

5N+

Our Path Towards a Sustainable Future

2023 Sustainability Report

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OVERVIEW



CHAIR AND CEO MESSAGE TO STAKEHOLDERS

Our Path Towards a Sustainable Future

It is our pleasure to present our 2023 Sustainability Report, the follow-up to our inaugural report issued last year. Our entire team is committed to ensuring we do more to create a sustainable future at all levels and in all aspects of our organization, while also working in collaboration with our business partners to continually strengthen the sustainability of our supply chain.

In 2023, we undertook several assessments and launched new initiatives as we advance our climate and environment-related priorities. Notably, we completed climate risk assessments for all our manufacturing sites and our first financial impact assessment to better understand how our business might be affected in different climate scenarios. The information we gained from these assessments has further informed our Enterprise Risk Management processes and the ongoing development of action plans that better manage and mitigate risks to our operations.

With this report, we also published, for the first time, our Scope 1 and Scope 2 GHG emissions. In 2024, we will complete our GHG inventory management plan to improve the accuracy of our Scope 3 emissions ahead of their disclosure. This will be another key step in laying the foundation for the development of long-term carbon footprint reduction strategies that we aim to align with emerging regulations, including the European Green Deal and the Corporate Sustainability Reporting Directive (CSRD) disclosure requirements.

The safety and well-being of our employees, as well as maintaining engaging work environments remain our top priorities. We continued to provide our employees with career development opportunities, while recognizing the critical contributions they make.

From a governance perspective, building on our Code of Business Conduct and Whistleblower Policy, in 2023 we adopted a Human Rights Statement and in early 2024, published our first report on the fight against forced labour. These policies and related disclosures all officially establish the high standards to which we hold all members of the 5N+ team – as well as our suppliers – when it comes to human rights, among other ethics standards. These expectations will be further formalized with the planned development and launch of a dedicated Supplier Code of Conduct in 2024.

As we look ahead, we are mindful of emerging regulations and expectations in North America and Europe where the majority of our operations are located. With an objective of meeting or exceeding industry standards and regulations, we will continue to assess our operations and collaborate with our business partners to establish new initiatives and goals that will further advance us on our sustainability path. As we continue to evolve and improve, we look forward to further engaging with our stakeholders and providing annual updates on the factors that matter to you.

Gervais Jacques
President and CEO

Luc Bertrand
Chair of the Board



SUSTAINABILITY HIGHLIGHTS

62%

reduction in work-related incidents since 2019

4,716

EHS training hours, or 12% increase over 2022

44%

reduction in process water consumption since 2019

First

disclosure of Scope 1 and 2 GHG emissions

27%

female representation among corporate office globally

40%

female representation maintained on Board of Directors



A CRITICAL SUPPLIER, COMMITTED TO SUSTAINABLE PRACTICES

5N+ At a Glance

Mission

To be critical to our customers, valued by our employees and trusted by our shareholders.

Vision

To enable critical industries through essential products based on advanced material technology.

Values

- Commitment
- Continuous improvement
- Customer focus
- Health and safety
- Integrity
- Sustainable development

US\$242 million

in revenues in 2023 across two segments:
Specialty Semiconductors and Performance Materials

Market leader

providing advanced materials for renewable energy, solar power, imaging and sensing, pharmaceutical and technical applications

800 employees

and operations on three continents

Global Presence

North America

Canada

Montréal ●●●

United States

Bridgeport ●●

St. George ●●●

Europe

Germany

Eisenhüttenstadt ●

Heilbronn ●●●

Lübeck ●●●

Asia

China

Hong Kong ●

Shangyu ●●

Laos

Vientiane ●

Malaysia

Kulim ●

● Commercial Activities

● Manufacturing

● Research & Development

#1 supplier

of bismuth-based active pharmaceutical ingredients, representing 75% of global demand^[1]

8 manufacturing sites

and

4 R&D centres

strategically located around the globe close to customers and suppliers

[1] Based on management estimates



A Sustainable Business Model

5N+ is committed to being a reliable source for specialty semiconductors and performance materials enabling innovative products critical to our everyday lives, from converting solar power into electricity to active pharmaceutical ingredients. As we pursue our growth, maintaining a leading edge in material technologies serving large, diversified and high-growth end markets is a cornerstone of our strategy.

In addition to enabling many industries essential to a sustainable future, we apply a sustainability lens to our own operations, our supply chain and practices. Our operations hold several recognized certifications to demonstrate this commitment to high standards in health and safety, quality, energy, environment and resource management.

ISO Certifications

	ISO 9001 Quality Management	ISO 14001 Environmental Management	ISO 45001 Health and Safety Management	ISO 50001 Energy Management
Eisenhüttenstadt (Germany)	◆	◆		◆
Heilbronn / AZUR SPACE (Germany)	◆	◆	◆	
Lübeck (Germany)	◆			◆
Montréal (Canada)	◆	◆	◆	
Shangyu (China)	◆	◆	◆	
St. George (USA)	◆			

Other Certifications

- Lübeck is a U.S. Food and Drug Administration (FDA) approved facility and meets Good Manufacturing Practices (GMP) requirements.
- Heilbronn / AZUR SPACE is EN 9100 (Quality Management System for Aviation Space & Defence) certified. Key space products are qualified to European (ECSS) and U.S. (AIAA) standards, and concentrated photovoltaic products are manufactured in accordance to the International Electrotechnical Commission (IEC) standards.

Go to www.5nplus.com to find out more about our wide range of enabling advanced materials and primary end markets.

A Sustainable and Closed Loop Business Model

We also take an integrated, lifecycle approach to materials management. This includes recycling, repurposing and remanufacturing materials, as well as utilizing degraded resources from other industries in our own manufacturing processes. From upcycling mining byproducts into useful products to recycling our process water, we are always looking for new ways to reduce our footprint and integrate circular economy principles into our practices.





SUSTAINABILITY ROADMAP PROGRESS

For 2023, our approach to sustainability and our focus areas remained consistent with those outlined in our inaugural 2022 Sustainability Report, including the material topics derived from the initial materiality assessment on which it was based. A double materiality assessment is planned for 2024, which will help us further fine-tune our approach and material topics, in line with recognized ESG standards.

As a Canadian publicly listed company with a large proportion of its operations in North America and Europe, we are paying particular attention to the rapidly evolving regulatory environment and anticipated ESG disclosure requirements, such as the European Green Deal, CSRD disclosure requirements and the International Sustainability Standards Board (ISSB) IFRS S1 and S2 standards, among other relevant regulations. In this context, we continue to consider Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), Task Force on Climate-Related Financial Disclosures (TCDF) as well as European Sustainability Reporting Standards (ESRS) recommended disclosures.

We continue to evolve our roadmap, including through improved tracking and monitoring, as we seek to enhance our disclosure over time. Our current roadmap and the extensive assessments we have underway are designed to give 5N+ a strong foundation for enduring sustainability – leveraging the commitment to sustainability already ingrained in our DNA, while ensuring that we can meet evolving expectations and requirements. We continue to make steady progress, as outlined on the following page, while also recognizing that there is more work to be done.

