage. Once ready, Corre Energy will operate the storage and, together with a large energy company, supply renewable electricity to the local market. It is important to timely obtain permits to develop of the caverns, and we are in the process of doing so.

The brine generated during the development of the caverns will be transported to our salt plant in Delfzijl, where we produce high-purity salt for the chemical industry. This gives both projects a dual purpose – salt production and renewable energy storage.

Case study

Replacement of brine preheaters

Nobian has replaced two brine preheaters at its Delfzijl plant. These preheaters have a significant impact on the steam consumption in the salt production process. They were commissioned in the first half of 2023 and have been in operation since, resulting in savings of about 35,000 tons of steam per year. This translates to an annual saving of more than 5 kton of CO_2.

The old preheaters were at the end of their service life and their energy efficiency was significantly reduced due to their age. As part of the replacement project, we investigated how to increase the durability of the new preheaters. We opted to use titanium as a more durable material, with an expectation of a significant increase in operational life.

The project team at one of the old pre-heaters. From left to right: Ria Bongertman, Henk Weurding, Simon Snijders, Arjen Buurke, Theo Arling, Peter Brongers and Leon Haverkort.


©Shell Netherlands


©WIRCON

Case study

Expanding our renewable energy portfolio through Power Purchase Agreements

Showcasing our commitment to sustainable energy sourcing, Nobian entered into three new PPAs in the Netherlands in 2023.

The first is a long-term commitment with Shell for the purchase of green energy from the combined solar and wind farm Pottendijk in Drenthe.

The second is a long-term agreement with Axpo for the purchase of the WIRCON Valgenweg solar park, located near the Delfzijl Chemical Park.

The third agreement is a multi-year deal with utility PZEM (for the supply of power from the Gemini Offshore wind farm in the Dutch North Sea). Next to this, the Mutkalampi wind farm in Finland became commercially operational, for which we signed a consortium PPA in late 2020.

These long-term commitments make a significant contribution to meeting our renewable energy targets and are helping to reduce our Scope 2 emissions from the production of salt, chlorine, caustic soda and hydrogen. The PPAs cover the equivalent of around 25% for 2024 to 40% for 2025 of Nobian's annual electricity consumption in the Netherlands. This compares to the consumption of 160,000 to 240,000 Dutch households. Estimated CO_2 savings are 80,000 tons in 2024 and 120,000 tons in 2025.

The agreements above represent an important next step towards achieving Nobian's goal of 100% renewable energy and carbon neutrality by 2040 and exemplify the industry's pivotal role in transitioning to a sustainable energy system.

Nobian, Mariager | © Nobian

Case study

SaltPower at the Hvornum brine field in Denmark

Nobian has started a pilot project with SaltPower™ and Dansk Salt at SaltPower's[14] salt mining field in Hvornum, Denmark. The plant, the first of its kind in the world with a capacity of 100 kW, started operating in 2023. This follows a successful test of a prototype at the factory in Mariager in 2021.

By applying SaltPower to the solution mining process, we can reduce energy demand by injecting diluted salt water back into the cavern. In this way, SaltPower technology can replace the high-pressure pump normally used in solution mining. We hope this technology will eventually make the operation of the brine field energy neutral.

SaltPower produces energy by using the osmotic pressure difference between fresh water and salt brine. The concentrated brine draws fresh water through a semi-permeable membrane, causing an increase in pressure. The high-pressure diluted brine can then be used to produce electricity in a turbine or directly as hydraulic energy.

The salt concentration in brine is about eight times higher than in seawater. As a result, the economics of the process are much better compared to the case where seawater is used to create the osmotic pressure to produce electricity.

[14] https://www.saltpower.net

Circular

Circular economy and green products

With our sustainable technology, we help transform salt into products which are essential to everyday life and a sustainable future, and help to reduce carbon throughout the value chain.

An essential part of our approach is to reduce the environmental impact of our products to an absolute minimum. We also focus – through targeted projects – on reducing our fresh water consumption and salt recycling to reduce our impact on natural resources and make our business more circular.

GROW GREENER TOGETHER

Circular KPIs and targets

Circular

Green Products

- Be able to supply at least 40% of total sales volume with low carbon footprint products by 2025
- Have Environmental Product Declarations (EPD®) available for all low carbon footprint products in 2024

Water

- Fresh water consumption reduction: 8% by 2030; 15% by 2035, 35% by 2040 compared to 2020

Recycling

- 100 kton salt is reused from salty residual streams by 2026
- 10 kton CO_2 captured based products in our value chain by 2025
- Circular methanol available as source for our chloromethane production by 2030

Salt, chlorine, caustic soda and hydrogen production is energy intensive by nature. With our Grow Greener Together program we make a significant impact in reducing the carbon footprint of our customers. Many of our plants are based in clusters with our customers, enabling us to recycle residual streams and enhance circular processes.

4.1. Green products

Our product portfolio starts with high-purity vacuum salt. From there, we produce chlorine, caustic soda and hydrogen, as well as other derivatives such as chloromethanes, hydrochloric acid and ferric chloride. Subsequently, they are used in key areas such as the production of aluminum, pulp and paper, polyvinyl chloride, polyurethanes, epoxy resins and steel.

We started building our portfolio of green products in 2018 with hydrogen certified under the CertifHy.[15] scheme as being 100% produced with renewable energy. The hydrogen produced at our chlor-alkali plants in Rotterdam and Delfzijl is certified under this scheme. Furthermore, our plant in Bitterfeld is certified according to the CMS 70 scheme and guarantees hydrogen produced with 100% renewable energy.

Nobian is also one of the first chlor-alkali players to certify its caustic and chlorine production according to the ISCC+ scheme. This expanded our green products portfolio with ISCC+[16] certified chlorine and caustic soda, produced using 100% renewable electricity in our electrolysis process at our production sites in Rotterdam, Delfzijl and Frankfurt.

In 2023, we extended the certification scope to include our plant in Bitterfeld as well as various caustic depots in the Nordics area. This allows us to offer most of our customers a green alternative to regular caustic and chlorine, directly impacting the customer's carbon footprint. Certified chlorine has a carbon footprint up to seven times lower than chlorine produced using fossil fuel-based electricity. We are continuously working to further reduce the carbon footprint of these products.

The environmental footprint of our products is substantiated by independently verified LCAs. See 'Environmental Product Declarations' on page 22.

[15] https://www.certifhy.eu

[16] https://www.iscc-system.org/certificates/valid-certificates/

New value chains

As well as developing our own portfolio of green products, we are supporting the development of new value chains that drive sustainability and reduce the global carbon footprint. Examples include the application of our green caustic in battery chemicals production and working to reduce the carbon footprint of the cement industry by supporting development of geopolymer based products requiring caustic.

In addition we are developing potentially new value chains in for instance lithium and sodium based batteries, as explained in section 3.3.

4.2. Water

Water is an essential ingredient of life, but must not be taken for granted, whether used as drinking water, for growing crops in agriculture, or for industry as a raw material and processing aid. Our first and essential step is to reduce the volume of our water use. This is followed by options to reuse, recycle and purify water before returning it to its original source.

Case study

Sustainable Industry Challenge

We participated in Chemport Europe's Sustainable Industry Challenge 2023, in partnership with the Unknown Group. Scale-ups active in green chemistry, energy transition or recycling were able to apply with solutions to help solve innovation challenges to become more sustainable. Other participants alongside Nobian were BASF, Cosun Beet Company, RWE and Teijin Aramid.

Our challenge was to purify and extract salt from salty residual streams, thereby reusing the wastewater and salt as a raw material. Nobian and the start-up company Adionics will work together to evaluate the application of technologies in the field of salt extraction from brine streams. This is the result of our search for a partnership to help us extract value from our process and wastewater.

Adionics can provide a unique technology for the salt production process to extract more salt and valuable minerals from brine streams while using less water and energy. Following laboratory studies, we intend to construct a pilot plant at our salt plant in the Delfzijl Chemical Park as an intermediate step towards its eventual application. The size and scale of our salt production also offers great opportunities to extract not only more salt, but also minerals from the brine. At the same time, we can reduce water and energy consumption.

From left to right: Johan Visser, Technology Director Nobian, Guillaume de Souza, Founder Adionics Advanced Ionic solutions, and Jurgen Nieuwenhuijsen, COO Unknown Group.

Nobian, Delfzijl | ©Nobian

Gerard van de Putte, Delesto's senior process technologist, at the demineralization plant.

Case study

Nobian helps reduce fresh water consumption at Chemical Park Delfzijl

With the target of a 35% reduction in water consumption for 2040 from 2020 levels, we started a project at the Delfzijl Chemical Park to minimize the consumption of drinking water for industrial use and switch major customers to industrial water.

Traditionally, we play a central role in the supply of utilities, including industrial water, to our own plants as well as other companies at the park. For example, in salt production, a large amount of clean process water is left over after evaporation and cooling, which is very suitable for industrial use.

The project will make several hundred thousand m^3 of Nobian's condensate and process water suitable for use by other companies at the site, Ultimately, this will eliminate the need for drinking water to be used as process water. This switch is a great example of how we can further strengthen and make our integrated chain more sustainable, and a concrete step in Groningen's water transition.

Our approach is guided by a redeveloped Water Management Policy, with clear KPIs and targets. The main target is to reduce fresh water consumption by 35% from 2020 to 2040. We have developed a list of feasible site action plans to accompany the planned reduction.

Immediately following this policy and plans, we took a major step towards reducing drinking water consumption at Chemical Park Delfzijl. Nobian has traditionally been a utility provider at the park, supplying a range of utilities to its chlorine and caustic pipeline customers. Drinking water was supplied by Nobian in significant quantities as process water to four customers. Condensate from salt production was available and clean, but required further purification before it could be accepted as process water by the Chemical Park Delfzijl participants.

By recirculating this condensate, Nobian not only reuses it, but also directly reduces the regional consumption of drinking water. We have successfully implemented this project, delivering half a million cubic meters of purified condensate to four satisfied customers.

4.3. Recycling

To create a circular value chain, we are developing routes to recycle our products from salty residual streams. We also support our customers to circularize their processes. We have developed and designed a process route to purify a concentrated salty residual stream from one of our customers in Delfzijl.

The recovered salt is brought to a quality level sufficient for use in our chlorine electrolysis. By reusing this salt, we not only make a part of the production process circular, but also reduce salt emissions to surface water. In addition, we help our customer to reduce the number of substances of very high concern present in the residual stream by removing them in the purification process.

The treated recycled stream fed into our plant also reduces overall energy and fresh water consumption. Overall, this provides some especially attractive environmental benefits. The project is now in the permitting phase.

Nobian, Frankfurt | ©Nobian / Celine Paczkowski

4.4. Product stewardship

We recognize we have a role to play in the drive towards a greener, more sustainable society. This goes beyond manufacturing greener products. We support the aims of the European Green Deal and the EU Chemical Strategy for Sustainability.[17] We have adopted an approach of product stewardship at both company and site level. By considering product safety and sustainability throughout the value chain, we do not only support regulatory compliance, but we also help to develop more sustainable solutions for our customers and society.

Risk assessment for safe use

We handle around 1,600 different chemical products at our production sites, including raw materials. Of these, 22 are sold in various grades and used throughout the world. Eighteen are classified under the Globally Harmonized System of classification and labeling of chemicals (GHS) as hazardous substances for adverse health or environmental properties in accordance with the EU's classification, labeling and packaging regulation. The other four products are classified as non-hazardous. Each GHS classified product has undergone a thorough hazard and risk assessment in line with REACH[18] standards and, where applicable, EU biocides law.[19]

[17] https://ec.europa.eu/environment/strategy/chemicals-strategy_en.

[18] https://www.echa.europa.eu/web/guest/regulations/reach/understanding-reach

[19] Regulation (EC) No 528/2012 concerning the placing on the market and use of biocidal products (BPR). For more information: https://echa.europa.eu/regulations/biocidal-products-regulation/understanding-bpr

Case study

Ibbenbüren winner of the Responsible Care Special Award

Nobian has won the Responsible Care Special Award for Medium-Sized Businesses of the German Chemical Industry Association, VCI, for the second time in three years. The theme of this year's competition was 'Our sustainable and economical use of energy'. For Nobian, this is part of our everyday work. In line with our sustainability program Grow Greener Together, the team in Ibbenbüren has initiated a number of measures to save energy, reduce the consumption of steam and cooling water and increase the possibility of using renewable electricity in production.

