Message from our CEO

102-14

"I am privileged to lead a passionate and high-performing team of Linde employees. I look forward to growing our impact and continuing to fulfill our commitments to you."

Dear Stakeholder,

Sustainability underpins so much of what we do at Linde. It is central to our mission of *making our world more productive* and key to how we create value for our customers and our global communities. In this report, we share how our people at Linde are making a difference and how we continue to deliver our environmental, economic and social commitments to you.

In the last year, we communicated our new, ambitious *"35 by 35"* target to reduce our absolute greenhouse (GHG) emissions 35 percent by 2035, compared to the 2021 emissions base. This target is in-line with the Paris Accords and is a cornerstone for achieving climate neutrality by 2050. Our worldwide teams are actively executing plans towards these goals, including developing carbon capture and storage (CCS) projects in the U.S. Gulf Coast to produce low-carbon hydrogen.

Enabling our customers' sustainability goals remains our priority. Our products help our customers to reduce their carbon footprint and to provide positive environmental impact for our planet. In 2021, we helped our customers avoid more than 88 million metric tons of equivalent carbon dioxide. Our operations also diverted more than 200 million pounds of waste from landfill through our Zero Waste Program and reduced our water usage by more than 500 million gallons of water through productivity efforts.

Our community commitment extends beyond environmental. We are proud of our role as a good citizen in communities across our footprint of approximately 100 countries. Our employees' commitment is evident through the impact made through approximately 400 community engagement projects conducted last year. These projects address compelling concerns, such as access to education and food insecurity. Through their personal engagement, our employees are helping to make our communities more resilient.

We remain committed to an equitable, inclusive world. Approximately 40 percent of our philanthropic contributions were diversity-related in 2021. Within our company, diversity and inclusion are a top priority, and we are well on track to exceed our *"30 by 30"* goal of 30 percent female representation globally by 2030.

Linde continues to be recognized for excellent sustainability performance. Last year, Linde celebrated its unique position in the chemicals industry with 19 consecutive years of inclusion in the Dow Jones Sustainability World Index (DJSI World). Linde was named to CDP's A-List for Water Security and remains at the Leadership level for the CDP Climate Change response. We were also reconfirmed as one of the World's Most Ethical Companies by Ethisphere.

Let me assure you, we do not rest on these achievements and remain committed to maintaining the highest standards and performance upon which our stakeholders — investors, employees and global communities — have based their confidence.

I am privileged to lead a passionate and high-performing team of Linde employees. I look forward to growing our impact and continuing to fulfill our commitments to you.

Sanjiv Lamba
Chief Executive Officer

Sustainable Development

Supplied green hydrogen to world's first **H_2-powered ferry**

Sourced **more than 1/3 of low-carbon electricity**

Lost Workday Case Rate (LWCR) **more than 4x better** than most recent U.S. Occupational Safety and Health Administration industrial average

Avoided >2x more GHG emissions than emitted

A leader in **diversity & inclusion**

Saved more than **500 million gallons of water** through sustainability initiatives

Diverted more than **200 million pounds** of waste from landfill

Benefited 250,000 people through employee **community engagement** projects

Awards & Recognition

Climate Change & Environment

- → CDP Climate Change Leadership level (A-)
- → CDP Water Security, A List
- → DJSI Environmental Dimension: 99th percentile

People & Community

- → DiversityInc Noteworthy Company
- → Forbes' America's Best Employers for Diversity
- → 100 Best Corporate Citizens

Integrity & Compliance

- → 2021 World's Most Ethical Companies

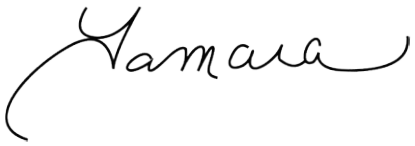
Letter from VP, Sustainability

Dear Stakeholder,

Over the course of the year, we have the pleasure of connecting with our stakeholders in various ways. Our annual sustainability report is one such opportunity. We are pleased to share information on our performance, key initiatives and progress against our own sustainability goals and those of the global community.

Sustainability is woven throughout Linde. Across our organization, we are working together every day to meet the complex expectations of the global sustainability community and to provide the level of transparency you have come to expect from us. We are not alone on this journey. Our customers, suppliers and other experts are working with us to tackle long-term concerns, such as climate change. For this, we have a vision that extends through 2028, 2035 and beyond. We are dedicated to providing opportunities that help make our communities stronger now and in the future.

I am excited about the ways Linde is connecting across boundaries. Together, we are living our mission of *making our world more productive*.



Tamara E. Brown
Vice President, Sustainability

Climate Change—Challenge & Opportunity

The effects of climate change are increasingly visible on the environment, society and the global economy. Climate change is not a distant threat. It is happening now. Linde has the technology, resources and people to help address climate change. For more than 100 years, we have been providing solutions to help solve global energy challenges. Our company's mission of *making our world more productive* is fully aligned with the goals of addressing the global challenges of sustainable energy and climate change. Through our high-quality solutions, products, technologies and services, we are making our customers more successful and helping to sustain and protect our planet.

TODAY

Linde is in the business of resource transformation. We use fuels for energy and as feedstock. Our business and production processes are therefore energy-intensive, making the cost and availability of energy important for Linde. Our total carbon footprint in 2021 was about 39.9 million tons of CO_2e, where 41 percent stems from direct carbon dioxide emissions, mostly from our hydrogen plants, and 59 percent from indirect emissions from our electricity consumption, mostly from air separation. This energy use, in turn, delivers innovative and sustainable solutions for our customers. In many cases, these solutions improve the productivity, energy use and GHG emissions for our customers or end users. In fact, we calculate that in 2021, Linde gases, principally oxygen and hydrogen, enabled our customers to avoid 88 million metric tons of CO_2e, which is more than twice as much GHG avoided than emitted from all our operations. See page 20.

As the electric grid decarbonizes by using more low-carbon and renewable sources, Linde's indirect GHG emissions will decrease. In addition, Linde actively contributes to grid decarbonization in multiple ways:

- Linde's business proposition is that it is more reliable and more energy efficient for our customers to outsource the production of industrial gases than to insource. Linde's energy efficiency is world-class, and we continue to improve it each year, which leads to financial savings as well as reductions in energy and GHG emissions..
- Many of Linde's cryogenic air separation (ASU) plants are designed to include "buffer" inventories to retain reliable supply in case of power failure. This has allowed Linde to participate in demand-response programs. In periods of peak energy demand, Linde can interrupt its grid power use and effectively reduce grid electric load (by the equivalent of 40,000 homes from a single location). Linde's design investment can provide ancillary service for grid operators to maintain reliable electric power service as wind and solar energy become a greater part of our resource mix.
- Forty percent of all Linde electricity (17 TWh) is currently sourced from low-carbon and renewable power. Of that, 3.5 TWh is directly or actively sourced. Linde electricity use in the UK is almost 100 percent renewable using wind and almost 100 percent in Brazil using hydroelectric. Low-carbon and renewable electricity is also sourced in the United States, where both hydro and nuclear power are used, as well as in Colombia, India, Spain, the Philippines and other geographies.

Hydrogen is a key enabler of the clean energy transition. It is a versatile, clean and safe energy carrier that can be used as fuel for power or in the industry as feedstock. At the point of use, it produces zero emissions, and it can be stored and transported at high energy density in liquid or gaseous form. It can be combusted or used in fuel cells to generate heat and electricity.

We are at the beginning of this transition. Conventional processes are dominant today in refining, chemical production and other manufacturing processes (steel, electronics and other applications). R&D and emerging technologies are starting to change the landscape, but hydrogen fuel cell vehicles (HFCVs) are not yet widely adopted, green fuels and materials are still at pilot stages and hydrogen for energy storage is still in the development stage.

Most hydrogen is produced by steam methane reforming (SMR) using natural gas, or recovered as a byproduct from other industrial processes. Water electrolysis is emerging as an effective low-carbon source of hydrogen production, but SMRs remain the dominant technology to produce hydrogen on a large scale.

Key Actions to 2035 and Beyond!

Developing Science-Based Targets

In October 2021, Linde announced its new 35 by 35 target, committing to reduce absolute Scope 1 and 2 GHG emissions by 35 percent by 2035 compared to 2021 emissions as a baseline, and a defined roadmap to achieve climate neutrality by 2050. These targets reflect Linde's alignment with the goals of the Paris Agreement and culminated nearly a year of work between Linde's business segments, Energy Management, Clean Energy, Sustainability and R&D. Corporate Fellow Minish Shah led the modeling of GHG trajectories to ensure alignment with well-below 2 degrees scenario.

Going Linde Green

In eight European countries, all of Linde's electricity purchases from the grid are zero-carbon. Additionally, in 2021, Linde put in place an agreement to supply nitrogen generated from renewable electricity to one of the largest pipeline customers in Europe and extended its Linde Green product range of liquefied gases with zero-carbon impact to more countries. To guarantee a pipeline of additional renewable, Linde has continued to negotiate more long-term Power Purchase Agreements, including in Sweden, where power from Statkraft's hydropower plant in Bassalt, pictured above, came online in 2022. *Picture credit: Statkraft*

Increasing Renewable Energy Utilization

Linde's energy management team in India signed several long-term power contracts in 2021 to source renewable energy by setting up photovoltaic systems and wind turbines at nine ASU sites. These contracts, which are in various stages of implementation, help Linde source at a rate that is less expensive than if obtained from the grid. All projects are planned to be fully commissioned by 2024. BS Anuradha, who is Associate Director of Power Management, and all the team members are proud of these efforts, which will more than triple renewable energy as compared to 2021 and reduce Scope 2 GHG emissions by 20 percent!

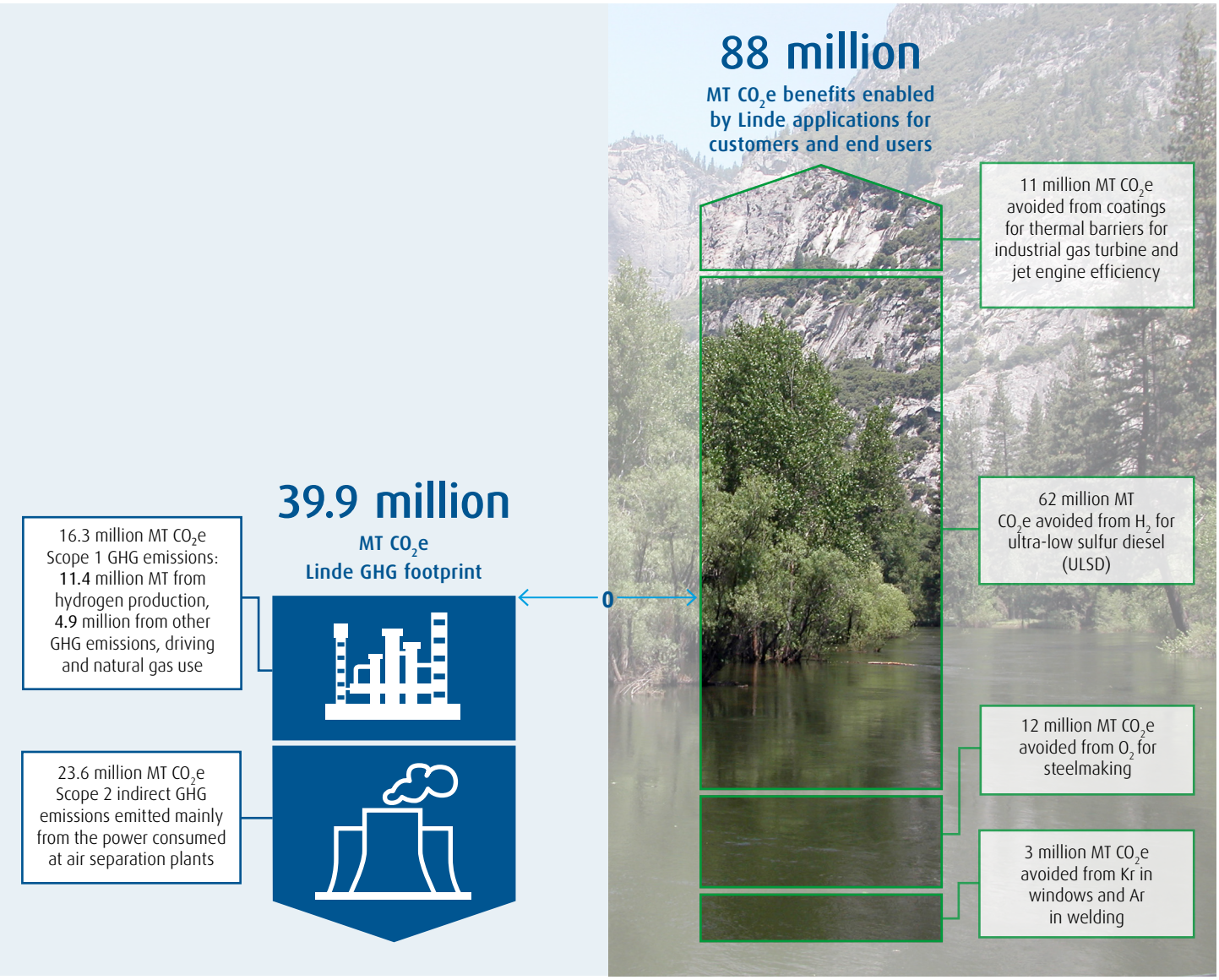
Lowering Fleet Emissions

One part of Linde's vision for 2050 is a zero-emissions fleet. Linde has already taken steps, including evaluations of both hydrogen fuel cell- and electric-powered vehicles. Working together with fuel manufacturers, Linde Gas & Equipment has evaluated renewable diesel, which in many cases, can be phased in progressively without modification to truck engines. Testing of this technology has begun in some geographies, including California, Washington and Oregon. GHG emissions from transportation can be reduced by up to 83 percent using renewable diesel compared to fossil diesel.

