NOKIA

People & Planet 2022

Contents

Our approach   Environment   Industrial digitalization   Bridging the digital divide   Responsible business   Our people   Corporate governance   Security and privacy   Key data

1

About this report

Nokia's People and Planet sustainability report is published annually. The scope of the 2022 sustainability report covers Nokia Group. In our reporting, we are committed to expanding our transparency and our coverage. Our report is prepared in accordance with the GRI Standards. As part of our reporting, we also recognize other sustainability reporting frameworks, such as SASB Standards and the UN Global Compact. Our selected key sustainability indicators have been assured by Nokia's independent auditor, Deloitte.

This report was published in March 2023 and is only available in digital format. The report can be found online. We have published annual corporate responsibility reports since 1999 and the reports are available in digital format from 2003 to the present in our online report archive.

Sustainability and ESG (Environmental, Social and Governance) topics are also discussed in our corporate annual reports, including the Annual report on Form 20-F that is filed with the USA Securities and Exchange Commission. The Board Review of Nokia's 2022 Annual Accounts includes non-financial information as required by the Finnish Accounting Act implementing the EU Non-Financial Reporting Directive and the EU Taxonomy Regulation. Financial and operational information in this report should be read in conjunction with the information provided in our interim reports and annual financial reports, as well as the risk factors and forward-looking statements included in such reports. For more information on our financial results, operations, and reporting structure, please see here.

Letter from the President and CEO

The big picture or the bottom line?

At Nokia, we believe you can have both purpose and profit. And there can be no green without digital.

The technology we create can help in the fight against climate change while enabling our customers to improve their productivity, as well as their energy and resource efficiency. We aim to continually improve our environmental, social and governance (ESG) practices and embed sustainability into every part of our business. In early 2023, we made it clear that our ambition is to make ESG a competitive advantage for Nokia.

The importance of ESG to our company is affirmed in our purpose: "At Nokia, we create technology that helps the world act together." This has helped create a virtuous cycle where our purpose drives our long-term technology and business strategy, and vice versa. ESG drives how we innovate, manufacture, deliver and maintain our products, and how we conduct ourselves as an organization.

In 2022, we took another step forward to make ESG a driver of value creation, with the launch of the new ESG strategy, with five focus areas and accompanying goals.

Environment: Become the leader in energy efficiency and circular practices. We have set an ambitious science-based target to reduce our Scope 1, 2 and 3 greenhouse gas emissions by 50% between 2019 and 2030. We have also set a target of 100% renewable electricity in our facilities by 2025. Both of these are stepping stones on our path to net zero.

Industrial digitalization: Transform physical industries to make them more productive, efficient, sustainable and safer through the connectivity and digital solutions we provide. This ambition is at the heart of our increasing work with non-service provider customers, such as manufacturers, energy producers and public sector organizations.

Security and privacy: Design products so security and privacy are built into their life cycle at every stage. Our networks underpin critical infrastructure so partners, customers and regulators must be able to trust them.

Bridging the digital divide: Build a bridge for digital inclusion and more equal access to healthcare, education and employment. We will achieve this ambition through connectivity and digital skill building.

Responsible business: Be a trusted, ethical company that our employees, customers, partners and investors are proud to work for and with.

Embedding energy efficiency into our technology

Improved performance with lower power consumption is at the heart of our product design and development. In 2022, around 95% of Nokia's greenhouse gas emissions came from use of our products by customers, rather than through our own operations. Our focus on upgrading customer networks and deploying our latest solutions means we can reduce our Scope 3 emissions and make concrete progress towards decoupling data growth from energy consumption.

For example, in Mobile Networks, we are on target for a 50% reduction in average power consumption of 5G mMIMO base stations by 2023 (from the 2019 baseline). The radio networks we modernized in 2022 used on average 44% less energy than those that were not modernized.

In Network Infrastructure, we have now reached 150 customers for our Quillion-based chipset for fixed broadband which uses about half the power of previous generations. We have more than 100 customers for PSE-V, our advanced coherent optical solution, which uses up to 50% less power. Our latest FP5-based routing silicon, which reduces power consumption by up to 75% per bit, is now being

used by more than 30 customers. And our sixth-generation Photonic Service Engine (PSE-6s) for optical networking offers customers more capacity while reducing power consumption by up to 60%.

There are many other examples of Nokia products and services increasing performance while reducing power consumption throughout this report.

Embedding sustainability into our company

Our reputation as an ESG-committed company, with the highest ethical standards, is dependent on continually delivering what we promise and taking action where we need to do better. We were pleased to surpass our annual target for renewable energy use across our facilities, reaching 63% in 2022 – on track to achieve our target of 100% renewable electricity in our own facilities by 2025.

We were pleased to be ranked in the Clean200 list of global companies leading the way on sustainability by placing it at the heart of their products, services and business models.

To further support our climate commitments, we introduced a Sustainable Finance Framework in early 2023 with the intention of strengthening the connection between our ESG and financing

strategies. The leading independent ESG ratings firm, Sustainalytics, considered our sustainability targets to be highly ambitious and rated the KPIs of our framework as very strong. Based on our target of a 50% emissions reduction in greenhouse gases across our value chain by 2030, Nokia successfully completed an inaugural EUR 500 million sustainability-linked bond issuance over eight years, with positive feedback from the investor community.

In 2022, we also launched a new Nokia People Strategy with the aim of creating a working environment in which all our people can perform at their best and fulfill their potential. Continuing to make progress in our inclusion and diversity efforts is a key component. I was pleased that Nokia was named in Bloomberg's Gender-Equality Index for the third time in a row in 2022. And I was happy to see industry recognition for our OUTLeaders program which supports and develops LGBT+ leaders at Nokia.

Maximizing our positive impact

This year's report includes many examples of how Nokia is maximizing its positive impact on the world. We are working with UNICEF to increase digital skills in Senegal, with the John Nurminen Foundation to protect biodiversity in the Baltic Sea, and with many other partners to achieve results where they are

needed most. Two of my favorites are our work on bringing broadband connectivity to underserved students in California and the expansion of our Smartpur project to bring connectivity to remote villages in India. Two countries, two completely different contexts, but both demonstrating the power and potential of technology when we act together.

Our purpose will continue to act as our guiding star as we strive to do good by and for people and our planet.

**Pekka Lundmark,**
President and CEO

Nokia today

At Nokia, we create technology that helps the world act together. The world is facing fundamental challenges. Pressure on the planet is increasing, productivity is stalling and access to opportunity remains stubbornly unequal.

Enhanced connectivity and digitalization can contribute to solving many of the planetary, people and business issues the world faces today. Through technology leadership, innovation and trusted partnerships we deliver critical networks that support and improve environmental, social and economic welfare.

With our customers we deliver solutions that help the world respond to climate change through the more efficient use and reuse of the world's resources, restore productivity growth by bringing digital to the physical industries it has not yet reached, and provide more inclusive access to opportunity - work, healthcare, education and markets.

In 2022, we delivered net sales of EUR 24 911 million and invested EUR 4 550 million in research and development. We have four core business groups: Network Infrastructure, Mobile Networks, Cloud and Network Services, and Nokia Technologies. For more information see our financial reporting here.

We have customers in most countries of the world. Digitalization and enhanced connectivity transform the way people communicate, work and live their daily lives. Our technology enables industries and cities to digitalize and automate, driving efficiency and productivity gains while enabling potential

Net sales by business 2022
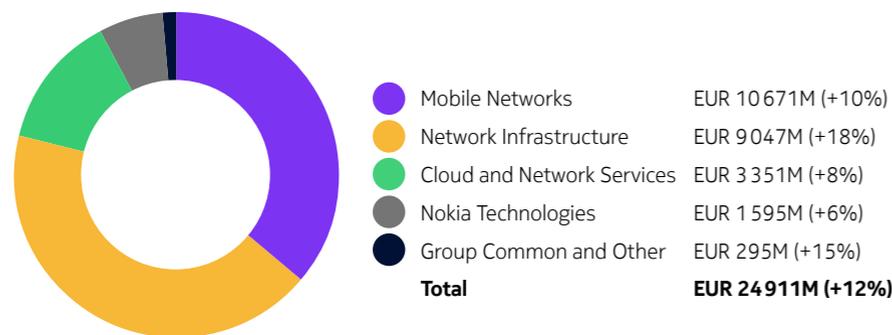
🟣	Mobile Networks	EUR 10 671M (+10%)
🟠	Network Infrastructure	EUR 9 047M (+18%)
🟢	Cloud and Network Services	EUR 3 351M (+8%)
⚫	Nokia Technologies	EUR 1 595M (+6%)
⚫	Group Common and Other	EUR 295M (+15%)
	Total	**EUR 24 911M (+12%)**

The figures are derived from our consolidated financial statements prepared in accordance with IFRS. Year-on-year change is in parentheses.

Net sales by region 2022

🟣	Asia-Pacific	EUR 2 648M (+7%)
🟠	Europe[1]	EUR 6 662M (+6%)
🟢	Greater China	EUR 1 581M (+5%)
⚫	India	EUR 1 290M (+25%)
⚫	Latin America	EUR 1 223M (+24%)
🔵	Middle East & Africa	EUR 1 969M (+11%)
🔵	North America	EUR 8 388M (+17%)
🟠	Submarine Networks	EUR 1 150M (+24%)
	Total	**EUR 24 911M (+12%)**

In 2022, Nokia changed the way it presents net sales information on a regional basis. Nokia believes that providing net sales for the Submarine Networks business separately from the rest of the Group improves the usefulness of disclosed information by removing volatility caused by the specific nature of the Submarine Networks business. The comparative information for net sales by region has been recast accordingly. This change did not otherwise affect the management's discussion of the year ended 31 December 2021 compared to the year ended 31 December 2020 included in the "Operating and financial review" section of the Annual report on Form 20-F for the year ended 31 December 2021.

The figures are derived from our consolidated financial statements prepared in accordance with IFRS. Year-on-year change is in parenthesis.

[1]All Nokia Technologies IPR and Licensing net sales are allocated to Finland.

reductions in emissions and use of resources. It supports improved worker safety and more secure, inclusive and safer communities.

At the end of 2022, we employed 87 005 people. More than 3% of employees were based at our headquarters in Espoo, Finland, and around 42% of our employees worked within our research and development in Europe, North America, and Asia.

Our employees at the end of 2022

Of the 87 005 employees worldwide, 23% were women, and we had 163 different nationalities working at the company. The average age of our employees was 42. The top ten countries by employee number were (in alphabetical order) Canada, China, Finland, France, Germany, Hungary, India, Poland, Portugal and the United States. Our regional structure is Asia Pacific (21 793), China (11 146), Finland (6 939), Latin America (2 918), Middle East and Africa (3 167), North America (10 359), Other European countries (30 683).

We outsource certain non-core activities and use subcontractors to meet customer needs or volume demands. At the end of 2022, the number of temporary workers (external temporary labor, ETL) used was around 3 590 people. Activities performed by externals, be they ETL or subcontractors, include for example, consultants supporting different tasks in our business groups and support functions, facility service providers, security guards and IT support.

Total number of employees

87 005

23%
of our employees were women

163
different nationalities worked at Nokia

42
was the average age of our employees
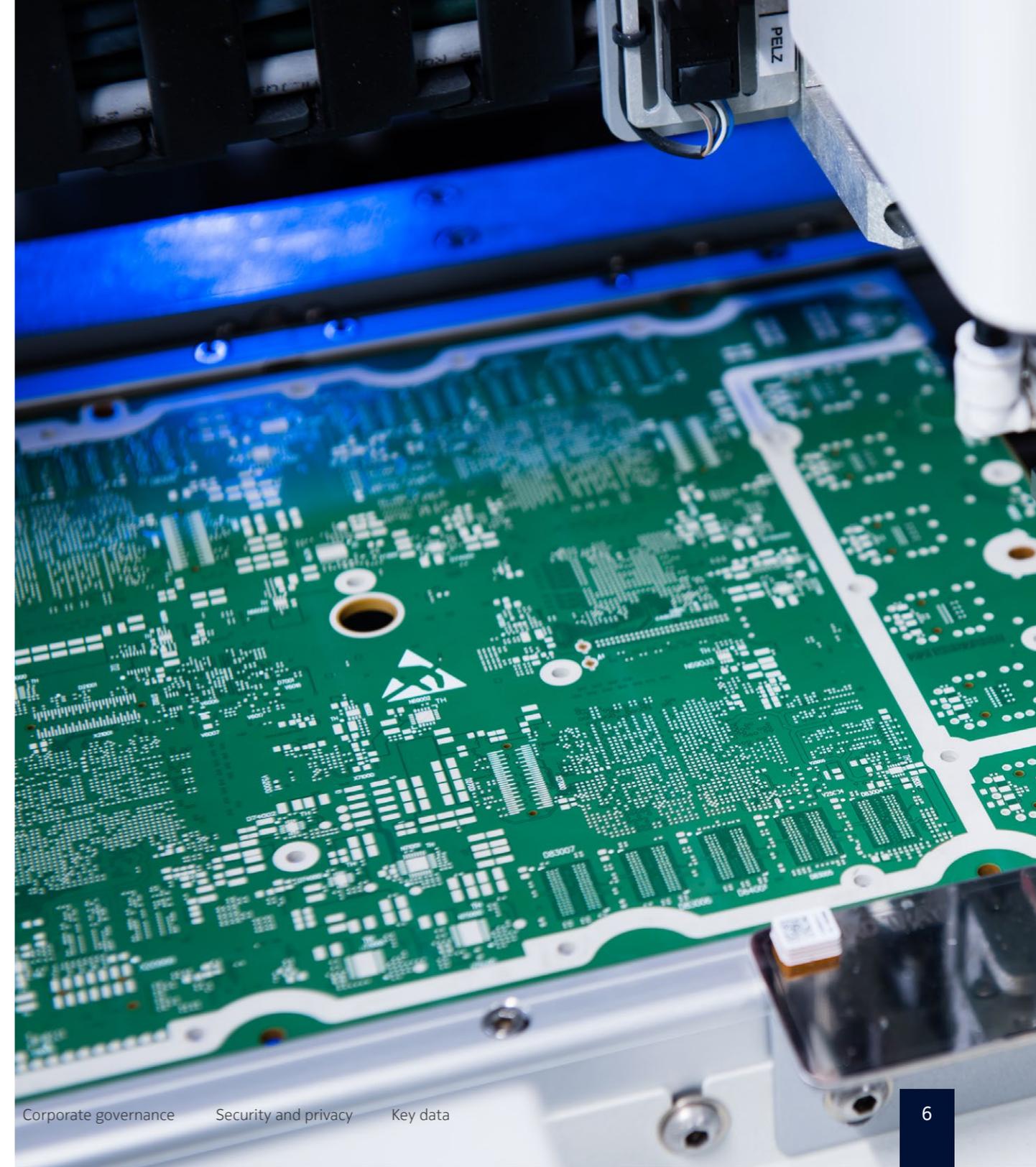
Our approach

Our approach to ESG centers around our company's purpose - to create technology that helps the world act together. It is an integral part of our corporate narrative and embedded in how we operate, and the decisions we make in our business. We adhere to high standards of integrity and security that build trust and help create the capabilities needed for a more productive, sustainable and inclusive world. Nokia Bell Labs, our renowned research arm, looks to help solve the future needs of humanity through technological innovation.

Sustainability highlights and challenges in 2022

What we did well...

- Laid the foundations for our Sustainable Finance Framework, to be set up in 2023, that underscores the importance of ESG to our business and financing structure.

- Surpassed our annual target for renewable energy across our facilities globally, reaching 63% of our purchased electricity.

- Introduced our liquid cooling solution across our AirScale baseband portfolio.

- New ESG strategy introduced in late 2022, emphasizing five focus areas and built with contribution from all business groups and functions.

- Were honored by Ethisphere once again as one of the World's Most Ethical Companies®. Nokia is one of two companies in the telecommunications sector to be recognized in 2023.

- Successfully completed our second independent human rights assessment by the Global Network Initiative.

What we need to do better...

- Although our total emissions remained level compared to 2021, we were in 2022 13% above the linear trajectory between 2019 and 2030. However, we do not expect the reduction of emissions in our value chain to be linear and we aim to achieve our target of 50% reduction in emissions by 2030, as the impact of new energy efficiency solutions take effect and the decarbonization of the electricity grid continues globally.

- Recorded eight fatal incidents and 4 critical incidents with suppliers carrying out work on Nokia's behalf. This is not acceptable. We are taking steps to drive greater emphasis on life-saving rules and supplier capability.

- Our logistics emissions saw a 9% increase compared to 2019. We continue to work with innovative solutions such as Sustainable Aviation Fuel and in collaboration with our customers.

Our company purpose

At Nokia, we create technology that helps the world act together.

Through our technology we help realize the full potential of digital in every industry for a more productive, sustainable and accessible world.

Our purpose provides a foundation for our future, and defines how we see our role in the world.

A full listing of recognitions can be found on our website.

Our ESG strategy

Nokia's new ESG (Environment, Social and Governance) strategy aims to ensure we maximize our impact in the areas most material to our company and is embedded in our business and technology strategies. It impacts how we make business decisions and develop our products and solutions. The ESG strategy builds on five focus areas where Nokia looks to differentiate and create tangible environmental and social benefits: Environment (climate and circularity), Industrial digitalization, Security and privacy, Bridging the digital divide, and Responsible business.

In **the environment** arena, we focus on two areas: climate and circularity. Our greatest source of emissions comes from the use of our products in our customers' networks. To address this, we aim for leadership in energy efficiency, building on work in silicon, software, and systems and opportunities to optimize across the network with energy orchestration and green operations. In circularity we focus on opportunities to promote hardware circularity and manage the sourcing and reuse of key source materials.

Industrial digitalization provides the opportunity to sustainably transform physical industries and cities through digitalization and connectivity. We concentrate our efforts through our Enterprise business, providing solutions for industries that enable decarbonization, resource efficiency, and safety. This has a much greater impact on the world's carbon footprint than reducing our own footprint, though we understand the importance of taking action across both domains.