See [Appendix](#) for more information on our materiality topics and the ESG standards considered in the preparation of this Sustainability Report. See [Governance](#) section for more information on our ESG governance.



SUSTAINABILITY ROADMAP PROGRESS

		Material Topics
Environment	<p>Operating our business in a responsible manner is not just about meeting and exceeding regulatory requirements, it also makes good business sense. When we reduce our environmental impact through sustainable business practices and a commitment to the circular economy, we strengthen our value chain.</p> <p>In 2023, we completed climate risk assessments across our entire manufacturing footprint and our first financial impacts analysis based on various climate scenarios. We are also pleased to include our first disclosure on GHG emissions (Scopes 1 and 2), laying the foundation for the future development of a carbon footprint reduction plan.</p>	<ul style="list-style-type: none"> Climate Change GHG Emissions and Carbon Footprint Energy Management Water Management By-product and Waste Management Safety and Environmental Stewardship of Chemicals Air Quality Circular Economy and Product Lifecycle Management
Social	<p>At 5N+, we have an unwavering commitment to people, both inside the organization and in the communities in which we operate. From health and safety standards to talent development internally to safeguarding human rights in our supply chain, we know people are key to our growth and success.</p> <p>In 2023, we continued to maintain strong health and safety policies, as well as programs that support career development for our employees. Externally, we looked to engage more deeply with our suppliers and take additional measures to safeguard human rights in our supply chain.</p>	<ul style="list-style-type: none"> Health and Safety Compensation and Benefits Talent Development Inclusion and Diversity Human Rights and Supplier Engagement Community Engagement
Governance	<p>5N+ believes that setting the standards for good business practices, from ethical behaviour to a sustainable and responsible business model, comes from the top but with accountability at every level.</p> <p>In 2023, we continued to strengthen our ESG governance framework and risk oversight. From a policy perspective, we adopted a Human Rights Statement and committed to deploying a dedicated Supplier Code of Conduct in 2024.</p>	<ul style="list-style-type: none"> Corporate Governance Business Ethics ESG Governance

ENVIRONMENT



CLIMATE CHANGE

At 5N+, we continue to deepen our understanding of the potential physical and transition risks that result from climate change which could impact our operations and business. The aim is to further develop strategies that will increase our preparedness, mitigate risk and build resilience.

Our risk identification and management of climate risks and opportunities rely on our enterprise risk assessment process. In 2023, we completed the climate risk assessments of all manufacturing sites (as further described below), alongside conducting related financial impact assessment and climate scenario analyses. The findings are shaping our strategy development for the years ahead. As a result of the foregoing, we have increased our alignment with the TCFD recommendations by improving our governance, strategy, risk management and metrics and targets around climate-related risks and opportunities, while also enhancing related disclosure.

Site-Specific Climate Risk Assessments

In 2022, we launched a comprehensive climate risk assessment program to identify the climate-related physical and transitional risks to the business. The objective was to proactively manage these risks through our Enterprise Risk Management (ERM) process, which is updated bi-annually.

Our climate risk assessment program begins with a review of site-specific strengths, weaknesses, opportunities and threats, using relevant models and climate-related scenarios. We assessed climate risks based on the geographical location of each site to anticipate future challenges, while also considering local policies that might impact our operations. In addition, we assessed our existing insurance policies against these risks to ensure we have adequate coverage.

In 2022, site-specific climate risk assessments were completed in Montreal, St. George, Eisenhüttenstadt, Lübeck, Heilbronn and Shangyu. In 2023, we concluded the climate risk assessments in Bridgeport and Vientiane, thereby completing assessments for all sites.

Findings

Based on a review of our findings, we have determined that our manufacturing sites face moderate to low physical risks in relation to flooding, earthquakes, landslides, cyclones, water scarcity, extreme heat, wildfire and other environmental challenges over the medium and long term (2030 and 2040). In terms of transition risks, our monitoring across the jurisdictions in which we operate suggests that we are currently in compliance, or alternatively, that government targets have not yet been fully implemented.

We have since then incorporated these risks into our environmental risk monitoring and action planning activities, so we can be better prepared to face future challenges and strive to minimize negative climate-related impacts on our operations.



Financial Impacts Assessment and Climate Scenario Analysis

In 2023, as an extension of our site-specific climate risk assessments, we initiated a transition risk assessment of the related potential financial impacts on our business. Specifically, we examined potential financial impacts in the context of a shift towards a low-carbon economy or other climate-related policy changes, and against three climate scenarios outlined by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS).

Our financial impact assessment aimed to proactively identify and evaluate policy risks until 2050, assuming that we take no climate action or mitigation measures under various climate scenarios. The assessment looked at short-, medium- and long-term horizons (2025, 2030, 2040 and 2050). We simulated the growth rate of 5N+ using historical data and forecasting through software modeling. The study focused on the cost impact of electricity, natural gas and carbon taxes, as they are likely to be critical to our operations, the most sensitive to climate-related change and within our control to adjust with the appropriate strategies in place.

Findings

Our financial impact assessment allows us to better understand how our operations could be affected if we take no climate action, thereby establishing a baseline under each scenario analyzed. Over the next few years, our aim is to develop action plans that respect the risks to our operations identified through this exercise.

Climate-related Opportunities

Our climate risk assessments to date are primarily focused on risks, but nonetheless provide visibility on potential climate-related opportunities.

We believe 5N+ remains well-positioned to capitalize on opportunities from a technology and product opportunity standpoint. Foremost, we are a trusted partner providing enabling materials to industries considered critical to the energy transition, such as renewal energy. In addition, our advanced materials are essential for other critical applications related to human health, such as medical imaging and active pharmaceutical ingredients, as well as defense and security applications, such as for infrared sensing and communication satellites, and space science and exploration. However, transition risks remain, for example in the areas of procurement and of critical metals, and a full assessment is in progress.

Next Steps

Our climate assessment work to date has enabled us to enhance our risk management processes by allowing us to better understand and further integrate potential physical and transition risks into business decision-making. While the work is ongoing and we continue to make progress in this regard, we have a much fuller picture of how climate-related changes might affect our operations and business model over the short-, medium- and long-term.