The panel was impressed with their project 'Future-proof production through decarbonization & flexibilization', because it showed how sustainability can be viewed holistically and implemented in an exemplary manner in all production processes.

According to the assessment, Nobian has impressively demonstrated that medium-sized companies can significantly increase efficiency potential through smart analytics and without large investments.

From left to right: Laudator Dr Josef Tumbrinck, Nobian's site director Egbert Schasfoort, and VCI-NRW Chairman Thomas Wessel.

Nobian, Frankfurt | ©Nobian/Celine Paczkowski

The risk assessments analyze any exposure to workers, consumers and the environment. Any necessary measures are communicated through safety data sheets and packaging labels according to legal requirements. We also have customer brochures which include our products' technical properties and best practice guidelines for safe handling, as well as information about regulatory compliance and associated certificates.

All products are carefully managed to ensure they are used safely at our sites and by our customers, conforming to applicable regional, national and international regulations and safety recommendations of our industry associations. This covers areas from safe transport to controlled waste disposal and recycling. Our comprehensive management system is ISO 9001, 14001 and 45001 certified. It is designed to protect the environment and the health and safety of employees, contractors and residents from any adverse impact of chemicals and emissions, as well as other hazards arising from the operation of chemical production plants and associated logistics. We endorse the European Chemical Industry Council's (Cefic) Responsible Care® program.[20]

Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

Supply chain safety

Before we supply an industrial customer for the first time, we carry out a first-delivery check to ensure products can be safely received and refilled. We also offer safety training for their personnel. We are committed to monitoring and investigating incidents at our own sites, reporting to our industry associations, and improving safety along the supply chain in accordance with Cefic's SQAS program.[21]

To ensure professional incident management and clean-up along the supply chain, we have also put an emergency response system in place that comprises incident support on a global scale. Incident support can consist of general safety advice and product information by telephone or email (24/7) all the way up to assistance with personnel and equipment at the scene of an incident according to the Cefic's Intervention in Chemical Transport Emergencies program.[22] In 2023, three incidents occurred during the distribution of our products by our distribution partners resulting in limited product releases.[23]

All incidents were handled adequately and there were no adverse or long-term consequences for either people or the environment.

[20] https://cefic.org/responsible-care
[21] https://www.sqas.org
[22] https://www.ice-chem.org
[23] Not part of assurance by DNV.

Case study

Improved use of brine recycling streams

A team at the Nobian salt plant in the Delfzijl Chemical Park has successfully implemented a solution to make better use of the brine streams that return to our plants. This yields 5,000 tons of salt annually.

At the start of the process, samples are taken from the brine stream to continuously measure and monitor certain levels of contaminants. This data is used to control the rest of the process. Previously, these samples were disposed of after analysis, but with process knowledge, smart-thinking and creativity, this small return flow of brine can now be reused with a relatively small investment and a payback time of less than a year by making salt from it in our plant.

Nobian, Delfzijl | ©Nobian

Harrie Greven,
Construction Coordinator
Nobian Delfzijl.

Care

Care for people and communities

Care is one of our core values and we are committed to providing our employees a safe and healthy work place, making sure everyone returns home safely everyday. In addition we strive for active and meaningful engagement with our people and the communities, residents, authorities and local interest groups around our operations. We promote open dialogue, inform them about our activities and operations, share knowledge and support social initiatives.

GROW GREENER TOGETHER

Care KPIs and targets

Care

Health & Safety

- Reduce safety incidents year on year towards zero people and process incidents
- Implement vitality program to increase focus on health (mental and physical) of our employees

Community

- Maintain the active local community program at all sites
- Have an active local community program for all new salt mining projects from start of salt production

People

- Perform employee engagement survey 2024 and act on outcome
- Act on the Nobian Inclusion and Diversity plan for 2024

We strive to always act in an inclusive and respectful manner, championing and supporting our diverse teams. We go the extra mile to engage and empower the people at the heart of our company. We work continuously to provide a safe, healthy and accident-free working environment for our employees, contractors and neighbors.

5.1. Health and safety

At Nobian we want to ensure that everyone returns home safely every day. We strive to deliver a leading performance when it comes to health and safety. We work tirelessly in these areas to benefit our employees, contractors, customers, neighbors and the planet, and our goal is to achieve zero injuries, waste and harm.

We understand the key to improving safety performance lies in firm leadership, embedding safety in our culture at every level and robust processes that are reviewed regularly to identify any areas for improvement. We need to ensure our employees have the knowledge and skills to apply these processes consistently across all our sites, and our Life-Saving Rules help prevent serious injury to employees, contractors and visitors.

Safety management systems and corporate HSE&S audits

Our health, safety and environment (HSE) management system conforms to global standards such as ISO 14001 and ISO 45001. These drive continuous improvement in the protection of all our employees and contractors. All our production sites are certified for ISO 14001 and ISO 45001.

We conduct corporate internal HSE audits including process safety in a three-year cycle at our production sites to safeguard internal compliancy and continuous improvement on safety performance. These audits are conducted according to our Nobian HSE and Security (HSE&S) procedures. We actively track progress as we implement their findings.

People safety

Our ambition is to have zero injuries. We consciously work every day to provide a safe and healthy workplace for our employees and contractors. In 2023, our occupational safety and health administration (OSHA) incident rate increased, but performance remains in the top quartile.[24] There were no fatal incidents involving our employees or contractors. For 2024 we are focusing on strengthening safety awareness and our safety processes, and continue to facilitate company-wide learning from incidents to prevent reoccurrence.

At Nobian we expect everyone to contribute to a safe and healthy working environment. We encourage everyone to report hazards and near misses, as these leading indicators help us proactively create safer workplaces by taking mitigating action to prevent injuries. This reporting also increases overall safety awareness and

[24] Based on annual Occupational Safety and Health Administration (OHSA) recordable injury rates versus chemical industry peers in the American Chemistry Council.

Nobian, Frankfurt | ©Nobian / Celine Paczkowski

Nobian, Heiligerlee | ©Nobian/Studio Dijkgraaf

strengthens our safety culture. We work hard to encourage everyone to identify unsafe behaviors through our Behavior-Based Safety program which is implemented at all our production sites.

Behavior-Based Safety is a cornerstone in our five-year safety program started in 2022 to achieve zero injuries and involves all employees, from shopfloor to leaders, in conversations and dialogues that improve safety by promoting behavioral change among colleagues and contractors. Improvement proposals and employee or contractor feedback are incorporated into the program and used to continually improve site safety.

Our health and safety performance is monitored through KPIs and third-party verification of compliance with relevant safety standards. Total incident rate (TIR) and lost time injury rate (LTIR) for employees, temporary workers and contractors are the main lagging KPIs for people safety. The data for these three groups is combined and can be found in the ESG Factsheet on page 60.

Safety Day

Our annual Safety Day is a company-wide tradition that aims to increase safety awareness and engagement, enable people to share expertise, and promote hazard recognition. It is also an opportunity to celebrate our achievements and reaffirm our promise to do whatever it takes to ensure everyone goes home safely, every day.

Our sites and offices plan exciting programs to engage everyone working with us, including our annual Safety Day award. Our management team actively participates at every site. For the first time a company-wide Safety Day Quiz was organized to challenge everyone's safety knowledge, and to provide an opportunity to collect ideas on how to enhance our safety performance and behavior. Many people took part and we received a lot of valuable insights that are integrated into actionable strategies that will take us toward an even safer and more secure work environment.

Worker health

We have implemented site-specific health management systems to reduce the risk of occupational health hazards to everyone working at our locations. The risks vary according to the type of work, but hazards are typically categorized as being physical, chemical, biological, ergonomic or organizational. Each of our production sites undergoes a Nobian Health Risk Assessment that meets local regulatory standards. Based on the outcome, improvement plans are put in place to address any health

concerns and implement additional exposure control measures where necessary according to the hierarchy of controls.

These might include phasing out or substituting certain substances; implementing technology to control worker exposure; risk assessments as part of long-term health studies; use of personal protective equipment; and evaluation of alternative materials or processes.

We scrutinize the effectiveness of implemented exposure control measures at site level through industrial hygiene monitoring programs. Sampling and testing strategies are determined by qualified professionals, with third-party experts brought in when necessary.

We are also focused on our employees' personal health and well-being. As well as making sure we provide safe, comfortable working conditions, our sites are encouraged to support health and wellness activities, such as initiatives that promote the benefits of exercise or raise awareness of unhealthy lifestyle choices. All employees have access to on-site medical services, and we have procedures in place for medical emergencies, laid out in our Emergency and Community Awareness Policy.

Case study

Further Together: Supporting children in Amersfoort

Every child has talent. Even those who grow up in an environment with high unemployment and few role models. JINC is a Dutch organization that fights for a society where your background does not determine your future.

In 2023 Nobian's office in Amersfoort, the Netherlands started a partnership with JINC. This resulted in several inspirational projects in which groups of employees provided so-called 'flash internships', job interview training and coaching to children between the ages of 12 and 16.

By becoming a partner, we commit to supporting children in the Amersfoort region, who need a little support that can benefit them for the rest of their lives.

The partnership is part of Nobian's Further Together program, which aims to support local communities, including through education. Through JINC, children are introduced to all kinds of professions, discover what kind of work suits their talents, and learn how to apply for jobs, among other activities.

© Nobian, Amersfoort

To celebrate the start of the partnership, Nobian's Chief Human Resources Officer Lorette Roetenberg (left) and JINC representative Hanneke Janssen cut a special cake.

Nobian, Bitterfeld | ©Nobian/Celine Paczkowski

Contractor safety

We recognize that our contractors, not just our employees, help make sure we have a safe working environment. It is important that they too can challenge us on our safety culture and performance. We therefore choose to work with contractors who have the same safety principles and values that are in our Business Partner Code of Conduct and our Life-Saving Rules, with which they need to comply. Together with ISNetworld we evaluate contractor safety during the tendering process and ask for contractor feedback on our safety culture.

Process safety

All our operations follow an established process safety management framework that adheres to industry standards and best practices. Its primary goal is to prevent process safety events which could result in injury, environmental impact or asset damage, or have a negative impact on our neighbors and communities. It also underpins our aim of achieving zero injuries, waste and harm, and supports us in ensuring a reliable supply of products to our customers. We have a five year process safety program for strengthening process safety management at our production sites, which will result in highly focused, activity-based work processes being embedded throughout our businesses. By enabling our people to develop their knowledge and expertise, we will be able to further drive process safety performance. We continue to raise awareness and improve reporting of leading process safety indicators.

Nobian, Mariager | © Nobian

More than 330 guests attended the 60th anniversary celebrations in Mariager.

Case study

Community engagement in Denmark

Our Danish salt production site in Mariager, takes great care to involve its community. This includes holding information events about its new salt extraction wells in Hvornum, its contribution to the community, including through the Mariager Saltcenter, as well as during its own 60th anniversary celebrations last September.

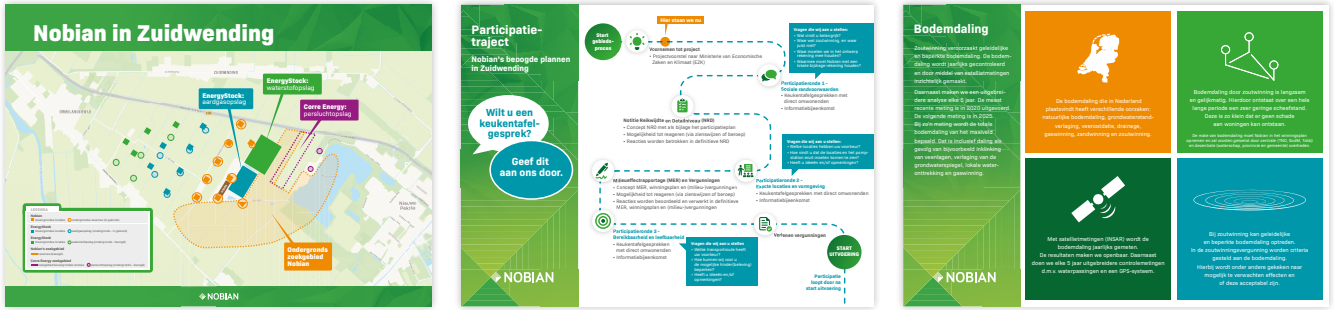
More than 330 invited guests, including neighbors in Assens and Hvornum, employees with their families, the mayor and deputy mayor, and the Director of Technology and Environment in Mariagerfjord municipality, joined in the celebrations at the Dansk Salt/ Nobian 'Open Plant Reception and Tour'. They learned about development projects such as the new energy-efficient electric boiler and mechanical vapor recompression, a high-efficiency heat pump technology that uses only a third of the energy of the current production process. They were also informed about plans to expand production by 400,000 tons of salt per year and how we reduce the CO_2 and fresh water footprint.