Applications Enable 2.2x Carbon Productivity

Linde is a company in the business of resource transformation in a world that is dealing with climate change. Below are our 2021 actual results as reported by Linde plc entities. We demonstrate that a subset of Linde applications allow our customers or their end users to avoid more than twice the GHG emissions of all Linde operations. In 2021, total GHG emissions were 39,9 million MT CO2e, versus 88 million MT CO2e avoided by our customers or end users, based upon several applications as shown below.

Again in 2021, a subset of Linde applications enabled more than twice the GHG benefit than was emitted in all global operations.



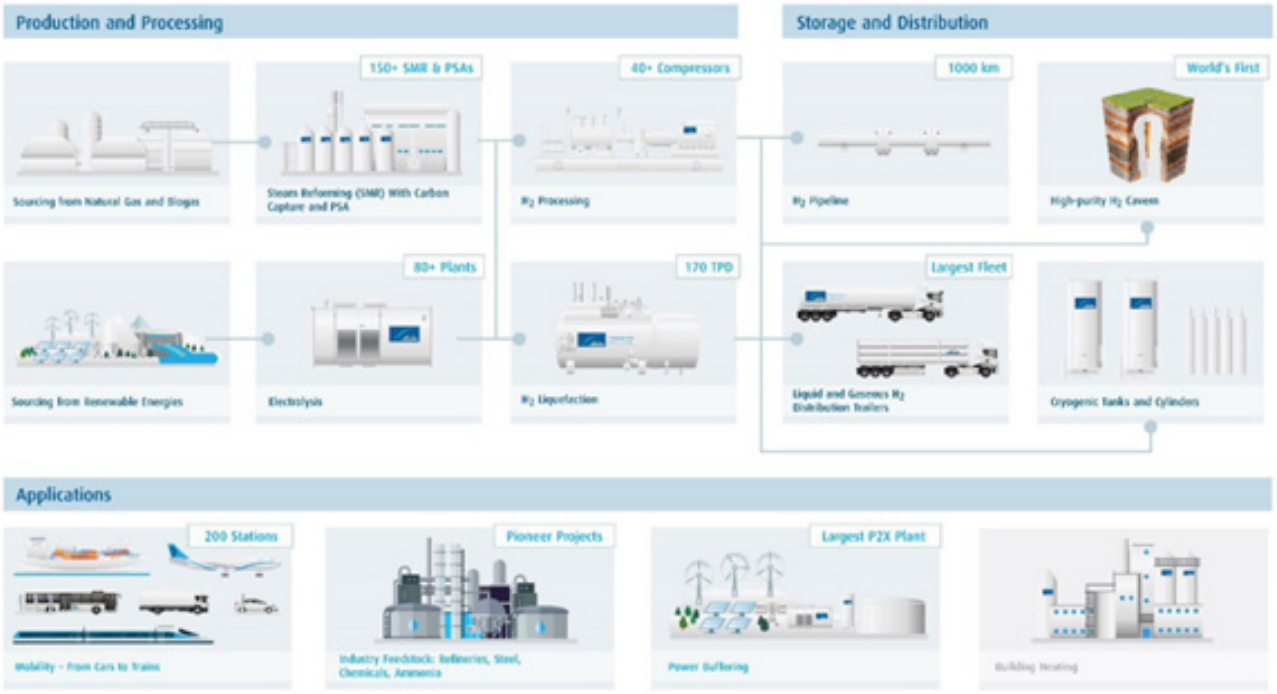
Values are based on 2021 reported and consolidated results from Linde plc subsidiaries following Linde plc reporting standards.
CO_2e = CO_2 equivalents

Leading the Transition to Low Carbon Energy

Hydrogen is the most abundant element in the universe. Even though it is light and small, hydrogen is a powerful energy carrier and can, for example, be used to store excess renewable energy. Hydrogen is transported underground through extensive pipeline networks or by truck, as a cryogenic liquid or high-pressure gas, to be used in a wide range of applications, from mobility to heavy industries. Due to its versatility, hydrogen is proving to be a key enabler of the transition to low and zero-carbon energy (clean energy), to help meet climate change targets. At Linde, we have been harnessing the power of hydrogen for over 100 years and are making continued investments in effective and economic ways to deliver gray, blue and, ultimately, green hydrogen. We can produce hydrogen from a range of feedstocks and natural resources. Using processes like steam reforming, we generate gray hydrogen from natural gas, liquefied petroleum gas (LPG) or naphtha. This is the most common hydrogen production process today. Gray hydrogen can be converted into blue hydrogen by adding carbon capture and storage technologies to the production process. We produce green hydrogen using electrolysis powered by renewable energy. An alternative green hydrogen production method is steam reforming using biomethane as feedstock. Gray and blue hydrogen are important steppingstones on the path to green hydrogen as they allow the necessary frameworks and infrastructures to be developed in the interim while green hydrogen production reaches the necessary scale.

As the world's leading industrial gas and engineering company, Linde covers the full spectrum of the hydrogen value chain. We can help customers and stakeholders navigate through the complexities of the transition to a zero-carbon economy. Our engineers work with customers in identifying their path to zero emissions and Linde has become a leader in designing, building and operating plants and facilities to meet our customers' needs. Clean hydrogen is a cornerstone of our Clean Energy strategy which is built around 1) providing solutions to mitigate and manage carbon emissions, and 2) developing clean hydrogen technologies to facilitate the transition to low-carbon fuels and applications. We are aligned with the Paris Accords and contribute to accelerating the transition to a clean energy economy. We also support the TCFD, an Index showing the alignment between Linde's reporting and the TCFD Guidelines which is available at: https://www.linde.com/about-linde/sustainabledevelopment/reporting center.

Advocacy is another way in which we actively drive the transition to clean energy: Linde is a founding member of the Hydrogen Council and participates in many other hydrogen and climate change forums and advocacy groups, such as the Sustainable Markets Initiative and the Hydrogen Forward Coalition. Today, Linde has the largest liquid hydrogen production capacity and distribution system in the world. We also operate the world's first commercial high-purity hydrogen storage cavern, which, coupled with an unrivaled pipeline network of approximately 1,000 kilometers, enables us to reliably supply our customers. With more than 200 hydrogen refueling stations and 80 hydrogen electrolysis plants installed worldwide, we are at the forefront of the energy transition.



Linde's Capabilities Across the Hydrogen Value Chain

Linde's Pathway to Climate Neutrality: 2028, 2035, 2050

The next three decades will represent a period of great activity for the world and the quest to address climate change. Our strategy includes three milestones, 2028, 2035, and 2050, and that strategy is based upon a vision of the evolution across the world during this period.

2028:

Our assumptions for this time horizon are that industrial-level decarbonization continues to accelerate. New technologies will be piloted and demonstrated. Green fuels and materials will be scaling, and the feasibility for hydrogen usage as an agent of decarbonization in multiple applications will be growing. SMRs will continue to be used for most large-scale hydrogen production. They will become more efficient, and many will incorporate carbon capture and/or use feedstocks and power from renewable sources. Electrolysis for green hydrogen production from renewable power will be available at capacities greater than 100 MW. Linde's six climate change targets through 2028 (with a 2018 baseline) follow the full value chain from investment to customer and environmental benefits. They are consistent with Linde's mission and are critical to continuing the company's sustainability leadership. These are management targets; our businesses are accountable for achieving them. Linde will invest more than $1 billion in decarbonization initiatives and triple the amount of clean hydrogen production. The company is investing across the hydrogen value chain to accelerate the clean energy transition with a higher global renewable power mix and significant operating and capital efficiencies. We will pursue competitive low-carbon sources of hydrogen, including energy efficient SMRs and ATRs with carbon capture, electrolysis with renewable power, and pilot new low-carbon technologies. Our R&D will have a decarbonization focus. Key projects include advanced thermal barrier coatings and advanced sealing technologies; improving global plant efficiency, energy optimization, logistics and operations optimization; and flexible operations to support demand-side management and allow for higher utilization of renewably produced electrical power. It also includes the development of alternative gas separation technologies to allow alternative process concepts with higher efficiency and a lower carbon footprint. In the steel industry, projects include the decarbonization of the integrated mill, heat recovery, direct reduced iron technologies and electrochemistry initiatives.

Not all barriers to decarbonization can be overcome in the short term. However, we will continue to invest in optimizing operational efficiency to meet our commitment to substantially increase our focus on low-carbon and renewable energy to continue reducing carbon emissions.

The SD 2028 target of 35 percent improvement in Linde GHG intensity 2018 – 2028 is measured against adjusted EBITDA*. This target was chosen to show efficiency against a business denominator. EBITDA is one of the non-GAAP measures reported by Linde plc. Achieving this target will depend on a range of external variables that are not in our control, from global economic trends to government regulations to currency fluctuations. We remain committed to managing business growth while optimizing operational GHG emissions. In 2021, Linde reduced its GHG intensity by 26 percent from the baseline year; see Performance Towards Targets. In relation to Scope 1 or direct GHG

Goal of 35% improvement in Linde GHG intensity 2018–2028*

* Scope 1 and 2 emissions (in million MT) divided by adjusted EBITDA in billion USD. Calculation for 2018 uses adjusted pro forma EBITDA. Calculation for 2019 onward uses adjusted EBITDA. Adjusted EBITDA is a non-GAAP measure. For definition and reconciliation, please see Appendix to the Investor Teleconference Presentation Fourth Quarter 2021.

emissions, we target improving Scope 1 GHG intensity for hydrogen plants (HyCOs) (4 percent improvement within the target horizon) and our distribution vehicles (10 percent) and reducing our absolute GHG emissions from other sources (e.g., refrigerant filling losses, nitrous oxide [N_2O] emissions) by 10 percent. In relation to Scope 2 or indirect GHG emissions, Linde aims to improve its operational efficiency and GHG intensity at ASU plants (7 percent within the target horizon). Linde's largest medium-term opportunity to affect its GHG footprint is in Scope 2 electricity. We continue to leverage our scale and geographic distribution to procure reliable and affordable sources of renewable electricity through active procurement of new direct renewable energy contracts, Power Purchase Agreements (PPAs) or Renewable Energy Credits (RECs).

By 2028, we expect to have achieved:

- 35 percent improvement in GHG intensity versus EBITDA – from 5.31 to 3.45.
- Hold Scope 2 GHG emissions flat or reduced at the same time as we substantially increase our power use.
- More than 2x low-carbon power procured.
- Overall, renewable energy and low-carbon energy sources are projected to increase from 35 percent to more than 50 percent (all power).
- Development of blue and/or green hydrogen projects.

We have implemented several additional measures to help us better manage our carbon footprint, achieve our long-term targets, and assess the long-term risks of climate change. Linde's Clean Energy organization was launched to focus and accelerate activity in this area. The GHG emissions from new investments are calculated and integrated into considerations in Capital Investment Committee decisions for every project. They are then considered in the selection of the technology solution and project risks across the project development cycle. To help mitigate potential physical risks from climate change, Linde has developed a tool to explore future climate change scenarios that could impose additional operational costs on production processes from factors like higher ambient temperature or air quality deterioration/higher carbon dioxide parts per million (PPMs) in the atmosphere at our locations. Physical risks are considered in planning. Impacts and mitigations are considered as part of periodic business reviews.