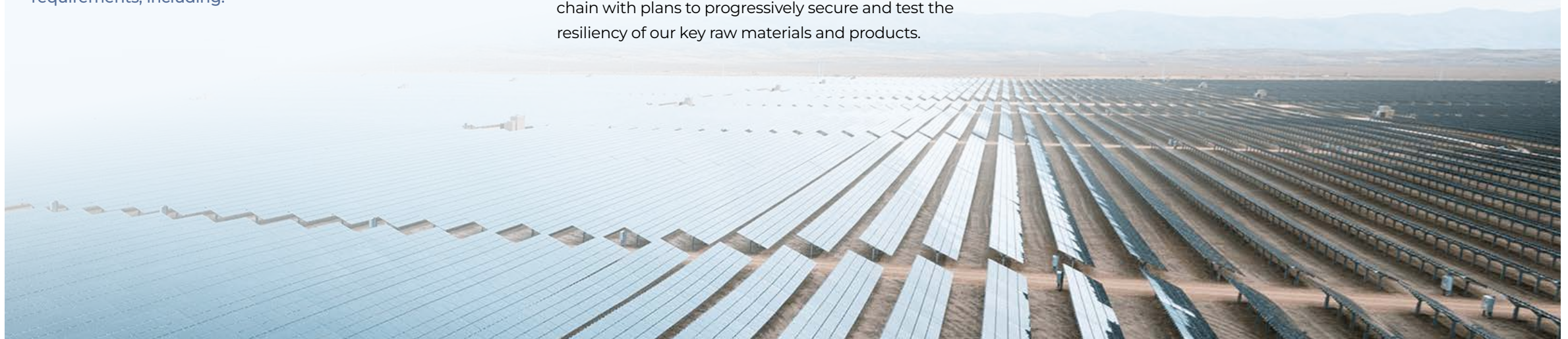
As we deepen our knowledge through this kind of exercise, additional transition risks, such as reputational, supply chain and sourcing related, customer pressure, technology and market, are intended to be added to our ongoing assessment work. We also continue to monitor relevant regulatory changes or government environmental targets that could impact our sites and business. This includes, but is not limited to, targets on reduction of GHG emissions, ultra-low carbon industrial processes and other green economy initiatives.

5N+ European Green Deal Roadmap

The European Green Deal is the response of the European Union to the Paris Agreement to transform the European Union into a modern, resource-efficient and competitive economy, with a core goal of no net GHG emissions by 2050.

The European Green Deal's set of proposals aims to reduce GHG emissions and minimize the use of resources while achieving economic growth. It is expected to have a direct impact on 5N+ and our three operating plants in Europe in the areas of transportation, environment, energy management, financing, building and resource management. To prepare for those anticipated future impacts, 5N+ has put in place several actions and initiatives to ensure its readiness for anticipated regulatory requirements, including:

- Tracking of industry developments through participation in relevant consortiums and software-powered monitoring of regulations to ensure timely notification of legislation that may impact us.
- Roadmap deployment aligned with the EU regulatory developments based on our assessment of upcoming requirements and resource planning before they become legally binding.
- Assessment underway to align R&D activities with the principles of the safe and sustainable by design framework of the EU Chemical Strategy for Sustainability.
- Assessing exposure to per – and polyfluoroalkyl substances (PFAS) as a first step to ensure the resiliency of our supply chain with plans to progressively secure and test the resiliency of our key raw materials and products.
- Planned assessment of our supply chain and potential partners with whom we can work to improve waste-to-resources and reuse circular economy strategies.
- Planned development of an environmental management program compatible with the zero-pollution action plan strategy and milestones to enhance our environmental performance.
- Impact assessment underway of our key contributors to GHG emissions and identification of solutions for their substitution.





GHG EMISSIONS AND CARBON FOOTPRINT

Since its founding, 5N+ has diligently monitored and continuously refined its environmental impact and energy consumption monitoring mechanisms, including through the accurate measurement and tracking of key data points.

In 2023, we completed the first comprehensive calculation of our Scope 1 and 2 GHG emissions, in line with the GHG Protocol. This is a first major step in laying the foundation for the future development of a carbon footprint reduction plan to meet emerging regulatory requirements and policies, such as those outlined in the European Green Deal. As we develop our plans, we intend to adopt targets which are science-based by following the guidance of the Science Based Targets initiative (SBTi).

Scope 1 and 2 GHG Emissions

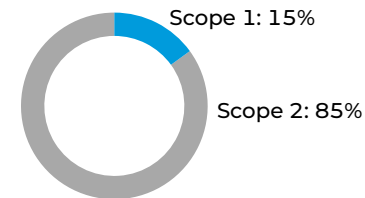
Scope 1 emissions are direct GHG emissions that occur from sources that are owned or controlled by 5N+. For 5N+, these include stationary combustion, mobile combustion, refrigerants and fugitives from all our sites, as well as from company-owned vehicles. Scope 2 are indirect emissions from the generation of purchased electricity consumed by 5N+. This is primarily comprised of purchased (grid) electricity for consumption within our operations, as well as from steam, heat and cooling as a result of our industrial processes.

While we have not set a formal target for absolute GHG emissions, the steps we are taking on an ongoing basis to achieve reductions include driving energy efficiency in our manufacturing processes, investing in low-carbon technologies and increasing our use of renewable energy sources.

GHG Emissions by Scope
(tons of CO₂e)

Scope 1	2,522
Scope 2	14,014

GHG Emissions Breakdown



Scope 3 GHG Emissions

Scope 3 emissions are indirect emissions from our activities, but that occur from sources not owned or controlled by 5N+.

In 2024, we will develop a GHG inventory management plan to improve the accuracy of our Scope 3 emissions ahead of our disclosure. This baseline will help inform the future development of data-driven reduction strategies, which we will continue to develop in 2025 and in the years to come. While Scope 1 and 2 emissions are more directly within our control, we recognize that the close collaboration of our suppliers will be required to have an impact on Scope 3 emission reductions.

Refining our understanding of our value chain and associated emissions will be an ongoing process. Our plan includes continual assessment and updates to identify and implement opportunities for enhanced data granularity and transparency.



ENERGY MANAGEMENT

5N+ is committed to improving its energy efficiency, including through the implementation of new technologies and processes in our manufacturing. We also seek to increase our sources of renewable energy wherever possible.

Electricity Consumption (MWh)



7% decrease compared to 2022

In 2023, electricity consumption decreased by 7% as a result of the divestiture of our former Tilly, Belgium site, offset by higher consumption in Eisenhüttenstadt, Lübeck and Montreal due to increased production.

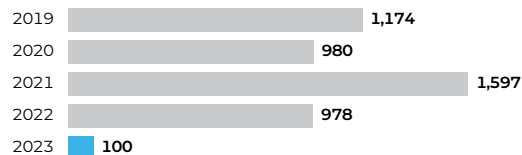
Natural Gas Consumption (m³)



13% increase compared to 2022

Natural gas consumption rose 13% for 2023, primarily due to the commissioning of new equipment in Lübeck and Montreal.

Diesel Consumption (m³)



90% decrease compared to 2022

Finally, we significantly decreased our diesel consumption also as a result of the Tilly, Belgium site wind down and divestiture. The consumption of diesel across our current footprint is now minimal.