5.2. Engaging with our communities

Our approach to community engagement starts with building strong relationships with neighboring stakeholders through timely and clear communication. But also, by explaining what we do during an open house and engaging them in our HSE rules on emergency response and community awareness. We value being involved with and to be part of the communities in which we operate, for example through our community program Go Further Together and other types of local sponsorship.

Salt mining

Salt mining in the Netherlands and Denmark takes place outside the perimeter of the production sites. We maintain a continuous dialogue with the communities around these locations, proactively engaging with municipalities, residents and local interest groups to stimulate open discussion about our activities. We value direct contact, such as through community meetings, weekly walk-in mornings and 'kitchen table' conversations. These activities are also reflected in the participation processes we undertake with residents for new salt mining projects. In Groningen province, for example, we started a participation process for projects in the areas of Zuiderveen and Zuidwending. As part of a broader process for the area, residents will be able to participate in deciding where the well pads will be located and what the salt houses will look like.



Some of the information panels used during the participation process.

We take great care to make our mining operations more sustainable and transparent. This process is never finished, as new insights are frequently applied and discussed with relevant stakeholders. We operate an active planning and monitoring program throughout the lifecycles of wells and salt caverns that includes continuous measuring of caverns and the effects of salt mining such as possible micro-seismic activities and subsidence. We regularly discuss and share developments with municipalities, regional and local authorities, stakeholders and supervisors in regional steering groups.

In our efforts to be part of the communities in which we operate, we are committed to contributing to local economic and social well-being. For the area around our planned project near Haaksbergen in the Netherlands, for example, this is reflected in the independent community fund we have committed to in 2023. This fund aims to better share the benefits and burdens of the salt mining activities in the area.

In 2024, we will continue to support local initiatives through our community program, Further Together. Part of the broader processes for the areas of Zuiderveen and Zuidwending is to determine, together with local stakeholders, the best ways to give back to the communities living near our salt mining projects.

Nobian organized information sessions for the local community as part of a participation plan.

Case study

Salt extraction project in Zuiderveen: Designing with the community

Nobian's plans for salt extraction in the Zuiderveen area,[25] in the north of the Netherlands, will take a number of years to complete and are likely to have an impact on the surrounding area. We take great care to actively involve the surrounding community right from the start of our salt mining projects. To this end, we have drawn up a participation plan with the aim of reaching a jointly agreed design with the local community.

We are doing this in three rounds of participation: identification of interests, concerns and preferences, creating the designs and limiting nuisance. The first round of participation has now been completed for the Zuiderveen project. Besides organizing an information session for the community, we've asked 50+ households and businesses, as well as authorities and organizations, what they think is important in the area, what we should consider in the design and what we could do to compensate for the environment.

The results of this round of participation will be included in the *Notitie Reikwijdte en Detailniveau* (memorandum on scope and details) which is expected to be available for consultation in the first half of 2024. Before summer 2024, we will start the second round of participation. This will include several design sessions with the local community to find the most acceptable design for the well pads.

[25] https://www.gebiedsproceszuiderveen.nl

During the employee engagement survey all employees were invited to make their voices heard.

Case study

Employee engagement survey launched

It is now more than two years since Nobian became an independent company. In this short time, we have successfully continued to build our business and started to shape our culture by introducing the Nobian values of Care, Excellence, Ownership and Safety. To take the next steps, we asked our employees for their opinions and commitment in our first employee engagement survey: Your voice counts!

The survey covered a wide range of topics including leadership, development, strategy, safety and the workplace. All employees were invited to complete the questionnaire and to make their voices heard. This was achieved with an overall response rate of 79%. The survey results were shared within the teams, key findings discussed and action plans developed to further improve our business. Our next employee engagement survey is planned for 2024.

Nobian, Bitterfeld | ©Nobian/Celine Paczkowski

5.3. People

Our people

In an increasingly complex and fast-moving world, we know that engaged, empowered, healthy and happy employees are the key to growing a competitive, innovative, safe and successful organization. We aim to build an equal, diverse and inclusive workforce where people are safe (both physically and mentally) and feel valued for their contribution and who they are. To achieve this, we strive for an open culture and recognize the importance of investing in the development and training of our people. We aim to achieve sustainable business growth and make a positive impact on people's everyday lives through our actions and the essential products we make. We do this by supporting, developing, listening to and empowering our people and local communities. We engage and collaborate with customers, partner companies, universities, industry peers and governments. These relationships help us drive growth while becoming a safer, more sustainable and more innovative company.

In 2023 we continued to build on our Nobian values and behaviors (see 'Our values' on page 55). Of these, 'care' and 'safety' focus explicitly on our employees' well-being and ensure we are a caring partner to our customers, stakeholders and the communities in which we operate. Our core values are the backbone of the performance-driven culture we are creating, forming a strong framework that empowers our employees and enables us to successfully deliver on our company's purpose and strategy.

Diversity, equity and inclusion

Nobian aims to provide equal employment opportunities and is resolved to avoid discrimination in the workplace or against job applicants, customers or business partners.

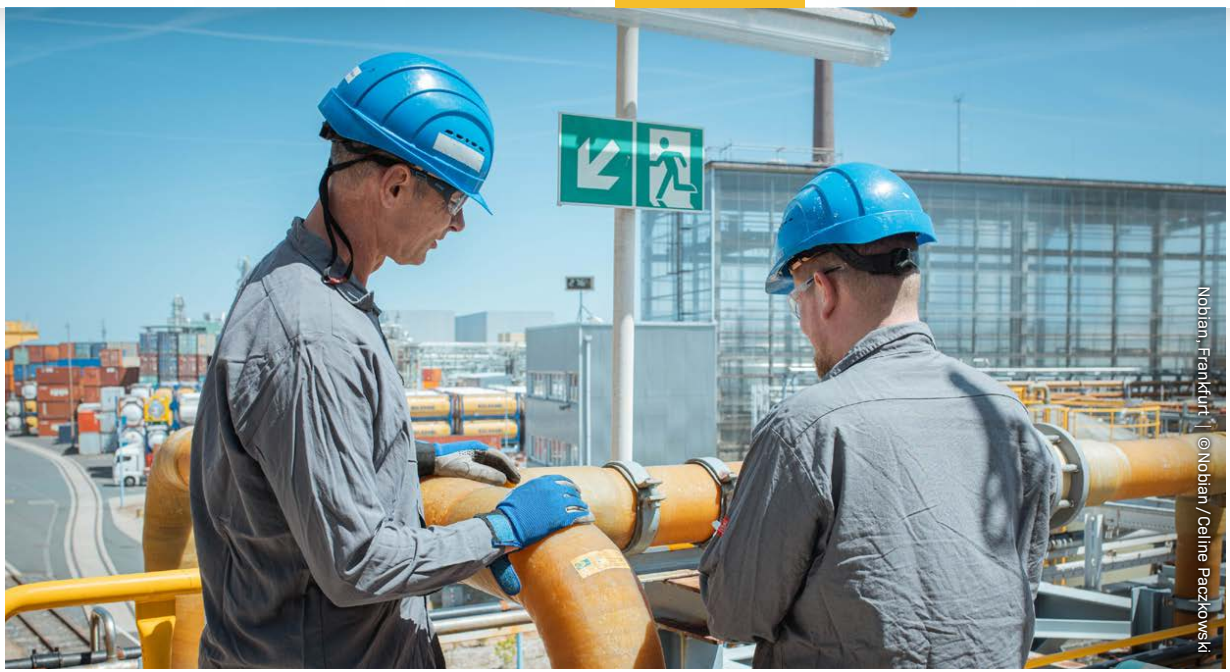
Diversity, equity and inclusion (DE&I) are important to the long-term health of our organization. We want to attract and develop diverse talent and see individual differences as an opportunity for innovation and growth. We cultivate an environment where behaviors and social norms are welcoming and respectful, and employees are provided with equality-based access to resources and opportunities. To achieve this we set up a talent network focusing on our young professionals. We are eager to learn from our young people and seek their views across a range of areas, as well as helping them develop both professionally and personally. As a result, we hope to retain them as fulfilled, valuable members of our organization. The network runs activities in the areas of knowledge sharing, sport and sustainability initiatives. It is highly appreciated by the members and has increased engagement.

In 2023, we took a step forward on DE&I, bringing together people from across our company to identify and implement initiatives that bring our DE&I Policy to life. The DE&I (Executive) Committee, which includes employee representatives from all sites, has been established to give the entire organization a stronger voice on the key issues and actions related to DE&I.

Improving and supporting diversity in our workforce is therefore an ongoing process. Gender diversity at senior level currently stands at 9.5%. The Nobian Leadership Team has three Dutch and four German members.

In 2023, unconscious bias training took place for senior executives and this will be rolled out across the organization in 2024. We continue to assess the diversity of our workforce and have continued to review all aspects of our employees' lives within the company, from 'hire to retire'. This is to ensure that our recruitment, engagement, reward and promotion processes support their needs.

Diversity awareness will continue to play an important role. This applies to all areas of the organization, though our recruitment of senior personnel and directors offers particular scope for sustained improvement throughout the organization.


Nobian, Frankfurt | © Nobian / Celine Paczkowski

In 2023 we launched our employee engagement survey which included questions on inclusion, mental safety and health (see page 47). Actions are defined with the support of our employees, as their insight is of utmost importance in ensuring our focus is on the right challenges. Employee consultation plays an essential role in our promise to increase employee motivation and engagement.

Social dialogue and working conditions

Our structured communication between employer and employee representatives includes discussions, consultations, dialogue and negotiations across various economic and social topics. In each of our countries there are monthly meetings with the Central Works Councils and Local Works Councils. In the Netherlands we also have quarterly updates with Dutch Unions and the Advisory Council. Working conditions at Nobian are negotiated with respective unions via collective labor agreements. All agreements cover working hours, social benefits and wages, policies and duties and responsibilities of both the employee and employer. Both the social dialogues and the clear working conditions contribute to providing an engaged place of work and sound relationships between employer and employee.

Case study

Giving young people an extra push

It just so happens that some young people, for whatever reason, need that extra push in the right direction to increase their chances in the job market. Being unemployed, they usually just need some practical, hands-on experience, personal attention, and a few additional skills to enhance their resume to secure that first job interview.

This is the background of an initiative taken by our Danish salt production site in Mariager. In 2023 they started a cooperation program with the local job center. The aim of the program is to provide people, often young, with training and experience to improve their job opportunities. The program offers internships and work experience with a focus on IT/OT-related work.

An internship typically lasts four weeks. During this time, the intern will learn a specific set of skills through hands-on experience. They also receive guidance on how to write a compelling cover letter, spice up their resume, and effectively use tools like LinkedIn and job boards.

Alex Benthien: "I can say that about 80% of interns find employment within a few months."

The program is spearheaded by IT/OT Manager Alex Benthien, who has the full support of the site leadership team. Alex brings a wealth of experience to the program, including management and general business coaching, as well as extensive expertise in teaching subjects such as Scripting, Open Source, Security, and various other fundamental IT/OT topics. Additionally, Alex has experience working with individuals across the autism spectrum and those returning from stress-related medical leave.

Alex remarks, "These experiences, combined with my repository of assignments, serve as a strong foundation for providing candidates with an individually tailored skillset to help them secure that crucial first interview, or preparing them for further education, making this program a great fit."

The program has many advantages. For starters, the pass rate is high. Alex: "From my own experience in the past, I can say that about 80% of interns find employment within a few months of completing an internship. In addition, these types of initiatives build goodwill within the community and with the local authorities, and I am glad that we can make our contribution to that."

Although the program is still in its early stages, Nobian has ambitions to make this a long-term effort.

Case study

Securing our information:
Internal cyber security communications campaign

One of the communication tools of the internal cyber security communications campaign entitled 'Securing Nobian information: It's all about the right reaction.'

In today's digital age, information and data are the lifeblood of our business. Our production relies more and more on computers, automation and data. Digital working is everywhere: in our control rooms, logistics, planning, maintenance and communications. We therefore need to protect our data carefully to prevent cyber security incidents.