Security and privacy are positioned as a cornerstone of our reputation and product proposition. Product development follows the 'Design for Security' methodology, building security into the life cycle from the very start, with a standards-compliant, secure network architecture that also incorporates further proven security concepts providing inbuilt defense against security threats. Nokia's customer security team consists of security experts who partner with our customers to build and maintain secure networks, compliant with national regulations for critical telecom infrastructure.

We aim to **bridge the digital divide** using our broad product portfolio and focused partnering with non-terrestrial operations to address different demographics. We are also building digital skills which, combined with greater connectivity, allow more equal access to healthcare, education and employment for individuals and the opportunity to participate in the digital economy for small businesses.

In **responsible business** we work to ensure our business practices are aligned to our values. We apply this approach internally and across our value chain, collaborating to improve systemic issues related to the environment, mitigating the risk of technology misuse (and advocating for responsible AI principles), enhancing human rights, inclusion and diversity and working conditions and contributing to the responsible development of new standards.

We strive to create value and, where possible, exceed stakeholder requirements and expectations while complying with increased regulatory demands and meeting transparency expectations.

In 2022, along with our refreshed ESG strategy, we also launched a new mandatory ESG training course for all employees and Board members.

Key strategic ESG areas

Be the leader in energy efficiency and circular practices

We provide connectivity and digital solutions that sustainably transform physical industries

Environment

Industrial digitalization

Security and privacy become a cornerstone of our reputation and product proposition

Security & Privacy

Bridging the digital divide

Responsible business

We are a bridge for digital inclusion through our connectivity and digital skill building solutions

We take a proactive and values-driven role in driving responsible business practices internally and in our value chain

Our materiality assessment

As part of our strategy refresh and in line with good practice, we completed a materiality assessment in spring 2022 with an external consultancy. The results of this assessment are based on desktop research, interviews and a survey conducted with internal and external stakeholders (including employees, customers, investors, suppliers, partners, NGOs (non-governmental organizations) and academics), as well as insights from sustainability experts. The new materiality matrix was reviewed by the Group Leadership Team and the Board of Directors.

The diagram on the following page shows the top right quadrant of our new materiality matrix. The magnified quadrant shows the topics that are all currently considered most relevant to our business and to stakeholders, the economy and the environment. The top five most material topics for Nokia are:

- Climate impact through products and enabling transformation in other industries
- Ethical business practices and ethical use of new technologies
- Privacy and security
- Responsible sourcing
- Health and safety

Sources of input for the materiality work included:

- Global macro trends with an impact on sustainable development
- Regular engagement with various stakeholders. Read Engagement with our stakeholders for more
- Requirements and information requests especially from our customers and investors
- Benchmarking of industry peers and leaders in sustainability
- Corporate strategy and Code of Conduct
- Assessments of risks and opportunities through the Nokia Enterprise Risk Management system
- Analysis of the economic, environmental and social value we can create throughout our value chain
- Analysis of UN Sustainable Development Goals and Targets and their relevance to Nokia. More on our website
- International sustainability frameworks such as SASB, the GRI Standards and the UN Global Compact (see Key ESG frameworks)
- Long history and experience in sustainability.

The most significant growth in importance can be seen in privacy and security, responsible sourcing and circularity. Biodiversity also appeared for the first time in the top quadrant of the matrix, while economic impact dropped out of the top quadrant.

Our key material topics

Relevance to stakeholders, economy and the environment

Relevance to Nokia's business

Opportunity ●●●○○ ○ Risk mitigation

Topics plotted: Privacy and security, Ethical business practices, Health & safety of employees, Responsible sourcing, Transparency, Enablement of industry transformation, Ethical use of new technologies, Climate impact through products, Diversity & inclusion, How products can enable diversity & inclusion, Circularity, Impact innovation, Digital inclusion, Nokia's own environmental impact, Employees' skills, Human rights, Community participation, Biodiversity

Our handprint and footprint

We believe the technology we provide enables environmental and social benefits to individuals, industries and communities that outweigh negative impact. These benefits represent the handprint of digitalization and connectivity. We have both a social and an environmental handprint. We work hard to maximize this handprint. At the same time, we know we must continually strive to minimize any potential negative impacts of technology. This is our footprint. We have both an environmental and a social footprint. We collaborate throughout our value chain to continually minimize our footprint.

These two aspects of our approach are underpinned by responsible and ethical business practices. We strive to be a trusted, ethical company that our employees, customers, partners and investors are proud to work for and with.

As part of our responsible approach, we aim for:
- Robust practices, procedures and policies that minimize risk
- Management accountability for ESG and responsibility throughout the organization
- Trust, accountability, and ethical behavior as foundations on which we operate
- ISO certified and audited management systems
- A robust people strategy and mature processes to attract, retain and develop talent.

Enabling and engaging our organization and value chain

In 2022, with the launch of our refreshed ESG strategy and key messaging, we also increased emphasis on employee engagement, targeted training, customer and stakeholder engagement and knowledge sharing. We initiated the first ever Nokia mandatory training for all employees on ESG in order to enable a basic understanding of sustainability, Nokia's messaging and position across the organization. The online training was available in 13 languages and by the end of 2022 over 97% of employees had completed the training.

We also introduced a new support model across our geographies with the establishment of a network of ESG principals who volunteer a portion of their working time, in agreement with their line manager, to work as initial points of contact for ESG topics for the customer interface and regional organizations. These volunteers come from a variety of functions within the company and have a strong passion and belief in the critical role of sustainability to the business. The principals also receive targeted in-depth training on ESG topics. By the end of 2022 we had built a network of 56 ESG principals across our global footprint.

Finally, we have engaged through workshops and virtual meetings with our customers and other stakeholders to share our strategy and approach. We have explored the potential areas of collaboration in order to drive sustainable development within and beyond our industry.

During 2022, we also launched our first ESG Customer Advisory Council in Europe to explore collaboration and how we can further support customers in reaching their sustainability goals. We also aim to launch other regional ESG Customer Advisory Councils.

Our ESG approach

Maximizing our positive impact - our handprint

- Decarbonizing other industries and society
- Enabling the transition of the energy sector
- Providing the critical networks for life
- Connecting the unconnected through building digital skills

Minimizing any negative impact - our footprint

- Continually improving product energy efficiency
- Driving circularity to reduce waste
- De-risking the potential misuse of technology
- Building sustainable operations & supply chain

Key ESG targets and performance

We have set short-, mid- and long-term targets and provide a list of these and the status at the end of 2022 on the following pages. In 2022, we had 26 external targets, of which 22 were either achieved or on track. 1 target was not achieved, 1 target was cancelled, and 2 were not on track. Our targets for 2023 and onward are presented after the table summarizing the 2022 targets. Key targets by strategic focus area are also discussed in the relevant chapters of this report.

Progress of ESG targets in 2022

Focus area	Target year	Base year	Target	2022 results	Target status
Environment					
Climate	2030	2019	Our Science-based target (SBT): Reduce our greenhouse gas (GHG) emissions across our value chain (Scope 1, 2 and 3) by 50% between 2019 and 2030, and reach net zero by 2050.	Emissions covered by our SBT were 37 627 000 tons CO_2e[1] which, as anticipated, are 13% above our cumulative carbon budget for 2020–2022 if a linear reduction from 2019 is expected annually. Total emissions however remained at the same level as in 2021. However, we do not expect the reduction of emissions in our value chain to be a linear process. We aim to achieve our target of 50% reduction in emissions by 2030 as we expect to see greater impact as more energy efficient products and features of our portfolio are adopted and decarbonization of the electricity grid continues globally.	→ Not on track
	2030	2019	Our final assembly suppliers reach net zero emissions by 2030.	Our final assembly supplier emissions were 46 000 tons CO_2e which is a 39% reduction from 2019.	→ On track
	2030	2019	Our suppliers reduce GHG emissions by 50% by 2030[2].	Our suppliers emissions were 683 700 tons CO_2e which is a 78% reduction from 2019. However, as this includes emissions data from hundreds of suppliers and the quality of allocated emissions data has been of concern, we are conscious that some of the reductions may be due to the quality of the data reported.	→ On track
	2030	2019	Our logistics GHG emissions reduce by 73% by 2030.	Our logistics emissions were 329 800 tons CO_2e which is a 9% increase from 2019.	→ Not on track
	2025	2019	GHG emission reduction of 65% from Scope 1 and 2, including 85% reduction from facilities, compared to 2019.	GHG reduction of 43% from Scope 1 and 2 (facilities, car fleet, marine fleet), including 54% reduction from facilities, compared to 2019.	→ On track

Progress of ESG targets in 2022

Focus area	Target year	Base year	Target	2022 results	Target status
	2025	N/A	Use 100% renewable electricity in our own facilities.	63% of electricity was renewable in our facilities.	→ On track
	2023	2019	50% reduction of average power consumption of 5G mMIMO Base Station by 2023 from 2019 baseline.	Target on track, 2022 intermediate steps achieved through the delivery of new Compact Baseband Unit and Micro DTx enhancement features.	→ On track
	2022	N/A	Reach 60% renewable electricity in our own facilities.	Reached 63% renewable electricity in our own facilities.	✓ Achieved
	2022	2019	45% reduction of facility GHG emissions.	Reduced 54% of facility GHG emissions.	✓ Achieved
Circularity	2030	N/A	95% circularity rate for waste from our offices, labs, manufacturing, installation and product takeback by 2030.	Data collection undertaken with recognition that some areas still require greater data coverage. Having the target helps accelerate this process and we have reached 89% circularity based on the current data collected.	→ On track
	2022	N/A	Divert 75% of facility waste from landfill.	80% of facility waste was diverted from landfill.	✓ Achieved
Bridging the digital divide					
Connecting the unconnected and under-served	2030	2021	Helping our customers to connect the next 2 billion measured by number of subscriptions in Nokia radio customers' networks by 2030.	In line with Nokia's long term goal, we work with our customers to provide broadband based digital services on more subscriptions. The number of mobile broadband subscriptions in Nokia radio customers' networks has increased from 2021 to end of 2022 by 400M[3].	→ On track
	2025	2021	Harness Nokia technology, capabilities and funds to improve the lives of 1 500 000 through social digitalization projects, digital skills building, and connecting the unconnected or underserved by 2025[4].	We reached 560 702 direct beneficiaries through social digitalization projects, building digital skills, connecting the unconnected or underserved, and improving inclusion, equity and diversity.	→ On track
	2023	N/A	Invest in proven research technology on non-traditional ways of 5G access, like FWA using mmWave technology and Nokia Digital Automation Cloud 2, to bridge the digital divide in rural and urban poor areas focused on access to education and healthcare.	During 2022 we announced 5G collaboration with a non-terrestrial service provider, expanded campus networks in the educational and medical arenas, ramped up our offerings to the education sector and further explored the use of Nokia DAC. However, the target as written does not require a quantifiable data point. Therefore, the target will be cancelled and replaced with a more quantifiable and measurable target. See 2023 targets roadmap.	✕ Cancelled

Progress of ESG targets in 2022

Focus area	Target year	Base year	Target	2022 results	Target status
Responsible Business					
Health & Safety	2030	2016	100% of suppliers delivering high risk activity to meet "H&S preferred supplier" status (score 4 or more out of 5) in our Health & Safety maturity assessment.	21% of relevant suppliers met H&S preferred supplier status.	→ On track
	2024	N/A	95% of projects compliant with the strengthened requirements of our High-Risk Project Implementation Assessments (HRPIA) process.	97% of High risk projects were found to meet our minimum non-negotiable requirements.	→ On track
	2023	N/A	100% of suppliers performing high risk activities pledge their commitment to Nokia's life-saving rules.	73% of suppliers delivering high risk activities pledged their commitment to Nokia's life-saving rules.	→ On track
	2022	N/A	Zero critical or fatal incidents for employees and suppliers.	There were no critical or fatal incidents affecting Nokia employees. There were, however, eight fatal and four critical incidents affecting suppliers. These all occurred in our supply chain. Any such serious incidents while carrying out work on behalf of Nokia are unacceptable and corrective actions are implemented to reduce the likelihood of future occurrences.	✕ Not achieved
Inclusion & Diversity	2030	2021	Increase the share of women to a minimum of 25% of total employees by end 2030.	The ratio of women is gradually increasing over time. However the percentage of women was around the same at 23% at the end of 2021 and 2022.	→ On track
	2022	N/A	Reach a minimum of 26% female hires in all global external recruits.	27% of external recruits were women. We achieved the 2022 target via increased marketing, communication and talent attraction activities to make Nokia's employer brand stand out for diversity-friendly employment policies and attract diverse talent.	✓ Achieved
Ethics & Compliance	2030	2016	Maintain 85% favorability of employee/line manager engagement on ethics and compliance.	Progress against the target was measured as favorable responses to the following question in our employee survey: "My line manager sets a positive example by acting with integrity." 88% of the responses were favorable.	✓ Achieved
	2022	N/A	Ethical Business Training (EBT) completed by 95% of employees.	98% of employees completed the training.	✓ Achieved
Human Rights	2022	N/A	Complete our second Global Network Initiative (GNI) assessment and, as a result, Nokia is deemed to have shown good faith efforts to implement the GNI principles in freedom of expression and privacy.	We completed our second Global Network Initiative independent assessment early and are proud to report that the GNI board found we have made good faith efforts to implement the GNI Principles on freedom of expression and privacy with improvement over time.	✓ Achieved

Progress of ESG targets in 2022

Focus area	Target year	Base year	Target	2022 results	Target status
Responsible sourcing	**2025**	**N/A**	98% 3TG traceability and conflict free status to smelter level in our supply chain as well as conflict free status of the smelters. Extended due diligence and conflict free status of cobalt, mica and 2 additional minerals.	As of 2022 we have achieved 98% 3TG traceability and conflict-free status to the smelters in our supply chain and their conflict-free status. We have also extended and conducted due diligence for cobalt and mica and mapped the supply chains for additional minerals. For those due-diligence will follow in the next years.	→ On track
	2025	**N/A**	80% of suppliers achieve satisfactory sustainability score (based on aggregated weighted share) from supplier performance evaluation (based on CR onsite audit programs, EcoVadis, CDP, Conflict minerals).	78% of suppliers, on average, received a satisfactory sustainability score in our assessment programs.	→ On track
	2022	**N/A**	98% tin, tantalum, tungsten and gold traceability and conflict-free status achieved and extended due diligence implemented for cobalt and mica.	As of 2022 we have achieved 98% 3TG traceability and conflict-free status to smelter level in our supply chain and also the conflict free status of the smelter. We have also extended and conducted due diligence for cobalt and mica.	✓ Achieved

Notes
[1] CO_2e = carbon dioxide equivalents
[2] Refers to our material suppliers
[3] Reference Source: GSMA Intelligence
[4] Improving lives refers to increased digital connectivity and inclusion for 1 500 000 people

Our ESG targets in 2023

Environment

75% renewable electricity in our own facilities

65% reduction of facilities' emissions

50% reduction of average power consumption of 5G mMIMO Base Station

Security and privacy

95% mandatory training completion related to privacy

2023

Environment

100% renewable electricity in our own facilities

65% reduction of Scope 1 and 2 GHG emissions, including 85% reduction from facilities

Industrial digitalization

Industry verticals adopting private wireless customers (number of customers, in line with business plan)
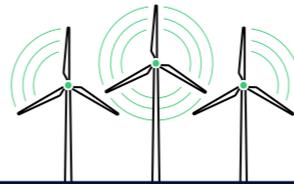
2025

Environment

50% reduction of our total GHG emissions (Scope 1, 2 and 3)

Final assembly suppliers reach zero emissions

50% reduction of suppliers' GHG emissions

73% reduction of logistics GHG emissions

95% circularity rate for waste from our offices, labs, manufacturing, installation and product takeback

Increase recycled content in source materials:

• Cast aluminum used in mechanical parts: to **90%**

• Wrought aluminum, steel and copper alloys, as well as polycarbonate plastics used in mechanical parts: to **50%**

2030

Environment

Net zero emissions in our value chain

2050

2024

Bridging the digital divide

Nokia's fixed and broadband technologies connecting **400 million** additional residential subscribers covering unconnected and underserved

Responsible business

A minimum of **27%** female hires in global external recruits

Zero critical or fatal incidents for employees and suppliers

100% of suppliers performing high risk activities pledge their commitment to Nokia's life-saving rules

Cohort of **40** senior leaders conduct safety tours to sites to increase monitoring visibility

98% tin, tantalum, tungsten and gold traceability and conflict-free status and extended due diligence to cobalt and mica

Ethical Business Training (EBT) completed by **95%** of employees

Responsible business

95% of projects to be compliant with HRPIA standards

Reduction in Total Recordable Incident Frequency Rate (TRIFR) and Lost Time Incident Frequency Rate (LTIFR) for Nokia employees and suppliers

Bridging the digital divide

Harness Nokia technology, capabilities and funds to improve the lives of **1 500 000** through social digitalization projects, digital skills building, and connecting the unconnected or underserved

Responsible business

98% tin, tantalum, tungsten and gold traceability and conflict-free status and extended due diligence to cobalt, mica and two additional minerals

80% of suppliers receive satisfactory sustainability score from supplier performance evaluation

TRIFR and LTIFR at industry benchmark

Bridging the digital divide

Provide broadband based digital services with **2 billion** more subscriptions

Responsible business

Maintain at least **85%** favorability of employee/line manager engagement on the importance of ethics and compliance

100% of suppliers delivering high risk activity to meet or exceed "H&S preferred supplier" status

Increase the proportion of Nokia's employees who are women **25%**

The UN Sustainable Development Goals and our business

The United Nations Sustainable Development Goals (SDGs) and their targets remain a key framework for our sustainability work and for many of our customers and partners. Goals 8, 9 and 13 are the most relevant for our business and reflect the areas in which we believe we can have the greatest positive impact. We believe digitalization and connectivity will continue to play a critical role in accelerating and achieving all 17 SDGs. More examples of how the work we do actively contributes to all 17 SDGs can be found in this report and on our website.