ISO Certifications: High Standards of Accountability

Two of our three German sites, in addition to our Montreal and Shangyu plants, are all ISO 14001 certified for Environment Management. In addition, two of our German sites are ISO 50001 certified for Energy

Management. To spur further efficient use of energy across our European operations, we began the process of implementing the ISO 50001 energy management system standard for our Heilbronn, Germany site (AZUR SPACE), acquired in November 2021.

Green Electricity Contract in Lübeck

5N+ signed a contract to supply its Lübeck, Germany site with renewable energy, part of our efforts to ensure the responsible use of energy, while reducing our carbon footprint. Our utilities services provider, EVH GmbH, has certified the delivery of renewable energy to Lübeck for calendar 2024. The planned delivery volume is 3.8 GWh/year of certificates from renewable sources in the Guarantee of Origin register (HKNR) in accordance with the OK POWER ecolabel.

A portfolio management system certified to clean energy TÜV SÜD CMS 93 standard is used to process and monitor their green electricity supply. This system guarantees the reliability and traceability of the supply, as well as balancing and delivery of electricity generated from renewable energy. As an independent auditor, TÜV Süd annually verifies the quantities of green electricity supplied by EVH GmbH.





WATER MANAGEMENT

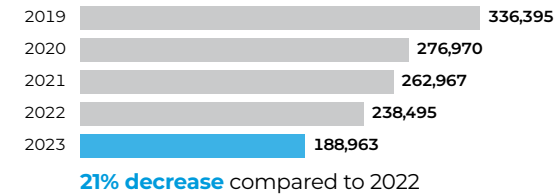
Water is a valuable and limited resource, and we are actively implementing process water usage and wastewater discharge reduction initiatives, as well as water reuse strategies across our operations.

Several of our facilities have their own wastewater treatment plants, which is not only more cost efficient, but also enables further upcycling and reuse of water and wastewater within our operations by operating a closed loop system. Currently, our three sites in Germany, as well as our Shangyu, China plant, operate their own water treatment plants. In Eisenhüttenstadt and Shangyu, zero wastewater is discharged thanks to onsite wastewater reuse.

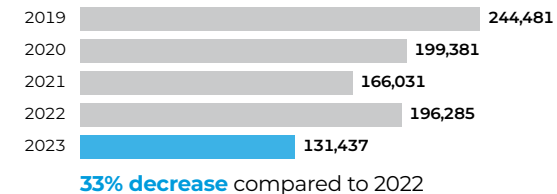
For sites that do not operate a closed loop system, such as Heilbronn and Lübeck, we ensure compliance with applicable environmental water discharge best practices. Trusted partners are selected to ensure compliance with environmental protection laws and regular performance audits are carried out. We continue to evaluate the feasibility of implementing wastewater treatment plants at sites that do not have one, currently prioritizing Montreal.

Process water consumption and wastewater discharged in 2023 benefitted from the wind down and divestiture of our former Tilly site. However, water consumption increased in Montreal due to increased production and recycling operations. Wastewater discharges also increased in Montreal because of the start-up of recycling operations.

Process Water Consumption^[1] (m³)



Wastewater Discharged (m³)



[1] Includes Heilbronn, Germany (AZUR SPACE) since 2022



BY-PRODUCT AND WASTE MANAGEMENT

Metal Waste

We are proud to lead reuse solutions that prevent some of the metals we use from being wasted in landfills. As we expand our waste reduction and reuse initiatives, we are working to reduce our impact on the environment and further implement circular economy principles.

In our operations, we are continuously working to reduce waste by reusing residues from our processes to create valuable products. For example, in St. George, we capture and use almost all our germanium residues from our regular processes for use in other value-added products, which reduces waste, as well as the amount of virgin materials we need to procure.

Our global facilities process metals and other inputs not only from our own waste and secondaries where feasible, but also by-products or secondary feeds from other manufacturers, including from mining and smelting companies, resulting in an impact well beyond our own facilities. As an example, the tellurium supply we successfully secured from Rio Tinto in Utah, announced in 2022, is a by-product of their copper mining operations which we process primarily in Montreal. Following investments made in our Montreal operations, we have made significant improvements to the overall recovery yield on the tellurium present in complex feedstocks thereby expanding our recycling capacity.

We are committed to responsible waste management and we submit annual waste reports to the appropriate regulatory authorities in each of our jurisdictions.

Hazardous Waste

Hazardous waste produced at our facilities include input material packaging, used personal protective equipment, laboratory waste, and potential production spills. As per our global standard, any hazardous waste generated is required to be disposed by certified waste operators and is not stored for more than 90 days in any of our facilities. In 2023, our reduction in hazardous waste reflects reduced operations in Laos and the divestiture of our Tilly site.

Hazardous Wastes (Metric Tons)



24% decrease compared to 2022

Recapturing Germanium from Wastewater in Heilbronn

5N+ aims to promote the circular economy by maximizing the recycling of primary resources. In late 2022, our Heilbronn, Germany site (AZUR SPACE) set up a system to recycle germanium in low concentrations from our wastewater. Germanium is a valuable semiconductor material, widely used in electronics.

To accomplish this, the wastewater from some of our processes is passed through a filter to capture the low concentrations of germanium particles still present. This filtered water, with its low concentration of germanium, is then passed to our partners to use their technology to further concentrate and extract the germanium. The resulting concentrate solution can be reused as a raw material.

By setting up a system to recapture germanium from wastewater, we are not only reducing our environmental impact, but also maximizing resource use. This project enabled the site to reuse 303 kg of germanium in 2023.



SAFETY AND ENVIRONMENTAL STEWARDSHIP OF CHEMICALS

All members of the 5N+ team take chemical management very seriously. We continue to work diligently to reduce the use of chemicals in our processes and ensure safe handling at all times to mitigate risks to our people, our communities and the environment.

Chemical Use Reduction

By pursuing ways to use less chemicals in our processes, we reduce our environmental footprint as fewer need to be produced and disposed. We also reduce the risk of chemical spills with fewer chemicals stored in our facilities.

Two processes that continue to be a key focus in these efforts are copper telluride and tellurium recycling, since they are core to many of our everyday activities across many of our sites. Past advances in copper telluride processing resulted in increased yield recovery and reduction in reagent requirements. Additionally, process improvements to our Montreal recycling operations have also enhanced our tellurium refining methods, resulting in higher tellurium oxide recovery and lower chemical requirements.

Chemical Handling

We have rigorous health and safety standards regarding the use and handling of chemicals and any other hazardous materials, whether they are raw materials we procure for our operations or the products we make. We use a safety data sheet (SDS) classification system for all

applicable substances, and we sell our products complete with their own safety data sheets, which are prepared and maintained by our environment, health and safety (EHS) corporate office.

In Europe, all chemicals must be REACH registered and compliant. We continue to implement various initiatives to ensure that we meet the highest standards in all our markets of operation, including continuous assessments, as well as new employee and refresher training.

Incident Risk Management

We have emergency response plans at all our locations. Should an incident take place, we minimize the risk to the environment and human health by immediately implementing mitigating and remedial actions. In the event of a leak or chemical spill, our incident response protocol focuses on containment, clean-up and investigation.