We already have a wide range of technical and organizational measures in place. But securing information and data is a shared responsibility in which each of us has a role to play. It is about our mindset and behavior, and is why we have launched an internal cyber security awareness communications campaign. Using communication tools such as a video, a dedicated intranet page with tips, tricks and tools, and an e-learning program, all employees were able to raise their awareness of the importance of data security and increase their knowledge of cyber security.

5.4. Sustainable sourcing

Ensuring sustainability is not only the right thing to do, but also an opportunity to deliver value for our customers and society by providing new solutions with smaller footprints or additional benefits. We believe that striving for a sustainable future means being a safe and reliable partner for customers, employees, business partners and communities. We identify potential sustainability issues from the first stages of supplier selection to eliminate risks and engage suppliers to improve continuously on sustainable performance.

We strive to only do business with suppliers who share and support our standards. All our business partners, including suppliers of (raw) materials and services, must comply with the Nobian Business Partner Code of Conduct. We also want all our suppliers to adhere to local and European legislative requirements, including the regulation on the registration, evaluation, authorization and restriction of chemicals (REACH), through mandatory acknowledgment in all new contracts and in all purchase order terms and conditions. More information on the Code of Business Conduct & Ethics can be found in section 5.5.


Nobian, Hengelo | ©Nobian/Studio Dijkgraaf

We actively engage with our business partners to jointly improve our sustainability performance. To this end we have developed a comprehensive Supplier Sustainability Risk Assessment by taking into account: the suppliers contribution to our Scope 3 CO_2 emissions, their plans to reduce the carbon footprint of their materials or services in line with Nobian's ambitions, and their EcoVadis score or equivalent scoring from a reputable sustainability rating agency. Through this assessment we classify our business partners as having a negative, neutral or positive impact on Nobian's sustainability ambitions.

We follow up with our suppliers with neutral and negative impact with the aim to ensure environmental and social practices are in line with Nobian's ambitions. These suppliers are engaged to jointly search for areas for improvement, for example by setting up plans to reduce the carbon footprint of their materials or services in line with Nobian's ambitions, improving knowledge through training or devising plans to improve their sustainability rating. This includes performing on-site audits.

The Supplier Assessment is evaluated twice a year to track progress and is fully embedded in accordance with our Sustainable Procurement Policy. If our suppliers have a negative or neutral score, we actively increase engagement with them to accelerate improvement of their sustainability performance. Suppliers performing strongly on sustainability are more often selected, or chosen for increased orders, while consistently weak performers are more likely to lose their position.

The Scope 3 categories within the remit of our procurement department are Category 1 *purchased goods and services,*[26] Category 2 *capital goods,* Category 3 *fuel and energy related activities,* Category 4 *upstream transport and distribution,* Category 9 *downstream transportation and distribution* and Category 13 *downstream leased assets.*

In 2023 we assessed our suppliers for raw materials, energy and transport in the above-mentioned categories; representing 607 kton CO_2-eq based on 2022 data. This is 68% of the Scope 3 emissions in these categories. Of these, two suppliers were classified as negative and 25 as neutral for which we have corrective actions in place and are actively monitoring. We started in 2023 with three on-site audits with suppliers where we discussed sustainability topics in-depth.

Finally, all Nobian's procurement employees have personal sustainability objectives. In 2023 they all completed annual sustainability training, which is one of their personal objectives.

[26] Excluding tolling materials.

Case study

Augmented Reality to guide processes in the field

The Rotterdam Continuous Improvement Team with support of the Data Analytics Insights Report Team has introduced the Augmented Reality I4.0 project. This aims to improve our largely paper-based process documentation for training and guidance purposes.

Together with colleagues from the production and maintenance departments in Rotterdam, more than five use cases have been identified where Augmented Reality could bring significant benefits to their daily work. So far, two processes have been recorded. The first is to guide operators when cleaning caustic filters, and the second concerns the inspection of electrolyzer frames.

This technology replaces paper-based process documentation and provides our colleagues with dynamic, easy-to-use documents that can be tracked in real time. Other benefits include increased reliability of procedure execution leading to less rework or downtime, easy capture of knowledge from senior operators and technicians who will be retiring in the coming years, and easy provision of training and guidance to new colleagues without the need for supervision by a senior colleague.

Senior operator Hans Los is wearing Augmented Reality glasses which could bring significant benefits to his daily work.

5.5. Sustainability memberships and compliance

Policy engagement and memberships

We actively engage with industry and trade associations to take a constructive and proactive approach to relevant EU initiatives. We bring expertise and solutions on topics such as raw materials strategy, a vision for salt extraction energy, carbon reduction and circular chemistry. This involvement helps further our sustainability objectives and ensures public policy decisions are grounded in sound data and science. Our engagements involve a diverse set of stakeholders focused on chemical-related and climate mitigation and adaptation issues, such as product design for energy efficiency, material safety, energy management in business and manufacturing operations, and industry collaboration.

Managing engagement on public affairs

All direct and indirect engagement with policy makers and related organizations follows a formal process managed by our Communication and Public Affairs Team. This covers the scope and business impact of specific policy issues and is integrated into annual business review meetings and our risk management assessment process.

The process ensures any activities that could influence public policy are consistent with our business strategy. In line with the Nobian Business Code of Conduct & Ethics and our company policies, we do not provide financial contributions or endorsements to political parties or politicians.

Advocacy actions related to sustainability

We seek to engage constructively with governments, regulators and legislators on proposed policies that are relevant to our business. This can cover a wide range of areas, from tax and employment issues to safety and chemical management. We seek to support policies that are sufficient, clear, stable, predictable, comprehensive, economically efficient and well designed, that deliver society's goals at the least cost. We also support policies that align with our position in areas such as our sustainability ambitions.

We have actively engaged with industry and trade associations to take a constructive and proactive approach to relevant EU sustainability and industry initiatives, for example Fit for 55, critical raw materials, and the EU Chemicals Strategy for Sustainability. We not only focus on the risks and challenges these new proposals have for our industry, but we also concentrate on opportunities

Memberships and associations

The best way of becoming a force for good and creating a positive impact through sustainability is by working together. That is why we strongly believe in collaborations and partnerships with other expert institutions and organizations. To this end, Nobian is a member of::

via new business models and innovation and actively drive a value chain approach. Through our memberships with several associations in the EU and the Netherlands, we have also actively engaged with policy makers on creating the right conditions and policy approach for energy storage and green hydrogen.

Code of Business Conduct & Ethics

Nobian's Code of Business Conduct & Ethics requires employees to always act ethically and comply with anti-bribery, anti-corruption laws, antitrust/competition laws, data protection laws and economic sanctions laws. The Code applies to all employees and long-term contractors and, as part of our commitment to a sustainable future, everyone must complete at least one compliance training session on ethical business conduct each year.

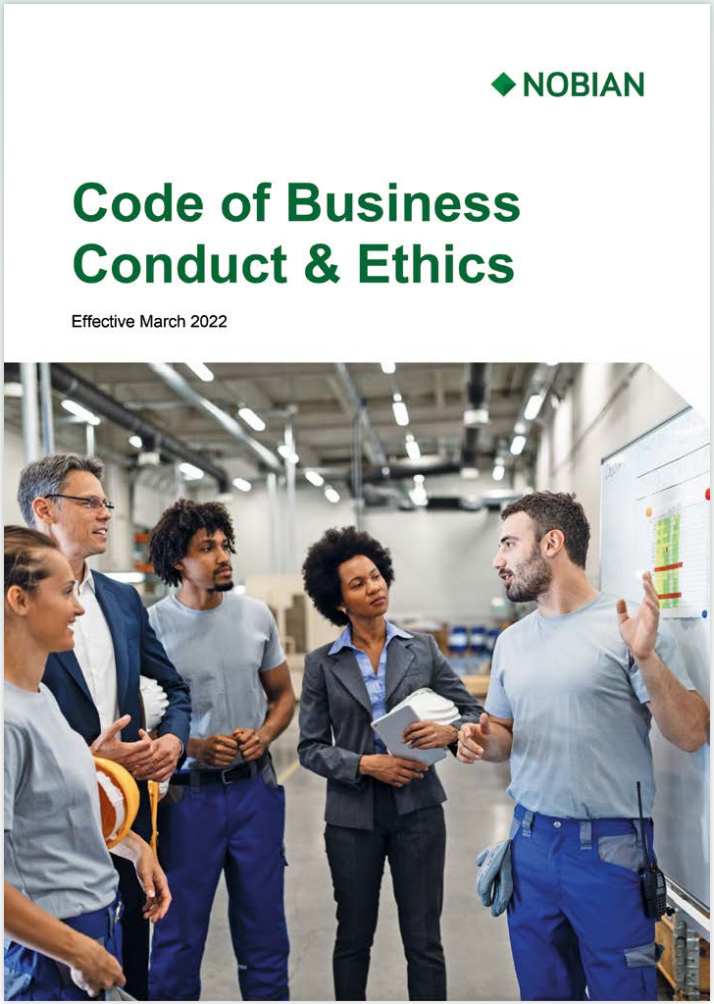
Our compliance program helps our employees and contractors understand and abide by our high standards of ethical business conduct, comply with our legal and regulatory requirements, and embody our values. The program consists of training, policies and procedures, external party due diligence and monitoring, and investigating and remediating concerns of unethical, illegal or inappropriate conduct. This commitment to compliance and ethics is supported at the highest levels of our business, with the Board of Directors and audit committee receiving regular updates from our General Counsel and Chief Compliance Officer.

Our values

Nobian has four company values: Safety, Excellence, Ownership and Care. The values are widely known throughout the business and are actively used in our strategy and day-to-day activities, such as town hall meetings and performance appraisals. They continue to guide our behavior and are a crucial part of our identity and company culture. The values demonstrate what we stand for – as a corporate citizen, a business partner and an employer. Our values guide our relationships with our partners, suppliers and stakeholders.

Business partners

We require our suppliers to adhere to our Business Partner Code of Business Conduct & Ethics. We also require certain third parties, such as customers and suppliers operating in sensitive countries, to undergo a due diligence process where they provide information on their ownership, compliance programs and any past relevant legal and regulatory issues, including economic sanctions. They are monitored through an online platform, and we receive daily updates of any sanctions, regulatory fines, or adverse media. Business partners also have access to our ethics reporting hotline, *SpeakUp!*.



The SpeakUp! procedure is also highlighted in Nobian's Code of Business Conduct & Ethics.

Reporting concerns: *SpeakUp!*

Employees, suppliers, customers and other business partners can report any suspected policy violations, inappropriate behavior and illegal or unethical practices through *SpeakUp!*, our confidential reporting hotline. *SpeakUp!* is a direct channel that enables people to anonymously highlight their concerns, and issues are heard and addressed in a timely manner. To ensure everyone is aware of *SpeakUp!*, it is publicized on our intranet, our external website and at every office and manufacturing site, along with contact information. It is also highlighted in our Code of Business Conduct & Ethics and employees are instructed on its use and about the protection they are afforded under our Nonretaliation Policy. Reports to *SpeakUp!* can be made anonymously in English, German, Dutch or Danish.

ESG Factsheet

GROW GREENER TOGETHER

Environment 1

	Unit	2010 (baseline)	2020	2021	2022	2023	% change 2023 vs. 2020
Scope 1 greenhouse gas emissions							
Scope 1 emissions	kton CO_2-eq	695.7	713.7	791.7	776.1	699.0	-2.1%
Scope 1 emissions under regulated emissions trading schemes (ETS)	%	99.1	97.9	98.3	98.2	98.2	
Scope 2 greenhouse gas emissions							
Scope 2 emissions	kton CO_2-eq	1,957	971.8	1,006	575.9	570.8	-41.3%
Scope 3 greenhouse gas emissions							
Total Scope 3 emissions[27]	kton CO_2-eq		1,273	1,488	1,299	1,212	-4.8%
Category 1: Purchased goods and services	kton CO_2-eq		442.6	445.4	430.8	359.8	-18.7%
Category 2: Capital goods	kton CO_2-eq		41.7	44.4	48.6	55.2	32.4%
Category 3: Fuel and energy related activities	kton CO_2-eq		332.4	432.6	323.9	381.1	14.6%
Category 4: Upstream transport and distribution	kton CO_2-eq		48.2	43.8	20.4	10.4	-78.5%
Category 5: Waste generated in operations	kton CO_2-eq		2.0	0.9	4.7	3.3	61.0%
Category 6: Business travel	kton CO_2-eq		0.2	0.2	0.2	0.4	69.9%
Category 7: Employee commuting	kton CO_2-eq		3.7	4.4	3.9	3.8	2.7%
Category 9: Downstream transportation and distribution	kton CO_2-eq		131.1	128.7	129.0	142.3	8.5%
Category 10 and 11: Processing of sold products and use of sold products	kton CO_2-eq		60.1	139.0	110.3	111.2	84.9%
Category 12: End-of-life treatment of sold products	kton CO_2-eq		209.2	246.9	225.6	142.7	-31.8%
Category 13: Downstream leased assets	kton CO_2-eq		1.9	1.8	1.0	2.0	7.2%
Total greenhouse gas emissions							
Toal emissions: Scope 1 and 2	kton CO_2-eq	2,653	1,685	1,798	1,352	1,270	-24.7%
Total emissions: Scope 1, 2 and 3	kton CO_2-eq		2,959	3,286	2,651	2,482	-16.1%

[27] Category 8 *Upstream leased assets*, Category 14 *Franchises*, Category 15 *Investments* are not applicable for Nobian.
Total Scope 3 Upstream greenhouse gas emissions (Category 1-8) 814.0 kton CO_2-eq.
Total Scope 3 Downstream greenhouse gas emissions (Category 9-15) 398.1 kton CO_2-eq.