2035:

In 2028, the target horizon for our 10-year managed climate objectives will end. Linde has recognized the degree of its stakeholders' interest in climate change and the importance of impact globally. The company responded in 2021: Teams assessed then-current targets and began working on more aggressive goals, as well as the plans to achieve.

Our 2035 target is science-based and aligned with the Paris Accords goal to reduce global warming to well below 2°C. Linde continues efforts toward validation of this target and has worked with others in industry through the first SBT Chemicals Stakeholder Advisory Group, which is the working group that is developing guidance for the chemicals sector. (More information is available at: https://sciencebasedtargets.org/companies-taking-action/.) As our latest climate commitment demonstrates, we are active in advancing the world towards ambitious GHG reduction in the chemical industry using scenario analysis (utilizing Sustainable Development Scenario).

We can envision a future where hydrogen fuel cells will be widely adopted; green electricity will be available commercially; and energy and fuel markets will be linked. Low-carbon hydrogen will be cost competitive; SMRs will feature additional energy efficiency and CCS; and electrolysis will be available with renewable electricity sources at much greater capacities and will supply a significant share of new hydrogen demand. By 2035, we expect that hydrogen derivatives will become the new energy vector and an essential means to transport low-cost renewable power around the world.

Achieving this objective will require changes in societal behaviors, government regulation, industry engagement and technology development. Linde will continue to participate in the investments and technologies that will reduce global GHG emissions.

By 2035, we expect to have achieved:

- 35 percent reduction in absolute GHG emissions from our 2021 inventory.
- More than 3x low-carbon power procured.
- Execution of CCS projects at some of Linde's largest SMRs that will, with other efficiency efforts, reduce Scope 1 emissions.

2050:

The world is at the beginning of an energy transformation, and Linde's climate neutrality ambition demonstrates our long-term commitment to be an active contributor to the transformation.

Our vision for 2050 includes widespread availability of renewable and low-carbon energy and alternative technologies for production and distribution. Linde's 2050 climate neutrality ambition is based upon IEA's scenario analysis, as described in its latest 2020 ETP paper. This well-below 2 degrees Sustainable Development Scenario (SDS) recognized that the chemical sector as a whole is one that is hard to abate and projects the GHG trajectory for this industry as declining after 2030, reaching net zero after 2070.

Linde's trajectory foresees a much earlier decline in absolute emissions, reaching climate neutrality by 2050. Analysis shows that this trajectory equates to an average decline of 4 percent of emissions per year, as compared to business-as-usual emissions. Therefore, Linde considers its 2050 net zero goal to be in line with the global goal to limit warming to 1.5 degrees.

Tackling climate change is a shared and global responsibility. The long-term effects of carbon-based fuels on the environment and climate require significant changes to the energy supply chain, regulations and society. Linde is poised to contribute across all aspects of managing climate change and reducing GHG emissions.

Performance Towards Targets

Linde's 2028 Sustainable Development (SD 2028) targets set a long-term, 10-year action plan with commitments from leadership and all levels of the organization. These are managed targets with clear accountability, ongoing reporting to management, and an annual process of review and continuous improvement. These target areas are consistent with Linde's strategic non-financial business objectives considered in determining executive variable compensation awards. Performance against this full slate of targets is reported quarterly to executive leadership, and at least once a year to the full Board of Directors. Operational performance towards targets is reported on a monthly basis to management.

Linde began providing ESG performance results versus its climate change targets in 2020, the only chemicals company on the DAX and S&P 500 to report quarterly ESG performance against its targets.

Most targets run from the 2018 base year, the first year of our combined company, for 10 years to 2028. This chapter provides a summary dashboard of the SD 2028 targets and performance against these targets for 2021.

In 2021, Linde announced an additional climate change target, "35 by 35," which is a commitment to reduce absolute Scope 1 and 2 emissions by 35 percent in 2035. This managed target runs from the 2021 base year, and performance against this target will be provided in future reporting.

Climate Change

103-1, 103-2, 103-3

Priority Factors	Linde Targets*	2018	2019	2020	2021	Target	Status
Climate Change	Invest in decarbonization initiatives, cumulative $ million	14	66	128	299	1,000	↗
	Direct >33% of R&D budget to decarbonization, cumulative %	23	25	26	27	>33	↗
	Contribute >50% revenue from sustainability portfolio, annual %	n/a	53	54	55	50	↑
	Enable >2x GHG benefits, annual	2.5x	2.7x	2.3x	2.2x	>2.0x	↑
	35% absolute reduction in Scope 1 and 2 emissions by 2035, 2021 baseline, cumulative % (million tons CO_2e)	n/a	n/a	n/a	n/a	-35% (25.9)	n/a
	35% Improvement in GHG intensity vs. EBITDA, cumulative %, (intensity MMT CO_2e/$ billion)	(5.3)	-8.1% (4.9)	-16.1% (4.5)	-26.2% (3.9)	-35% (3.5)	↗
	4% HyCO GHG intensity improvement, cumulative %	0	-3.4	-7.1	-9.3	-4.0	↗
	7% ASU energy intensity improvement, cumulative %	0	-0.6	-0.5	-1.7	-7.0	↗
	10% fleet GHG intensity improvement, cumulative %	0	-0.9	-7.2	-7.5	-10.0	↗
	10% absolute reduction in other GHG emissions, cumulative %	0	0	-9.3	-38	-10.0	↑
	>2x low-carbon power sourcing, primarily from active renewable electricity, cumulative TWh	14	14.3	15.3	17.0	>28.0	↗
Legend	*All Targets terminate in 2028, unless specified otherwise					↑achieved; ↗on track; ↘behind target	

Invest and Innovate in Decarbonization

Linde has four targets in the area of decarbonization and growth.

- Invest >$1 billion in decarbonization initiatives

The scope is capital projects of more than $2 million, where the primary aim of Linde and/or its customers is to reduce GHG emissions or advance the use of low-carbon fuels and energy. Since 2018, Linde has invested a cumulative $299 million. For 2021, this includes investment in Linde's first PEM electrolyzer facility in North America, in Niagara Falls, NY.

- Direct at least one-third of Linde's annual R&D budget to decarbonization

The scope includes annual spend to develop lower-carbon technology for Linde assets or to develop lower-carbon solutions for our customers. Linde invested 27 percent of its 2021 R&D budget ($144 million) into decarbonization (2020: 26 percent). Initiatives include developing industry-leading carbon capture technologies, investing in promising green hydrogen technologies and driving operational efficiency to further reduce GHG intensity.

- Contribute more than 50 percent of revenue from our Sustainability Portfolio

The scope is annual Linde revenue associated with the sale of gases in applications that bring environmental and/or social benefits; see the Business Model table. In 2021, Linde generated 55 percent of gases revenue, or $15 billion, from its Sustainability Portfolio. The Sustainability Portfolio includes sales from Linde's eco-portfolio ($10 billion) and social portfolio ($5 billion). The eco-portfolio includes applications that have environmental and social benefits, such as oxygen for blast furnaces in steel; hydrogen for utra-low sulfur diesel (ULSD); and oxygen and carbon dioxide for wastewater treatment, desalination and aquaculture. The social portfolio includes applications with target social benefits. Examples are oxygen for respiratory care and helium for MRI technology.

For the eco-portfolio, R&D developed a simplified Life Cycle Assessment (LCA)-based screening methodology to determine and update which applications are included. A simplified LCA includes part of the four stages of a product lifecycle of raw material acquisition, manufacturing, use/reuse/maintenance and recycle/waste management (e.g., it assesses one or two of the stages completely, or analyzes all four stages to lesser depth). All (100 percent) of Linde's products under development were evaluated in-depth in the first three stages (e.g., cradle to grave). For environmental impacts, we use Environmental Key Performance Indicators (EKPIs): energy (electricity, natural gas and fuel); air emissions and direct and indirect GHG emissions; waste (hazardous and non-hazardous); water; and ozone depleting substances (ODSs).

- Enable >2X more GHG to be avoided per year than are emitted in all Linde operations

The scope is GHG benefits from a subset of Linde applications that enable demonstrable GHG benefits, versus Linde's 2021 total direct and indirect (Scopes 1 and 2) GHG emissions. In 2021, a subset of its applications enabled 88 million MT CO_2e to be avoided—48 million MT more than its GHG emissions or 2.2x times more. See "Linde Applications Enable 2.2x Carbon Productivity."

Methodology: End-user-avoided carbon dioxide emissions are calculated in accordance with the International Council of Chemical Associations (ICCA) guidelines. Avoided emissions arise from efforts by multiple partners along the respective value chains. Linde's contribution has been characterized as fundamental in enabling the avoided emissions. See "Addressing the Avoided Emissions Challenge: Guidelines from the chemical industry for accounting for and reporting greenhouse gas (GHG) emissions avoided along the value chain based on comparative studies," ICCA October, 2003 (updated 2017), at: https://icca-chem.org/wp-content/uploads/2020/05/ICCA-2017_ Addressing_ guidelines_WEB.pdf.

Optimize Operational Energy Use and GHG Emissions

Linde's 2021 Scope 1 GHG emissions were 16.3 MM MT CO_2e. This represents a slight increase in emissions compared to 2020 by 0.5 percent, driven by an increase of hydrogen production, offset by improved HyCO GHG intensity due to higher byproduct sourcing. Results were also impacted by a considerable decrease in other GHG emissions; see "Other GHG emissions reduction target."

Scope 1 GHG emissions were caused mainly (70 percent) by hydrogen production in SMRs. An additional 21 percent is derived from ASUs or other production operations, where plants run on natural gas. Approximately 5 percent of Scope 1 emission were caused by "other" sources of GHG (e.g., nitrous oxide or other plants), and 4 percent is from driving. Targets to improve GHG intensity in hydrogen production, other GHG emissions and driving address those emissions.

Linde's Scope 2 GHG emissions were 23.6 MM MT CO_2e. This represents a 5.7 percent increase versus 2020. The 2021 result is driven by higher production volumes, offset by efficiency improvements. The value reflects increased usage of market-based emissions factors for several plants that previously used location-based factors. Scope 2 GHG emissions are caused by the use of electricity and steam, a portion of which comes from fossil fuel sources. Electricity is principally (90 percent) used by air separation plants and is tracked with the air separation energy efficiency target. An additional 5 percent of the electricity is used in hydrogen production. Targets to improve energy efficiency in ASUs and to increase low-carbon power sourcing address this issue.

In order to show GHG efficiency against a business denominator, Linde selected EBITDA, which is one of the non-GAAP measures reported by Linde plc. It reflects the size of the business for which the emissions are being reported and the efficiency improvements that are being targeted. Adjusted EBITDA is a non-GAAP measure. For definition and reconciliation, please see Appendix to the Investor Teleconference Presentation Fourth Quarter 2021. Linde's 2021 adjusted EBITDA was $10.2 billion. This GHG intensity analysis complements the absolute GHG reduction target announced in 2021.

- Achieve a 35 percent absolute reduction of Scope 1 and 2 emissions by 2035

The scope is all Scope 1 and Scope 2 GHG emissions for Linde globally. The target is aligned with the Paris Accords goal to limit global warming to well below 2°C. Progress against this new target will be reported in Linde's 2022 Sustainable Development Report.

- Achieve 35 percent GHG intensity improvement versus EBITDA

The scope is Linde's combined Scope 1 + Scope 2 GHG emissions versus EBITDA. In 2021, Linde's GHG intensity was 3.9 MMT CO_2e/$ billion, representing 26 percent GHG intensity improvement over 2018, resulting from increased renewable energy availability and sourcing as well as strong EBITDA growth as a consequence of increased production and turnover. In early 2022, Linde estimated an improvement of 24 percent. Upon final audit, improvement was confirmed to be 26 percent.

- Achieve 7 percent improvement in ASU energy intensity

The scope is Linde ASU facilities worldwide where Linde pays for the power and has operational control, including 50 percent majority-held joint ventures. The 2021 results represented a strong improvement versus 2020, from 0.5 percent cumulative reduction to 1.7 percent. This progress partly compensates the negative productivity impacts from lower production volumes during the pandemic. The improvements were achieved through targeted productivity efforts and capital investments, along with the startup of large plants incorporating state-of-the-art ASU equipment and processes. See GRI 302-1 for information on electricity consumption, GRI 302-3 for energy intensity, and GRI 302-4 for energy reduction activities.

- Achieve 4 percent improvement in hydrogen GHG intensity

The scope is Linde hydrogen facilities worldwide. The 2021 results were a 9.3 percent improvement versus 2018 (4 percent YOY), mainly due to increased byproduct sourcing in 2021.

Performance against this target was not expected to be linear. It reflects changes in production volumes ,the effect of project startups, the implementation of projected technology innovations, and an increase in byproduct hydrogen sourced.