Any chemical spill must be reported to management through our internal reporting platform. The cause and severity of the spill must be investigated by our EHS team and recommendations for preventing future spills must be presented to our teams so that we can learn from these incidents. 5N+ maintains a record of all reported spill incidents and uses these for improvement and training purposes. As a global organization with multiple sites, lessons learned from one facility are applied globally to prevent similar incidents.

Chemical Vetting Initiative

In 2023, as part of our commitment to continuous improvement, we deployed a new process for the vetting of potential new chemicals to be used at our manufacturing sites. The purpose of this process is to add an additional safeguard to ensure legal compliance of chemicals used and prevent any use of raw materials that are or could be banned in international lists of chemical product restrictions. This process involves the Corporate Product Stewardship Department and is launched at the beginning of the chemical assessment.





AIR QUALITY

At every 5N+ manufacturing site, compliance with local atmospheric emissions regulatory requirements is a priority. Ensuring compliance with all legislation concerning atmospheric emissions is not only a site-specific responsibility, but also audited at the corporate level.

Air quality sampling is conducted at all our sites where required. The frequency of the sampling is determined by local regulatory requirements and/or when production changes occur to monitor for any impact. In 2023, an off-site consequence analysis was completed to determine the air emissions impact of our St. George site. The findings concluded that our St. George site is considered a small emitter by the U.S. Environmental Protection Agency (EPA).

The primary emissions from 5N+ sites are mostly related to the use of natural gas in the manufacturing operations, the use of nitrogen-based raw materials and chemical processes that may produce sulfates. Therefore, our focus on improving energy and operational process efficiency also promotes better air emission quality.

Reducing NOx Emissions and Upcycling Bismuth in Shangyu

In Shangyu, a NOx capture-process was implemented on a voluntary basis to further reduce compliant NOx emissions from bismuth-related processes to concentrations substantially below applicable standards.



CIRCULAR ECONOMY PRINCIPLES AND PRODUCT LIFE CYCLE MANAGEMENT

5N+ inscribes itself to sustainable development through its initiatives and business model. From upcycling our own waste and transforming the by-products of other industries into useful products to adopting sustainable procurement practices, we continue to integrate circular economy principles wherever possible.

Resource Efficiency Evaluation Project

Launched in 2022, we continue to move forward with our resource efficiency evaluation project. This project has been implemented across our operations to identify gaps and opportunities to maximize reprocessing, repurposing and upcycling by capturing a more complete view of the inflows and outflows of our ecosystem.

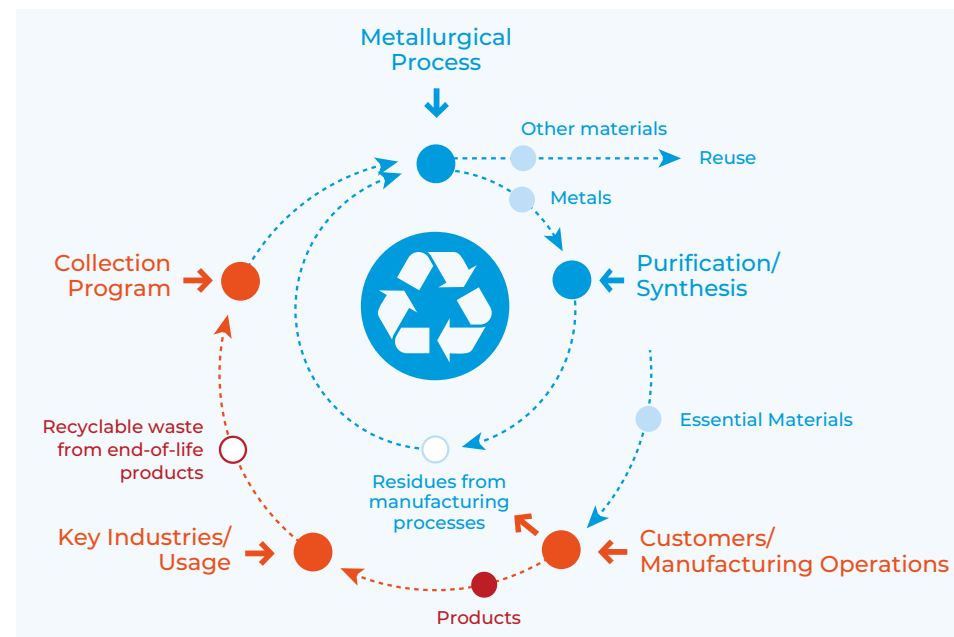
This objective of having greater visibility is to then facilitate the integration of circular economy principles into our resource management and sourcing activities – from raw materials, such as metals and ore, to process materials, such as chemicals and water. Concretely, the improvements sought aim to optimize our use of natural resources, raw materials and reduce energy consumption, while enabling us to ensure compliance with regulatory requirements like those anticipated as a result of the European Green Deal.

Criteria evaluated includes:

- The circularity of our supply, including our ability to recover our finished goods for reprocessing and our ability to acquire non-virgin material
- The proportion of revenue coming from non-virgin material with respect to total revenue generated
- The characterization of our supply sources and the potential risks associated with them
- Growth potential relative to demand for virgin raw materials

Progress Update

Since 2022, 5N+ has implemented a comprehensive dashboard to track and monitor all key environmental inputs, which align with our Environment material topics, including visibility on the management of our key critical metals. We are now better able to assess and monitor climate and supply risks to see if improvements can be made in the way products are sourced, and with a view to better characterizing input and output flows.





Product Lifecycle Analysis (LCA) Project

To complement this work, we are conducting comprehensive product lifecycle analyses (LCAs) of three critical minerals, core to our business:

- **Cadmium-telluride** – a semiconductor compound formed of cadmium and tellurium for terrestrial renewable energy and medical device applications
- **Bismuth** – whether in high-purity metal or chemical form, used in active pharmaceutical, electronic and industrial applications
- **Germanium** – produced in wafer form in space solar power and terrestrial renewable energy applications

The LCAs assess environmental impacts of these three critical metals, from creation to disposal. This will enable 5N+ to make more informed decisions in our continuous product improvement projects and will further inform our ability to adopt circular economy principles into our entire value chain.

Progress Update

In late 2023, the cadmium-telluride LCA was completed, and preliminary results are expected to be delivered in early 2024. The results are currently under review by a panel of experts composed of members from both academia and industry. We look forward to discussing our findings in our next Sustainability Report. Following the completion of the cadmium-telluride LCA, we expect to launch our second critical metal LCA by 2025.



SOCIAL



OUR WORKFORCE

At 5N+, we have always believed that a motivated, engaged workforce is the key to success. To that end, we work diligently to implement programs and policies that ensure our people are safe, healthy and rewarded for their contributions to achieving our goals. We also want to create an environment where individuals are celebrated for their unique perspectives and feel supported in their professional development.