Environment 2

	Unit	2010 (baseline)	2020	2021	2022	2023	% change 2023 vs. 2020
Energy management							
Total energy consumption	GWh	6,367	6,239	6,129	5,893	5,075	-18.7%
Percentage renewable energy	%		28.9	35.5	35.7	40.8	
Percentage renewable electricity	%		18.8	35.3	37.9	48.4	
Percentage renewable steam	%		37.1	35.7	33.9	34.1	
% grid energy	%		30.3	41.6	31.9	38.5	
Total self-generated electricity	GWh	911	978	1,219	1,076	962	-1.6%
Total self-generated steam	GWh	1,991	2,592	2,439	2,667	2,320	-10.5%
Emissions to air							
NOx absolute emissions	ton	443	563	608	545	421	-25.1%
SOx absolute emissions	ton	17.0	0.4	0.3	19.2	1.7	307.1%
Volatile organic compounds (VOC) emissions[28]	ton	1.8	3.0	2.7	2.6	2.1	-32.1%
Water management							
Fresh water intake	1,000 m³	96,568	42,540	41,042	48,125	44,744	5.2%
Fresh water consumption	1,000 m³	14,422	15,429	16,030	15,767	13,120	-15.0%
Fresh water consumption in stressed regions	1,000 m³	500	707	766	758	685	-3.1%
Emissions to water							
Chemical oxygen demand (COD) emissions	ton	101	104	100	98	115	10.3%
Waste management							
Total waste	ton	13,874	4,279	3,697	5,253	5,405	26.3%
Hazardous waste	ton		2,683	2,411	2,419	3,373	25.7%
of which disposed to landfill	ton		77.2	33.9	22.5	32.1	-58.4%
Percentage reusable hazardous waste	%		93.4	92.3	93.7	91.2	
Sales volumes							
Total sales volume	kton	7,391	8,722	8,800	7,535	6,593	-24.4%
Management systems							
Manufacturing sites with ISO 14001/RC-14001 certifications	%		100	100	100	100	

[28] VOC emissions include all applicable organic hazardous air pollutants (HAPS). Applicable inorganic HAPS are reported on site level and not consolidated centrally.

Social

	Unit	2020	2021	2022	2023
Workforce data					
Global headcount Nobian employees	#		1,541	1,527	1,622
Gender diversity in the workforce (M/F)	%		85/15	86/14	85/15
Gender diversity in senior positions (M/F)	%		89/11	86/14	91/9
Employee turnover rate (voluntary and involuntary)	%		9.0	12.9	7.7
People safety					
Total reportable incident rate (TRR) for employees, temporary workers and contractors	per 1,000,000 hours worked	1.09	0.51	1.07	2.46
Lost time injury rate (LTIR) for employees, temporary workers and contractors	per 1,000,000 hours worked	0.82	0.51	0.00	0.74
Total reportable incident rate (TRR) for employees, temporary workers	per 1,000,000 hours worked	0.42	0.00	0.95	2.16
Lost time injury rate (LTIR) for employees, temporary workers	per 1,000,000 hours worked	0.42	0.00	0.00	0.43
Total reportable incident rate (TRR) for contractors	per 1,000,000 hours worked	2.29	1.30	1.23	2.85
Lost time injury rate (LTIR) for contractors	per 1,000,000 hours worked	1.53	1.30	0.00	1.14
Fatalities	per 1,000,000 hours worked	0	0	0	0
Process safety					
Process safety incident counts – level 1	#	3.00	0.00	0.00	2.00
Process safety incident counts rate – level 1	per 1,000,000 hours worked	0.82	0.00	0.00	0.49
Process safety incident counts – level 2	#	3.00	0.00	0.00	1.00
Process safety incident counts rate – level 2	per 1,000,000 hours worked	0.82	0.00	0.00	0.25
Process Safety Total Incident Rate (PSTIR) combined	per 1,000,000 hours worked	1.64	0.00	0.00	0.74
Management systems					
% of manufacturing sites with ISO 45001 certification	%	100	100	100	100

Governance

	Unit	2021	2022	2023
Board				
Directors	#	9	9	9
Average tenure	years	0	1	2
Independent directors	#	0	0	1
Gender diversity (M/F)	%	100/0	100/0	89/11
Board coverage on ESG issues				
Frequency of board updates on ESG	frequency	Quarterly	Quarterly	Quarterly
Board oversight of climate strategy	Y/N	Y	Y	Y
Leadership Team				
Members	#	6	6	7
Gender diversity (M/F)	%	50/50	50/50	86/14

Appendices

Basis of reporting

SASB Index

Breakdown of greenhouse gas emissions

Sustainability governance

Impact, risks and opportunities

Independent assurance statement

GROW GREENER TOGETHER

History

Nobian became a standalone company in July 2021. This is our third sustainability report covering our activities and achievements in 2023.

Independent assurance

This report and ESG data have been independently assured by DNV Business Assurance Germany GmbH. Details of the assurance can be found on page 74.

Reporting standards

The report and its content has been prepared in accordance with SASB reporting standards. The index of SASB metrics is provided on page 69.

Scope and data

The scope of our environmental and health and safety data comprises our seven production sites in the Netherlands (Delfzijl, Hengelo and Rotterdam), Germany (Frankfurt, Ibbenbüren and Bitterfeld) and Denmark (Mariager). Administrative offices were not included as their contribution is negligible. For the remaining social and governance data, the full company is included. Data reported for 2023 is compared to that of 2020, 2021 and 2022. The data from 2023 has been included in the assurance process. For environmental data, 2010 serves as a reference baseline year. For social and governance no data from 2010 are available. At each production site, environmental data is reported quarterly, whereas health and safety data are reported monthly. Our data collection method and management system comply with ISO 14001 and ISO 45001.

In 2023 we changed reporting production volumes to sales volumes. Sales volumes give a more accurate figure on the company level since its aligned with our revenues as reported in our financial statements.

For the environmental parameters in the ESG factsheet, intensities per ton of product are not explicitly reported. Reason being is that Nobian is also an electricity and steam producer and is providing utilities like steam, electricity, water, compressed air, gas to other companies in the relevant chemical parks. The sales volumes only include our chemical products and not the utilities. Therefore there is not a direct relation between the Nobian environmental footprint on company level per ton of product, the so-called intensity. For completeness however, the sales volumes are reported in the ESG fact sheet. For the actual environmental footprint of our products we refer to our life-cycle assessments which are available for all products produced by Nobian.

Calculation methodology

We followed the guidelines of the SASB standard to report our environmental KPIs.

Scope 1 emissions

As indicated in SASB, the Greenhouse Gas Protocol was used to calculate Scope 1 CO_2 emissions. Our Scope 1 emissions are the combustion of fossil fuels to generate steam and electricity at our energy facilities. The emission factors we used to calculate our CO_2 emissions were based on the Dutch Energy Carrier list, providing emission factors per fuel type.

Scope 2 emissions and renewable energy

Our Scope 2 emissions are derived from purchased steam and electricity. All electricity purchased at Nobian is market-based, indicating that Guarantees of Origins (GoOs) or supplier-specific grid mixes are available for each MWh purchased.

To calculate our CO_2 emissions, we used the internationally recognized Ecoinvent database to calculate emissions per MWh. For steam from combined heat and power (CHP) systems, we have used supplier-specific emission factors. If not available, the EU heat benchmark methodology[29] to calculate the CO_2 emission factor for steam produced in a boiler or CHP system with reference efficiencies for natural gas were used.

[29] Guidance Document n°3 on the harmonized free allocation methodology for the EU ETS post 2020, section D. III Cogeneration tool.

The use of steam from municipal waste incineration plays an important transitional role in our goal to become climate neutral. It is the fastest and most efficient way to cut down CO_2 emissions overall, while we are also working on projects for the full electrification of our production processes. In a fully circular economy, municipal waste incineration (MWI) in general will be greatly reduced and will, ideally, eventually disappear. Until then, steam from MWI is considered a useful source of renewable steam for achieving Dutch CO_2 emission reduction targets. There is no conclusive guidance from the greenhouse gas protocol whether and/or how to include Scope 2 MWI steam emissions. The most concrete guidance is from the widely used LCA methodology, EN 15804+A2, a standard often used for Environmental Product Declaration (EPD®). It follows the polluter pays principle (PPP), meaning CO_2 emissions are carried by the waste generator and thus do not need to be included in the carbon footprint of the steam itself. In line with this guidance, Scope 2 MWI steam emissions are not included in the company's Scope 2 or Scope 3 emissions.

Scope 3 emissions

The calculations for our Scope 3 greenhouse gas (GHG) emissions are based on the GHG Protocol, 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard'[30] and recommendations of the World Business Council for Sustainable Development (WBCSD) Chemicals Sector Working Group, 'Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain'.[31] In the GHG protocol standard, Scope 3 emissions are divided into 15 categories. The description and approach per category can be found on the next pages.
We included 50% of emissions from joint ventures, taking an equity share approach.

Energy

Energy consumption was calculated as the total steam and electricity consumption (both internally produced and purchased) and converted to gigawatt hours. The energy reduction from return condensate of steam (hot water) usage is subtracted from the total. A certain percentage of our steam and electricity was procured from renewable sources. The renewable energy content of steam from Municipal Waste Incineration (MWI) is calculated based on the biogenic share of the waste as set annually by Rijkswaterstaat (54% in 2023). This percentage is, where needed, corrected for the possible additional fossil fuels used in the incineration process, and is used for calculating the contribution of renewable steam from MWI into our total renewable energy percentage.

Other environmental and social KPIs

Our air and water emissions have been tracked in accordance with national environmental regulations, as well as water intake and consumption.
The Aqueduct Water Risk Atlas tool from the World Resource Institute has been used to map the use of water in water stressed regions. Waste quantities have been tracked at waste processing facilities and the classification of nonreusable and reusable waste is in accordance with the Basel Convention.
The people safety data and the Process Safety Total Incident Rate (PSTIR) are calculated with the industry standard in Europe (per 1.000.000 hours worked), instead of calculating with the OHSA benchmark of 200.000 hours worked used in SASB.

[30] GHG protocol: 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard', 2011 and 'Technical guidance for calculating scope 3 emissions (version 1.0)', 2013.

[31] WBCSD Chemicals Sector Working Group: 'Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain', 2013.

Description and approach of Scope 3 categories | 1 – 3

Category 1
Purchased goods and services, including packaging

Category description	Extraction, production and transportation of goods and services, including packaging, purchased or acquired, not otherwise included in categories 2 – 8.
Type and source of data	Procurement data was used for purchased raw materials and packaging, including tolling activities and re-sale. As a change from 2022, delivery date was used as a basis of purchased goods volumes, instead of invoice receipt to more accurately include all purchased goods for the reporting year. For third-party services, an expert estimation based on spent was used to calculate corresponding CO_2-eq emissions.
Methodologies, allocation methods and assumptions	**Raw materials and packaging** Emission factors from relevant datasets from the ecoinvent database (version 3.10) were used. This database is an internationally accepted database for CO_2-eq. For a few raw materials, a proxy data set was used if no exact matching dataset was available. **Services** The CO_2-eq emissions per monetary unit spent on service activities were derived from 2011 data from the Department for Environment, Food and Rural Affairs (DEFRA)[32] as per the recommendation of the WBCSD Chemicals Sector Working Group.