Climate change remains the most significant sustainability challenge for our business and the planet and requires that we put in place the processes and concrete actions to do our part. Through the technology we provide we help customers, other industries and individuals decarbonize through the digitalization of industrial processes and society so that they become more predictive and productive, with reduced emissions. Nokia was the first telecoms equipment vendor to set a science-based target (SBT). We, in line with the 1.5°C warming scenario, commit to reduce our Scope 1, 2 and 3 GHG emissions by 50% by 2030 from a 2019 base year. To halve our GHG emissions by 2030 is our first target in order to reach net-zero emissions by no later than 2050. Read more in the Environment and Industrial digitalization chapters.

To address our own footprint, we focus on both climate and circularity, where we aim for leadership in the energy efficiency of our products and circular practices. In 2022, we again received a score of A- from CDP (Carbon Disclosure Project) for our work and disclosures on carbon emissions.

Responsible business and our people

We were again acknowledged as one of the World's Most Ethical companies by the Ethisphere Institute in early 2023. In 2022, we also successfully completed our second external independent human rights assessment for the Global Network Initiative (GNI). We took up membership in 2022 of BSR™, the Business for Social Responsibility organization, to help drive the sustainability narrative and ESG collaboration forward throughout the value chain. We also shared our approach to Responsible Artificial Intelligence.

In 2022, we also launched and implemented our People strategy and related Nokia essentials where we place our people at the heart of our business. In early 2023, we were also proud to be recognized for our work in inclusion and diversity – being included for the fifth time on the Bloomberg Gender Equality Index, again recognized for our Board and Group Leadership diversity by the Nordic Business Diversity Index, and being awarded Ambassador status by the 2022 Workplace Pride Global Benchmark.

Digital inclusion

We connect the unconnected through a variety of solutions that enable greater digital inclusion across countries globally. We deliver broadband to urban and rural communities through fixed and wireless networks and to businesses and educational institutions through private wireless and campus networks. We work to extend such reach through our collaboration with non-terrestrial companies such as AST SpaceMobile to help reach areas of the world still not connected.

Beyond these examples, the work we do, through digitalization and enhanced connectivity we are able to positively contribute to achieving all 17 SDGs.

Engaging with our stakeholders

We work with a range of stakeholders and look for where we can increase collaboration and also respond to requirements in building sustainable solutions. The table below summarizes those key stakeholders and our interaction.
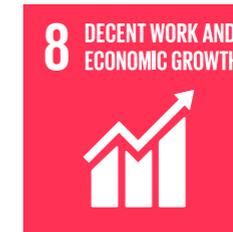
8 DECENT WORK AND ECONOMIC GROWTH — Promote inclusive and sustainable economic growth, employment and decent work

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE — Build resilient infrastructure, promote sustainable industrialization and foster innovation

13 CLIMATE ACTION — Take urgent action to combat climate change and its impacts

Engaging with our stakeholders

Collaboration is key to moving the needle on many sustainability topics – from protecting the environment to bridging the digital divide. We must embrace greater collaboration if we are to resolve many of the global problems facing humanity and build a more sustainable, inclusive and equitable society and world. We call on all stakeholders to join forces in solving the critical issues faced by the planet and society.

Supporting our customers' sustainability goals

We work with our customers, both communications service providers and enterprises, in many important areas of sustainability, including energy and resource efficiency, circular practices, materials, critical communications, efficient manufacturing and operations, supply chain transparency, modern slavery, human rights and community involvement. We further emphasized this collaboration in 2022 with the launch of the inaugural ESG Customer Advisory Council, facilitated by BSR™ (Business for Social Responsibility).

Sustainability is an integral part of most sales requests where we provide data and information on a variety of topics. We share best practices and provide information about our sustainability performance and our operations to our customers

on a regular basis. In 2022, we held a series of in-person customer and stakeholder workshops, sharing strategies, commitments, requirements and targets to understand how we can better collaborate. The workshops will continue in 2023. We also engage with customers through regular virtual and, where possible, face to face meetings at different levels of the company where ESG issues are discussed. Customers may request their allocated share of our GHG emissions. This data is primarily provided through our CDP climate change questionnaire responses and in-depth environmental data is provided in the Environmental Product Declaration (EPD) available for products.

We work with a range of stakeholders and look for where we can increase collaboration and also respond to requirements in building sustainable solutions. The table on the right summarizes those key stakeholders and our interaction.

Our stakeholders

Stakeholder group	Our approach	Key topics raised in 2022
Customers	We work with our customers to continue to improve the energy efficiency and sustainability of our products. We collaborate to resolve environmental, ethical, and social issues, and look at ways in which technology can enable positive changes.	GHG emissions reduction, energy and materials efficiency, climate actions, circular products and services, recycled materials, value chain, responsible operations, inclusion and diversity.
Employees	Our people are our greatest asset and we aim to build a culture of trust, respect, diversity and opportunity for all. Read more	New people strategy, Nokia essentials, wellbeing, health and safety, future ways of working and flexibility policies, inclusion and diversity, learning and career development.
Investors	We have regular discussions with our shareholders and the investor community on ESG topics including our approach and policies, and our opportunities and targets.	Climate targets and actions, governance and energy efficiency of our products, responsible sourcing, labor and human rights, ESG reporting and social achievements.
Suppliers and Partners	We work with suppliers to drive transparency, sustainability and good ethical and business practices in our long and often complex supply chain. Read more	Inclusion and diversity, modern slavery, ethical recruitment practices, responsible minerals sourcing, climate change, circular materials and health and safety.
Industries	We have broad and deep interaction and collaboration with many key industry bodies that are striving for economic and societal development on the national, regional and global levels, such as World Economic Forum (WEF), GSMA, and Digital Europe. Read more	Measurement methodology standards for 5G radio and circularity related standards for telecommunications products and networks in ETSI and ITU-T. Responsible use of Artificial Intelligence standards in ISO, CEN/CENELEC, and various national committees. Energy saving features in 3GPP.
Academia	We work with a broad range of academic institutions in areas such as collaborative research, training programs, innovation events and talent development. Read more	6G, ethical use of AI and data, industrial IoT, quantum computing.
Civil society	We engage with stakeholders such as community groups and NGOs. We work with NGOs to support programs which have a long-term impact and create a sustainable future platform in the target communities. Read more	Digital skills building, empowering diverse groups and ensuring equal access to opportunity such as education and entrepreneurship.
Cities	We work with cities and communities to drive digitalization and smart development. Read more	Connectivity and digitalization, 5G use cases, responsible AI, public safety and health, data security and privacy, green economy transition.
Governments	We contribute to policy debates fostering a connected society and the adoption of new technologies around the world. Read more	Digital and broadband policies, ESG topics, emerging technologies and business models.

Supporting informed public policies for digitalization and sustainable development

We believe that if we couple technological innovation with international cooperation and inclusive policies, we can make our planet healthier and our societies fairer. The United Nations SDGs establish a clear framework for us all. The next generation of connectivity technology and its applications are critical tools to enable a sustainable transformation towards digital societies that can enhance productivity, improve quality of life and reduce inequalities on a global scale. At Nokia, we collaborate with governments, regulators, trade associations, international organizations, industry peers, influencers and academia to drive policies that encourage investment in digital and broadband technologies and contribute to a green transition.

The rollout of 5G and leading-edge fiber networks is the foundation upon which decarbonization can thrive. Through robust connectivity, society can accelerate the rollout of sensors, Augmented Reality (AR) and Virtual Reality (VR), cloud, and analytics to maximize the sustainable benefits of technology. Policies that encourage broadband adoption and the digital transformation of industry, that maximize available spectrum for connectivity, and that enable rapid deployment of digital infrastructure will help meet climate change goals.

We were shocked by Russia's invasion, in 2022, of Ukraine, in contravention of international law. Russia's illegal invasion continues to bring into sharp focus the importance of communications infrastructure as the critical backbone of society. We have worked together with our customers and partners in Ukraine to help those in need and ensure Ukrainians remain connected. We continue to explore ways in which we can be a trusted partner to Ukraine and participate in the country's reconstruction. Our Chief Corporate Affairs Officer, Melissa Schoeb, serves as a member of the Center for Strategic and International Studies' Ukraine Economic Commission. We are also working towards our responsible, swift and compliant exit from Russia as announced on April 12th, 2022.

Russia's invasion of Ukraine has also brought increased pressure on the global economy, already weakened by the coronavirus pandemic, and affecting livelihoods especially in developing countries. In other regions, there have been concerns especially around inflation and energy supply. The invasion and its impacts have yet again highlighted that sustainability is increasingly a dimension of societal resilience and that we must accelerate our progress towards a greener world.

Technology has a key role to play as an enabler, unlocking economic opportunity and growth, facilitate access to work, education, health and other public services. Governments should further engage with industry to develop the best policy framework for sustainable and inclusive digitalization. Across the globe, Nokia engages with policymakers and regulators transparently and constructively to advise on spectrum for broadband, the security of digital infrastructures, a regulatory regime that facilitates network roll out and other digital policy endeavors.

In 2022, we contributed to evidence-based discussion by engaging and leading discussions in organizations developing best practices for the industry and advising
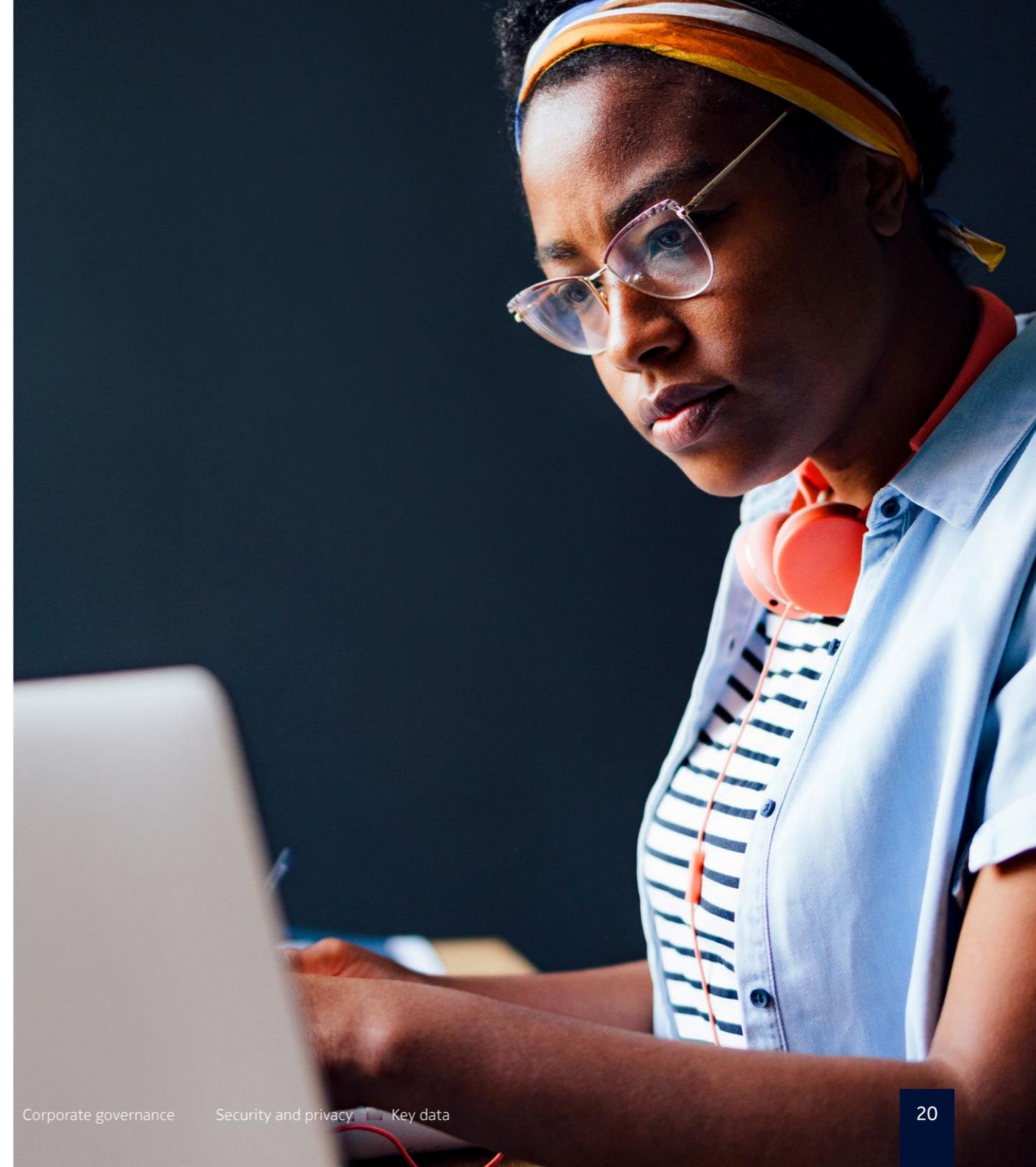
policymakers. These included the European Round Table for Industry (ERT), the Global System for Mobile Communications Association (GSMA), DIGITALEUROPE and national associations such as BITKOM. We collaborated with think tanks such as the European Council on Foreign Relations (ECFR) and the German Marshall Fund to promote informed debates on policies beneficial for society.

Ethical engagement

We do not participate in the political or electoral process through direct donations to political groups. Our guidelines for dealing with government officials always apply, regardless of the employee's role and the purpose or frequency of interaction. They also apply to interactions with employees of state-owned companies and other governmental customers. The basic guidance for interaction with a government official is laid down in our Code of Conduct.

Acting together for sustainable development

We strongly believe that by acting together, we can achieve greater results. Nokia engages in several multilateral processes in support of sustainable development at the global, regional and national levels.

We continued to participate in discussions on global connectivity and were an active partner of the UN, especially the International Telecommunications Union (ITU). In 2022, Nokia participated in the World Telecommunication Development Conference in Kigali, Rwanda, where we joined the ITU Partner2Connect Digital Coalition to foster meaningful connectivity and digital transformation globally, with a focus on

hardest-to-connect communities. We also participated in the ITU Plenipotentiary Conference organized in Bucharest, Romania.

As a UN Broadband Commissioner, our President and CEO Pekka Lundmark engages in public-private discourse on digital inclusion. In 2022, he led the work of the Working Group on AI Capacity together with UNESCO Director-General Audrey Azoulay. Together with stakeholders representing governments, non-governmental organizations and companies, the Working Group published its report in September 2022 on how civil servants can best take up transformative technologies and improve the delivery of public services. Our CEO also contributed to the State of Broadband Report, calling for international progress towards making the 2025 Broadband Advocacy Targets a reality.

Nokia is a partner of the World Economic Forum (WEF), contributing our expertise to deliver on the WEF's promise to improve the state of the world. In 2022, we continued to shape the work towards digital inclusion at the WEF Edison Alliance. Nokia has set a target of improving the lives of 1 500 000 people by 2025 through socially driven digitalization projects, digital skills building, and connecting the unconnected and the underserved. This is also our pledge to WEF Edison Alliance. Our actions will count towards the 1 Billion Lives Challenge to improve lives through affordable and accessible digital solutions across health, finance and education by 2025, as well as ITU's Partner2Connect initiative.

We continued to shape the path towards net zero as a founding member of the First Movers

Coalition, a public-private partnership with the U.S. State Department, and we actively contributed to discussions around digital for climate and metaverse. In 2022, Nokia joined the Global Parity Alliance, and our OUTLeaders program, supporting and developing LGBT+ leaders at Nokia, was chosen as a highlight of diversity, equity and inclusion efforts in the industry.

As a founding member of the Digital for Development (D4D) Coalition with other European companies, Nokia contributes to the efforts of the D4D Hub, a strategic multi-stakeholder platform that promotes new international partnerships and impact initiatives for digital transformation, led by the European Union and partner countries in Africa, Asia, Latin America, the Caribbean and the EU Eastern Neighborhood. Nokia continues to explore best practices for creating partnerships for skills and capacity development, facilitating the establishment of local innovation environments.

Although we did not have a physical presence at COP27 in Egypt we did release some information on our work around circularity in the region. See Circularity sub-chapter.

See the list of external initiatives we support and our memberships in associations, GRI 2–28.

> " In 2022, we reached 560 702 direct beneficiaries through social digitalization projects, building digital skills, connecting the unconnected, and improving inclusion, equity and diversity.

Our approach   Environment   Industrial digitalization   Bridging the digital divide   Responsible business   Our people   Corporate governance   Security and privacy   Key data

21

Environment

Our greatest environmental impact is from our products and solutions, which can help to decarbonize and dematerialize other industries and cities. This is our environmental handprint and is achieved through the green transition of industries and society.

In the environment arena, we aim to be the leader in energy efficiency in silicon, software, and systems. We intend to accelerate our ambition in energy efficiency in 5G-Advanced and 6G through early engagement in standardization and ecosystem development. We also improve product circularity with more recycled content in new products and expanding circular product offerings to customers.

Highlights

95%

In 2022, we introduced a new circularity metric to guide our operational circularity journey and to close the material loop. Our new target is to be **95% circular related to operational waste by 2030**

We announced commercial availability of **liquid cooling technology** for our latest **AirScale base station** portfolio

We joined the **RE100 initiative** and were awarded with **the Best Newcomer recognition** during climate week in New York in September 2022
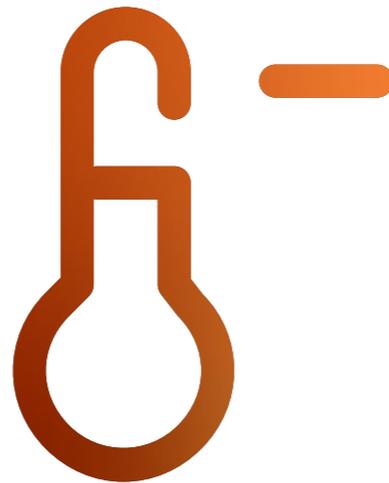
Our final assembly suppliers achieved a

39%

reduction in **GHG emissions** compared to the baseline year of 2019
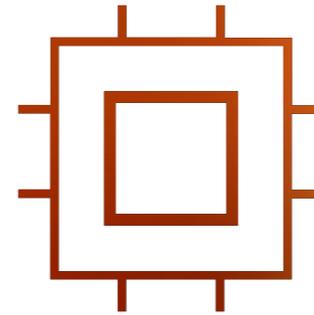
We began shipping our **FP5 new network processor silicon** which is **up to 75% more energy efficient** than previous generations

We launched **Intelligent RAN operations** which use machine learning to reduce 5G base station energy consumption

5G

We reduced our facility **GHG emissions by 54%** compared to 2019 and surpassed our annual target for renewable electricity in our facilities, reaching

63%

globally

150th customer deploying our Quillion-based chipset in fixed broadband solutions bringing related energy efficiency benefits

Climate

Climate change remains a significant risk to society and the natural environment. It can negatively impact our supply chain and our customers' business, as well as the global economy, and political and social stability. We recognize that the products and services we provide globally may affect the environment and climate as manufacturing, distributing, and operating these products require energy and other natural resources. This chapter presents our approach, actions and achievements in 2022 concerning our carbon footprint, circularity and biodiversity.