Health and Safety

The health and safety of our employees remains a top priority, with a strong emphasis on preventative measures above all else. Every 5N+ facility has a safety management system in place, which includes regular reminders, emergency management and rigorous training on our policies and procedures. Incidents (near misses, first aid and other recordable incidents) are tracked at each facility, investigated, reviewed at monthly meetings and addressed with specific action items designed to prevent further issues. These regular audits ensure that we are maintaining our commitment to safety first and best practices, but always looking for ways to improve.

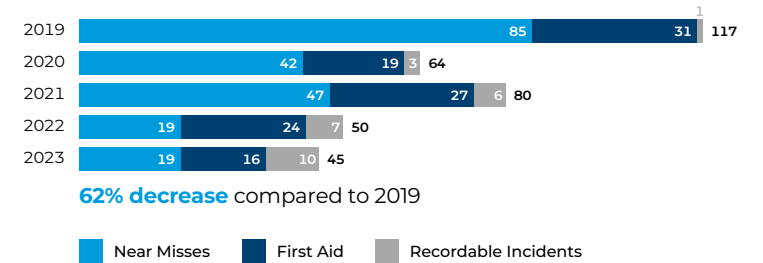
While the Tilly divestiture did result in reducing the total number of incidents, improvements are also the result of the continued reinforcement of our occupational health and safety plans at the plant level, to ensure the better overall health and safety of employees in operations.

Training

As part of our commitment to ensuring the safety of our employees, we provide extensive training for all our employees on our environmental, health and safety policies at 5N+. We want each employee to have a clear understanding of our approach to injury and incident prevention. Health and safety programs developed for every 5N+ site are required to include training and certification elements specific to their work environment.

	EHS Training Hours	Non-EHS Training Hours
2023	4,716	14,554
2022	4,220	9,456

Total Work-Related Incidents





Incidents and Emergency Management

In addition to our training programs, we employ a system of frequent reminders to keep health and safety top of mind at all times. To date, we have never had a fatality at any of our facilities and the total number of work-related incidents has been declining significantly since 2019. For each incident type, from a potential risk being identified to an occurrence of a severe event, we have specific action plans for each employee and site to follow, with emergencies being managed locally first. Every incident requires a report to be completed and filed so they can be tracked, investigated and actioned.

	Hours of Work	Incidents
2023	1,302,991	45
2022	1,305,611	64

Compensation and Benefits

The health of our employees extends beyond their physical well-being to include their mental wellness and overall job satisfaction. We continue to offer comprehensive compensation packages that include health insurance, retirement contributions and paid time off.

Talent Development

At 5N+, we believe in investing in the next generation through our talent development, which includes both internship and apprenticeship programs. These initiatives, which involve integration and collaboration, provide students and recent graduates invaluable experience and skills. In addition, it benefits 5N+ by exposing these bright individuals to our industry, while also providing us with fresh, diverse perspectives and a potential pool of future talent.

2023 Talent Development	Montreal	Lübeck	Heilbronn	St. George
Interns/ Apprentices	7	8	9	2
Hours	4,360	11,032	10,853	829

Employee Recognition

As the key to our success, we are truly grateful for the contributions all our employees make. In 2019, we launched our Employee Recognition Program to formalize our process of highlighting the accomplishments of individuals and teams at 5N+. From simple gestures to company social events to our formal programs, it is important to us that all employees feel valued, respected and supported by their colleagues and managers at all levels.

Inclusion and Diversity

With integrity as one of our core corporate values, it is essential to us that all employees work in an inclusive and supportive environment, free from the threat of harassment or discrimination, which is governed by our Global Corporate Harassment-Free Workplace Policy. From recruitment to training and compensation to advancement, we value performance, a variety of skills and qualifications and unique perspectives. In addition, we guarantee gender pay equity across the Company and recognize individual and collective contributions through our Employee Recognition Program.

Gender Diversity

As we progress to increase our diversity, we were pleased to add a new female director to our Board in February 2023, bringing our total female representation on the Board to 40%. Among 5N+'s global corporate offices, women represented 27% of our workforce, consistent with 2022.



OUR SUPPLY CHAIN

At 5N+, our social responsibility extends beyond our own organization to our supply partners, many of whom share in our commitment to social responsibility. As we advance along our sustainability journey, we are finding new ways to engage with our suppliers and business partners, to gain better visibility on their practices and meet stakeholder expectations.

Human Rights

In the past year, we have formalized our zero-tolerance commitment to human rights violations and have provided greater transparency on our practices with the adoption of a Human Rights Statement in August of 2023, followed by the publication of our inaugural report on the fighting of forced labour and child labour in supply chains in early 2024.

Our Human Rights Statement is guided by the Universal Declaration of Human Rights, the International Labour Organization's (ILO) Declaration on Fundamental Principles and Rights at Work and the UN Guiding Principles on Business and Human Rights. The Human Rights Statement specifically states that we have no tolerance for any form of child labour, forced labour, sexual exploitation or abuse, modern slavery or human trafficking whether in our operations, those of our suppliers or in the communities in which we operate. This Human Rights Statement applies to 5N+ together with its subsidiaries, and to all its employees, including directors and officers.

Next Steps

In 2024, a Supplier Code of Conduct aimed at effectively managing our risks of forced labour and child labour in our supply chain is scheduled to be adopted. The Supplier Code of Conduct will articulate explicit expectations in this regard for our suppliers and, among other obligations, is expected to require our direct suppliers to certify an absence of forced labour in their supply chain.

Additionally, we intend to offer targeted training sessions addressing forced labour and child labour to relevant individuals in due course.

Supplier Engagement

In the past year, to engage more deeply with our suppliers, we initiated a supply chain sustainability questionnaire. The purpose of the questionnaire was to gain a deeper understanding of the operations of our business partners, with particular attention to environmental issues, labour and human rights issues, ethics and sustainable procurement.

After the initial assessment of the preliminary results, we expect to launch a second phase in 2024–2025 which will involve more detailed discussions with our suppliers. The intent of this phase is to have a deeper engagement with our suppliers to benefit from their extensive experience, so that we may collaborate to find additional ways to create more sustainable and ethical business practices throughout the entire supply chain.

Conflict-free Minerals

While 5N+ does not directly mine the materials it refines, it is of critical importance to us that all materials we receive from our suppliers are ethically obtained. Our Code of Business Conduct currently covers the guidelines under which we operate for all our sourcing, including being in compliance with all applicable laws and regulations. In 2024, with our planned Supplier Code of Conduct, we will formalize the same guidelines with our suppliers to certify that they hold themselves to the same high standards that we do.

Our report on the fighting of forced labour and child labour in supply chains aims to create supply chain transparency and is available on our website at [5N Plus 2023 Report on Forced Labour](#).