- Achieve 10 percent improvement in trucking GHG emissions intensity

The scope is all Linde commercial driving operations (bulk and packaged gases combined) where the driver is a Linde employee. The 2021 results were a 7.5 cumulative percent GHG intensity improvement against the baseline.

The target is calculated by multiplying the number of miles driven and fuel used in each geography by GHG emissions factors and dividing by volume of product delivered. 2021 performance continued to improve due to logistics efficiency projects, fleet renewal and new technology deployment—despite efficiency pressure effects from various government-imposed COVID-related minimum supply chain stocking levels. Contractor driving is reported as Scope 3 at GRI 305-3.

- Achieve a 10 percent absolute reduction in other GHG emissions

The scope is most "other GHG emissions" from a range of Scope 1 GHG emissions sources, calculated into CO_2 equivalents—refrigerant losses from cylinder refilling operations; N_2O emissions from N_2O plants and cylinder filling; and methane releases from helium and CO_2 plants, which account for most of Linde's other GHG emissions. In 2021, these emissions were 0.9 MM MT CO_2e (2020: 1.5). 2021 results were a 38 percent improvement over the baseline, representing an early achievement of the target, which was originally set for 2028. This performance improvement was achieved by best practices and programs in refrigerants and N_2O. Methane improvement is due to new recovery and use processes, among other factors.

- >2x low-carbon power sourcing, primarily from active renewable electricity

The scope is all Linde operations within our GHG reporting boundary. The target is on track. In 2021, the company sourced 17 million MWh low-carbon energy, or 40 percent of all its purchased electricity. Progress on this target was not expected to be linear. Low-carbon electricity is defined as electricity produced from non-fossil sources including renewables (e.g., solar, wind, biomass, geothermal, hydro) and other low-carbon sources. The target includes passive electricity (e.g., from the grid) and active sourcing over PPAs, RECs, certificates and sourcing contracts for specific facilities. It considers all energy consumption where Linde purchases the electricity. It excludes electricity where Linde is not the purchaser.

Linde actively sourced 2.8 TWh renewable electricity and 0.7 TWh low-carbon power in 2021. Linde electricity use in the UK is almost 100 percent renewable using wind and almost 100 percent in Brazil using hydroelectric. Low-carbon and renewable electricity is also sourced in the United States, where both hydro and nuclear power are used, as well as in Colombia, India, Spain, the Philippines and other geographies.

Safety, Health & Environment

103-1, 103-2, 103-3

Priority Factors	Linde Targets*	2018	2019	2020	2021	Target	Status
Safety, Health & Environment	$1.3 billion in sustainable productivity, cumulative $ million	92	176.5	310	497	1,300	↗
	Water Management Plans (WMPs) at high-water-use sites in areas of high-water stress (# sites in scope, % WMPs implemented)	n/a	22 (73%)	67 (20%)	67 (36%)	100%	↗
	Achieve Zero Waste to Landfill at 450 sites	217	210	286	360	450	↗
	Annually achieve operational safety better than industry levels for Lost Workday Case Rate (LWCR)	0.32	0.23	0.21	0.22	1.00	↑
	Annually achieve annual operational safety better than industry levels for Total Recordable Case Rate (TRCR)	0.74	0.57	0.51	0.54	3.10	↑
	Annually achieve Commercial Vehicle Incident Rate (CVIR) of <2.5 per million kilometers driven	2.05	2.17	1.7	2.08	<2.50	↑
	Zero global sales of coating slurries that contain hexavalent chrome by 2029 (Surface Coatings)	On track, see reporting section following					↗
Legend	*All Targets terminate in 2028, unless specified otherwise	↑ achieved; ↗ on track; ↘ behind target					

Environment

In addition to its investment targets, aimed at addressing climate change, Linde has defined three environmental targets: sustainable productivity or eco-efficiency, reduction of waste and management of water. All three programs are baselined with 2018 data from legacy Praxair only. From 2019, the data reflects the Linde plc organization.

- Save $1.3 billion from sustainable productivity

Sustainable productivity projects bring financial and environmental savings in Linde's EKPIs. The target for sustainable productivity is a cumulative savings of $1.3 billion, 2018 – 2028. The 2021 results are on track to meet this target. Linde achieved savings of $187 million (cumulatively $497 million), or 38 percent of all targeted productivity savings. Environmental protection costs in 2021 included approximately $13 million in capital expenditures and $42 million of expenses.

The scope is all Linde operations. In 2021, sustainable productivity also saved 875 million KWh, 1,800 billion BTU of natural gas, 6 million gallons of diesel fuel, approximately 24 million pounds of waste, 514 million gallons of water and 696,000 MT CO_2e. CO_2e savings count projects where benefits are fully realized and projects that were implemented in 2021 and are still accruing benefits. Based on our experience with rolling out this program at Praxair over almost a decade from 2010, the target assumes that both reported financial savings, and their percentage contribution to all productivity, will increase from the early years of the target period, before achieving a steady state in later years.

- Implement Water Management Plans (WMPs) at high-water use sites in areas of water stress

The scope is high-water use (hi-hi) sites, defined as sites exceeding 50,000 m^3/ year of water withdrawal, excluding once-through, non-contact cooling water. The 2021 results are on track to meet this target: Sixty-seven sites were defined as in scope for this target in 2021. WMPs were implemented at 36 percent of applicable sites.

Areas of water stress are defined by the WRI Aqueduct Global Water Risk Atlas Tool (2019 version). We determined "high stress" to mean that the baseline water stress was "high" or "extremely high". In addition, businesses are encouraged to voluntarily use local determinants of water risk; sites thus defined are included in this target scope.

Linde's main uses of water include cooling and boiler systems for the production of steam for the SMR process to make hydrogen. Net freshwater consumption was 99.5 million m^3.

In 2021, Linde improved its water reporting tool structure and focused on reducing water use through productivity projects. To enhance data quality and water intensity monitoring, Linde increased its water reporting frequency from quarterly to monthly for sites with WMPs. The number of total sites in scope is 67.

Nine of these sites were added voluntarily in South Latin America and APAC, based on local assessment of high-water stress. Of the 67 sites determined to be in scope, 36 percent implemented WMPs by the end of 2021. In addition to the voluntary sites in the Americas (8) and APAC (1), the remaining WMP sites are in EMEA (31), APAC (13), and the Americas (14).

Linde's team in South Latin America has set a voluntary regional target to continuously improve their WMP site-specific water intensity performance since 2016.

They are on track to achieving this goal. At the end of 2021, 45 percent of the 11 WMP sites improved their water intensity results compared to the baseline year. They also achieved an overall water reduction of more than 400,000 m^3—a reduction of 9.2 percent, compared to 2020.

Investments were made to optimize cooling and boiler systems operation, to identify and repair water leaks, to collect and re-use rainwater, as well as to recover process condensate and other effluents to use it as make-up water in cooling towers.

- SD 2028 Target: >450 sites achieve Zero Waste to Landfill

The scope is all Linde operations. At the end of 2021, 360 sites achieved Zero Waste to Landfill. A Zero Waste to Landfill site is defined as one that diverts more than 90 percent process waste or hazardous waste from landfills; this can include incineration for energy recovery. Altogether, 707 sites participated, and approximately 260 million pounds of waste was diverted from landfills. Zero Waste to Landfill helps extend our company's mission and values and promotes circular economic practices. In many cases, the program brings social benefits to local communities, from education to job creation. See GRI 306-2 for more information on waste metrics.

In addition to Linde facilities, six regional offices retained their external recognitions for greening their offices: Bangalore, India; Seoul, South Korea; Burr Ridge, Illinois; The Woodlands, Texas; Danbury, Connecticut; and Tonawanda, New York. See the Green Seal website at: https://greenseal.org/programs/green-office-partnership.

Safety & Health

During 2021, Linde continued to align its safety and environmental standards and procedures for both work processes and product handling to enable employees around the world to execute their jobs safely and to prevent safety incidents relating to operational processes or products. Linde's SD 2028 targets include two for operational safety, one for distribution safety and one for product safety. Increases in 2021 incident rates compared to previous year are mainly due to post-COVID effects like return of staff to Linde offices and plants, higher commuting and more on-road traffic compared to 2020.

- Annually achieve operational safety better than industry levels for Lost Workday Case Rate (LWCR) and Total Recordable Case Rate (TRCR). The scope of these targets are all Linde operations (e.g., for employees and contractors).

Lost Workday Case Rate (LWCR): Linde's 2021 LWCR was 0.22 (2020: 0.21), more than four times better than the OSHA all industries industrial average (1.2). Linde's LWCR is defined as the number of Recordable Injury Cases (RICs) plus the number of Recordable Sickness Cases (RSCs) that result in one or more day(s) away from work as a result of a work-related incident or exposure per 200,000 hours worked (for employees and contractors).

Total Recordable Case Rate (TRCR): Linde's 2021 TRCR (the number of employee or contractor recordable injuries per 200,000 hours worked) was 0.54 (2020: 0.51). Linde's 2021 TRCR was more than five times better than the OSHA all industries industrial average (2.7). A recordable case is defined as any recordable injury or sickness of an employee, temporary worker or contractor that results from a work-related incident or exposure per 200,000 hours worked.

- Annually achieve Commercial Vehicle Incident Rate (CVIR) of <2.5/million kilometers

The scope is all operations and all employee and contractor commercial vehicle incidents at all severity levels, per million kilometers. The annual vehicle safety target is to maintain Linde's CVIR at <2.5/million kilometers. In 2021, this target was achieved: Linde's global CVIR was 2.08 vehicle incidents per million kilometers (2020: 1.7).

Each high-severity vehicle incident is investigated, and the results from the investigation are reviewed by local leadership and Corporate SHEQ, including root cause analysis and corrective actions. In addition, selected high-severity incidents based on results and learnings are reviewed monthly with corporate and regional leadership. Target scope excludes service vehicles.

Annually, all high-severity vehicle incidents, which are defined by Linde standards and closely aligned with ICCA guidance, are reviewed. As part of this review, an analysis is conducted to identify improvement opportunity areas in which the learnings and conclusions, as identified from the analysis, are used to improve safety standards and/or establish new initiatives and focus areas.

As an example, the learning and conclusions identified from the 2020 analysis resulted in additional 2021 safety initiatives in the areas of addressing driver fatigue and driver distraction in addition to a continued focus in transport contractor management and driver development programs.

- Zero global sales of coating slurries that contain hexavalent chrome [Cr(VI)] by 2029.

The scope is Surface Technologies. Four targets were established in relation to eliminating Cr(VI)-containing slurries and replacing coatings with strontium chromate, which is currently used in several SermeTel® and SermaLon® coatings.

  - By 2019: Offer coatings free of strontium chromate.
  - By 2021: Offer 100 percent chrome-free slurry product alternatives to the market.
  - By 2024: No sales of coating slurries that contain Cr(VI) if chrome–free 2020 alternatives have been developed and qualified by the original equipment manufacturers (OEMs).
  - By 2029: No sales of coating slurries that contain Cr(VI).

These targets were prompted by the requirements of REACH*, but go beyond REACH in that they apply worldwide and will eliminate toxic substances not just in Europe, as required by REACH, but everywhere. Surface Technologies continues to develop additional Cr(VI)-free alternatives to replace legacy SermeTel systems targeted for elimination in 2029. In addition to the three targets to eliminate Cr(VI)-containing slurries, Surface Technologies has expanded its focus and developed replacement coatings that are free of strontium chromate, a chemical that is currently used in several SermeTel and SermaLon coatings.

This target is on track. In 2019, Surface Technologies introduced replacement coatings to major OEMs, and they have been accepted and incorporated into usage, allowing the OEMs to comply with the January 2019 REACH sunset date for strontium chromate. Cr(VI)-free products have been introduced to the market. As of 2021, these alternatives are available for much of the company's portfolio and under testing by several key customers in aviation and energy. Upon the adoption of these products by the aerospace, industrial, and oil and gas industries, we have the potential to reduce our usage of Cr(VI) – containing substances of concern by an estimated 8,000 – 9,000 pounds annually.

*REACH (the Registration, Evaluation and Restriction of Chemicals) is a European Union regulation that aims to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical substances. This is done by the four processes of REACH, namely the registration, evaluation, authorization and restriction of chemicals.

Environmental Topics

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Connecting with External Stakeholders to Expand and Refine Scope 3 Reporting

Linde has reported emissions along its supply chain, or Scope 3 emissions, for several years. This category of GHG is of interest to many stakeholders, as the world seeks to understand the global carbon footprint, and the company discloses this information in annual reporting, including its CDP Climate Change response. Scope 3 emissions derive from suppliers, direct customers, or even end consumers, and developing baselines and sound and repeatable methodologies is an essential step in reporting. Collaboration with suppliers and customers is key to obtaining the information to make this process successful, to increase accuracy, and to establish baselines that can be used to manage and potentially reduce emissions long-term.