In 2022, 95% of our greenhouse gas emissions came from our products in use by our customers in their networks. To help minimize emissions we constantly increase the energy efficiency of our products, improve software and services, reduce power consumption, and drive innovation across the portfolio. Examples of the innovations in silicon, cooling, product design and AI based energy management in 2022 can be found under the Our portfolio section.

We also drive energy efficiency in our own operations and our value chain. Our own operations only account for a minor part of our footprint (around 1%) and are less prone to the impact of natural catastrophes and severe weather. However, we still strive to minimize our own operational footprint. We continue to drive reductions in our energy consumption across our facilities through targeted programs and actions. These are detailed in Our own operations and climate section. This is further supported by our target to purchase 100% renewable electricity by 2025 across our facilities.

We also apply this same minimization first step to our value chain from our suppliers to customers. We set clear targets. We engage with our stakeholders, supply chain and industry to drive improvements in the broader ecosystem. While we expect that digitalization will drive more energy- and material-efficient industries, cities and communities, the ICT industry must continue to decarbonize its own operations and products, decoupling energy use from increased capacity and data traffic demands.

Our climate targets and outcomes in 2022

We have set our key greenhouse gas (GHG) emissions reduction target through the Science Based Targets (SBT) initiative. Our target is to reduce our GHG emissions by 50% by 2030 from 2019 across our value chain (Scope 1, 2 and 3). The reported emissions for the baseline year were 34 961 000 metric tons CO_2e. Our SBT is aligned with the goal of limiting global warming to 1.5°C. We were the first telecoms equipment vendor to have a science-based target accepted by the SBT initiative in 2017.

Our climate targets from 2023 onwards

2023
75% renewable electricity in facilities

65% reduction of facilities' emissions

50% reduction of average power consumption of 5G mMIMO Base Station

2025
100% renewable electricity in own facilities

65% reduction of Scope 1 and 2 GHG emissions, including 85% reduction from facilities

2030
50% reduction of our total GHG emissions (Scope 1, 2 and 3)

Final assembly suppliers reach zero emissions

50% reduction of suppliers' GHG emissions

73% reduction of logistics GHG emissions

95% circularity rate for waste from our offices, labs, manufacturing, installation and product takeback

Increase recyclate use in products

2050
Net zero emissions in our value chain

We also set other short-, medium- and long-term targets in specific areas of our operations and value chain to drive concrete actions that support and accelerate the achievement of the main SBT target. We have our own 100% renewable electricity target across our facilities, aligned with the RE100 initiative which we joined in 2022. We have also agreed to a target with our main final assembly suppliers to reduce the GHG emissions by 100% by 2030 for the portion of their manufacturing attributed to Nokia. Furthermore, we continue to advocate for greater uptake of decarbonized electricity. We encourage the use of more sustainable fuels by our logistics service providers, and work with energy utilities to help enable their transition.

We also focus on reducing the embodied emissions* of our products, for example by offering circular products, adding recycled material content into new products and working with our suppliers on their journey to decarbonize their energy sources. Read more in our key climate related targets for 2022 and see a full 2023 roadmap of all our ESG targets.

Understanding and tracking our emissions

As shown in the graph, Nokia's total CO_2e emissions from Scope 1, 2 and 3 were 39 713 600 (40 983 500 in 2021) metric tons CO_2e. From this total amount, Scope 1 emissions were 124 000 (124 300 in 2021) metric tons CO_2e, Scope 2 market-based emissions

The SBT target covers the following activities:

- **Scope 1:** emissions from our facilities, car fleet and marine fleet
- **Scope 2:** market-based emissions from purchased energy
- **Scope 3:** emissions from the customer use of sold products (covering almost 100% of our current portfolio) and emissions from the logistics and the final assembly factories in our supply chain

were 135 300 (224 500 in 2021) metric tons CO_2e, and Scope 3 emissions totaled 39 454 200 (40 634 700 in 2021) metric tons CO_2e. The scope of our Science Based Target (SBT) covers 37 627 000 (37 598 000 in 2021) metric tons CO_2e which is 95% (92% in 2021) of our total 2022 emissions. Read more about the SBT initiative and the criteria for science-based targets here.

In 2022, our SBT was not on track and emissions covered by our SBT were 13% above the linear trajectory between 2019 and 2030. Total emissions remained at the same level as in 2021. However, we do not expect the reduction of emissions in our value

Our carbon footprint (Scope 1, 2 and 3)

	Emission source	Metric tons CO₂e	% of total	
🟣	Energy use in facilities and by fleet	259 400	0.7%	Our Scope 1 and 2 emissions
🟡	Use of sold products	37 919 200	95%	
🟢	Purchased goods and services	683 700	2%	
⚫	Capital goods	444 800	1%	
⚪	Upstream transportation and distribution	329 800	0.8%	Our Scope 3 emissions
🔵	Employee commuting	50 100	0.1%	
🔵	Business air travel	26 700	0.1%	
	Total Scope 1, 2 and 3 emissions	**39 713 600**	**100%**	
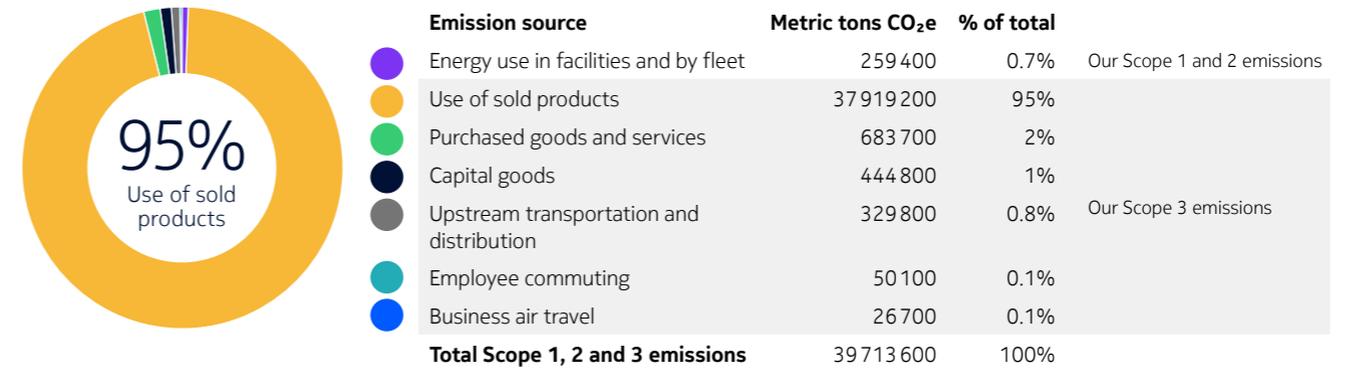
Reported data is rounded to hundreds. We ensure the total Scope 1, 2 and 3 rounds correctly. Percentages calculated out of accurate GHG emissions.

Our carbon footprint (Scope 1 and 2)

	Emission source	Metric tons CO₂e	% of total	
🟣	Facilities, direct emissions	24 300	9%	
🟡	Car fleet	22 400	9%	Our Scope 1 emissions
🟢	Marine fleet	77 300	30%	
⚪	Facilities, indirect emissions from purchased energy, market-based	135 300	52%	Our Scope 2 emissions
	Total Scope 1 and 2 emissions	**259 400**	**100%**	
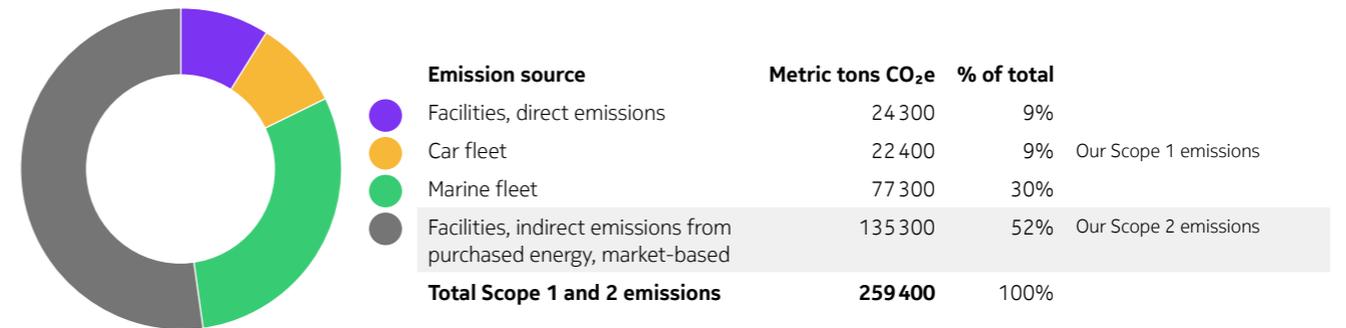
Reported data is rounded to hundreds. We ensure the total Scope 1 and 2 rounds correctly. Percentages calculated out of accurate GHG emissions.

* Embodied emissions - Combines the GHG emissions from the following life cycle stages: raw material acquisition and prepro-cessing, production, distribution and transport, installation (by which is meant service deployment and build), and end-of-life treatment (i.e., all life cycle stages other than the use stage). This categorization is for simplicity of reporting, because for many ICT products the use stage is responsible for the majority of the emissions, thus the term "embodied emissions" is often used to refer to all the emissions other than those from the use stage. [GHG Protocol ICT Sector guidance].

chain to be a linear process. We aim to achieve our target of 50% reduction in emissions by 2030 as we expect to see greater impact as more energy efficient products and features of our portfolio are adopted and decarbonization of the grid continues globally.

Managing our climate actions

Our global Environmental Management System (EMS) provides the tools to analyze our most significant environmental impacts on an annual basis and to systematically track progress on selected focus areas. We select the focus areas based on current, upcoming, and potential new regulation and requirements, stakeholder interest and needs, the severity of the environmental impact, related risks and opportunities, and current and potential changes in our business. Our own operations are certified under the ISO 14001:2015 Environmental Management System standard to verify compliance with regulations, and Nokia's own environmental requirements. In 2022, we got re-certified with ISO 14001:2015 and the coverage of employees within the scope of that certification was 86% (88% in 2021).

Climate-related risks and opportunities

The potential effects of climate change are wide-ranging, from natural disasters that could affect our supply chain, operations and customers, to the impact on the world economy, rising energy prices and increased regulation. We provide products and services globally that have an impact on the environment, as manufacturing, distributing, and operating these products require energy and other resources. We are committed to the UN Global Compact's Ten Principles, including Principle 7 on supporting a precautionary approach to environmental challenges. We follow the precautionary principle, especially in areas involving environmental risks.

Our most material climate-related opportunities and risks are related to our ability to help other industries reduce their emissions and to constantly improve the energy efficiency of our products in use. We believe that the opportunities our technology provides to our customers, industry and society, and the environmental actions we take in our operations can positively contribute to the fight against climate change. For examples of how we help other industries and cities increase efficiency, see the Industrial Digitalization chapter.

Our own operations are not very sensitive to changes in energy pricing or natural catastrophes. However, climate change can impact our customers and supply chain, as well as the global economy and political and social stability. We have aligned our climate-related disclosures in our CDP* report according to the guidance of the Task Force on Climate-related Financial Disclosures (TCFD). Read more about the risk factors that could affect our business in the Annual report, Nokia in 2022.

We also reported in line with the EU taxonomy regulation (2020/852). The telecom sector is not yet included within the EU taxonomy sectors and, therefore, the positive impact (handprint) of connectivity and digitalization are not currently recognized under the EU taxonomy. The majority of our achievements in reducing GHG emissions for our customers, industry and society at large go unrecognized by the EU taxonomy in its current form. Thus, without recognition of sector relevant economic activities, the taxonomy eligibility is low for Nokia. More can be read in our Annual report, Nokia in 2022.

*CDP is a global organization that runs a bespoke global disclosure system for investors, companies, cities, states, and regions to manage their environmental impacts.

Decarbonizing our value chain

As data grows rapidly, we must continually manage our industry's own footprint. We have to ensure that the network infrastructure we design and deliver to our customers is as energy and material efficient as possible. Our operations, including our supply chain, must also show improvements in efficiency. We must minimize any potential negative impacts of technology.

Our portfolio

According to our life cycle assessment, the use phase of our products remains by far the greatest part of our carbon footprint.

In 2022, the use phase based on GHG reporting accounted for 95% of our total emissions. Therefore, our greatest impact from a portfolio perspective is to continually drive down the power consumption of our products, thus improving the energy efficiency of the products when in use by our customers.

In 2022, we ramped up energy efficiency solutions in silicon, hardware, software and services. We work with our customers to look at

the energy used across their networks, not just individual elements. We assess the opportunities to optimize network performance and minimize, minimize energy use and therefore lower emissions. We also look at the use of intelligent software to dynamically manage the network, maximizing energy efficiency. In 2022, the GHG emissions from the customer use of sold products decreased by 1% compared to 2021. This small decrease is mainly coming from a reduction in emissions of fixed networks products due to better energy efficiency.

Examples of energy efficiency improvements across our product and services portfolio are provided in the following paragraphs.

Our approach **Environment** Industrial digitalization Bridging the digital divide Responsible business Our people Corporate governance Security and privacy Key data

27

Mobile Networks and energy efficiency

5G is a natively greener technology than its predecessor 4G and can potentially provide 100 times more traffic with less energy per bit. Beyond its own footprint, 5G is expected to reduce energy use in other sectors of society and industry as it enables new, robust use cases. Nokia AirScale Radio Access is a complete radio access solution that helps telecom operators to address the increasing demands for mobile broadband. Innovations such as liquid-cooled base stations, new chipset designs and power saving software features based on artificial intelligence, all provide an impetus to improve the energy efficiency of 4G and 5G networks and thus minimize related CO_2e emissions.

The energy efficiency of mobile networks can be improved by using power-saving features, small cell deployments and new 5G architecture, and protocols. 5G has energy-saving features such as advanced sleep modes which help reduce power consumption particularly in low traffic. Our AirScale radio base station (BTS) products provide powerful energy-saving software features when network traffic is medium or high. Close to 150 customers have installed energy efficiency software features on our products, including over 50 customers with 5G energy efficient features. Over 60% of our radio products in the field have one or more energy efficiency features activated.

In 2022, we continued to expand our zero emissions radio network solutions, including new energy-saving software features for both 4G and 5G Radio Access technologies. We introduced an updated Radio Access Network (RAN) hardware portfolio using our latest System on Chip (SoC) generation ReefShark, doubling the capacity of the mMIMO (massive multiple input and multiple output) antenna solution. We have enriched our liquid-cooled BTS offering with the latest generation of ReefShark based high-capacity Plug-In Units. We also introduced Intelligent Radio Access Network (RAN) operations that use machine learning to reduce 4G and 5G base station power consumption by up to 15%.

Modernization is also another key approach to minimizing the expected rise in energy use as 5G is deployed and data grows. Initial deployments of 5G can potentially lead to increased energy use if 5G is simply added on top of an existing network without modernization of the legacy network. The customer base station sites we modernized in 2022 used on average 44% less energy than those that were not modernized. The number of modernized products is based on the number of older generation radio network products replaced at customer sites for which the data is available in a global product deployment database for the reportable year. Beyond reductions in energy use and related emissions, base station modernization also brings economic benefits through a typical payback time of two to three years. **Read more about 5G here**.

Network Infrastructure

In IP Networks in 2022, we launched the **FP5 Nokia chipset** which sets a new benchmark for power efficiency in IP routing with a 75% reduction in power consumption per bit over the previous generation. It reduces power consumption even more if only a fraction of the potential capacity is used. An intelligent aggregation mode enables a 33% throughput capacity increase using the same power modules and inputs.

With FP5, power efficiency is always optimized, no matter the load conditions. FP5 maintains consistently high performance, even as it takes on multiple concurrent roles with all features and capabilities enabled and running at line rate. This allows service providers to do more with fewer routers and line cards, minimizing their overall power consumption. Highly efficient cooling also offers other options for service providers and lowers total power consumption even further.

FP5 based products are 800GE routing-enabled, offering a reduction in power consumption between 20% and 40% when compared with 100GE and 400GE devices, and provide the **same reach with higher capacity.**

In **Optical Networks**, the **PSE-V** our Photonic Service Engine solution in commercial delivery in 2022 provided the most advanced family of coherent digital signal processors (DSP). The PSE-V powers Nokia's next generation high-performance, high-capacity optical transport hardware. The PSE-V supports higher capacity over longer distances – including support for 400G over any distance - while further reducing network costs and power consumption per bit. The PSE-V allows a reduction of power consumption per bit of at least 50% in respect to the PSE previous generation.

In 2022, Nokia's Fixed Networks hit a milestone of reaching its 150th customer deploying our Quillion-based chipset in fixed broadband solutions. Quillion-based solutions consume about 50% less power in the Optical Line Terminal (OLT) than previous generations and are two years ahead of the European Union Code of Conduct for Broadband Communication Equipment targets – helping operators to meet their emissions goals. This allows operators to deploy power-optimized line cards with next-gen processors, power-saving features and optimal airflow guidance, resulting in more compact efficient nodes with less power and cooling provisioning.