OUR COMMUNITY

Investing in the communities in which we operate is important to everyone at 5N+. We want to be an active participant in each community where we are located – supporting and uplifting its members. We strive to make a positive impact in our communities by supporting organizations that uphold similar values to those of 5N+, and by recognizing the contributions of our employees to the causes they care about.

Case Study: Moisson Montréal

- **Mission:** To provide an optimal food supply for community agencies serving Montreal's most vulnerable people while actively participating in the development of sustainable solutions to promote food security.
- **The Need:** Food insecurity in Montréal is rampant, and inflation is hitting the most vulnerable hardest. Because of an extraordinary multiplier effect resulting from Moisson Montréal's operating model, which relies on food recovery rather than purchases, for every dollar donated, they are able to redistribute over \$15 worth of food.
- A much needed donation was made by 5N+ to help to alleviate hunger for families in Montréal.



Case Study: SLK Klinik – Big Help for Little Heroes

- **Mission:** To support sick children and their families during their inpatient stay at the Heilbronn Children's Hospital, as well as afterwards.
- **The Need:** A stay in hospital is always an extremely stressful situation for a child and their family. Big Help for Little Heroes provides a holistic therapy concept that goes far beyond purely medical treatment. Working with the medical and nursing teams, the program supports projects that make optimal care and treatment measures possible.
- AZUR SPACE employees have been donating to this organization for the last ten consecutive years.



*Große Hilfe
für kleine Helden*



GOVERNANCE



CORPORATE GOVERNANCE

The Board and Executive Committee at 5N+ are committed to strong governance that follows industry-leading best practices. To ensure the confidence of all stakeholders, 5N+ has adopted and made available corporate governance policies to guide the Board and management in its pursuit of responsible and ethical business management and to ensure that all directors, officers and employees hold themselves to the same high ethical standards.

Board Composition

5N+ values the oversight and guidance provided by its directors. The independence of the Board is of the utmost importance, along with creating a board with a diverse and relevant mix of skills, backgrounds and experience.

Attendance	Director Independence	Average Director Tenure	Average Director Age	Gender Diversity
100%	80% 4 out of 5 directors are independent	7 years	64 years	40% Female

The complete list of corporate governance policies, board charters and guidelines can be found on the 5N+ website at www.5nplus.com/en/investors/governance/.



BUSINESS ETHICS

Code of Business Conduct

In 2009, we formally implemented our Code of Business Conduct. The Code of Business Conduct does not replace obligations under the law, and cannot answer every question; rather, it is intended to set out the general principles of acceptable conduct in our relations with other employees, clients, suppliers, investors, and the communities in which we carry on our activities. The Code of Business Conduct applies to everyone at 5N+ and its subsidiaries. This includes all employees, officers, directors, agents, consultants, suppliers and partners of the Company. The Code of Business Conduct is available on our website.

Employees who become aware of a possible violation of the Code of Business Conduct or other legal violation by the Company or any of its employees, have an important duty to report it (see Whistleblower Policy). All employees and directors complete an annual certification acknowledging that they have read and understood the Code of Business Conduct.

Whistleblower Policy

Our Whistleblower Policy allows employees to report violations or express their concerns in good faith with the assurance that they will be protected against reprisals or victimization. If an employee is aware of or suspects another party is acting unethically or illegally, they can make a confidential or anonymous report using any of the reporting channels. The [Whistleblower Policy](#) is available on our website.

Risk Management

The Board is responsible for overall risk management, and it is management's policy and responsibility to regularly assess and identify risk factors which may affect the business operations of 5N+ and take steps to minimize their impact. All business risks are mandated to be reviewed twice a year through the Corporate Internal Audit with all risks and mitigation measures undertaken reported to the Board of Directors on a regular basis.

Anti-Corruption

In our commitment to ensuring ethical business operations, we comply with and train our employees on the requirements associated with the *Corruption of Foreign Public Officials Act of Canada* to avoid real or perceived corruption. The policies we have implemented provide guidance to our employees on situations that may be considered a conflict of interest or bribery, including restrictions on receiving or giving gifts in the course of business.



ESG GOVERNANCE

While our Board is responsible for the overall stewardship of our organization and overseeing the management of our business and affairs, ESG governance extends through our entire organization, from the Board and the Executive Committee to enterprise risk management, down to individual leaders at the corporate and operations level.

The Board has established two committees to assist it in fulfilling its oversight responsibilities in particular with regard to corporate social responsibility and compliance with legal and regulatory requirements: the Audit and Risk Management Committee and the Governance and Compensation Committee, both composed of independent directors. ESG oversight and responsibility is officially integrated into the Board's Governance and Compensation Committee charter, and we are continuously evaluating the Board's composition to ensure it is aligned with the objectives of the Company.

Board of Directors

- Reviews and approves, at least on an annual basis, a strategic plan that must take into account, among others, the opportunities and risks of the Company's business
- Periodically reviews the significant risks and opportunities affecting the Company and its business and oversees the actions, systems and controls in place to manage and monitor risks and opportunities
- Ultimately responsible for overall ESG matters oversight and governance, with specific ESG matters delegated to the relevant Board committees

Governance and Compensation Committee

- Oversees the Company's ESG strategy (Sustainability Roadmap) and its integration within the business strategy
- Responsibility officially integrated into committee charter in 2023

Audit and Risk Management Committee

- Responsible for the identification and management of the Company's risks, including relevant ESG-related risks
- Climate risks further integrated into Enterprise Risk Management (ERM) in 2023 following the completion of climate risk assessments and financial impact scenario analysis by management

Executive Committee (ExCo)

- Reports to the Board and its relevant committees on ESG matters and risks on a quarterly basis
- The Chief Financial Officer (member of the ExCo) is responsible for the supervision of the Company's Sustainability Roadmap

Management and Company-wide

- Development and implementation of the Sustainability Roadmap falls under the leadership of our Corporate Director, EH&S and Product Stewardship, who reports directly to the CFO, with the collaboration of corporate and operational leaders across the organization
- Each manufacturing site leader is accountable for the implementation of the Sustainability Roadmap at the operational level



APPENDIX



ABOUT THIS REPORT

This 2023 Sustainability Report produced by 5N+ was developed in alignment or reference with select Global Reporting Initiative (GRI) indicators as well as by consulting other relevant ESG reporting frameworks and standards.