Category 2
Capital goods

Category description	Extraction, production, and transportation of capital goods purchased or acquired by the reporting company in the reporting year.
Type and source of data	Primary data on monetary amount spent on capital goods, subdivided into expenditure on steel and concrete based on expert estimations was used.
Methodologies, allocation methods and assumptions	CO_2-eq emissions per monetary unit spent for different materials was derived from 2011 data from the DEFRA[32] as per recommendation of the WBCSD Chemicals Sector Working Group.[33]

Category 3
Fuel and energy related activities
not included in Scope 1 or Scope 2

Category description	Extraction, production, and transportation of fuels and energy purchased or acquired by the reporting company in the reporting year, not already accounted for in scope 1 or scope 2: upstream emissions of purchased fuels, upstream emissions of purchased electricity and steam, transmission and distribution losses, generation of purchased electricity and steam that is sold to end users.
Type and source of data	Primary data on total volumes of fuel and energy sources were used.
Methodologies, allocation methods and assumptions	Emission factors from relevant datasets from the ecoinvent database (version 3.10) were used. These datasets represent the average scope 3 emissions required per country or region (Europe). For transmissions and distribution losses in electricity, an average of 5% was taken, based on the US Energy Information Administration.

[32] Department for Environment, Food and Rural affairs (DEFRA), Annex 13 – indirect emissions from the supply chain, 2013. https://www.gov.uk/government/statistics/uks-carbon-footprint

[33] WBCSD Chemicals Sector Working Group: 'Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain', 2013.

Description and approach of Scope 3 categories | 4 – 6

Category 4
Upstream transport and distribution

Category description	All **inbound** logistics of raw materials from external suppliers to own operations, both Nobian-arranged transport and supplier-arranged transport. Transport of Nobian products between factories was changed from category 4 to category 9 in 2023.
Type and source of data	Primary data of raw materials purchased by Nobian, including supplier locations and modality were used to calculate the transport distance to the Nobian site.
Methodologies, allocation methods and assumptions	The raw materials that contributed to 99% of Scope 3 emissions in category 1 were included in category 4. Emission factors per ton-kilometer were derived from the GLEC framework[34] that provides logistic emissions for the European chemical industry.

Category 5
Waste generated in operations

Category description	Emissions from third-party disposal and treatment of waste generated in own or controlled operations in the reporting year.
Type and source of data	Primary data on the amount of non-reusable waste was used. Waste sent for recycling or for incineration with energy recovery was not included as the GHG protocol uses a cut-off approach where emissions from recycling will be included in the secondary system.
Methodologies, allocation methods and assumptions	Calculations were made according to guidance of the WBCSD Chemical sector (2013).[35]

Category 6
Business travel

Category description	Transportation of employees for business-related activities in vehicles not owned or operated by Nobian.
Type and source of data	Primary data on total expense claims for flights, public transport and car drives were used. For car drives, the actual total kilometers were available and used.
Methodologies, allocation methods and assumptions	Emission factors for passenger-kilometer (pkm) for flights, train and car transport were derived from the UK government,[36] based on WBCSD Chemicals sector guidance.

[34] GLEC framework & Cefic: 'Calculating GHG transport and logistics emissions for the European Chemical Industry, Module 5 of the GLEC Framework written in partnership with Cefic', 2021, updated August 2023

[35] WBCSD Chemicals Sector Working Group: 'Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain', 2013.

[36] UK government, Department of Business, Energy and Industrial Strategy, Greenhouse gas reporting: conversion factors 2023. Link: https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

Description and approach of Scope 3 categories | 7 – 11[37]

Category 7
Employee commuting

Category description	Transportation of employees between their homes and worksites in vehicles not owned or operated by Nobian.
Type and source of data	Primary data on home-work distance of Dutch employees was used.
Methodologies, allocation methods and assumptions	Emission factors for passenger kilometer (pkm) for train and car transport were derived from the UK government,[38] based on WBCSD Chemicals sector guidance. Mode of transportation was assessed based on travel from home address to working location. The emissions for the Netherlands were extrapolated to Germany and Denmark based on the number of employees.

Category 9
Transport downstream

Category description	All **outbound** transportation and distribution of products sold between own operations and customers or storage locations.
Type and source of data	Primary data on total kilometers and tonnage were used. For transportation not arranged by Nobian an expert estimation was made.
Methodologies, allocation methods and assumptions	Emission factors per ton-kilometer were derived from the GLEC framework[39] that provides logistic emissions for the European chemical industry or supplier-specific emissions were available. Some emission factors for Nobian-arranged transport were corrected for payload and or % empty running for transport where accurate data were available.

Category 10 & 11
Processing & Use of sold products

Category description	**Category 10:** Emissions generated during processing of intermediate products sold. **Category 11:** Emissions that are directly emitted during the use-phase of goods and services sold.
Type and source of data	For most products, these categories are excluded as Nobian's basic chemicals are used in a wide array of products. As such there is no longer any relation between CO_2 emissions from processing and use of sold products. For a few products that also have greenhouse gas properties, emissions were included. Primary data on production was used to calculate emissions during the further processing and use of these products.
Methodologies, allocation methods and assumptions	Expert judgment and EU-wide data was used to estimate the emissions. The Global Warming Potentials (GWPs) as provided in the 6th IPCC assessment report were used to calculate the total CO_2-eq emissions.

[37] *Category 8* ***Upstream Leased Assets*** is not applicable for Nobian.

[38] UK government, Department of Business, Energy and Industrial Strategy, Greenhouse gas reporting: conversion factors 2023. Link: https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

[39] GLEC framework & Cefic: 'Calculating GHG transport and logistics emissions for the European Chemical Industry, Module 5 of the GLEC Framework written in partnership with Cefic', 2021, updated August 2023

Description and approach of Scope 3 categories | 12 & 13[40]

Category 12 **End-of-life treatment**	
Category description	Waste disposal and treatment of products sold at the end of their life.
Type and source of data	Primary data on the total volume of purchased raw materials and packaging was used.
Methodologies, allocation methods and assumptions	Based on the carbon content of the purchased raw materials/packaging, the corresponding CO_2-eq emissions per input material were calculated. The emissions of the products already reported in categories 10 and 11 were excluded.

Category 13 **Downstream leased assets**	
Category description	Operation of assets leased by the reporting company, not included in Scope 1 and Scope 2.
Type and source of data	Primary data for downstream leased assets for dry and liquid bulk storage was used.
Methodologies, allocation methods and assumptions	For bulk liquid storage, Scope 2 emissions from one vendor were extrapolated to the total tonnage of bulk stored. For dry bulk storage specific fuel use for from one vendor was extrapolated to the total tonnage.

[40] *Categories 14* ***Franchises*** and *15* ***Investments*** are not applicable for Nobian.

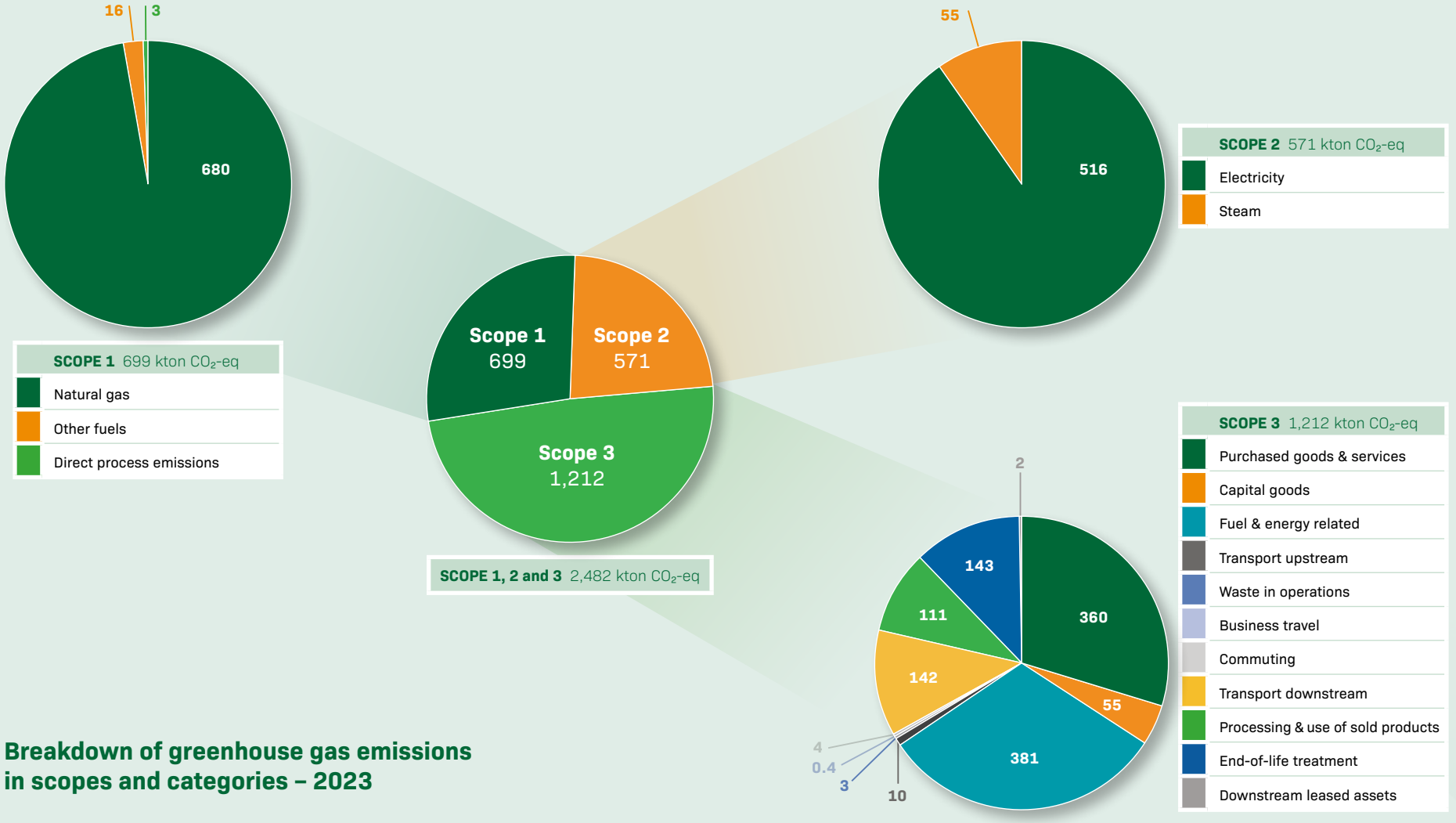
SASB Index

TOPIC	METRIC	CODE	PAGE
Greenhouse gas emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	RT-CH-110a.1	ESG Factsheet, page 58
	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	Section 3.1, page 18
Air quality	Air emissions of the following pollutants: (1) NOx (excluding N2O); (2) SOx; (3) Volatile organic compounds (VOCs); (4) Hazardous air pollutants (HAPs)	RT-CH-120a.1	ESG Factsheet, page 59
Energy management	(1) Total energy consumed; (2) Percentage grid electricity; (3) Percentage renewable; (4) Total self-generated energy	RT-CH-130a.1	ESG Factsheet, page 59
Water management	(1) Total water withdrawn; (2) Total water consumed, percentage of each in regions with high or extremely high baseline water stress	RT-CH-140a.1	ESG Factsheet, page 59
	Number of incidents of non-compliance associated with water quality permits, standards and regulations[41]	RT-CH-140a.2	ESG Factsheet, page 60
	Description of water management risks and discussion of strategies and practices to mitigate those risks	RT-CH-140a.3	Section 4.2, page 32
Hazardous waste management	Amount of hazardous waste generated; percentage recycled	RT-CH-150a.1	ESG Factsheet, page 59
Community relations	Discussion of engagement processes to manage risks and opportunities associated with community interests	RT-CH-210a.1	Section 5.2, page 45
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	ESG Factsheet, page 60
	Description of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	RT-CH-320a.2	Section 5.1, page 39
Safety and environmental stewardship of chemicals	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	RT-CH-410b.2	Section 4.4, page 35
Genetically modified organisms	Percentage of products by revenue that contain genetically modified organisms (GMOs)	RT-CH-410c.1	Zero
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	Section 5.5, page 54
Operational safety, emergency preparedness and response	Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR)[42]	RT-CH-540a.1	ESG Factsheet, page 60
	Number of transport incidents	RT-CH-540a.2	Section 4.4, page 36

[41] These incidents are included in Process safety numbers.