Such special projects also offer the company the opportunity to engage with another group of external stakeholders: future sustainability champions. Linde's continued work in Scope 3 seemed a perfect fit for the continuing engagement with Villanova University's Resilient Innovation through Sustainable Engineering (RISE) program. Since 2016, the company has been a member of RISE, completing one or two sustainability projects annually with graduate students who take part in the RISE program.

"The advantages for both sides are apparent," said Kathy Kuberka, Director, Technology Planning, "Linde benefits from the graduate students' fresh ideas and solutions based on the current state of science, driving resilient innovation across our value chain." The university agrees. "Our collaboration with Linde enables graduate student teams the unique opportunity to work alongside professional experts and to complement their academic knowledge with practical experience addressing real-life sustainability challenges," said Dr. Mary McRae, RISE faculty advisor.

RISE team members Adi Pise, Ana Cedillo, Chris Wilson, Jamie Silk and Renee Turner helped to research emissions from cylinder and tank assets in the semester-long effort, which involved outreach with key suppliers who agreed to collaborate in this endeavor. To close the project, the students made a final presentation and gave recommendations on how to streamline the data collection process while continuing to focus on data quality. Interestingly, the team found that calculated emissions from supplier data were lower than the original model suggested, due to a high proportion of aluminum produced from hydropower sources, making clear the value from engagements across the supply chain for such efforts.

The next project is already in planning. The Linde team looks for more opportunities to work creatively with suppliers, customers and academia on complex projects.

→ For more information on Linde's GHG inventory, see Linde's CDP disclosures on the Sustainable Development Reporting Center.

300 Series: Environmental Topics

Environmental Management approach for material aspects 103-1, 103-2, 103-3

The environmental dimension of sustainability concerns an organization's impacts on natural systems, including ecosystems, land, air and water. Linde's business depends on a natural resource (the air), and the company's mission and business model both aim to create more value with fewer resources. Its PFs in sustainable development include a range of environmental aspects aimed at reducing operational environmental impacts and maximizing environmental contributions — the benefits that Linde applications bring to customers and the planet.

Organizational Responsibility, Accountability and Incentives
Linde's CEO and the Board of Directors are accountable for environmental issues impacting the company. Linde's full Board of Directors has responsibility for reviewing safety and environmental risk at each Board meeting.

Responsibility for performance lies within the businesses. Performance is consolidated and reported to the Executive Leadership Team and to the Board. Linde's EVP and CHRO is the most senior officer responsible for environmental issues globally. Respective members of the executive leadership are responsible for the regional operating segments of the Americas, APAC, and EMEA, as well as Linde Engineering, Lincare, Applications Technology, Clean Energy, Sustainability and Digitalization. Linde's environmental compliance and management are managed under the vice president, SHEQ (Safety, Health, Environment, and Quality), who reports to the CHRO. The SHEQ organization develops and maintains consistent methodologies, procedures and reporting. Safety is one of Linde's values and is, therefore, non-negotiable. We are driven to ensure that no harm comes from our actions to people, the environment or the communities in which we operate.

Linde's water program and water target are led and maintained by the COE, which also leads and maintains its program in Sustainable Productivity. The Zero Waste program is led and maintained by Sustainable Development. Linde's Sustainable Development Management System (SDMS) provides a monthly dashboard to review performance towards environmental targets. It is jointly coordinated by SD, COE and SHEQ. Climate change targets are also reported monthly from the SDMS to the finance organization and CFO.

Linde's executive annual variable compensation is impacted by performance in non-financial areas considered to be Strategic Business Objectives. These include achieving best-in-class performance in several areas, including productivity and environmental responsibility.

Policies, Commitments, Goals and Targets
Linde has a CBI and a global HSE Policy, both with commitments to environmental stewardship. Linde has issued a Sustainable Development and Climate Change Position Statement.

As described in Materiality, Priorities and Targets: SD 2028 on page 15, Linde's Environmental PFs are Climate Change and Environment, Safety & Health. Each of these PFs has related SD 2028 targets; see Performance Towards Targets on page 24. The 300 series disclosures report against the relevant GRI Standards for these PFs, in addition to GRI disclosures that are not PFs but that may be of interest to various external stakeholders.

Mechanisms for Grievance and Recourse
Linde policies are communicated to employees around the world to outline its expectations of conduct wherever it does business. It takes these standards very seriously, and non-compliance can result in severe disciplinary action, up to and including termination of employment. Linde employees are actively encouraged to report suspected complaints and concerns, or to anonymously report violations, through a number of channels, including the Integrity Hotline. The company also encourages customers, vendors or other observers to use the hotline to submit complaints or allegations about these or other matters. The company provides an annual report of Linde incidences of substantiated hotline reports on its website at: http://www.linde.com/about-linde/sustainable-development/reporting-center/hotline-reports.

Programs, Projects, Initiatives
In addition to the material below, see the environmental disclosures per the GRI 300 series aspects.

Training
Environmental and safety training is conducted for all employees and all contractors, as defined in the SHEQ Management System and Standard Operating Procedures (see 404-1). Onboarding and ongoing training are conducted as part of the SDMS.

103-1, 103-2, 103-3

Environmental Management System (EMS)

Linde's strong global environmental management system (EMS) ensures that measures are in place to enable pollution prevention and control, the responsible management of direct and indirect atmospheric emissions and waste, the protection of natural resources and biodiversity, and the management of environmental impacts from transportation or from the use and disposal of products and services. Linde is a member of the chemical industry Responsible Care program. It strives to continually improve its health, safety and environmental performance; listen and respond to public concerns; work with customers, carriers, suppliers, distributors and contractors to foster the safe and secure use, transport and disposal of chemicals; achieve optimum environmental performance; and report goals and progress to the public. Linde's global EMS conforms to the American Chemistry Council's (ACC's) Responsible Care® Management System (RCMS) and is aligned with ISO 14001, the international standard for Environmental Management Systems (EMSs).

External EMS Certification

As a member of ACC, Linde's safety, health, environment and security (SHES) management system is audited by an accredited third party to ensure compliance with the ACC RCMS. Linde is audited by Bureau Veritas per the requirements of the RCMS, most recently in March 2019 (the certification cycle is three years). RCMS audits for ACC include Linde's Danbury, Connecticut, corporate office and a representative sampling of sites in the U.S. and Canada.

The scope of the audit includes sites that "manufacture and distribute industrial gases per the RCMS Technical Specification (TC) RC 101.03." As an outcome of the RCMS audit, Linde's SHES management system in the U.S. and Canada has been recognized as compliant with ACC requirements (see https://www.linde.com/about-linde/safety-and-environment).

Linde is signatory to and in compliance with the Responsible Care Global Charter, which includes active participation in Responsible Care programs in all countries where programs exist and where Linde has significant business interests.

Linde businesses around the world conform to Linde's worldwide SHES management system; in the company's major markets, they are certified to the international EMS standard, ISO 14001, to national standards for EMSs or to other related standards. For example:

- All Linde Germany is externally certified to ISO 5001, the international standard for energy management systems, as well as ISO 14001.
- Linde Engineering has obtained external certification to ISO 14001.
- White Martins sites in Brazil and APAC businesses maintain certifications to ISO 14001.
- Mexico sites are certified to their national environmental agency PROFEPA Clean Industry Standard.

By revenue, 87 percent of Linde's worldwide gases production and engineering sites are externally certified to RCMS, ISO 14001 or an equivalent national standard.

Internal SHEQ Assessment Program

All Linde sites, and other sites where Linde is a majority shareholder, are subject to evaluation for safety, environment and quality (the latter for compliance with local medical regulations, where applicable). Quarterly assessment reports are provided to senior management. The full Board is committed to review safety and environmental risks at each board meeting. Regular assessments are a requirement of Linde's SHEQ standards and help ensure consistently high standards in all areas of safety, environmental protection, security and compliance.

Linde's internal SHEQ assessment program includes type "A" and "B" assessments and facility self-assessments. Type A assessments are led by Global SHEQ staff or their designated agent. Type B assessments are led by a member of one of the global business units. Both type A and B assessments are independent of the facility being audited, and the number of these assessments is tracked by Global SHEQ. Facility self-assessments are also conducted by local or regional personnel to help facilities self-identify areas in need of improvement and are not tracked outside of the local operating unit. In 2021, Linde conducted 70 "A" assessment audits, all at Linde sites, and 328 internal "B" assessment audits as per business safety plans. See GEN (2).

Internal Assessments

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
"A" Assessment audits conducted	56	60	26	70
"B" Assessment audits	216	300	250	328

GEN (2): Internal Assessments

103-1, 103-2, 103-3

External Environmental Data Assurance

Linde's eKPIs are externally assured. See 102-54 for the verification letter and https://www.linde.com/-/media/linde/merger/documents/sustainable-development/2021-ekpi-assurance-statement.pdf.

Introduction

Linde is a resource-intensive company. Linde's environmental performance year-on-year can best be evaluated on an intensity basis versus revenue. In most cases, this shows a positive trend. In addition, Linde's business model is resource efficiency — to make more value than it consumes. The environmental and other benefits of Linde applications are described in the "Business Model" section on page 10, the "Creating Economic, Environmental and Social Value" section on page 11, and the "Linde Applications Enable >2x Carbon Productivity" section on page 20.

For ease of comparison and to follow Linde's performance year-on-year, Linde presents a full-year pro forma value for 2018 for each environmental KPI. These 2018 pro forma values are comparable to the 2019 and 2020 numbers, using the same reporting scope, definition and boundaries. Trend data needs to be understood in the context of the merger in 2018 between Linde AG and Praxair, Inc. to form Linde plc.

Linde's reporting boundaries for eKPIs are consistent with the financial reporting boundaries and financial control definition to the greatest extent possible. Linde reports on all eKPIs for all subsidiaries, JVs and other holdings within its organizational boundaries whose revenues and Earnings Before Interests and Taxes (EBIT) are included in Linde's financial results. Linde does not collect eKPI data for minority holdings and other holdings that are not reporting their financials. EKPIs for JVs, which are not fully consolidated into the company financials (at-equity JVs), are collected but are only included in external GHG reporting under Scope 3.

301-1 Materials used by weight or volume

Raw materials are procured through a global procurement organization under global procurement standards and expectations that include requirements for material sustainability. Linde has supplier expectations that manage sustainability in its supply chain.

Non-Renewable Materials Used

Linde estimates that 1 percent by weight of the raw materials used in 2021 were non-renewable, including natural gas and naphtha, which are used in hydrogen production.

Linde also builds air separation units (ASUs) and steam methane reformers (SMRs). Construction materials for these are generally from non-renewable sources: aluminum, carbon steel, stainless steel, copper and brass alloys, brass and metals. The largest material by spend is steel.

Renewable Materials Used

Ninety-nine percent by weight of the raw materials used in 2021 to produce gaseous nitrogen, oxygen, argon, carbon dioxide and hydrogen were renewable raw materials. Renewable raw materials used by Linde include air, water, carbon dioxide and hydrogen. These products represent more than 90 percent of the revenue Linde received for the products it manufactures. Examples of products not included are those manufactured by Surface Technologies and low-volume products, such as acetylene.

Using air as its raw material, Linde produces oxygen, nitrogen, argon and rare gases through several air separation processes, of which cryogenic air separation is the most prevalent. As air is a renewable natural resource, there is no negative environmental consequence to using this raw material.

Process gases, including carbon dioxide, hydrogen, carbon monoxide, helium, specialty gases and acetylene, are produced by methods other than air separation. In many cases, these are sourced as an industrial byproduct or waste. Some of these byproduct sources are renewable, but all offer a means to reuse products that would otherwise have been waste. The volumes of process gases procured are considered business confidential.

- Most carbon dioxide is purchased from byproduct sources, including chemical plants, refineries and industrial processes. These byproduct sources include ethanol manufacturing facilities, where the waste carbon dioxide is considered renewable. A portion is recovered from carbon dioxide wells.
- Hydrogen and carbon monoxide are produced by either steam methane reforming of natural gas or by purifying byproduct sources obtained from the chemical and petrochemical industries. In 2021, Linde procured 19 percent byproduct hydrogen.
- Helium is acquired from several sources. In the U.S., for example, Linde is sourced from helium-rich natural gas streams.
- Acetylene can be produced from calcium carbide and water. A significant percentage is purchased as a chemical byproduct.