These include:

- GRI standards and indicators
- Chemicals, and Metals & Mining SASB Standards (standards which are now under the responsibility of the ISSB). We have also reviewed the Semiconductors Standard.
- European Sustainability Reporting Standards (ESRS)
- Recommendations from the TCFD

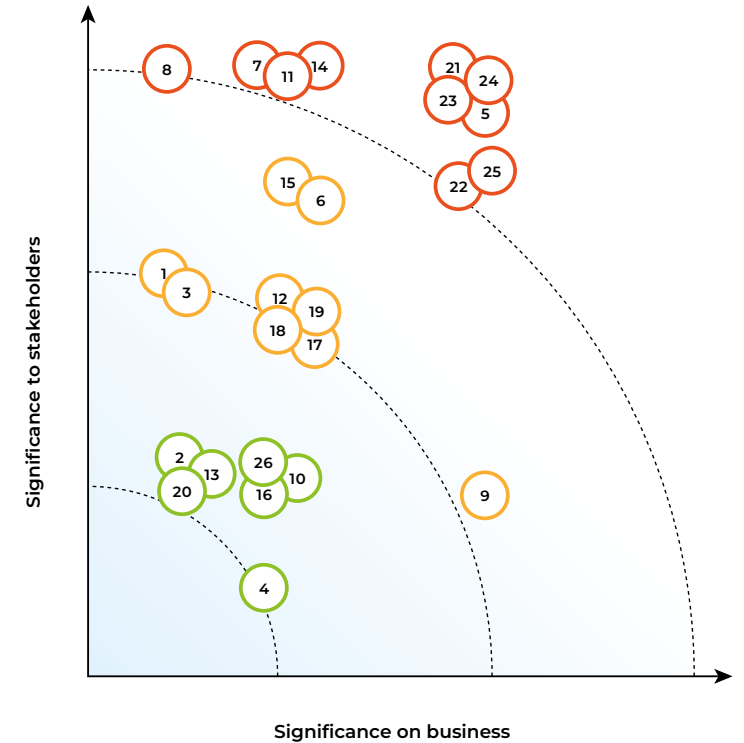
Materiality Assessment

Ahead of our inaugural 2022 Sustainability Report, 5N+ conducted an initial materiality assessment, guided by key GRI indicators, to identify the relevant ESG risks and opportunities relevant and material to the business, and their relative importance to our stakeholders (authorities, public, investors and shareholders, employees and customers). This assessment has guided the development of our sustainability roadmap, including the disclosures in our 2022 and 2023 Sustainability Reports.

Unless otherwise mentioned, the reporting period spans up to and including December 31, 2023.

If you have questions or to provide feedback on our sustainability reporting, please contact: ehssupport@5nplus.com

1	Diversity
2	Sulfate Emissions
3	CO ₂ Emissions
4	Product Life Cycle
5	Process Safety Management
6	Solid and Liquid Spills
7	NO _x Emissions
8	Emission of Particulate Material & Combustions Gases
9	Community Incidents
10	Water Consumption
11	Human Rights
12	Electrical Energy Consumption
13	Board Composition
14	Waste
15	Wastewater
16	Community Relations
17	Worker Participation
18	EHS and Quality Training
19	Fuel and Gas Consumption
20	Gender Pay Equity
21	EHS Management System – Incident Management
22	Anti-Corruption, Anti-Trust and Fair Competition Practices
23	Employee Health – Exposure to Contaminants
24	Compliance to Environmental Regulations
25	EHS – Injury Ratio
26	Manufactured Chemicals





INDEX OF GRI-RELATED INFORMATION

This section provides select GRI-related information as well as reference to the pages where this information can be found within this Sustainability Report, as available.

GRI Key Performance Indicators ^[1]	2023	2022	GRI	Page
Net Sales (\$Million)	242,371	264,223	102-7	5
Total Scope 1 GHG Emissions (Metric Tons CO ₂ eq)	2,522	NA	305-1	13
Total Scope 2 GHG Emissions (Metric Tons CO ₂ eq)	14,014	NA	305-2	13
Total Electricity Consumption (MWh)	32,219	34,577	302-1	14
Total Natural Gas Consumption (m ³)	987,235	873,244	302-1	14
Total Diesel Consumption (m ³)	100	978	302-1	14
Total Hazardous Waste Generation (Metrics Tons)	351	511	306-2	16
Total Wastewater Discharge (m ³)	131,437	196,285	306-1	15
Global Recordable Injury Rate (per 200,000 hours)	1.55	1.07	403-9	–
Global Lost Time Injury Rate (per 200,000 hours)	1.24	0.61	403-9	–
Number of Work-Related Fatalities	0	0	403-9	–
Rate of high-consequence work-related injuries	0	0	403-9	–
Total hours worked	1,301,718	1,305,611	403-9	22
Total Training Hours in EHS	4,716	4,220	404-0	21
Total training Hours different than EHS	14,554	9,456		21
% Male Workforce	73%	73%	405-1	22
% Female Workforce	27%	27%	405-1	22

[1] GRI Indicators provided for comparison only, data and reporting does not necessarily meet all GRI requirements (example: data reported by facility)



GHG EMISSION CALCULATIONS

Scope 1 and 2 GHG Emissions Calculations

All data used to calculate Scope 1 and Scope 2 GHG emissions comes directly from the GHG Protocol. The GHG Protocol is a multistakeholder partnership of businesses, nongovernmental organizations (NGOs), governments, and others convened by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). For certain countries in which we have operations, such as Laos, the data for electricity comes from Carbon Footprint Ltd, based on emission factors specific of several countries.

GHG emissions not covered by the Kyoto Protocol, e.g., CFCs, NOx, etc. were not included in Scope 1. The method selected for Scope 2 GHG emissions is the Location-Based Method (LBM).

LBM is a method to quantify Scope 2 GHG emissions based on average energy generation emission factors for defined geographic locations, including local, subnational, or national boundaries.

Cautionary Statement Regarding and Forward-Looking Information

Certain statements in this Sustainability Report may be forward-looking within the meaning of applicable securities laws. These statements are not guarantees of future performance and involve assumptions, risks and uncertainties that are difficult to predict and may cause the Company's actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Factors of uncertainty and risk that might result in such differences include the risks associated with interest rate, foreign currency, credit, liquidity, global economic conditions, international operations including China, environmental regulations, crisis and climate change management, environmental social and governance (ESG) considerations, safety and hazards, prolonged armed conflict in Ukraine, disease outbreaks, availability and retention of qualified professional employees, collective agreements, litigation, our growth strategy, competition, commodity price, sources of supply, protection of intellectual property, inventory price, business interruptions, loss of an important customer, changes to backlog, acquisitions, systems, network infrastructure and data failure, privacy, market price of the common shares, as well as grants and other incentive programs. A description of the risks affecting the Company's business and activities appears under the heading "Risk and Uncertainties" of our management discussion and analysis dated February 27, 2024.

Forward-looking statements can generally be identified by the use of terms such as "may", "should", "would", "believe", "expect", the negative of these terms, variations of them or any similar terms. No assurance can be given that any events anticipated by the forward-looking statements in this Sustainability Report will transpire or occur, or if any of them do so, what benefits that 5N+ will derive therefrom. In particular, no assurance can be given as to the future financial performance of 5N+. The forward-looking statements contained in this Sustainability Report are made as of the date hereof and 5N+ has no obligation to publicly update such forward-looking information to reflect new information, subsequent or otherwise, unless required by applicable securities laws. The reader is warned against placing undue reliance on these forward-looking statements.



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