The Quillion Multi-PON solutions can co-exist with previous generation technologies. This means there is no need to replace the existing deployed fiber. Consequently, no new digging is needed to lay fiber, which results in the avoidance of potential environmental impact from laying new fiber. **Read more about Quillion here.**

Cloud and Network Service

AVA Energy Efficiency (formerly iCES Energy) helps customers meet their energy efficiency and carbon reduction goals. The product uses AI to assess where active and passive power usage can be reduced without impacting the customer experience. Some customers see an up to 20% reduction in energy consumption. The AI-based AVA Energy Efficiency predicts low traffic periods and shuts down resources like frequency carriers or even whole sites in case of overlapping coverage. It can be deployed on multivendor active RAN site and other network domains like access, transport, core, and data centers. It also monitors and controls auxiliary components in a network site including cooling systems, batteries, air ventilators, and AC control, and shuts down unused hardware resources that are critically important levers for energy reduction.

AVA Energy Efficiency offers an as-a-service solution, combining Nokia's deep telco knowledge and data science capabilities. Tailored insights reduce energy consumption of active RAN and passive of auxiliary components at the base station site.

In 2023, CNS expects to launch an extension to AVA Energy covering data centers, which are huge power consumers.

The IMPACT software platform allows customers to implement smart metering on energy, waste, gas, water, humidity, and more to conserve scarce resources. The horizontal architectural approach allows automatic data collection from many different types of sensors and multiple options of wired and wireless connectivity. IMPACT IoT can be used by customers to manage energy and feed data into the ESG system for sustainability reporting.

The Cloud Native Communication Suite (CNCS) gathers all IMS voice core components in a single CNF (Cloud Native Network Function) reducing the carbon footprint of the solution by 15% and operating costs by about 35% due to simplified life cycle management. CNS will evolve this solution in 2023 to serve up to 4 million subscribers with a rich set of services.

With industrial digitalization, particularly through campus private wireless networks, CNS provides connectivity and digital solutions that can transform physical and asset-intensive industries to decarbonize, making them more sustainable, safer, and more productive. In campus edge, more than 90% of early adopters report energy reductions.

The on-demand nature of Software-as-a-Service (SaaS) delivers more efficient use of resources and sustainability benefits. Customers consume the energy they need, and cloud hosting reduces emissions from hardware shipments.

In 2022, Nokia signed a technology collaboration agreement with Intel to create market-differentiating improvements in power savings (>30%), performance (>20%), and security and analytics of the CNS portfolio running on the latest-generation Intel processors. The project will establish a new Nokia 5G Core on a Core engineered system lab to measure the power savings of different Intel features, as well as their performance and footprint.

Nokia fosters engagement with hardware suppliers to ensure circular and carbon optimized logistic flows, and is partnering to bridge the digital divide and increase universal access to the Internet.

Finally, an ESG Design Framework for network functions and applications leverages and builds on the Design for Environment recommendations created by Nokia Bell Labs. The Design Framework is based on three pillars:
1. Developing a consistent model across different products and software to evaluate and measure the consumption of virtual resources
2. Defining APIs allowing the exposure of the network function consumption, its monitoring and reporting
3. Applying AI/ML rules to analyze, predict and propose active optimization for scaling back when needed or moving the workload to a distribution center where the source of energy is cleaner.

Nokia's own operations and climate

Our real estate team focuses on developing and delivering energy efficient facilities in-line with our overall company goals and science-based target (SBT).

We aim to reach 100% purchased electricity from renewable sources by 2025 across our facilities. This covers our offices, laboratories and our own final assembly factories. This target is aligned with the RE100 initiative. The RE100 initiative is the

> " In October 2022, we were pleased to receive the first ever Vodafone Group planet award at the Arch Summit in Luxembourg for our work on climate challenges.

global corporate renewable energy initiative bringing together hundreds of large and ambitious businesses committed to 100% renewable electricity. In September 2022, we were recognized as the best newcomer by RE100, the Climate Group and CDP for our work on renewables.

In 2022, electricity consumption across our facilities increased 1% compared to 2021. 63% (53% in 2021) of total consumed electricity came from renewable sources and our Scope 2 market-based emissions decreased by 40% from 2021 levels. The facilities' Scope 1 and 2 emissions were reduced by 34% compared to 2021 and 54% compared to the 2019 baseline.

Total energy use across our real estate portfolio was 3% higher compared to 2021. Nokia sites employing renewable electricity in 2022 were located in the following countries: Australia, Austria, Belgium, Bulgaria, Canada, China, Denmark, Finland, France, Germany, India, Ireland, Italy, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK, and the USA.

In 2022, our existing wind power purchase agreement for our Chennai factory in India was boosted by a new 3 600 panel rooftop solar plant. At our Horizonte building in Portugal, 610 new solar panels on top of the employee car park are now generating 18% of all the electricity used in the building. At our flagship factory in Oulu, Finland we have added renewable district heating to the existing purchase of renewable electricity.

We continue to encourage the consideration of sustainability in the selection, development, management and disposal of our facilities. Our new sites in Istanbul, Massy, Stuttgart and Sunnyvale all have sustainability certifications (LEED, BREEAM or equivalent). Our site in Singapore also achieved the Singapore Environment Council Eco-Office Champion certification. All markets implemented projects designed to improve facility operational efficiency, including but not limited to the utilization of LED lighting at sites within China, the USA, India, Portugal, Poland, Germany and Singapore; the use of partial free cooling in Finland and Belgium; and replacement/optimization of UPS and chillers in India. Also, transferring operations to more energy efficient sites in Germany and the USA has brought reductions in energy use compared to the previous sites.

Employee transportation — our car fleet

With our employee transportation we aim to reach the target for our own operation emissions by introducing low emission vehicles and alternate mobility options. In 2022, GHG emissions from our global car fleet decreased by 8% compared to 2021 and are now 24% less than in 2019. In 2022, almost all pandemic related restrictions were lifted, and people were able to travel freely. Employees did not have to use a car for traveling as often as during the pandemic and our new flexible working model also reduced commuting to the offices. We have introduced electric vehicles in all countries that represent most of our fleet emissions. Electrification will accelerate in coming years when charging infrastructure matures and when there is more choice in electric car ranges and more affordable pricing.

Marine fleet

Nokia also has a marine fleet related to our subsea cables business, Alcatel Submarine Networks (ASN). ASN contributes to Nokia's main target to reduce GHG emissions by 50% by 2030. The ASN fleet represents around 62% of our Scope 1 emissions. In 2022, the GHG emissions for our marine fleet decreased by 5% compared to 2021. ASN has a green charter in place and continued to look at five important strategic areas: the rejuvenation of its marine fleet, the use of shore power when at port, the optimization of transit routes using Artificial Intelligence (AI), the mobilization of regional based chartered vessels to reduce transits, and next-gen cable ships with the latest technology in terms of propulsion and power generation. In 2022, the main ASN Marine Fleet Manager committed to proactively go beyond European and International environmental regulations by submitting its application for the label of the Green Marine Europe Program to continually improve its environmental performance.

Virtual meetings increased, business travel emissions decreased

Air travel CO_2e emissions (metric tons) / Number of remote meetings (millions)

● Air travel CO_2e emissions

● Number of remote meetings
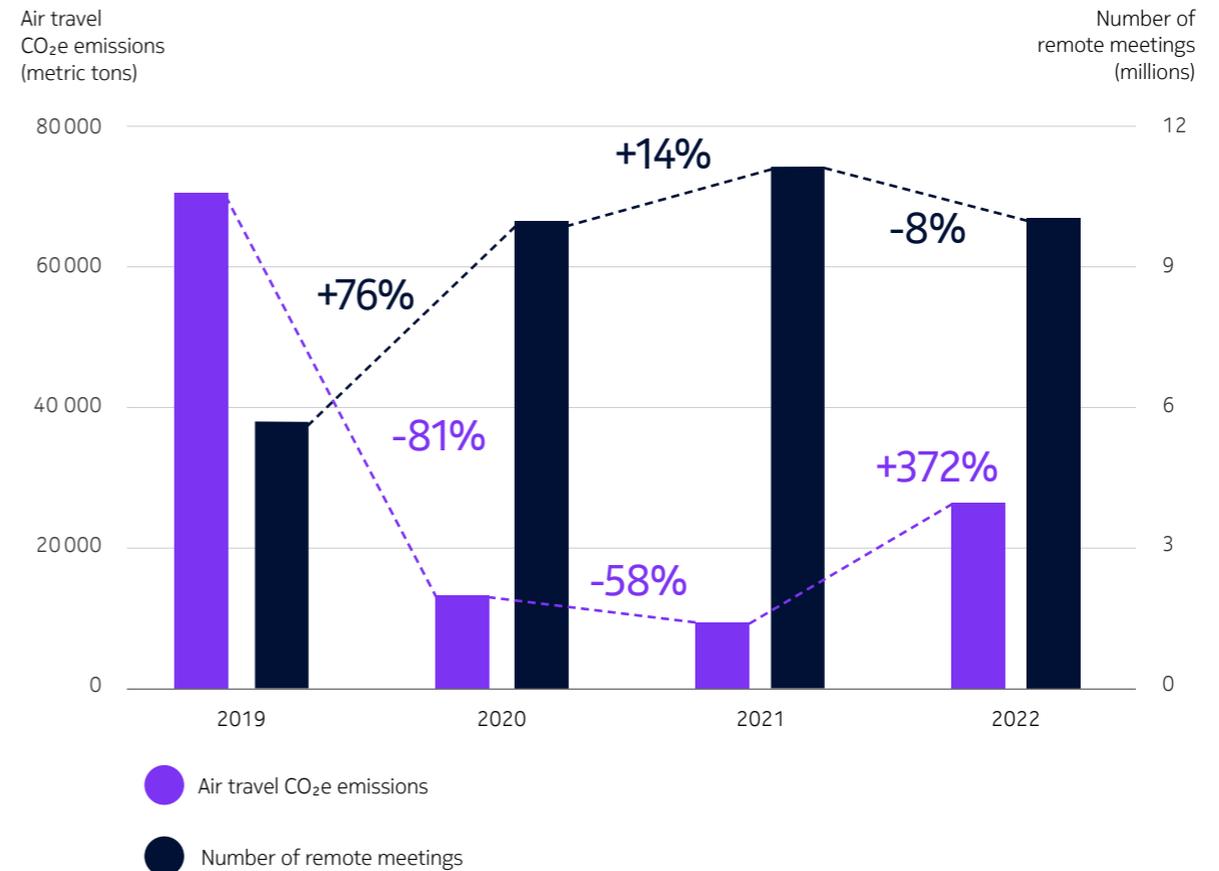
Engaging our suppliers on climate

Our target for our final assembly suppliers is part of our corporate climate target and requires that they achieve zero emissions by 2030 for the portion of their manufacturing allocated to Nokia. In 2022, we continued working with our final assembly partners on their 2030 roadmaps development. All suppliers delivered factory-level detailed roadmaps. New manufacturing facilities opened with final assembly suppliers in 2022 were also included into the program addressing climate ambitions and roadmaps.

We require our suppliers to have a documented Environmental Management System (EMS). We also require key suppliers to be ISO 14001 certified, which we track. We have worked with the CDP Supply Chain Climate program for more than 10 years and together create programs to drive improvements in our upstream Scope 3 emissions. We encourage our key suppliers to report their climate impacts. We set carbon reduction targets through CDP for our suppliers and create improvement programs with them to help reach those targets.

In 2022, 481 (441 in 2021) of our key suppliers representing 64% of our total procurement spend, responded to CDPs request to disclose their climate performance information. Some of the key data is shown in the chart on this page. All suppliers whose CDP performance was below expectations were provided with improvement requirements and recommended on next priorities.

In 2022, our Scope 3 emissions from our supply chain were approximately 683 700 metric tons CO_2e. These emissions are estimated by using our suppliers' Scope 1 and 2 emissions allocated to us based on the volume of products and services we purchase from them. We received the data from 63% of our supplier spend through the CDP Climate Change program, and we scaled up the emissions allocated to Nokia to cover 100% of our suppliers. In 2022, we continued to address one of the challenges in emissions allocations, namely data quality, by comparing the supplier reported data with Life Cycle Assessment (LCA) data tools and addressing quality issues with suppliers with strong deviations from sector average and LCA values.

Our Supplier Diamond Awards in 2022 again recognized suppliers across several categories. Expert juries judged supplier presentations and the best were announced at our annual supplier event. The winning supplier in the sustainability category in 2022 demonstrated commitment to CO_2e emission reductions in line with Science Based Targets and had a clear roadmap in place for 2030 and a 2050 path to carbon neutrality. This involved looking at maximizing energy efficiency, such as upgrading their activities to high-efficiency manufacturing equipment, improvement of clean room heat exchange equipment as well as on-site generation of renewable energy and purchased renewable electricity.

Read more about our work with suppliers under the Responsible sourcing sub-chapter and the Water in our supply chain section.

Supplier climate disclosure figures

8 200 tons CO_2e

annual reduction achieved by our final assembly suppliers (Nokia relevant)

887 900 tons CO_2e

annual reduction achieved by all suppliers' activities related to Nokia business

481
Suppliers disclosed data, >60% of Nokia spend

418
Suppliers reported their GHG emissions (Scope 1 and/or 2)

265
Suppliers purchased renewable energy

288
Suppliers engaged their own suppliers on climate disclosure

95
Suppliers proposed reduction initiatives and collaboration opportunities with Nokia

278
Suppliers had structured targets for emission reduction, and 96 of them in line and validated by Science Based Targets Initiative

Reducing our travel footprint

Business travel includes flights, hotels, rail, rental cars, taxis and public transport. Our reporting is based on air travel, which is the biggest contributor to our business travel emissions. We calculate the CO_2e emissions based on the number of miles flown.

In 2022, our CO_2e emissions related to business travel increased to approximately 26 700 metric tons (5 600 metric tons in 2021), meaning a 372% increase compared to 2021. A significant part of the increase was due to waived travel restrictions globally, leading to expected increase of travel volumes after a long period of pandemic. We managed to keep the growth still reasonable, having still 63% less travel emissions than in 2019. Despite the increased travel volumes, we were able to keep remote meeting volumes high, seeing an only 8% drop compared to 2021.

As the majority of our employees continued working from home offices in 2022 – on average 57% (85% in 2021) of all employees during 2022 – our commuting emissions have significantly decreased (55%) compared to the time before the pandemic (2019). In 2022, emissions increased by 190% compared to 2021. Travel and commuting emissions are expected to grow as recovery from the pandemic proceeds.

Product transportation and distribution

We aim to save space, reduce packaging materials and maximize transport efficiency, thereby reducing inbound and outbound shipments. The continuous optimization of our manufacturing and supplier network across the regions will not only enable us to deliver a more rapid response to our customers' needs, but also decrease transportation costs and reduce CO_2e emissions. The reuse of packaging materials also contributes to reductions in CO_2e emissions from deliveries. In 2022, we reduced the use of new packaging materials in terms of weight by 2 500 tons through reuse of transportation packaging. This was achieved mostly due to improved working practices in our hubs.

We look at the most efficient product transportation options and in 2022, our Scope 3 GHG emissions related to upstream and downstream transportation and distribution of our products stood at around 329 800 (326 100 in 2021) metric tons CO_2e, an increase of 1% compared to 2021. Although in 2022, we managed to lower the share of air transportation mode and raise the sea mode considerably (even utilizing a combination of sea and air mode), used regionalized practices and other means of optimization of transportation, still the overall yearly CO_2e emission result was higher mainly due to the significant increase in the volume of transported goods and to the turbulent geopolitical situation. With our business groups we are working on specific reduction targets and on the execution of the roadmap to achieve the contribution of product transportation to Nokia's science-based targets.

As one of the emission reduction methods in our transportation, we have explored carbon in-setting which is similar to carbon off-setting, except the activities that lead to carbon footprint reduction take place within the context of the value chain. In 2022, we continued our successful pilot from deployment of a Sustainable Aviation Fuel (SAF) carbon in-setting model which aims at a direct carbon mitigation of the transport system. This is one of the most sustainable ways to reduce carbon emissions in air freight as it saves any additional energy consumption arising from compensation measures. We further engaged with our logistics partners on our requirements related to the offering of sustainable aviation fuel and have expanded the collaboration on SAF to 3 logistics partners.

For 2023, our focus will be to continue improving the environmental efficiency of our transportation by collaborating with the biggest contributors and concentrating on the most environmentally detrimental modes of transport.

Circularity

Around 50% of global CO_2e emissions come from the global production of materials and less than 10% of materials are treated as circular. Increasing circular practices and reducing waste are therefore critical to combating climate change. We look at circularity from two perspectives: First, how we can increase the usage of non-virgin materials in the creation of new products and packaging. Second, how we can ensure maximum circularity of our operational value chain. This means that we embed circularity into everything we do.

Efficiency, the optimized use of resources and digitalization are key contributors to increase circularity. Traditional ownership of goods is changing to access to services and to the use of digital platforms for a sharing economy, all of which can improve circularity. Our strategy to increase operational circularity follows the classic waste hierarchy. The first principle of the hierarchy is always the avoidance of waste, which we do through digitalization, operational efficiency and product life extension. As we are not able to dematerialize everything, good waste management practices are important as well.

We introduced a new circular metric to guide our operational circularity journey and to close the material loop. Our new target is to be 95% circular with waste in 2030. This target includes waste across our value chain: from our own top 20 sites based on waste production, including our own final assembly factories, supply chain final assembly factories, installation projects at customer sites, and product

takeback. The purpose of the new target is to improve waste management so that disposal to landfill is minimized. To reach our target we aim to improve our waste-related data management and work with stakeholders to help ensure the best possible circular solutions for obsolete materials across geographies. In 2022, we achieved a circular waste level of 89% with the data coverage we had in 2022.

Circular practices and our products

We continue to progress with the creation of telecommunication-specific circular economy standards in the ITU-T (International Telecommunication Union - Telecommunication Standardization Sector) and ETSI (European Telecommunications Standards Institute), providing a common industry view on circularity and sharing best practices. For over 25 years, we have had well-established circular practices that utilize the full value of our products. We take back or acquire excess and obsolete products from customers and markets, and then refurbish, repair,

Circular practices and products

Circular Consultation
Scope of Work definition and solution creation to maximize circularity potential

Reuse
Utilizing and reselling circular equipment and parts

Customer network

Collection
Material collection, warehousing, disassembly and segregation

Products and parts
Preparing preowned equipment and parts into fully functioning or like-new equipment

E-Waste

Recycling

Maximizing material recycling and minimizing landfilling

or remanufacture these units for inclusion in the product supply chain for customer purchase or our own internal use. As an original equipment manufacturer, we maintain processes that keep products at their highest value and quality for multiple uses and for the longest time possible through our global services.