[42] PSISR is not used by Nobian. We use Process safety incident counts rate – level 1 as KPI for this.

Breakdown of greenhouse gas emissions



Breakdown of greenhouse gas emissions in scopes and categories – 2023

Sustainability governance

Our sustainability approach is focused on making sustainability an integral part of our strategic decisions and daily operations. For this reason, the governance structure for sustainability matters is embedded as far as possible in existing processes, controls and procedures and identifies roles and responsibilities.

Board of Directors & Corporate Responsibility Committee

The Corporate Responsibility Committee (a Board Committee) has been tasked by the Board of Directors to execute certain oversight responsibilities relating to Nobian's policies, practices and performance with respect to its corporate responsibility, including the Company's environmental, health, safety, sustainability, product quality, social policies and programs and other matters that may impact its public reputation.

Leadership Team

The Leadership Team, which is led by the CEO, sets the strategic direction for sustainability and monitors progress against the set KPI's, under the initiative and leadership of the Chief Technology and Sustainability Officer.

Sustainability core team

The central responsibility for the development of, implementation, monitoring and reporting on the sustainability program lies with the cross-functional members of the Sustainability core team. This team is headed by the Sustainability Manager. The members of the core team come from all relevant functions each having their own specific focus area for which they are responsible. Each member has a sponsor from the Leadership Team accountable for the specific focus area.

Sustainability theme	Focus area	Sustainability core team lead	Leadership Team member
Climate	CO_2-reduction	Technology Manager Energy	Chief Technology and Sustainability Officer
	Renewable energy	Director Energy	Chief Operations Officer
	Energy efficiency and storage	Technology Manager Energy	Chief Technology and Sustainability Officer
Circular	Green products	Sustainability Manager	Chief Operations Officer
	Water	Technology Manager	Chief Technology and Sustainability Officer
	Recycling	Director Innovation Program and Technology Manager	Chief Technology and Sustainability Officer
Care	Health and safety	HSE&S Specialist	Executive Vice President Integrated Supply Chain
	Community	Director Communications and Public Affairs	General Counsel
	People	Chief Human Resources Officer	Chief Human Resources Officer
Other	Sustainability reporting and assurance	Sustainability Manager	Chief Technology and Sustainability Officer
	EcoVadis, SBTI, CDP	Sustainability Coordinator	Chief Technology and Sustainability Officer
	Investor relations	Director Treasury and Investor Relations	Chief Financial Officer
	Legislation and compliance	Deputy General Counsel and Chief Compliance Officer	General Counsel
	Sourcing	Procurement Director	Executive Vice President Integrated Supply Chain

Policies

Since sustainability is an integral part of our strategic decisions and daily operation, specific items related to sustainability are integrated in the policies of the specific function where applicable, such as the procurement policy, HSE policy and Cyber security policy.

Reporting

On a yearly basis the sustainability KPIs and targets are reviewed and updated when applicable. Progress on the KPIs is reported by the team leads in the Sustainability core team meetings which are held periodically. On a quarterly basis the progress on targets is reported to the Leadership Team and the Board of Directors' Corporate Responsibility Committee by the Chief Technology and Sustainability Officer.

This appendix describes the processes through which we identify sustainability-related impacts, risks and opportunities, and assess their materiality. The assessment is an integral part of our double materiality assessment for implementing the EU Corporate Sustainability Reporting Directive (CSRD) legislation. The used methodology is in line with the European Sustainability Reporting Standards (ESRS) and the Task Force on Climate-Related Financial Disclosures (TCFD)[43] framework. The outcome of this high-level assessment, the environmental, social and governance (ESG) topics matrix, is available and shown in section 2.3.

Impacts

The impact assessment relates to how external and internal stakeholders perceive where Nobian makes the most impact (positive or negative) on society and the environment. This is called the inside-out perspective. We invited representatives from different stakeholder groups – employees, investors, public authorities, suppliers and customers – to complete an impact survey. In total 29 surveys were completed and, follow-up interviews were conducted with several stakeholders.

The survey included a ranking of 10 materiality topics as defined by CSRD legislation. The individual rankings of the survey were consolidated and resulted in an overall ranking on a scale from low (1) to high (10) impact.

Risks and opportunities

Nobian conducts a risk and opportunity assessment as part of our enterprise risk management (ERM) process, which is performed annually. We hold ERM sessions with all relevant functions and departments, and assess and rate strategic, operational, financial, compliance, HSE and reputational risks using a uniform methodology.

As such, the identification of sustainability-related impacts, risks and opportunities is fully integrated in our ERM process.

We held eight ERM sessions, each linked to a specific expertise within the organization, and a separate workshop, involving subject matter experts, to identify the relevant opportunities. We aggregated the outcome of the individual workshops to identify the overarching relevant ESG topics.

As such, within these ERM sessions, we held in-depth discussions with relevant stakeholders to identify and classify the potential risks and opportunities that could materially affect our business. The TCFD-based framework was used to assess sustainability-related impacts, risks and opportunities. The sessions identified several sustainability-related risks and opportunities, such as shift to a lower-carbon economy, extreme weather-related and volatile water levels.

Each risk and opportunity is assigned a timeline for when it could impact the company: short (within 2 years), medium (two to four years) or long (over four years). The risks were rated on potential impact and the likelihood this would happen within the stated timeframe. Similarly, the opportunities were scored according to their anticipated positive impact. The number of top risks and opportunities determines the score for the high-level ESG topics, used on the y-axis of the materiality topics matrix. We consolidated the individual rankings of the ERM sessions, resulting in an overall ranking 1 to 10 based on a combination of likelihood and impact.

[43] https://www.fsb-tcfd.org/

Three significant risks to company performance

The table below shows a summary of three of the main sustainability risks identified during the various ERM sessions that could have a significant impact on our company performance. Most of the key risks relate to the transition to low carbon technologies and fresh water shortages.

Selection of identified risks

Topic	Time span	Initiatives in place
Investment cost to transition to lower carbon emissions technology	Short	Working on tailor-made agreements with Dutch government (page 21). Innovative business models with equipment suppliers.
Access to affordable renewable energy and power purchase agreements (PPAs) for industry	Short	Consortium with other energy-intensive companies to jointly participate in offshore wind tenders. Bilateral discussions with renewable energy suppliers for PPAs (page 20).
Fresh water shortages	Short	Introduction of sustainable water management to reduce fresh water consumption, address volatile water levels and tackle issues related to water discharge (page 32).

As to the transition to low carbon technologies, the main risks to our performance are related to the substantial investments needed for the electrification of our production processes from fossil fuel-based processes, and to enable access to affordable renewable electricity. These topics form part of our discussions with the Dutch government for the tailor-made agreements for which we signed a Joint Letter of Intent in 2023.

The risks related to fresh water shortages are related to the effect of volatile water levels impacting the transport of raw materials and products, the ability to extract surface or ground water for our production process and the discharge of cooling water in summertime. In 2023 we developed a sustainable Water Management Policy, including fresh water consumption reduction targets, mitigating these risks, which has also led to several opportunities.

Three significant opportunities

Likewise, we identified several opportunities that can lead to substantial business growth and cost savings.
Three such opportunities are listed below.

Selection of identified opportunities

Topic	Time span	Initiatives in place
Accelerate reaching our climate targets supported by tailor-made agreements with the Dutch government	Short	Working on tailor-made agreements with Dutch government (page 21).
Further increasing the flex capacity of our production to help stabilize the electricity grid	Short	The current capacity available for grid stabilization is 25%. New program has started to further increase our automatic frequency restoration reserve (aFrr) capacity (page 24).
Reducing fresh water consumption and increase reusing process water (as part of sustainable water management program)	Medium	Several projects in pipeline to reduce fresh water consumption by transition to heat pump technology and expanding use of process water in brine fields by installing return pipelines (page 32).

We have a key opportunity to accelerate our Scope 1 climate targets and become an important contributor to the Dutch government's ambition to accelerate the reduction of CO_2 emissions by 55% by 2030. This also aligns with the EU's Fit for 55 plans. Next to this, we can increase our role in helping to stabilize the Dutch electricity grid, by increasing our E-flex capacity.

Finally, we see several opportunities to significantly reduce our fresh water consumption by moving to heat pump technology (mechanical vapor recompression) from fossil fuel-based technology, which will significantly reduce our energy and water consumption, and returning more process water to our brine fields by constructing return pipelines. All these projects are in our transition plans and require significant investments.

Independent assurance statement

WHEN TRUST MATTERS

Independent Limited Assurance Report

Nobian Industrial Chemicals B.V. ("Nobian" or "Group") commissioned DNV Business Assurance Germany GmbH ("DNV", "we", or "us") to provide limited assurance over the Subject Matter presented in Nobian's Sustainability Report 2023 ("Report") for the reporting year ending 31st December 2023.

Our observations and areas for improvement will be raised in a separate report to Company's Management. Selected observations are provided below. These observations do not affect our conclusions set below.

Overall, for the performance data in scope, we have confidence in the processes and systems to ensure the information presented in the Report is accurate. Nobian has demonstrated enhancements in its data collection practices and consolidation approach. Observations by DNV indicate a noticeable improvement in the efficiency of audit trails across all visited sites and key performance indicators. Nobian has expressed and shown a strong commitment to comprehensively document its data collection procedures to further facilitate forthcoming sustainability reporting and audit activities.

Subject Matter

The scope and boundary of our work is restricted to the following areas (collectively the "Subject Matter"):

1. Selected information

The performance indicators included within the Report (the "Selected Information"), listed below:

- Scope 1 emissions (kton CO2-eq)
- Scope 2 emissions (kton CO2-eq)
- Total emissions: Scope 1 and 2 (kton CO2-eq)
- Scope 1 emissions under regulated emissions trading schemes (ETS)(% of direct emissions)
- Total Scope 3 emissions (kton CO2-eq)
- Category 1: Purchased goods and services (kton CO2-eq)
- Category 2: Capital goods (kton CO2-eq)
- Category 3: Fuel and energy related activities (kton CO2-eq)
- Category 4: Upstream transport and distribution (kton CO2-eq)
- Category 5: Waste generated in operations (kton CO2-eq)
- Category 6: Business travel (kton CO2-eq)
- Category 7: Employee commuting (kton CO2-eq)
- Category 9: Downstream transportation and distribution (kton CO2-eq)
- Category 10 and 11: Processing of sold products and use of sold products (kton CO2-eq)
- Category 12: End-of-life treatment of sold products (kton CO2-eq)
- Category 13: Downstream leased assets (kton CO2-eq)
- Total emissions: Scope 1, 2 and 3 (kton CO2-eq)
- Total energy consumption (GWh)
- Percentage renewable energy (%)
- Percentage renewable electricity (%)
- Percentage renewable steam (%)
- Percentage grid energy (%)
- Total self-generated electricity (GWh)
- Total self-generated steam (GWh)
- NOx absolute emissions (ton)
- SOx absolute emissions (ton)
- Volatile Organic Carbon (VOC) emissions (ton)
- Chemical Oxygen Demand (COD) emissions (ton)
- Fresh water intake (1000 m3)
- Fresh water consumption (1000 m3)
- Fresh water consumption in stressed regions (1000 m3)
- Total waste (ton)
- Hazardous waste (ton)
- Of which disposed to landfill (ton)
- Percentage reusable hazardous waste (%)
- Total sales volume (kton)
- Manufacturing sites with ISO 14001/RC-14001 certifications (%)

Our competence, independence and quality control

DNV established policies and procedures which are designed to ensure that DNV, its personnel and, where applicable, others are subject to independence requirements (including personnel of other entities of DNV) and maintain independence where required by relevant ethical requirements. This engagement work was carried out by an independent team of sustainability assurance professionals. Our multi-disciplinary team consisted of professionals with a combination of environmental and sustainability assurance experience.