301-2 Percentage of materials used that are recycled input materials

Also see 301-1 for information on renewable raw materials. As part of its sustainable supply chain program, Linde's Procurement organization works with vendors to reduce consumption of upstream, non-renewable natural resources. For some of its business lines, Linde actively sources recycled input materials by using byproducts from other industrial processes. The total weight of these byproducts as a percentage of total material use is not reported here.

From 2011–2021, most of the acetylene produced by Linde in the U.S. was sourced from byproduct acetylene, avoiding the mining of calcium carbonate and the recycling or disposal of carbide lime. Most Linde carbon dioxide sold in the U.S. was sourced from ethanol fermentation (a biomass source). As a business, Linde is constantly researching innovative ways to expand the use of this application.

Most gases are transported in pipelines or trucks and use little packaging. Cylinder products are typically transported by truck. (See 301-3).

Linde has a large engineering business, which designs and constructs new production plants. When building a new plant, the focus is put on the re-use of parts/components from other dissembled plants (e.g., refurbished parts) as much as possible. At the end-of-life of a production facility, parts and components are checked, refurbished if required, and directly re-used or put in stock for future usage. Thus, most of the materials are recycled and become input materials (e.g., for new plants).

In order to avoid procurement of new materials, the company has established several asset management programs that are actively identifying idle assets (e.g., cylinders) to ensure that they are put back into use rather than purchasing new materials. The programs actively track all assets, are well reported and yielding good results.

301-3 Reclaimed products and their packaging materials

Linde produces very little packaging waste. Linde delivers most of its product in pipelines or bulk trucks, or in cylinders. As the products are consumable, there is nothing to reclaim and no packaging material for the majority of products. For the packaged gases product lines, either disposable cylinders or reusable cylinders are utilized. The metal cylinders last about 40 years, are returnable and are typically reused multiple times.

Linde runs several large cylinder refurbishment centers worldwide as well as many smaller test shops and repair centers in many countries. In its cylinder test shop in Wolverhampton, UK, Linde refurbishes about 500,000 cylinders per year in order to avoid unnecessary scrapping.

302-1 Energy consumption within the organization

Where MWh were converted to GJ, MWh were multiplied by 3.6.

Fuel Consumption

Linde's total non-renewable fuel consumption in 2021 was 75.6 million GJ, or 21 million MWh. This figure represents energy consumption and excludes fuel consumed as a feedstock for production. Linde did not consume any renewable fuel for such purposes in 2021. Fuel types used included natural gas, diesel, oil and "other," which includes naphtha and other refinery fuel gas.

Electricity Consumed

Total non-renewable electricity consumed in 2021 was approximately 40 million MWh, or 144 million GJ. Total active renewable electricity purchased in 2021 was 2.8 million MWh, or 10 million GJ.

Linde also tracks low carbon electricity, which includes both active and passive renewable electricity as well as nuclear. Active renewable electricity is classified as electricity procured through Power Purchase Agreements (PPAs), directly connected 100 percent RE supplier contracts, or validated green energy certificates. Passively procured electricity from the grid was calculated using the latest location-based renewable energy grid factors from the IEA and, where available, plant-specific RE factors according to the supplier contract/utility bill. In 2021, active RE was 2.780 million MWh and passive RE was 9.125 million MWh, for a total of 11.905 million MWh. Nuclear was 5.051 million renewable electricity, of which 0.7 million was actively sourced, bringing the total to 17 million MWh of low carbon electricity, which represents 40 percent of Linde's total electricity consumption in 2021.

Electricity values for the 2018 baseline, 2019, and 2020 have been updated due to the Scope 2 recalculation incorporating additional market-based emission factors. See 102-48 on page 13 for information on restatements and the affected KPIs.

302-1

See page 24 in Performance Towards Targets for information about Linde's low carbon power sourcing target.

Steam Consumed

Linde did not consume any heating or cooling in 2021.

Linde consumed 9.15 million MWh, or 32.9 million GJ, of steam in 2021.

Electricity, Heating, Cooling and Steam Sold

Linde sold 9.8 million MWh of steam in 2021.

Total Energy Consumed

Linde consumed a total of 72,943,000 MWh, or 262.6 million GJ, of energy in 2021. This is a 5 percent increase from the previous year. While Linde continued to implement energy efficiency projects, energy use increased mainly due to increases in production volumes.

Linde tracks energy consumption through meters and utility bills, collecting information for each plant and location in a global eKPI system. Newly constructed plants less than 2 months old and de-minimis locations consuming less than 1,500 MWh are excluded from reporting.

Non-renewable Fuel Consumption

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Non-renewable fuels purchased and consumed	21,034,000	21,246,000	21,298,000	21,012,000

EN (1): Non-renewable Fuel Consumption

Units: MWh

Electricity

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Active renewable electricity consumed	2,507,000	2,431,000	2,493,000	2,780,000
Passive renewable electricity consumed	7,868,000	8,161,000	8,534,000	9,125,000
Low carbon (nuclear) electricity consumed	3,617,000	3,687,000	4,264,000	5,051,000
Fossil electricity consumed	27,557,000	27,600,000	26,331,000	25,823,000
Total Electricity Consumed	**41,549,000**	**41,879,000**	**41,622,000**	**42,779,000**

EN (2): Electricity

Units: MWh

Steam

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Steam consumption	5,943,000	6,012,000	6,357,000	9,152,000

EN (3): Steam

Units: MWh

302-1

Total Energy

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
a. Non-renewable fuels purchased and consumed	21,034,000	21,246,000	21,298,000	21,012,000
b. Non-renewable electricity consumed[1]	39,042,000	39,448,000	39,129,000	39,999,000
c. Steam consumption	5,943,000	6,012,000	6,357,000	9,152,000
d. Total non-renewable energy consumption (a+b+c)	**66,019,000**	**66,706,000**	**66,784,000**	**70,163,000**
e. Total renewable electricity purchased or generated[2]	2,507,000	2,432,000	2,493,000	2,780,000
Total Energy Consumed (d+e)	**68,526,000**	**69,138,000**	**69,277,000**	**72,943,000**

1 Row b (non-renewable electricity consumed) includes both fossil-fuel based electricity and passive renewable electricity. Since passive renewables are consumed from the grid, Linde does not include this in row b since it did not directly purchase or generate this power.

2 Row e includes only active renewable energy consumed.

EN(4): Total Energy

Units: MWh

302-2 Energy consumption outside of the organization

Linde did not consume energy outside the organization.

302-3 Energy intensity

It is key to Linde's business to manage energy use and energy use in production. The company considers production volumes to be business confidential. Internally, energy intensity is tracked monthly and is a basis for Linde's operational GHG intensity targets, see Performance Towards Targets, page 24.

302-4 Reduction of energy consumption

Linde has a 7 percent energy intensity improvement target by 2028 for air separation units, see Performance Towards Targets, page 24.

303-1 Interactions with water as a shared resource

303-2 Management of water discharge-related impacts

Note: This section responds to 303-1 and 303-2

Water sourced from municipal utilities, surface waters and ground water are considered fresh water (<= 1,000 mg/L Total Dissolved Solids); all other sources are considered "other" (> 1,000 mg/L Total Dissolved Solids).

For more information on the company's water impact, interactions with key stakeholders, management approach and commitment to water stewardship, see Linde's Water Position Statement at https://www.linde.com/sustainable-development/policies-and-position-statements/water-position-statement and the most recent CDP Water Security response at: https://www.linde.com/-/media/linde/merger/documents/sustainable-development/2022-cdp-response-water-security.pdf. The CDP response is available at the end of July.

303-3 Water withdrawal

303-4 Water discharge

303-5 Water consumption

Note: This section responds to 303-3, 303-4, and 303-5

Water Withdrawal

In 2021, Linde withdrew 971 million m^3 of water. Linde tracks water withdrawals primarily through utility bills. No water sources were significantly affected by Linde's withdrawal of water in 2021.

Of the 971 million m^3 of water that Linde withdrew in 2021, 47 percent was from fresh water sources (municipal, surface water and groundwater), 31 percent from seawater, and 22 percent from third-party (industrial/recycled) sources. Linde estimates that more than 90 percent of the water withdrawn in 2021 at Linde production plants (excluding once-through) was recycled numerous times through cooling towers before discharge.

Overall, water withdrawal increased 16.6 percent compared to 2020, mainly due to increased production, including the impact of one new plant startup that used a significant volume of the category "other/seawater".

Water Discharge

Linde did not have any unplanned water discharges in 2021. No water bodies or related habitats were significantly affected by Linde water discharges or runoff in 2021.

Where Linde facilities discharge process water, discharges are governed by discharge permits issued by a regulatory agency. Linde estimated chemical oxygen demand (COD) at these sites to be 1,700 metric tons in 2021, which is a 15 percent decrease from 2020.

Linde discharged 891.2 million m^3 of water in 2021, of which 39.2 million m^3 was wastewater. Linde also discharged once-through cooling water back to the source from which it came. In 2021, 852.0 million m^3 of water was discharged in this manner, of which 42 percent was to fresh water sources, 35 percent was to seawater sources, and 23 percent was to third-party sources.

Water Consumption

Linde consumed 80.4 million m^3 of water in 2021. Consumption is defined as total water withdrawn minus wastewater discharged, minus once-though cooling water that is returned to the original source with no impact to quality. Consumption increased by 9 percent compared to 2020.

Consumption of fresh water was 99.5 million m^3 in 2021, which is a 7 percent increase compared to 2020. Overall, consumption increased due to increases in production volumes.

Water-stressed Areas

Linde tracks water withdrawal, discharge and consumption from sites in areas of water stress. Areas of water stress are defined by the WRI Aqueduct Water Risk Atlas. Linde determines sites to be in a water-stressed area if the Atlas lists the baseline water stress as "high" or "extremely high."

See page 27 for information on Linde's target to implement water management plans at high-water-use sites in areas of water stress.

303-3, 303-4, 303-5

Total Water Withdrawal, Discharge & Consumption

	2019 Linde	2020 Linde	2021 Linde
A. Fresh Water Withdrawal	456.0	427.9	457.2
B. Other Water Withdrawal – Seawater	175.7	202.4	298.6
C. Other Water Withdrawal – Third Party (Industrial/Recycled)	170.2	202.9	215.8
D. Total Water Withdrawal (A+B+C)	**801.9**	**833.2**	**971.6**
E. Fresh Water Returned to Original Source (once-through cooling water)	354.8	334.8	357.6
F. Other Water Returned to Original Source (once-through cooling water) – Seawater	175.7	202.4	298.6
G. Other Water Returned to Original Source (once-through cooling water) – Third Party	145.1	179.2	195.7
H. Wastewater Discharge (non-once-through)	43.4	43.1	39.2
I. Total Water Discharge (E+F+G+H)	**719.0**	**759.5**	**891.2**
J. Total Water Consumption (D-I)	**82.9**	**73.7**	**80.4**

EN (5): Total Water Withdrawal, Discharge & Consumption

Units: million m^3

Fresh Water Withdrawal, Discharge & Consumption

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
A. Municipal Water Withdrawal	54.1	58.9	56.6	61.7
B. Surface Water Withdrawal	446.1	386.3	361.2	386.3
C. Ground Water Withdrawal	11.9	10.8	10.1	9.2
D. Total Fresh Water Withdrawal (A+B+C)	**512.1**	**456.0**	**427.9**	**457.2**
E. Discharge: Fresh Once-Through Cooling Water Returned to Surface Water Sources	**419.7**	**354.8**	**334.8**	**357.6**
F. Net Freshwater Consumption (D-E)	**92.5**	**101.2**	**93.1**	**99.5**

EN (6): Fresh Water

Units: million m^3

Water-Stressed Areas: Withdrawal, Discharge & Consumption

	2020 Linde	2021 Linde
A. Withdrawal	35.9	31.5
B. Discharge	18.9	15.8
C. Consumption (A-B)	17.0	15.7

EN (7): Water-Stressed Areas: Withdrawal, Discharge & Consumption

Units: million m^3

304-1 Operational sites owned, leased, managed in or adjacent to protected areas and areas of high biodiversity value outside protected areas
304-2 Significant impacts of activities, products and services on biodiversity
304-3 Habitats protected or restored
304-4 Total number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk

Biodiversity

Linde's operations do not have a significant impact on biodiversity.

When planning new sites, processes are in place to ensure that Linde minimizes any potential negative impacts on biodiversity. Linde follows internationally recognized guidelines when performing its evaluations, such as the Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment issued by the United Nations.