Circular products and services

At Nokia, we are focused on strengthening our customer offering and boosting circularity. Nokia's Circular Products & Services portfolio enables customers to shift more quickly into the circular economy and ensures that the customer network evolution is sustainable. We take on the collecting, refurbishing, reusing, reselling and recycling of telecom equipment during network upgrades or expansions.

In 2022, we processed 3 400 metric tons of obsolete products and parts. Approximately 88 900 units with total weight of 350 metric tons were refurbished for reuse/resell purposes and about 3 000 metric tons of old telcommunications equipment were sent for energy and materials recovery.

Nokia Global Refurbishment Center running with zero landfill

In 2022, the Nokia Global refurbishment center sent damaged/non-repairable units for recycling via Nokia approved recycling partners where mixed plastic material that was previously incinerated was used to create raw materials to produce recycled pots for agriculture and outdoor furniture. A very small proportion of waste was recycled using thermal recovery, which was incinerated in a cement factory

and the resulting combustion product (e.g. ash) became a part of the cement. With strong processes and procedures done in close collaboration with recycling partners, our global refurbishment center was running with zero landfill.

Returned products that cannot be reused are sent for recycling to Nokia authorized facilities, to generate raw material for another application or industry. There is a certain tipping point when the energy efficiency of the new generation of product is so good compared to previous generations that the refurbishment and reuse of the old generation of products no longer brings environmental efficiency benefits.

One example of our circular innovation is in our customer networks, where our highly adaptable silicon and systems are all designed for long-term reuse and are recognized as having the highest longevity in the industry. We take back excess or obsolete products, refurbish and resell equipment and dispose of end-of-life products responsibly. Up to 95% of the CO_2e embodied emissions are avoided for direct reuse of products and up to 80% of the CO_2e embodied emissions are avoided when ~5% of components are replaced. During 2022, Nokia has received more requests from customers for circular products to help them reach their sustainability targets. The customer base for circular products from both the Network Infrastructure and Mobile

* Per our life cycle assessment approximation calculations in line with GHG protocol methods for the ICT sector (ITU-T L.1410 standard, which is based on ISO 14040 /14044 standards).

Networks product portfolios increased by over 29% in 2022 to over 300 customers globally.

We track the CO_2e emissions that are avoided by the reuse or resale of circular products through our CO_2e avoidance dashboard. This CO_2e emissions avoidance is determined by comparing the emissions that result from our new manufacture and our circular product processes. The calculation method is based on the latest available information regarding developing manufacturing methods. For customers globally who invest in circular products to support their corporate environmental targets, we can provide data on CO_2e emissions avoided through these purchases.

Recycled content in products

In 2022, we continued our work to increase the use of recycled material content in our products. Firstly, we worked further with our suppliers of cast aluminum parts to fully understand raw material acquisition practices and the potential to increase the recycled content in our components. We estimate that 45% of over 10 000 tons of cast aluminum parts used in Nokia products in 2022 have recycled content in them. This is down from the 72% reported in 2021. Recycled content percentage dropped primarily due to increased demand that suppliers faced in 2022 for their products and the shortage of recycled material content to match this demand. The recycled material is from inter-industry manufacturing waste, as there are still challenges related to material purity when adding post-consumer material into our components.

In 2022, we expanded this work to look at the closed loop development for the gold used in our products.

Nokia Circular Products and Services consists of 4 modules that can be customized to meet e2e customer requirements:
- Asset Recovery: Reacquiring (takeback/buyback) and handling customer dismantled surplus products including consultation, logistics and project management
- Circular Products and Parts: Selling circular products and parts to operators looking to expand their network using circular products.
- Refurbishment Service: Extending hardware lifetime but also testing and validating of customer owned dismantled product equipment for reuse in the network
- Recycling Service: Maximizing material recycling and minimizing landfill, e-waste management

We began collaboration with our electronics waste recyclers to determine the destination of the gold from our obsolete products and matched those companies with the ones that our suppliers use for gold purchases, thus closing the loop. We also mapped relevant suppliers to copper, and steel in our mechanical parts and conducted awareness sessions and baseline analysis for recycled material content, challenges, and future plans.

We have focused on increasing the circularity of plastics used in our products. In 2022, we continued projects to improve the recycling potential of our plastics through the increased use of halogen-free

materials. In 2022, Fixed Networks continued shipping a customized Optical Network Terminal (ONT) design that uses 60% post-consumer recycled plastic in its housing and designed a second ONT intended to start shipping in Q1 2023. Meanwhile, Mobile Networks research has led to the initial qualification of a plastic for outdoor use which contains 50% post-consumer recyclate. The first samples of a part specifically designed with this material in mind are planned to be tested in early 2023.

Extended producer responsibility (EPR)
Compliance with relevant environmental regulations is an important part of our environmental policy. Extended Producer Responsibility (EPR) regulatory programs strive to decrease the environmental impact of covered products by making the manufacturer responsible for the entire life cycle of the product, especially end-of-life management through product takeback.

As EPR regulations evolve globally, we continued our work on increasing product value recovery at the end of life. Based on the Recycling and Reuse Metric that we pioneered, we are now better able to evaluate new product designs with an eye towards improving materials choice, ease of parts and materials liberation, and available recovery technology in countries where the products are sold.

Sustainable product design
Our Design for Environment (DfE) approach helps to ensure we create technologies that incorporate environmentally sustainable principles. Life cycle thinking is a key component of this approach. It helps us reduce our products' lifetime environmental

impact by improving material and energy efficiency. It also enables compliance with both regulatory and our own requirements. We provide an environmental product declaration (EPD) to our customers for the majority of our products. The EPD details environmental data for our products, including material composition, embodied emissions, power consumption, and recycling instructions.

When looking at our products' carbon footprint calculated with life cycle assessment (LCA), the energy consumption during products' use stage forms the biggest part. We provide an EPD in both product embodied emissions (raw material acquisition, production, installation, maintenance, end-of-life treatment, and distribution and transport for each stage) and also product power consumption. The LCAs performed on our products follow the ITU-T L.1410 standard, which is based on ISO 14040/14044 standards.

To help address this use stage energy consumption, our DfE program supports product development teams by setting requirements and evaluating energy-saving features with each new product introduction. In 2022, we worked jointly with several industry members to update life cycle environmental impact data for key component categories used in our products – printed circuit boards, semiconductor devices, and commodity materials such as metals and plastics. The result was having more contemporary datasets available to more accurately assess our products' carbon footprint during their development. Read more about the project and its results at iNEMI Eco-Impact Estimator.

Sustainable product design
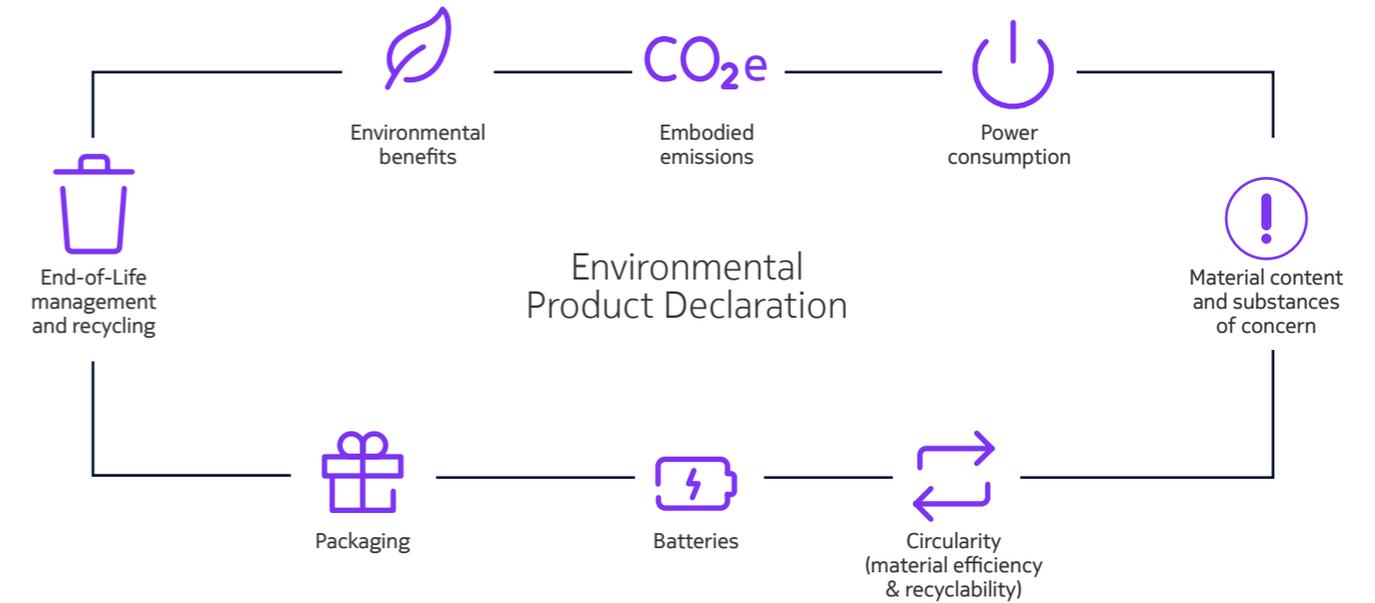
Our DfE program covers more than product hardware – it also includes the software designed to operate the hardware. Nokia's DfE for Software methodology documentation aims to help software developers to significantly reduce the amount of energy used by network equipment by having them consider how their software code affects equipment energy use. To evaluate the resource efficiency and energy efficiency of the virtualization of network functions, our software developers employ the new Resource Efficiency Rating (RER) and Energy Efficiency Rating (EER) metrics as defined in ETSI standard ES 203 539.

Materials and restricted substances
Global legislation or regulations ban or restrict several substances considered hazardous to humans and/or the environment. In the design phase we ensure these substances are not present in our products, components, and materials. Future customer and legal requirements may also influence product development choices made today.

Our products, including original equipment manufacturers' (OEMs) product parts, modules, and components must meet the requirements stated in

the Nokia Substance List (NSL). In 2022, we again reviewed and published our latest NSL with minor changes to the requirements. The current list is found at Nokia Sustainability downloads.

Suppliers' product documentation must also provide us with a list of any EU REACH candidate substance of very high concern present in a product. Furthermore, products, parts, modules, and components must not contain any substance listed as "to be avoided" on our NSL, to the extent technically and economically possible. We aim to comply with all applicable substance requirements from environmental laws and regulations such as the EU RoHS Directive (2011/65/EU), WEEE Directive (2012/19/EU) and REACH Regulation ((EC) 1907/2006). For more information on REACH, please see Nokia's REACH Declaration.

We globally restrict the use of ozone depleting substances in products and packaging, as well as in supplier processes per the requirements of EU Regulation (EC)1005/2009 on Ozone Depleting Substances, which implements the Montreal Protocol in EU legislation.

In 2022, we refreshed the material content data from our suppliers when distributing the updated NSL. Over 95% of suppliers have provided the requested data on NSL compliance, use of RoHS exemptions and presence of REACH Substances of Very High Concern (SVHCs). The data is subsequently reviewed and stored in a dedicated database enabling us to review the impact of changing substance requirements on our current and future products.

Material efficiency innovation
Material efficiency includes designing products that use less material and energy while having increased throughput capacity and functionality. This material efficiency is exemplified in our Mobile Networks products. In traditional massive multiple input / multiple output (mMIMO) wireless 5G radio systems, bulky antennas had the antenna radiowave beamforming processing done in the baseband unit. This caused congestion with other essential baseband processing tasks. Now, with the ReefShark System-on-Chip (SoC), the newest generation of mMIMO has higher energy efficiency, and significant reduction in materials compared to the previous generation. This is a clear demonstration of how extreme advances in new chipset designs can provide a trio of benefits in power efficiency, material reduction, and capacity increase.

Product materials breakdown
Our products are comprised predominantly of metals which constitute more than 80% of the total weight in most products. Aluminum is the most significant metal. It is used in sheet metal for cabinets and chassis, and in castings for heat sinks. Plastics only comprise about 10% of our products by weight. We published an academic paper in the Going Green Eco Design conference to explain the material content of a 5G product in detail together with the development needed to minimize the environmental impact of the telecom product from a materials perspective.

Most of our products have a design life of between 10 and 15 years, with some of our products remaining in extended service for more than 20 years. We have environmentally beneficial circularity

practices in place such as product takeback, refurbishing, and recycling services.

Our product packaging primarily consists of corrugated wood fiber board containing at least 50% post-consumer recycled content. We are constantly reducing the usage of virgin plastic using new packaging concepts and investigating usage of new bio-based materials in our packaging. At the same time, we are also increasing the recycled content of plastic used.

Waste in our operations
We have implemented waste reduction, reuse, and recycling programs across our operations. Through the continual and detailed review of waste during 2022, we looked at the facility waste management arrangements in order to increase the percentage of waste that is recycled and aligned with our circularity waste target. Improved Nokia product repair data collection from external repair suppliers in 2022 resulted in increased e-waste data reporting over 2021 data.

Operational waste also includes Nokia product repair waste. In 2022, the total operational waste increased by 103% compared to 2021. We recycled, reused or recovered energy from 80% of all waste (80% in 2021).

Design for environment and material aspects of a Nokia 5G radio
Today's telecommunications equipment provide ever-increasing levels of performance and functionality that can benefit society. To accomplish this, it takes a myriad of materials and processes to make

Total waste in our own operations in 2022 by treatment method

17 200 tons
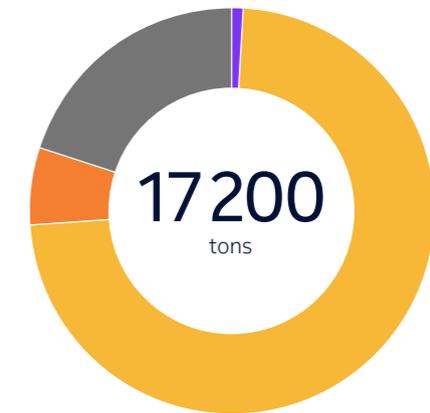
🟣 Reused		1%
🟡 Recycled		73%
🟠 Energy recovery		6%
⚫ Landfill		20%

them, including metals – some precious and rare earth elements, and some critical to the socio-economic prosperity of a region. Such complexity of materials and their associated processes consume energy and produce environmental impact that must be accounted for and minimized so that telecommunications equipment will be more sustainable over its full life cycle. We took an in-depth look at one of our 5G radios and the materials used and the associated environmental impact. More information on the study is found on our sustainability webpage.

Ensuring appropriate recycling of e-waste

All electronic waste generated in our facilities and other operations, including asset recovery, can only be shipped to processing facilities that have gone through our health, safety, and environmental (HSE) liability assessment. The requirements for the HSE liability assessment vary based on risk, which is dependent on waste quantity, shipment frequency, waste type/toxicity, waste treatment technology, environmental management systems, location, legal requirements, and prior assessments.

Our goal is to maintain the minimum number of approved waste processing facilities needed to meet required services and minimize environmental liability. In 2022, we completed ten environmental health and safety liability assessments of e-waste recycling facilities located in France, the Netherlands, Spain, and the USA.

Water in our own operations

Life cycle assessments (LCA) show that the predominant water withdrawal results from the generation of electricity used to power our products in our customers' networks. As our products consume electricity during their relatively long design lifetime, our biggest influence on water withdrawal is to reduce power consumption over the products' use time.

Water utilization within our facilities is typically associated with sanitary use, cleaning, and landscaping activities. In 2022, we used 907 000 m³ (1 038 000 m³ in 2021) of water in our facilities, a reduction of 13% compared to 2021. Total water withdrawal was 885 000 m³ which is less than the total water consumption as 2.5% of the withdrawn water was recycled. The reduction of water consumption is partially explained by the Covid-19 lockdowns in China in 2022 requiring our China-based employees to work remotely. During 2022, we identified and analyzed facilities in countries recognized as being under extremely high and high baseline water stress to create an action plan to be implemented in 2023. We will also select further sites outside of water stressed countries to review for best practices.

Water in our supply chain

We address supplier categories where water may be a material risk through a water assessment program which includes awareness raising, annual data collection, target setting and follow up. In 2022, 276 (273 in 2021) of our manufacturing suppliers completed the CDP Water Security assessment, representing 53% of our total supplier spend (49% in 2021). Out of the participating suppliers, 74% (71% in 2021) had undertaken a water-related risk assessment for their direct operations. They identified actual water-related risks in their operations such as flooding or increased water stress or scarcity, potentially resulting in the reduction or disruption of production capacity or increased operating costs. 66% of suppliers had structured targets (53% in 2021) related to water consumption, discharge or withdrawals. Targets were mostly related to internal efficiencies rather than being contextual (for example, water basins facing challenges related to high risk areas or shared sources of water). Our supplier water risk map relevant to our manufacturing locations is found online.

Biodiversity

The high-level COP15 United Nations conference clearly showed that biodiversity loss and climate change remain two of the biggest threats to our planet. As part of our implementation of a materiality assessment in 2022, biodiversity also moved into the top quartile of the matrix for the first time, demonstrating growing stakeholder interest in the topic.

Biodiversity can be defined as the variety of animals, plants, fungi, and even micro-organisms such as bacteria that make up our natural world in a particular area. Biodiversity can be considered material for every company and individual as it provides everything in nature that we need to survive: food, clean water, medicine, and even shelter.

Although biodiversity is of increasing importance for our stakeholders, at Nokia we also look more broadly at our dependence on natural resources, including climate, biodiversity, and geological diversity (geodiversity). By geodiversity, we mean the earth's minerals, rocks, fossils, soils, sediments, landforms, topography and hydrological features such as rivers and lakes.