WHEN TRUST MATTERS

- Global headcount Nobian employees (#)
- Gender diversity in the workforce (M/F) (%)
- Gender diversity in senior positions (M/F) (%)
- Employee turnover rate (voluntary and involuntary) (%)
- Total reportable incident rate (TRR) for employees, temporary workers and contractors (per 1,000,000 hours worked)
- Lost time injury rate (LTIR) for employees, temporary workers and contractors (per 1,000,000 hours worked)
- Total reportable incident rate (TRR) for employees, temporary workers (per 1,000,000 hours worked)
- Lost time injury rate (LTIR) for employees, temporary workers (per 1,000,000 hours worked)
- Total reportable incident rate (TRR) for contractors (per 1,000,000 hours worked)
- Lost time injury rate (LTIR) for contractors (per 1,000,000 hours worked)
- Fatalities (per 1,000,000 hours worked)
- Process safety incident counts - level 1 (#)
- Process safety incident counts rate - level 1 (per 1,000,000 hours worked)
- Process safety incident counts - level 2 (#)
- Process safety incident counts rate - level 2 (per 1,000,000 hours worked)
- Process Safety Total Incident Rate (PSTIR) combined (per 1,000,000 hours worked)
- % of manufacturing sites with ISO 45001 certification (%)
- Directors (#)
- Average director tenure (years)
- Independent directors (#)
- Gender diversity of the board (M/F) (%)
- Frequency of board updates on ESG (frequency)
- Board oversight of climate strategy (Y/N)
- Members of the leadership team (#)
- Gender diversity of the leadership team (M/F) (%)

To assess the Selected Information, which includes an assessment of the risk of material misstatement in the Report, we have used Nobian's Basis of Reporting (the "Criteria"), which can be found on pages 63-68 (online version) and pages 68-73 (print version) of the Report.

2. SASB Indicators

RT-CH-110a.1, RT-CH-110a.2, RT-CH-120a.1, RT-CH-130a.1, RT-CH-140a.1, RT-CH-140a.2, RT-CH-140a.3, RT-CH-150a.1, RT-CH-210a.1, RT-CH-320a.1, RT-CH-320a.2, RT-CH-410b.2, RT-CH-410c.1, RT-CH-530a.1, RT-CH-540a.1, RT-CH-540a.2

We have not performed any work, and do not express any conclusions, on any other information outside of the Subject Matter that may be published in the Report or on Nobian's website for the current reporting period or for previous periods.

Our conclusions

1. Selected Information

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Selected Information is not fairly stated and has not been prepared in all material respects, in accordance with the Criteria. This conclusion relates only to the Selected Information and is to be read in the context of this Independent Limited Assurance Report, in particular the inherent limitations.

2. SASB Indicators

Based on the work undertaken, nothing has come to our attention that causes us to believe that the Selected Indicators are not fairly stated and has not been prepared in all material respects in accordance with the Industry standard Chemicals Sustainability Accounting Standard 2023 (version 2023-12), issued by the International Sustainability Standards Board (ISSB).

Inherent limitations

All assurance engagements are subject to inherent limitations as selective testing (sampling) may not detect errors, fraud or other irregularities. Non-financial data may be subject to greater inherent uncertainty than financial data, given the nature and methods used for calculating, estimating and determining such data. The selection of different, but acceptable, measurement techniques may result in different quantifications between different entities.

Our assurance relies on the premise that the data and information provided to us by Nobian have been provided in good faith. DNV expressly disclaims any liability or co-responsibility for any decision a person or an entity may make based on this Independent Limited Assurance Report.

Responsibilities of the Management of Nobian and DNV

The Directors of Nobian have sole responsibility for:

- Preparing and presenting the Selected Information in accordance with the Criteria;
- Designing, implementing and maintaining effective internal controls over the information and data, resulting in the preparation of the Selected Information that is free from material misstatements;
- Measuring and reporting the Selected Information based on their established Criteria; and Contents and statements contained within the Report and the Criteria.

Our responsibility is to plan and perform our work to obtain limited assurance about whether the Selected Information has been prepared in accordance with the Criteria and to report to Nobian Group in the form of an independent limited assurance conclusion, based on the work performed and the evidence obtained. We have not been responsible for the preparation of the Reports.

WHEN TRUST MATTERS

Standard and level of Assurance

We performed our work using DNV's assurance methodology VeriSustain™, which is based on our professional experience and international assurance best practice including the International Standard on Assurance Engagements 3000 ("ISAE 3000"). We planned and performed our work to obtain the evidence we considered necessary to provide a basis for our Assurance Opinion. We are providing a 'limited level' of assurance.

DNV applies its own management standards and compliance policies for quality control, which are based on the principles enclosed within ISO IEC 17029:2019 – Conformity Assessment – General principles and requirements for validation and verification bodies, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

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 the level of assurance obtained is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. We planned and performed our work to obtain the evidence we considered sufficient to provide a basis for our opinion, so that the risk of this conclusion being in error is reduced but not reduced completely.

Basis of our conclusion

1. Selected Information

We are required to plan and perform our work in order to consider the risk of material misstatement of the Selected Information; our work included, but was not restricted to:

- Conducting interviews with Nobian's management, to obtain an understanding of the key processes, systems and controls in place to generate, aggregate and report the Selected Information;
- Conducting an on-site visit to the headquarter in Amersfoort, and on-site visits to Hengelo (Netherlands) and Mariager (Denmark), and teleconferences with different sites including the headquarter to review processes and systems for preparing site level data consolidated at Group level. We were free to choose the sites on the basis of their material contribution to Nobian's data;
- Performing limited substantive testing on the most significant contributors, to check that their data had been appropriately measured, recorded, collated and reported;
- Reviewing that the evidence, measurements and the context provided to us by Nobian for the Selected Information is prepared in line with the Criteria;
- Assessing the appropriateness of the Criteria for the Selected Information;
- Reading the Report and narrative accompanying the Selected Information within it with regard to the Criteria; and
- Review of supporting evidence for key claims in the Report; our checking process prioritized the most material claims at a group level.

2. SASB Indicators

We are required to plan and perform our work in order to form an opinion over the reporting of selected indicators in accordance with the Industry standard Chemicals Sustainability Accounting Standard 2023 (version 2023-12), issued by the International Sustainability Standards Board (ISSB).

For and on behalf of DNV Business Assurance Germany GmbH

Oliver Bley
Reviewer

Timothy Bankroff
Lead Verifier

Essen, Germany
6 May 2024

DNV Business Assurance Germany GmbH is part of DNV – Business Assurance, a global provider of certification, verification, assessment and training services, helping customers to build sustainable business performance. www.dnv.com

Assurance Statement Number: DNV-2024-ASR-691920
DNV Business Assurance Germany GmbH – Wolbeckstr. 25, 45329 Essen, Germany

Glossary

A

Aqueduct Water Risk Atlas A water risk mapping tool to help companies, investors, governments, and other users understand where and how water risks and opportunities are emerging.

B

Basel Convention The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was created to protect people and the environment from the negative effects of the inappropriate management of hazardous wastes worldwide.

BBS (Behavior Based Safety) Behavior based safety (BBS) is a proactive approach to increasing safe behavior in an area. BBS focuses on reducing hazards, risks, and incidents by observing the behavior of a person and determining what follows when this behavior occurs.

Brine Water saturated with salt.

C

Carbon neutral Carbon neutrality is reached when the same amount of CO_2 is released into the atmosphere as is removed by various means.

CDP CDP is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts.

CEFIC European Chemical Industry Council.

CertifyHy CertifHy has developed high-quality hydrogen certification schemes across Europe.

CMS 70 Green Hydrogen certification standard from TÜV SÜD.

CO_2 Carbon dioxide.

CO_2-eq Carbon dioxide equivalent is used to compare the emissions from various greenhouse gases on the basis of their global warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

Corporate Sustainability Reporting Directive (CSRD) The Corporate Sustainability Reporting Directive (CSRD) requires companies to report on the impact of corporate activities on the environment and society, and requires the audit (assurance) of reported information.

D

DE&I Diversity, equity, and inclusion are three closely linked values held by many organizations that are working to be supportive of different groups of individuals, including people of different races, ethnicities, religions, abilities, genders, and sexual orientations.

DNV Independent expert in assurance and risk management and one of the world's leading certification bodies.

E

EcoVadis A globally recognized assessment platform that rates businesses' sustainability based on four key categories: environmental impact, labor, and human rights standards, ethics, and procurement practices.

E-flex E-flex is the flexible use of electricity based on renewable energy supply and demand, helping to stabilize the grid.

Enterprise Risk Management (ERM) Enterprise risk management is the process of identifying and addressing methodically the potential events that represent risks to the achievement of strategic objectives, or to opportunities to gain competitive advantage.

Environmental Product Declaration (EPD) An Environmental Product Declaration transparently reports objective, comparable and third-party verified data about products and services' environmental performances from a life-cycle perspective.

ESG ESG stands for environmental, social and governance. These are called pillars in ESG frameworks and represent the three main topic areas that companies are expected to report in.

ESRS European Sustainability Reporting Standards.

F

Fit for 55 The EU's commitment to reduce its net greenhouse gas emissions by at least 55% by 2030.

G

GHS Globally Harmonized System of Classification and Labeling of Chemicals. It is a system for harmonizing hazard classification criteria and chemical hazard communication elements worldwide.

GLEC The GLEC Framework is the global method for the calculation and reporting of logistics emissions.

Green chemistry Green chemistry is the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Green chemistry applies across the life cycle of a chemical product, including its design, manufacture, use, and ultimate disposal.

Green hydrogen Green hydrogen is hydrogen produced by the electrolysis of water, using renewable electricity.

Greenhouse Gases (GHG) Gases, such as carbon dioxide, that trap heat in the atmosphere are called greenhouse gases.

I

IPCC The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.

ISCC+ ISCC PLUS certification is a voluntary scheme that is applicable for the bioeconomy and circular economy for food, feed, chemicals, plastics, packaging, textiles and renewable feedstock derived from a process using renewable energy sources.

L

Life Cycle Assessment (LCA) A Life Cycle Assessment calculates the environmental impact of products or services throughout their entire life-cycle.

LTIR Lost Time Incident Rate (LTIR) is a metric used to record the average number of incidents leading to an employee being unable to work for a minimum of one day during a set period.

M

Materiality assessment An ESG materiality assessment is a process through which an organization identifies the ESG issues that are the most relevant and critical — and thus, material — to its operations, its success and its stakeholders.

N

NO_x NO_x is shorthand for nitric oxide (NO) and nitrogen dioxide (NO_2).

P

Paris Agreement The Paris Agreement is a legally binding international treaty on climate change. It was adopted in Paris, France, on 12 December 2015.

Power Purchase Agreement (PPA) A long-term electricity supply agreement between two or more parties, usually between a power producer and a customer.

Product Stewardship An approach to managing the environmental impacts of different products and materials and at different stages in their production, use and disposal.

R

REACH Registration, Evaluation, Authorisation and Restriction of Chemicals. REACH is a European Union regulation and addresses the production and use of chemical substances, and their potential impacts on both human health and the environment.

Responsible Care Responsible Care is the chemical industry's ethical commitment to improving safe production, handling and use of chemicals across the supply chains.

S

Science Based Targets initiative (SBTi) The Science Based Targets initiative (SBTi) is a corporate climate action organization that develops standards, tools and guidance which allow companies to set greenhouse gas emissions reductions targets.

Scope 1, 2 and 3 emissions
Scope 1 emissions are direct greenhouse (GHG) emissions that occur from e.g. fuel combustion or chemical processes.
Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling.
Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly affects in its value chain.

SO_x Sulfur oxides are compounds made up of sulfur and oxygen.

Sustainability Accounting Standards Board (SASB) SASB Standards help companies disclose relevant sustainability information to their investors.

T

TCFD Taskforce on Climate-Related Financial Disclosures with the aim to improve and increase reporting of climate-related financial information.

TRR Total Reportable Injury Rate, reflecting the number of recordable injuries.

U

UN Sustainable Development Goals The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

V

Value chain A value chain refers to the full life-cycle of a product or process, including material sourcing, production, consumption and disposal/recycling processes.

W

World Business Council for Sustainable Development (WBCSD) The World Business Council for Sustainable Development (WBCSD) brings together transformational organizations to form a global community that shifts the systems they work within towards a better future.

Colophon

Cautionary statement and reference information

This report contains forward-looking statements which are subject to risks and uncertainties, and actual results and events may differ considerably from those expressed within them. Many of these risks and uncertainties relate to factors that Nobian is unable to control or estimate precisely, such as future market and economic conditions, the behavior of other market participants, costs of raw materials, changes in law, technological developments and legal judgments and stipulations of regulatory bodies that affect the activities of Nobian. You are cautioned not to place undue reliance on these forward-looking statements. Nobian does not undertake any obligation to update the forward-looking statements contained in this report.

This report is a Nobian publication

Nobian Industrial Chemicals B.V.
Van Asch van Wijckstraat 53
3811 LP Amersfoort
The Netherlands

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Utrecht, The Netherlands

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Zeeman+Beemster
Amsterdam, The Netherlands

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4d Impact
London, United Kingdom

NOBIAN

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