Linde's approach is to avoid operations near protected areas. In fact, because most of Linde's sites are located in industrial areas or business parks, protected areas are not typically within close proximity to the facilities. If periodic surveillance finds site(s) within close proximity of a protected area, Linde will work to understand possible impacts and to minimize, restore, and/or offset, as appropriate, working with local stakeholders.

Because sites recognized as important to biodiversity may change over time, Linde periodically conducts a surveillance of the locations of its global industrial gas production facilities and their proximity to protected areas, based on data provided by the International Union for Conservation of Nature (IUCN). This surveillance is conducted at least every 3 years.

The last evaluation, covering more than 600 production sites, established that none of these sites are located in the vicinity of a protected area.

For more information on Linde's position on the importance of ecosystems, please see the statement on Linde's website at https://www.linde.com/sustainable-development/policies-and-position-statements/ecosystems-position-statement.

Greenhouse Gas Emissions 305-1, 305-2, 305-3, 305-4, 305-5

GHG Inventory Methodology

Linde's greenhouse gas (GHG) emissions disclosures have been prepared based on a reporting year of January 1 to December 31, the same as the financial reporting period. All GHG emissions figures are in metric tons of CO_2e and cover six gases: CO_2, CH_4, N_2O, PFCs, HFCs, NF_3 and SF_6.

Linde's GHG emissions information was prepared with reference to the World Resources Institute/World Business Council for Sustainable Development's Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, revised edition (the GHG Protocol®).

Global warming potentials (GWPs) are sourced from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.

- Timelines and Base Year GHG Emissions
  Linde reports on its eKPIs for the last four years in order to reflect the trend and development of KPIs.

  Linde defined new sustainable development targets in 2019, which set 2018 as a baseline year for the new company's targets. Those targets include targets relating to GHG emissions. The basis for those targets is a 2018 full-year pro forma value for the complete merged company according to the final organizational structure. For performance against GHG targets, see the "Performance Towards Targets" section, page 24.

- Excluded Sources of GHG Emissions
  Linde has very small office sites and smaller sales outlets (such as retail outlets) with fewer than five people, called "de-minimis" sites. Emissions from these sites are negligible and are therefore not included in the GHG inventory.

- Prior Year Revisions
  The company has restated 2018-2020 Scope 2 to reflect an update to market-based emission factors. See 102-48 on page 13.

- External Verification
  Linde's 2021 GHG inventory was verified by a third party. In 2022, a Limited Assurance was performed on Scopes 1 and 2 and a subset of Scope 3 emissions (2021 calendar year data). A copy of Linde's assurance statement is available at the end of this report and may be found separately on the Linde website.

305-1 Direct greenhouse gas (GHG) emissions (Scope 1)

Linde's total Scope 1 emissions in 2021 were 16,321,000 MT CO_2e, which is an increase of 0.5 percent from 2020. This is mainly attributed to increases in production volumes that were largely offset by efficiency improvements. The primary source of Scope 1 emissions for Linde is the combustion of natural gas at hydrogen plants, which represented 11.4 million metric tons of Scope 1 emissions in 2021. Another portion is from ASU plants using natural gas for energy generation, which amounted to 2.2 million metric tons CO_2e. Smaller sources of Scope 1 emissions are other GHGs (e.g., from methane plants or nitrous oxide plants) or other types of GHG emissions that are converted into CO_2 equivalents. The total of such "other GHG emissions" was 0.9 million metric tons in 2021. Carbon dioxide and other plants caused approximately 1.2 million metric tons. The combustion of diesel and gasoline from transport activities resulted in approximately 0.6 million metric tons CO_2e in 2021.

Scope 1 Emissions Covered by Emissions-limiting Regulations

In 2021, 1,570,000 metric tons of Scope 1 emissions (10 percent) were subject to a form of carbon legislation, over a cap-and-trade scheme, ETS or a form of carbon taxation. Most of this number (more than 86 percent) was covered by the EU ETS or UK ETS schemes; smaller amounts were subject to sub-national regulations such as the California CAT scheme or the Singapore carbon tax. For details on the 2021 carbon regulation schemes applicable to Linde, see Linde's most recent CDP report, which will be available at the end of July at:
https://www.linde.com/-/media/linde/merger/documents/sustainable-development/2022-cdp-response-climate-change.pdf.

Calculation Methodology

Hydrogen plants, which represent the largest source of Linde's Scope 1 emissions, consume natural gas, both for fuel and feedstock. To determine Scope 1 emissions, the amount of carbon produced as product is subtracted. In addition, Linde calculates Scope 1 emissions from gas losses (during production and filling processes). These are calculated for nitrous oxide manufacturing and filling facilities, carbon dioxide plants, on-site refrigeration equipment and cylinder filling operations associated with methane (CH_4), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and nitrogen trifluoride (NF_3).

305-1

To calculate Scope 1 emissions from natural gas, Linde uses the reported natural gas factors from each production plant (depending on the mix of hydrocarbons). If a specific natural gas factor is not available or known, Linde uses a chemical natural gas to CO_2 conversion factor from the Department for Environment, Food & Rural Affairs (DEFRA), from the Government of United Kingdom. For other fuels, Linde uses DEFRA factors to convert to CO_2 equivalents.

Emissions from transport are calculated based on actual kilometers driven for commercial and non-commercial vehicles, multiplied by average emission factors by vehicle type from the "Estimated U.S. Average Vehicle Emissions Rates per Vehicle by Vehicle Type using Gasoline and Diesel (Grams per mile)" from the U.S. Environmental Protection Agency, Office of Transportation and Air Quality, personal communication, Apr. 6, 2018.

Scope 1 GHG Emissions

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Scope 1	16,872,000	16,461,000	16,247,000	16,321,000

EN (8): Scope 1 GHG Emissions
Units: Metric Tons CO_2e

305-2 Energy indirect greenhouse gas (GHG) emissions (Scope 2)

Linde's Scope 2 GHG emissions in 2021 were 23.6 million metric tons CO_2e (market-based), which is a 5.7 percent increase from 2020. The largest electricity user is ASUs, which account for approximately 90 percent of all electricity used.

These emissions were calculated using the market-based approach. Linde continues to move to market-based emissions factors where possible. In some cases, market-based factors are higher than location-based factors. These have resulted in increases in Scope 2 emissions. Compared to 2020, Scope 2 emissions have increased, partly due in increased production.

Restatements are made in accordance with its GHG Recalculation policy. Linde has updated its Scope 2 emissions for 2018, 2019 and 2020.

Linde also calculated Scope 2 emissions for 2021 using the location-based approach, which applies IEA factors and eGRID emission factors in the U.S. Scope 2 emissions calculated with the location-based approach were 21.4 million metric tons CO_2e in 2021. The difference between market-based and location-based emissions are mostly due to certain plants where customers provide the electricity to Linde (which Linde purchases). Some of these plants have a very high market-based emissions factor compared to the location-based emissions factor.

Organizational Boundary

Linde reports on all electricity and its resulting Scope 2 emissions purchased by the company. Electricity for sites where Linde does not pay the utility bill is excluded from its reported electricity number as well as from the reported Scope 2; however, it is tracked internally for operational purposes and for Scope 3 reporting.

Calculation Methodology

The main methodology for calculating Scope 2 emissions from electricity is the market-based approach, using site-specific emissions factors by plant according to supplier contracts and utility bills where available. For sites where such market-based factors are not known, Linde uses the most recent location-based factors from the IEA and the EPA's eGRID factors for the U.S. See 102-48 on page 13 for information on restating Scope 2 emissions for 2018-2020 due to updates to market-based emissions factors.

Scope 2 GHG Emissions (Market-based)

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Scope 2	23,518,000	23,448,000	22,299,000	23,573,000

EN (9): Scope 2 GHG Emissions
Units: Metric Tons CO_2e

305-3 Other indirect greenhouse gas (GHG) emissions (Scope 3)

Linde reports on the following seven categories of Scope 3 emissions:

- Fuel- and energy-related activities not included in Scopes 1 and 2
- Emissions due to investments
- Emissions due to down-stream leased assets
- Emissions from purchased goods and services
- Emissions from capital goods purchases
- Upstream transportation and distribution (contractor driving)
- Emissions from business travel

Criteria for selecting Scope 3 reporting categories were:

- Relevance and transparency: This includes activity over which Linde has a level of operational control but where the GHG emissions are reported by another party.
- Relevance or materiality to Linde's footprint: This includes activity that may have a potentially significant GHG consequence.

Upstream Scope 3 Emissions

Linde's methodologies for upstream Scope 3 emissions are described below.

Fuel- and energy-related activities not included in Scopes 1 or 2 (category 3)

Scope 3 emissions from fuel-and energy-related activities (including upstream emissions from purchased fuel, purchased electricity and transmission and distribution losses) are a significant source of Scope 3 emissions for Linde, as Linde's business is energy-intensive, and energy is a significant cost for Linde.

The methodology used is based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, Category 3 for Scope 3 emissions caused in the extraction, production and transportation of fuels and energy purchased by Linde.

For electricity, Linde applies IEA factors for transmission and distribution (T&D) losses and DEFRA factors for Well-to-Tank (WTT) to calculate all the Scope 3 GHG emissions released into the atmosphere from the production, processing and delivery of energy. The calculation is done on a site level for each site for which Linde purchases the power. For thermal energy, a global WTT factor for heat and steam from DEFRA is applied. For Scope 3 emissions from transport fuels as well as other fuels consumed (excluding feedstocks), DEFRA factors for fuel- and energy-related emissions are used per relevant category.

In 2021 DEFRA adjusted its methodology and underlying assumptions to calculate its Scope 3 emissions factors for fuel and energy. This led to a significant increase of the Scope 3 factors relevant for Linde, resulting in an increase in Linde's Scope 3 emissions in this category by more than 2 million tons CO2e. A small portion of the increase in 2021 is also based on higher fuel and electricity consumption due to increased production/output.

Purchased Goods and Services (category 1)

In 2021, Linde defined a new company-wide methodology to calculate its Scope 3 category 1 emissions, as well as expanded its boundaries, leading to a substantial increase of its reported emissions in this category (by 2.6 million tons CO2e).

Linde's Scope 3 category 1 now considers Scope 3 emissions from Linde's purchased raw materials representing >95 percent of Linde's procurement spend in this category. This includes raw materials and traded items like healthcare components or hardgoods sold in Linde's shops, construction components used by Linde engineering to build customer plants, as well as purchased feedstock – natural gas for hydrogen plants and compressed air for air separation plants.

The calculation of carbon emissions from Linde's raw materials procured (except for natural gas and compressed air feedstock) is now based upon a model utilizing input-output tables and data from OECD, EXIOBASE, the U.S. Bureau of Economic Analysis and World Bank. CO2e emissions are calculated based on GWP values from IPCC's AR 5 (2013) for a 100-year time horizon including carbon feedbacks.

To calculate Scope 3 from natural gas feedstock Linde applies a fuel-based method based on the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, Category 3 for Scope 3 emissions caused in the extraction, production, and transportation of fuels and energy. Linde uses emission factors from DEFRA, which have increased considerably in 2021 and have impacted Linde's Scope 3 category 1 value.

305-3

For compressed air, Linde receives information from the supplier about the specific energy usage to provide that feedstock and calculates the resulting Scope 3 emissions based on the energy consumption and the supplier-plant-specific electricity Scope 2 emission factors.

Capital Goods (category 2)

In 2021, Linde applied a new company-wide methodology to calculate its Scope 3 category 2 emissions, which considers capital goods procured by Linde allocated to a procurement category, such as cylinders, tanks, healthcare, automotive or plant components capitalized, as well as production plants operated by Linde.

The calculation of carbon emissions from Linde's capital goods procured is based upon a model utilizing input-output tables and data from OECD, EXIOBASE, the U.S. Bureau of Economic Analysis and World Bank. (See category 1).

Moreover, in 2021 Linde began collecting product-specific GHG emissions data from several suppliers of cylinder assets procured in 2021. The product carbon footprint included the suppliers' own emissions (based on a product-specific calculation) as well as related upstream emissions. The emissions data obtained directly from suppliers were integrated into the overall category 2 value.

The Scope 3 category 2 value decreased in 2021 compared to the previous year. This is due to a reclassification of some procurement categories that were previously considered as capital goods that are now correctly disclosed under raw materials.

Upstream Transportation and Distribution, including Contractor Driving (category 4)

This category includes emissions related to Linde's inbound and outbound logistics that are paid by Linde and are carried out by external carriers.