Although the ICT industry is not considered to be one of the high-impacting sectors related to biodiversity, the story may be different for geodiversity. From a geodiversity perspective, the production of ICT hardware requires various metals, minerals, plastics, chemicals, energy and water in a multi-tier supply chain.

Beyond our science-based climate targets, we have now started to work to understand the impacts affecting natural capital (including biodiversity and geodiversity) across our value chain. These areas include mining raw materials and component production, final assembly production, logistics and fleet, installation and use, maintenance of sold products, and product end-of-life activities.

We also accomplished tangible nature-related actions during 2022. A close examination of our own property portfolio reflects Nokia's long history of responsible environmental stewardship. Today Nokia owns four separate nature protection sites in Finland. Two initially protected areas in the Baltic Sea were established in 1985 and cover 119 hectares of sea and islands in the bay of Båtvik just 25km west of Helsinki city center. A third area was protected in Kuusamo in northern Finland in 2009. It provides a biodiverse-rich 32 hectares of pristine fen area with rich chalky soil. Harjasuo-Laurinkorpi is famous for its endemic and many rare species including two that are on the IUCN Red List of Threatened Species: Hamatocaulis vernicosus

(Slender Green Feather-moss) and Saxifraga hirculus (Yellow Marsh Saxifrage).

The fourth area is newly protected as of late 2022. This is a natural island called Rikkisaari in Lake Ala-Kitka in Kuusamo. The lake is in fact the largest natural spring in the whole of Europe and provides drinking water to the local communities. The island is 5.6 hectares and is protected under the Finnish Government's nature gift program through which the government protects a corresponding 5.6 hectares of government land. The total Nokia-owned protected land covers 156.6 hectares.

In late 2022, we confirmed an exciting partnership with the John Nurminen Foundation to protect biodiversity in the Baltic Sea. A three-year joint effort is meant to combat eutrophication in the Baltic Sea and the associated risk to biodiversity. Nokia's critical role is to support the conservation and sustainability of natural habitats by providing immediate, up-to-date and constant information on the status of the environment whether on land or in the sea through our advanced technologies.

The oceans and seas are also linked to Nokia's business. Nokia ASN (Alcatel Submarine Networks) develops and installs the subsea optical fiber networks that connect the world. Their aim is to do this in a responsible and sustainable way.

Protected areas, hectares (ha)

Rikkisaari island
5.6ha

Kuusamo
(Oulanka and Kitkajoki)
32ha

Baltic Sea and islands
119ha
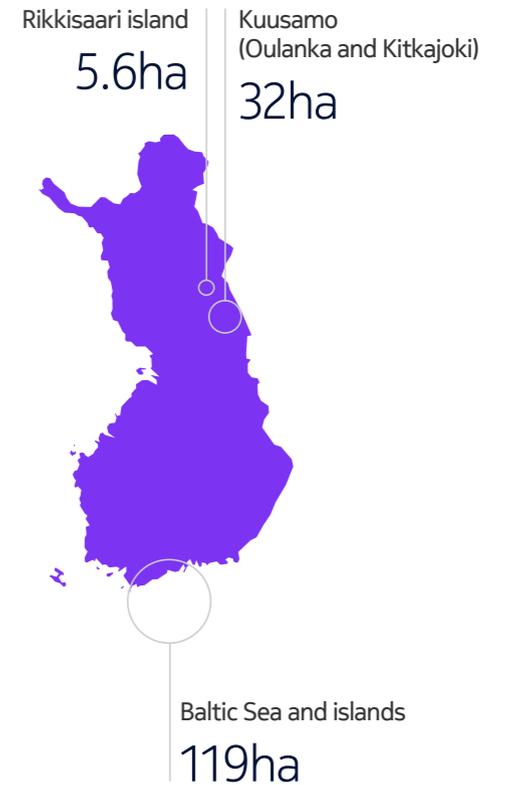
Industrial digitalization

We have the opportunity to sustainably transform physical industries and cities through digitalization and connectivity. We concentrate our efforts through our Enterprise business, providing solutions for industries and cities that help to enable improved decarbonization, productivity, resource efficiency, and safety. This is the positive handprint impact of connectivity and digital technologies built by Nokia. We focus on maximizing our positive impact as it can have a much greater influence on the world's carbon footprint in comparison to reducing only our own footprint. However, we understand the importance of dealing with both our handprint and our footprint.

Highlights

By the end of 2022, Nokia has deployed mission-critical networks to more than 2 600 leading enterprise customers in the transport, energy, large enterprise, manufacturing, webscale, and public sector segments around the globe

Almost 80% of enterprises saw a return on their investment in private wireless within six months in our survey with Global Data

Nokia Bell Labs released its initial research on environmental monitoring and early views on sustainability in

6G

Nokia Oulu factory in Finland has seen

250%

increase in output while maintaining the same level of resources and energy consumption due to digitalization projects

Nokia is the leader in the private wireless market with over

560

customers globally, helping industrials accelerate their digital transformation to create more efficient processes, empowered workers and high-quality output

The Fourth Industrial Revolution (4IR) powered by 5G can enable more resource efficient industries with less waste and greater productivity, a significant response to climate challenges and provide alternative consumption options for individuals and communities. The traditional asset-intensive industries such as the manufacturing, energy and utilities, transportation and building sectors account for a major part of total global GHG emissions, according to GSMA.

Green digital proposition

The use of mobile technology can enable a global reduction in carbon emissions that is potentially up to ten times greater than the carbon footprint of the mobile industry itself.

GloablData surveyed key decision makers at 79 multinational companies, representing early adopters of private wireless digitalization solutions in the manufacturing, energy, and transportation sectors. Results show a high level of confidence in private wireless and industrial edge, particularly in integrated solutions to achieve enterprise cybersecurity, cost efficiency, and sustainability goals. Of those who had already deployed the technology, over 50% had already seen total cost of ownership (TCO) reductions of 6% or more from their investments, with 29% experiencing a more than 10% reduction.

Working with Industry verticals
We focus on digitalizing and automating processes in asset intensive industries such as energy, manufacturing, transportation and mining as well as making cities smarter, safer and greener.

Manufacturing
We believe connected smart factories hold the key to the manufacturing industry reducing its emissions of roughly 16 gigatons CO_2e per year. In 2022, we announced deals with multiple manufacturers and partners in the deployment of 4G/5G private wireless networks in their industrial facilities including: Dow/Kyndryl, British Sugar/Virgin Media O2, Flex electronics and Alcatel Submarine Networks/Iliad. The 4G/5G private wireless network use cases varied across the deployments. However,

greater coverage in large industrial complexes, reliable connectivity to support workforce and management communications, and better network performance in challenging environments were typically cited as reasons for its selection over other wireless technologies.

Nokia's own Oulu factory in Finland is a fully digitalized factory that has been recognized as a World Economic Forum lighthouse, and example of the impact digitalization can bring. It incorporates all 5G+ technologies to drive machining and assembly using robotics, autonomous transportation through mobile robots, advanced quality control methods, including video analytics, and maintenance schedules driven by augmented intelligence/machine learning recommendations based on real-time asset condition data.

According to the latest data gathered in 2022, Nokia Oulu factory output has increased by 250% whilst maintaining the same level of resources and energy consumption. In 2022 compared to 2015, we saw a reduction of energy consumption per produced product by 54%, and 70% of CO_2e emissions have been avoided. In addition, both process defects and product time to market reduced by half. Besides the environmental benefits it has also experienced efficiency gains through the reduction of robot lead time by 80%, and it has reduced staff floor time by 20%, leading to greater worker safety.

Flex, a multi-national electronics manufacturing company with operations in 30 countries, designs and builds products for a broad range of industries including automotive, cloud computing,

communications, consumers, and healthcare industry. Nokia will deploy a 5G SA private wireless network in Flex Brazil manufacturing facilities. Initial use cases will focus on increasing wireless applications and exploring the potential of 5G for reliable connectivity, massive transfers of operational data and greater layout flexibility on the shop floor.

Energy and natural resources
The demand for electricity continues to grow as more is electrified – efficiency gains are needed in home heating, public transportation and vehicles to realize emission goals. The production and use of renewable energy will have an increasing role in meeting this demand. Improved efficiency, productivity, safety and less waste are key to more sustainable utilities and mining. McKinsey estimates that by 2035 renewables will generate 60% of the world's electricity.

Monitoring and controlling of distributed, intermittent renewable energy sources – solar and wind – will be critical to maintaining the high quality, reliable and safe power our daily lives depend on. Gathering data to create intelligent and timely insights leading to faster interventions is key. So, even though power utilities have utilized communications to remotely monitor and control grid assets for a long time, these capabilities are being extended further out into the grid with lower latency, more bandwidth and iron-clad security.

For example, in 2022, we announced that we are working with 450connect, a joint venture backed by German companies from the energy and water

sectors, to build a nationwide private LTE 450 network in Germany that provides the digitalization platform necessary for the energy transition to decarbonization, and to further secure the energy supply.

In addition to playing a key role in transitioning our society to net zero emissions, power utilities in many countries are helping conquer the digital divide. For example, in 2022, we announced we are working with EPB, which launched America's first community-wide 25 Gigabit internet service for residential and commercial customers over a fiber optic network.

The water industry is facing challenges due to climate change, urbanization and aging infrastructure that make water security, safety and sustainability key public policy concerns. With the advent and adoption of low-powered Industrial IoT (IIoT) sensors, increased information and operational data promise to revolutionize the way water systems are managed. The result is a powerful, holistic water management approach that can empower flexible and resilient community water systems. For example, in 2022, Nokia worked with TPG Telecom on Narrowband IoT (NB-IoT) enabled device management contract with Yarra Valley Water that will support a range of use cases to help improve service reliability and responsiveness, and reduce wasted water.

Mining
Clean energy and electric vehicles (EVs) are capturing a lot of attention in a post-COP27 world focused on reducing carbon emissions. Yet significant sustainability gains are likely to come from an unexpected source: the mining industry.

No green without digital research
Manufacturing, energy and utilities, transportation and buildings account for approximately 80% of the total global CO_2e emissions. Digitalization and enhanced connectivity are expected to play a major role in the energy transition from fossil fuels to renewables and more sustainable options.

The evolution to clean energy involves shifting from a fuel-intensive system dependent on oil and gas to a material-intensive system. As stated in a study by McKinsey & Company, the drive to net zero is likely to be accompanied by soaring demand for raw materials: "The transition to a net-zero economy is expected to be metal-intensive. As the move toward cleaner technologies progresses, the metals and mining sector will be put to the test: it will need to provide the vast quantities of raw materials required for the energy transition."

Huge volumes of steel and copper will be needed for the infrastructure to generate, transport and distribute solar, wind, geothermal and hydrogen energy. A single wind turbine requires more than two hundred tons (200-230 metric tonnes) of steel, for example, while copper is needed for almost all electricity-related technologies. Fuel cells and EV batteries rely heavily on lithium, cobalt and nickel, and rare earth elements such as neodymium and samarium have become indispensable to making powerful magnets for wind turbines and EVs.

But the mining industry itself also needs to increase its efforts to establish safer, more environmentally

sustainable and socially responsible operations. Investments in digitalization, electrification, and automation, combined with better mining techniques that reuse waste and minimize the use of water, land and energy, can take mining companies on the path to a more sustainable business. As such, they need to invest in technology today that will help make operations more productive and more efficient.

Industrial automation can eliminate productivity bottlenecks, streamline operations, and minimize waste. Remote and autonomous operation can increase asset utilization, maximize operating hours, and lower fuel consumption. Predictive maintenance can reduce equipment and vehicle downtime. Electrification is expected to help cut greenhouse gas emissions. Recycling and reuse are also seen as a necessary part of the energy transition equation – and an emerging new dimension for the metals industry.

Climate change is a unique chance for companies to commit to joint goals and work together on sustainable solutions. Our communications industry sits at the heart of that because it enables many other industries to become safer, more sustainable, productive and efficient. And the natural resources sector is one of these.

In 2022, we continued our work with connected digital mines to help improve mine safety, sustainability, productivity and resource efficiency, reducing waste and inefficiencies. We are working with several mining operators and ecosystem partners worldwide to deploy private wireless networks based on private LTE and 5G. Today, over 40 mining companies are testing, trialling and operating our networks at more than 70

of their mine sites, across every continent. Our mining customers include Codelco and Antofagasta Minerals in Chile, Antamina in Peru, Rio Tinto in Australia, Teck Resources in Canada, as well as Agnico Eagle Kittila mine and the nuclear waste disposal facility of Posiva in Finland.

Smart cities and public safety
Urban populations grow and continue to deal with congestion, security, citizen safety, environmental pollution, resource management, infrastructure capacity, access and supply of services. Cities will need to accelerate digitalization, providing more connectivity, greater ease of access and range of services for all citizens. Digitalization should make cities more efficient, reduce waste and be more sustainable by offering better safety and security services, as well as better lighting, parking, waste management and environmental services.

We continued our work with the city of Melbourne to optimize waste collection in city center laneways. When it found that illegally dumped waste was blocking laneways and causing problems with access, the Smart City Incubator teamed up with Nokia to deploy an innovative, artificial intelligence (AI)-based solution. By implementing Nokia Scene Analytics in a city laneway, the City of Melbourne gained insight into how waste disposal facilities were being used. As a result, it developed effective strategies to keep the site clear, protect the health and safety of citizens and optimize waste collection.

We are also actively engaged with the public safety community to drive the adoption of modern

broadband mission-critical networks to drive first responders' operational efficiency in any situation, including the most critical ones. In 2022, we unveiled the results of a study that we led for the European Space Agency (ESA), on end-to-end integrated terrestrial and satellite communications systems in disaster situations. We looked at a deployment the case of a major natural disaster that causes the existing telecom infrastructure to go down with communications lost. Based on a 5G private wireless deployable system and backhauled by a satellite link, such a solution will be available to support essential public safety operations and bring first aid services when commercial or default public safety networks aren't operational.

Internet of Things (IoT)
Connected devices have an increasing role in our daily lives, from sensor and security systems in smart cities, to control and safety systems in smart homes. Industrial IoT is integral to enabling greater efficiency, security and safety in the utility industry, agriculture, the automotive industry, manufacturing facilities, healthcare, environmental services and public safety.

We offer our Intelligent Management Platform for All Connected Things (IMPACT) IoT Platform to service providers and enterprises for device management, data collection, analytics and application integration to enable vertical businesses. We provide the scale, experience, commitment and network knowledge to help ensure that the multitude of existing devices, as well as future devices, are integrated and supported on this platform. From an environmental perspective, the platform also provides the potential for intelligent

sensor management to achieve optimum power consumption and contribute to energy efficiency.

In 2022, we saw continued momentum for our Nokia Worldwide IoT Network Grid (WING) managed service that provides connectivity across geographical borders and technologies – serving operators globally, including AT&T, US Cellular, China Mobile IoT, Vodafone Idea, Tele2 IoT, Telecom Argentina, TIM Brazil, Marubeni, Telecom Egypt, Hutchison 3 Indonesia, PLDT Smart and HMD Global. We support our customers in various industries from agriculture to ports and consumer appliances.

Private Wireless
The majority of assets in industrial plants are largely unconnected which proves a key challenge for the industrial transformation that will yield improved efficiency, flexibility, safety and sustainability. Private wireless, operating with 4.9G/LTE or 5G, brings an easy way to connect all assets (machines, sensors and people) with pervasive yet reliable coverage. Today, Nokia is considered the leader in private wireless based on its over 560 customers globally, helping industrials accelerate their digital transformation to create more efficient processes and empower workers for high-quality output.

Beyond private wireless, Nokia offers a range of industrial devices to connect legacy machines and equip workers. Since 2021, our private wireless solution has integrated an ecosystem-neutral Operational Technology (OT) -centric edge. This allows the on-site processing of OT data, to bring knowledge and insights and eventually take autonomous actions, closing the full loop of Industry 4.0 needs.

Sustainable innovation enablement

Our long-standing commitment to innovation enables our customers to deliver extraordinary, transformative experiences. Working alongside our customers across industries and around the world, we build future technologies to help make Industry 4.0 a reality and enhance almost every aspect of life.

Nokia Bell Labs leads research in Nokia and conducts disruptive research to solve the needs of the future. Nokia Bell Labs is world-renowned for its profound influence on the evolution of communications and information technologies and consequently how people connect, collaborate and communicate.

We create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs. 2022 saw several sustainability innovation and research highlights from Nokia Bell Labs.

6G research leadership
Every single improvement in network connectivity that 5G will bring to the end-user will get further perfected with 6G. Whether we talk about smart cities, farms, factories or robotics, 6G will take it to the next level while at the same time targeting lower energy consumption. This leveling up will be partly facilitated by 5G-Advanced, the next standard enhancements for 5G. 6G will come with improved efficiency (spectral and energy), extended capabilities and improved user experience. At the same time, 6G will enable new use cases, for example, zero power device communications.

Powered by research from Nokia Bell Labs, Nokia has been the forerunner in defining the fundamental technologies for the 5G era and beyond. Nokia is engaging with major industry peers, customers, academia and research institutions globally to form a common view and direction for 6G, which is expected to be commercialized by 2030. Our current key engagements span the USA, Europe and APAC. In Europe, for example, Nokia leads Hexa-X, the European Commission's 6G flagship initiative with strong participation from CSPs, major industry, SMEs and academic stakeholders. In October 2022, Nokia was named as the overall project leader for Hexa-X-II, the second phase of the European 6G initiative. In addition, Nokia is also a founding member of the Next G Alliance, an initiative to advance North American mobile technology leadership, and RINGS, a National Science Foundation-led initiative in the USA that will accelerate research in areas with potentially significant impact on Next-Generation (NextG) networking and computing systems.

Energy efficiency goals for 6G

The 6G era is under the initial stages of research and no standard benchmarks have yet been established, but what is clear is that sustainability will be one of the primary determining factors in how networks are designed and built. While industry performance optimization will still be a priority for 6G, the environmental impact of our communications will become equally important.

At Nokia, we believe that the main 6G target is to cut the average power consumption of 6G networks in half compared to 5G, while still supporting peak capacities 10 times higher than today's 5G networks.

The chart on the right illustrates the proposed key differences in energy efficiency between the two generations under all load conditions.