Linde uses a distance-based method for calculating Scope 3 emissions from outbound deliveries of gases to its clients. Contractor miles driven are collected in each country and business or region and tracked. Linde's Scope 3 emissions resulting from delivery of products by third-party carriers were derived using the same methodology as used to calculate GHG emissions from owned trucks: Emissions from transport are calculated based on actual kilometers driven for commercial and non-commercial vehicles, multiplied by average emissions factors by vehicle type from the "Estimated U.S. Average Vehicle Emissions Rates per Vehicle by Vehicle Type using Gasoline and Diesel (Grams per mile)" from the U.S. Environmental Protection Agency, Office of Transportation and Air Quality, personal communication, Apr. 6, 2018.

In addition, in 2021 Linde implemented a new tool to calculate emissions from products and services procured, which uses a spend-based method (see category 1). This also considers transport services procured. The calculation result showed that emissions from transport of construction components delivered to Linde Engineering construction sites (mostly over sea and air) are relevant and therefore are to be included in the overall Scope 3 category 4 value, leading to an overall increase of emissions in category 4.

Emissions from contractor driving were previously classified as downstream emissions (category 9) and have been reclassified, per guidance in the Greenhouse Gas Protocol. See the Restatements section, 102-48.

Business Travel (category 6)

Linde also estimates a small amount of emissions from business travel, estimated at 0.021 million MT. This has not previously been reported as a part of this disclosure, as it is negligible. As we have determined an estimate, we now include within our Scope 3 disclosures. Estimates are based on the company's historical air travel records, including countries of destination, and uses emissions data provided by airlines.

Downstream Scope 3 Emissions

Linde's methodologies for downstream Scope 3 emissions are described below.

Downstream Leased Assets (category 13)

This category includes emissions for assets such as smaller on-site facilities where the customer is paying for the power and, in many cases, operating the plant. This also includes several major plants where customers are paying for the power and where Linde is charging a facility fee to the customer. Emissions for those plants where the customer pays for the power are not included in Linde's Scope 2.

HyCO plants/facilities that are owned by Linde are fully reported under Scope 1, regardless of whether they are leased out or independent on who is running the plant or providing the fuel or feedstock.

305-3

Emissions from leased out or charged out entities are calculated on a plant level, using the same calculation methodology as for calculating indirect/ Scope 2 emissions for other Linde plants. For plants where the customer pays for the power and the plant-specific emissions factors are not known, Linde uses country emission factors from the IEA to calculate indirect emissions for those sites.

Emissions due to Investments (category 15)

Linde includes in its Scope 1 and 2 reporting only subsidiaries/holdings that are reporting their financials to the company and whose results are consolidated into the company P&L. Holdings/investments that are reporting their results but are not consolidated into the P&L statement (mainly JVs consolidated at-equity) are not considered for Scope 1 and 2 emissions but are reported as Scope 3 from investments. Linde has large JV operations, especially in China.

Linde calculates its emissions due to investments on a plant level. All JVs are reporting their electricity and other fuel consumption into Linde's environmental reporting system. Linde is then calculating Scope 3 from such investments for all plants in this category, by adding reported direct emissions from HyCO plants and indirect emissions from ASUs and other plants, based on reported electricity consumption, multiplied by a country IEA factor.

Emissions in this category increased, in part, in 2021 due to the change in ownership of the company's business in Taiwan. As of 2021, the entity is now held as a joint venture, and emissions from that entity are now accounted as Scope 3 emissions.

Scope 3 Sources Not Reported

As demonstrated in this year's reporting, Linde continues to assess ways to expand and refine Scope 3 reporting, in ways that lend transparency and repeatability.

Linde does not report emissions in the following categories: employee commuting, upstream leased assets, downstream transportation and distribution, franchises and waste generated in operations. These emissions have been calculated or estimated and were determined to be not relevant due to their very small contribution to Linde's Scope 3 footprint.

Linde currently does not report emissions from processing of sold products, use of sold products and end-of-life treatment of sold products. Linde is at the beginning of numerous value chains and provides many intermediate products with many downstream applications, each of which has a very different GHG profile. Linde does not estimate the downstream emissions associated with the various end uses of all its product but is currently evaluating methodologies that will provide feasible estimates. The company expects to continue to expand its reporting in the future.

Scope 3 GHG Emissions

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Upstream				
Fuel-and Energy-related activities	5,060,000	5,590,000	5,290,000	7,430,000
Purchased Goods and Services	1,540,000	1,540,000	1,640,000	4,250,000
Capital Goods	965,000	965,000	931,000	810,000
Upstream Transportation (including Contractor Driving)	661,000	577,000	562,000	780,000
Business Travel				21,000
Downstream				
Investments	4,460,000	4,460,000	3,930,000	5,450,000
Downstream Leased Assets	2,163,000	2,280,000	2,050,000	2,520,000
Total	**14,849,000**	**15,412,000**	**14,403,000**	21,261,000

EN (10): Scope 3 GHG Emissions

Units: Metric Tons CO_2e

305-4 Greenhouse gas (GHG) emissions intensity

Scope 1 and 2 emissions are as reported in 305-1 and 305-2 and include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), nitrogen trifluoride (NF_3) and sulfur hexafluoride (SF_6). Sales revenue reported to calculate revenue intensity is reported in Linde plc's financial filings. See EN (11).

Linde is tracking emissions intensity versus EBITDA and has defined a 10-year target for this intensity figure (reduction of 35 percent). See details on GHG versus EBITDA intensity in the "Performance Towards Targets" section, page 24, and EN (12). Total Scope 1+2 emissions for 2018-2020 are restated due to restated Scope 2 values; see 102-48 on page 13.

GHG Intensity by Revenue

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Total Scope 1+2 (thousands) in Metric Tons CO_2e	40,390	39,909	38,546	39,894
Revenue (million USD)	$28,084	$28,228	$27,243	$30,793
GHG Intensity	**1.44**	**1.41**	**1.41**	**1.30**

EN (11): GHG Intensity by Revenue

Units: Metric Tons CO_2e/ Thousand USD Revenue

GHG Intensity by EBITDA

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Total Scope 1+2 (thousands) in Metric Tons CO_2e	40,390	39,909	38,546	39,894
EBITDA (million USD)	$7,603	$8,178	$8,645	$10,179
GHG Intensity	**5.31**	**4.88**	**4.46**	**3.92**

EN (12): GHG Intensity by EBITDA

Units: Metric Tons CO_2e/Thousand USD EBITDA

305-5 Reduction of greenhouse gas (GHG) emissions

Scopes 1+2 GHG Emissions Reductions

Linde's total sustainable productivity in 2021 yielded savings equivalent to 696,000 metric tons CO_2e. It counts projects where benefits are fully realized as well as projects that were implemented in 2021 and are still accruing benefits. These projects provided GHG savings from enhancing the energy efficiency of buildings, processes and the transportation fleet. Information on the projects, including investment made and cost savings, can be found in Linde's CDP response, which is available at the end of July at: https://www.linde.com/-/media/linde/merger/documents/sustainable-development/2022-cdp-response-climate-change.pdf.

Customer GHG Benefits

A subset of Linde applications enabled customers and end users to avoid 88 million metric tons of CO_2e in 2021;see page 20.
Such emissions represent avoided emissions, which are sometimes referred to as Scope 4.

305-7 NOx, SOx, and other significant air emissions

NOx Emissions

NOx emissions were 12,236 metric tons in 2021. This is an increase of 1.7 percent from 2020 and is attributed to normal variability in sampling.

SOx Emissions

SOx emissions were 714 metric tons in 2021, a 9.6 percent decrease from 2020, mainly due to improvements in stack flow data used in calculations as well as the increasing implementation of national standards for fuels with lower sulfur content.

VOC Emissions

VOC emissions were 948 metric tons in 2021, a 16.9 percent decrease from 2020, mainly due to updates in standard emissions factors.

Calculation Methodology

NOx, SOx and VOC emissions from plants are taken from emissions monitoring systems or are estimated based on operations data where emissions monitoring is not required by local regulations. SOx emissions from transport are estimated based on sulfur concentration in local fuel using local transport knowledge and legislative limits. NOx and VOC emissions from transport are calculated based on estimated diesel consumption rates and local regulatory limits. Emissions factors are sourced from the U.S. Environmental Protection Agency Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005.

See 102-48 on page 13 for information on restated VOC emissions.

NOx, SOx and VOC Emissions

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
NOx Emissions	10,003	10,596	12,030	12,236
SOx Emissions	591	730	790	714
VOC Emissions	1,185	1,158	1,141	948

EN (13): NOx, SOx and VOC Emissions
Units: Metric Tons

306-1 Waste generation and significant waste-related impacts

306-2 Management of significant waste-related impacts

306-3 Waste generated

306-4 Waste diverted from disposal

306-5 Waste directed to disposal

Linde manages and reports waste metrics as part of environmental management. The company makes efforts to reduce waste generation and to reduce waste to landfill through initiatives in operations and programs such as the Zero Waste program.

Hazardous Waste

Linde uses local country regulations to define and report hazardous waste.

Linde tracks the amount of hazardous waste recycled but does not track the portion of this that is sold. Linde estimates that about half of recycled hazardous waste is marketable. In 2021, Linde recycled 8,000 metric tons of hazardous waste, including 4,000 metric tons of marketable and 4,000 metric tons of non-marketable hazardous waste. Linde reports the half that is not marketable in the table below as part of "hazardous waste generated."

306-1, 306-2, 306-3, 306-4, 306-5,

In 2021, total hazardous waste generated (this does not include hazardous waste that is sold for recycling, as this is considered a product) was 21,500 metric tons, which is a 13.7 percent decrease from 2020, largely due to a reduction in waste process material from one large site. This accounts for more than half of the global waste in this category.

Non-hazardous Waste

Total non-hazardous waste disposed in 2021 was 15,900 metric tons, which is a 36 percent decrease from 2020. The main reasons for the significant decrease are construction, turnaround and cylinder scrapping activities in 2020 that were not required in 2021. Note that non-hazardous waste was restated for 2020. This was due to a reporting update at two sites.

Zero Waste Program

Linde is committed to reducing hazardous and non-hazardous waste. Linde's Zero Waste program is an effort that has existed for more than a decade. Sites work to divert at least 90 percent of the normal waste from going to landfill. The program encourages a practice, prioritizing reduction of waste generation at the source. Therefore, in addition to recycling and other reclamation efforts, many sites have incorporated initiatives that not only reduce waste but also extend conservation principles in the community and help foster economic opportunity. By the end 2021, more than 700 sites participated in the program, collectively diverting more than 260 million pounds from landfills.

See page 28 of this report for information on the Zero Waste Program and performance against the SD 2028 Zero Waste target.

Significant Spills

There were no significant spills in 2021.

Transport of Hazardous Waste

Linde did not transport, import or export hazardous waste across international borders in 2021.

Hazardous Waste

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Hazardous waste disposed	25,600	20,500	20,000	17,500
Hazardous waste recycled that is not marketable	2,200	6,800	4,900	4,000
Total hazardous waste generated	**27,800**	**27,300**	**24,900**	**21,500**
Hazardous waste recycled that is sold/ marketable	**2,200**	**6,800**	**4,900**	**4,000**

EN (15): Non-Hazardous Waste

Units: Metric Tons

Non-Hazardous Waste

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Non-hazardous waste disposed	32,100	28,700	24,698	15,939
Non-hazardous waste used/recycled/sold	45,300	35,000	34,929	31,830
Total non-hazardous waste generated	**77,400**	**63,700**	**59,628**	**47,769**

EN (16): Non-Hazardous Waste

Units: Metric Tons

307-1 Non-compliance with environmental laws and regulations

The company reports significant fines in the year the violation occurred (not the year the fine was paid). Significant fines are those costing more than $10,000. See EN(16). There were two significant fines assessed to Linde for non-compliance with environmental laws or regulations that occurred in 2021.

Linde is not aware of any non-monetary sanctions for environmental non-compliance or any actions brought through dispute resolution mechanisms involving an independent third-party review.

Environmental Violations and Fines

	2018 Linde Pro Forma	2019 Linde	2020 Linde	2021 Linde
Number of Violations	0	2	0	2
Value of Fines Related to Above	0	$142,000	0	$52,000

EN (17): Environmental Violations and Fines
Units: USD

308-1 New suppliers that were screened using environmental criteria

One-hundred percent of suppliers that present environmental risk are screened using environmental criteria.

308-2 Significant actual and potential negative environmental impacts in the supply chain and actions taken

Linde values its supplier relationships and works to develop supplier capacity. Linde uses a risk-based approach to supplier management. Those suppliers at risk of negative environmental impacts are principally suppliers of chemicals, or process and specialty gas suppliers, and all are subject to additional pre-qualification requirements. These qualifications are revisited in periodic audits and in any contract re-qualification.

Those that show an unwillingness or inability to conform are subject to disciplinary action up to and including contract termination.