Starting at the left end of the chart, we envision a 6G radio access network (RAN) that consumes practically no electricity when no users are connected. Moving toward the right in the chart, we find that at every capacity level achieved by 5G, the 6G network would support the same number of users or overall capacity at much lower power, making it vastly more efficient in watts per gigabit.

To reach these energy-efficiency gains will require new technologies in every aspect of the RAN from the power amplifier and antenna design to the processing architecture, algorithms and overall network topology. Networks are not monolithic entities in the way they consume power. As demands on the network increase, electricity

demands shift to different elements, meaning we need to find holistic solutions to achieve our aggressive energy targets. A new Nokia Bell Labs white paper details the specific technologies we are researching that will minimize energy consumption as network conditions change.

Green cells

While 6G will usher in new opportunities for energy efficiency, there's far more to sustainability than tamping down power consumption. To create truly sustainable networks in the 6G era, we need to look at the environmental impacts of every aspect of 6G systems.

Nokia Bell Labs is researching multiple sustainable technologies that could make the cell site of the future more green. We are investigating whether greater numbers of base stations can be self-powering through renewable energy sources such as solar panels. We are researching ways to redirect heat from the RAN's own cooling systems into electricity generation that can power the network. We are even discovering ways to capture carbon emissions at the cell site, further offsetting the network's carbon footprint.

Today, the telecom industry consumes around 1% of all global energy, but if nothing were to change, the expected increase in data traffic and infrastructure could double or triple that figure by the end of the decade. That is why Nokia has set the ambitious target of cutting its global greenhouse gas emissions in half by 2030, joining a global effort to limit global temperature rise to 1.5°C.

Capacity vs energy consumption in 4G, 5G and 6G
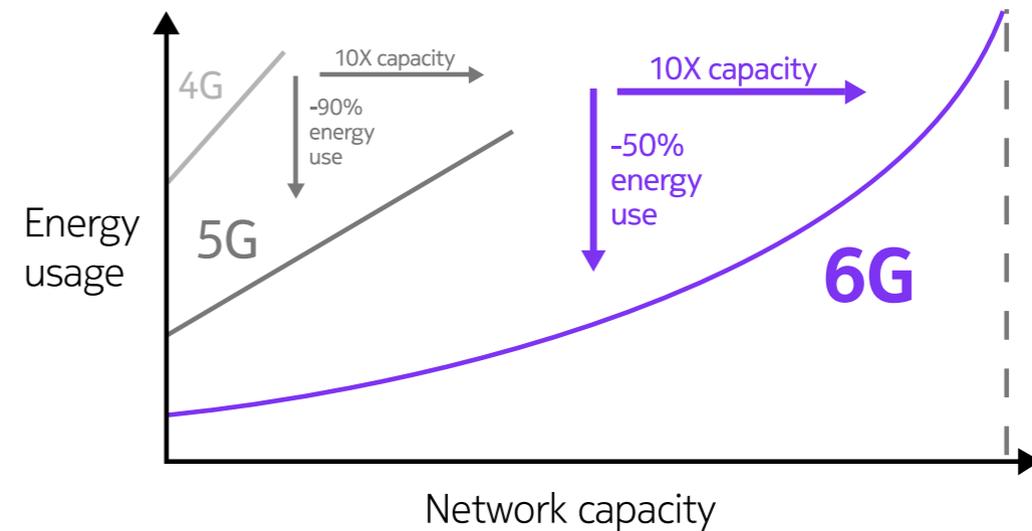
Building more energy-efficient and sustainable networks has long been a goal of the mobile industry, but that goal has usually taken a backseat to building high-performance networks. In the 6G era, Nokia can do both.

Safety and adaptation research

With the frequency of unusual natural events growing along with the potential cost of damage, remote environmental monitoring is about creating the earliest possible natural disaster warning. About 4 million square kilometers of earth are impacted by wildfires each year globally with losses estimated up to $285 billion annually. Wildfire detection, analysis, and notification/warning are a good example of where technology can play a critical role.

Nokia Bell Labs has carried out research into early warning solutions to better predict and prevent natural disasters. The research brings together intelligent sensing, network connectivity, and cloud analytics to take advantage of digital intelligence to create effective early warning solutions designed to make communities around the world smarter and safer. Our Remote Environmental Monitoring system is a universal multi-modal sensing device platform supported by a comprehensive end-to-end analytics solution. It is designed to monitor outdoor environmental conditions such as particulate matter, volatile organic compounds, heat, moisture, air quality, carbon dioxide, carbon monoxide and more. For information on how we innovate visit www.nokia.com/innovation or www.bell-labs.com.

Bridging the digital divide

Connectivity and digitalization enable us to collaborate and innovate, help make our industries more productive and efficient and engage with our communities and families. Our solutions can bring more inclusive access to opportunity and help resolve many of the social and economic challenges the world faces today. Through enhanced connectivity and digitalization, we provide access to basic social services, education and healthcare. We enable human rights and help restore industry productivity. This is our positive social handprint.

We aim to bridge the digital divide and connect the unconnected through our broadband and innovative connectivity solutions. We further drive the uptake and knowledge of digital technologies and skills.

Highlights

Our corporate **social responsibility initiatives** in 2022 reached

614149

direct beneficiaries across the world, including **110 programs in 34 countries**

By the end of 2022, we had rolled out

96

live 5G networks globally
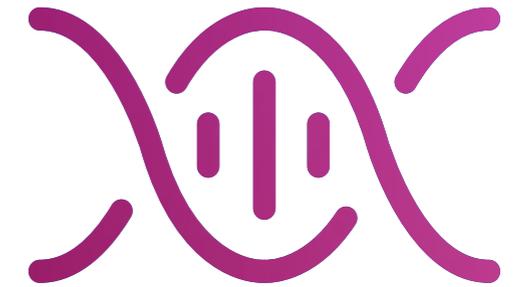
We continued to support the **Forge Academy in South Africa**, a fully **inclusive AI laboratory** aiming to train students from various backgrounds with the skills needed in the Fourth Industrial Revolution
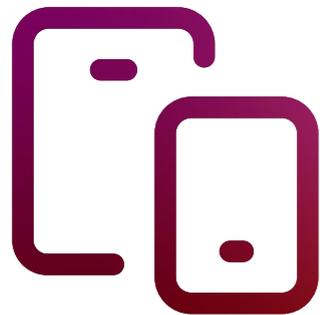
Nokia announced a new program with UNICEF for **connectivity and digital skills** in Senegal, Africa

Our multi-year **Smartpur digital village ecosystem program in India reached 90 more villages** increasing the number of Smartpur centers to 350 villages across India

Connecting people and things

We believe the positive impact of our technology outweighs any potential negative impacts.

Despite the acceleration of digitalization during the pandemic, 2.7 billion people around the world remain unconnected. Nokia's products and solutions can help provide more equal access to healthcare, education and employment, and enable small and medium-sized enterprises to participate in the digital economy.

We aim to improve digital inclusion through our connectivity and digital skill building solutions. Our greatest impact on digital inclusion comes through our broad product portfolio and focused strategies with non-terrestrial

providers and other partners. Together, we connect different demographics to broadband level speeds in both fixed and wireless.

As the world digitalizes, no one can be left behind. We continue to build on our training assets, certifications and initiatives. We support digital skill building and help prepare individuals and enterprises for the digital future of work and life.

Collaboration is key. With our customers we connect the world's people, machines and devices. We build critical networks,

software and services, and continue to innovate and reimagine technology to help face society's many challenges and opportunities. We make communities smarter and more sustainable, transportation safer, and enterprises more agile, efficient and productive. We believe 5G, combined with other technologies such as Internet of Things (IoT) and Industrial IoT, Artificial Intelligence and Machine Learning, Big Data and Cloud, can assist in delivering greater economic and social prosperity, improved equity and opportunity for all people and a healthier planet. These are the technologies of the future workforce and digital living.

Technology and sustainable development

5G can provide the fabric for a better world. 5G, when combined with other technologies and smarter planning, can provide a wide range of benefits and new use cases. We expect to see new, even unimagined types of services and greatly improved existing ones to provide more sustainable living and working. The combination of 5G's low latency, which provides real-time connectivity and massive amounts of data with sensors and analytics, will help enable all sorts of smart services that can resolve environmental and social challenges, and improve healthcare, and public safety.

By the end of 2022, we had 266 5G commercial deals in key markets and had rolled out 96 live 5G networks across the world. In 2022, we announced several new 5G customers such as TIM Brasil, Safaricom Kenya, CBN China, Tele 2 Croatia, Associated British Ports and Volkswagen Wolfsburg. For the latest information on our 5G rollouts and benefits, go to 5G Overview.

We see 5G transforming our lives in fundamental ways. For example, in healthcare 5G can help save lives as the foundation of modern healthcare services. High-resolution video consultations, assistance robots and smart wearables all help to increase the efficiency and effectiveness of treatments. To ease living and working, 5G coverage in cities and rural areas alike can allow everyone access to equal opportunities from their homes. On the road, we can make journeys safer and more efficient with 5G car connectivity, enabling vehicles to connect to each other, infrastructure, network services, and other road users such as cyclists and pedestrians.

Connecting the unconnected

We have customers in most countries of the world. The rollout of 5G continued around the world in 2022, and we continued to improve connectivity and coverage in many emerging markets and announced new cooperation in countries and territories such as Chile, Indonesia, rural California (USA), Jamaica, and South Africa.

With our partners and customers, we connect school districts and local communities through best-in-breed broadband communications solutions that are fast and easy to deploy and manage. Nokia's private wireless solution – Nokia Digital Automation Cloud (DAC) with FastMile end-user home device can help cities, communities and educational institutions access online learning for students. The same solution can enable broadband connectivity and business continuity for city services, such as community centers, hospitals and libraries. It can also

help improve choice for public employees as they can work from home when necessary.

Bridging the digital divide successfully calls for collaboration, such as the case in El Salvador, where we are working together with players from the public and private sectors to bring El Salvador's public services online. The aim is to have broadband in every school by 2030, as well as extending it to other public services such as medical clinics, hospitals and police stations. This will not only vastly improve internet access, but also help create the foundations for a modern digital economy.

Broadband connectivity translates to improved and optimized productivity, increased access to education, and new opportunities in highly skilled areas with jobs in the formal sector. For example, by 2030, the economic impact of Broadband on GDP per capita in El Salvador is estimated to be 0.5–3%. Also, there is an expected 0.3–1.8% increase in the employment rate, boosting the job market through stronger skill development.

> **" A large share of our 2022 social donations, 57%, were classified under the theme of digital inclusion through connecting the unconnected and building digital skills.**

Digital skills building solutions

Enterprise

According to studies by Nokia Bell Labs, in 2022, only 30% of the world's industry was fully digitalized. Despite the acceleration of digitalization, there remains the risk that small and medium-sized enterprises may well face challenges in developing their employees in future digital skills and knowledge. We believe our knowledge and the capacity to offer training through partners and collaboration can enable small and medium-sized companies to benefit fully from digitalization.

We also look to have the greatest impact on sustainable development through our corporate social programs in collaboration with leading non-governmental organizations. One key focus area for these donation-based programs is increasing digital inclusion through connecting the unconnected and building digital skills.

Education

Broadly, digital skills correlate to years spent in education. Those with tertiary education (college, university) are more likely to leverage the potential of broadband and connected devices. Low literacy levels widen digital inequality and often lead to lower

incomes. It's important that mandatory education develops digital skills and competence, but it is equally important to ensure life-long learning and skills development to adapt to workplace demand.

As the world and education become more reliant on broadband connectivity, Nokia is working to close the digital divide for students by providing access to broadband connectivity through a range of solutions. The objective is that everyone can benefit from access to high-speed broadband internet and devices. It means more than just having the skills to use the internet, but also having access to the best education systems and importantly, staying secure and protecting online data.

We are also helping smaller, more rural districts to drive inclusion. In 2022, we announced the deployment of a fixed wireless access solution for the school district of Dos Palos Oro Loma of California, to provide broadband internet connectivity to underserved students. During the pandemic, the school district found they could only provide coverage for about 50% of their students via commercial wireless network providers. This new network will provide secure, reliable, high-performance internet access to the homes of 2 400 students.
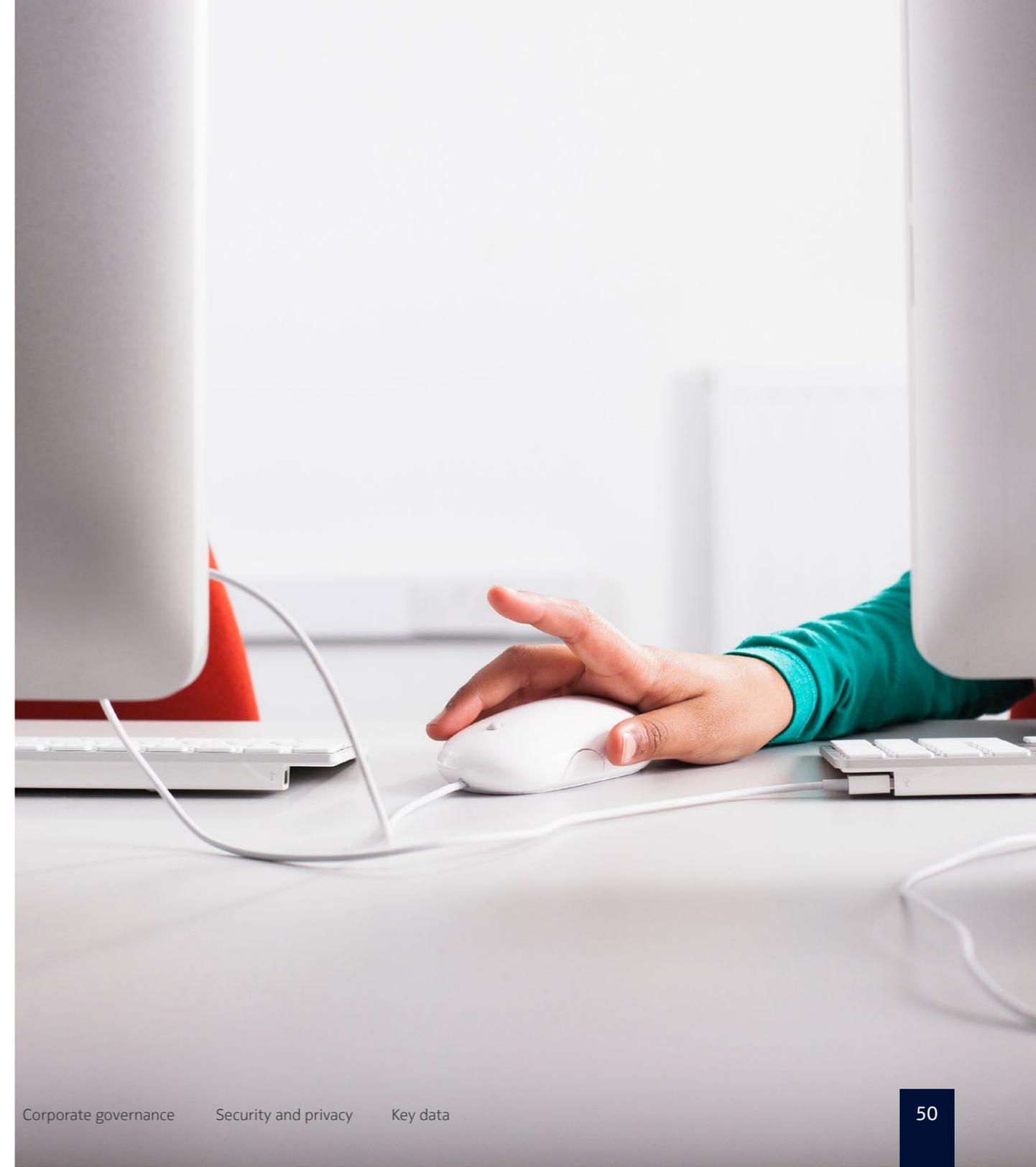
Our social responsibility programs

Our approach to Corporate Social Responsibility

Our Corporate Social Responsibility (CSR) activities are divided into corporate, key regional, and local programs. Our corporate level programs are centrally managed and in 2022, focused on four key themes: Increasing digital inclusion, climate and environment, inclusion, equity and diversity, and disaster relief. Key regional programs cover programs in India and China, and local programs are initiated and run by Nokia offices around the world.

One of our key digital inclusion targets in 2022 is to harness our technology, capabilities and funds to improve the lives of 1 500 000 people through social digitalization projects, digital skill building, and connecting the unconnected and underserved by 2025. In support of this target in 2022, we invested about EUR 13 million in communities around the world (EUR 7 million in 2021). 92% of the contributions were provided as cash, 8% as employee time and less than 1% as in-kind non-cash resources. A large share of total donations, 57%, was classified under the theme of Digital inclusion through connecting the unconnected and building digital skills.

In 2022, as we introduced our refreshed ESG strategy, we also instigated a number of new programs related to protecting the environment, and climate change. These programs will see full implementation in 2023.

In 2022, we also had a smaller amount of spend related to empowering diversity at the corporate level. A number of larger programs had come to an end in 2021 and the ongoing programs were focused on smaller groups of beneficiaries thus affecting global beneficiary numbers in 2022. In 2020, we also saw the impact of many programs related to the pandemic, and the longer-term mHealth program with UNICEF in Indonesia. A number of new programs undertaken in late 2022 and running through 2023 do not yet have reportable beneficiaries.

In total, our programs reached 614 149 direct beneficiaries in 2022 as shown in the graph on the right. Women, students and minority groups are the largest beneficiary groups.

Our corporate CSR programs

We support programs which have a long-term impact and create a sustainable future platform in target communities, while being aligned with the UN Sustainable Development Goals.

Nokia and UNICEF announced a new program in Senegal in early 2023 which aims to help bridge the digital divide and provide a dedicated digital education in selected parts of Senegal. The expected beneficiaries are both teachers and middle school children in underserved areas. At the same time in 2022, we continued programs with UNICEF Finland

Direct beneficiaries reached by our corporate social responsibility programs

Our approach   Environment   Industrial digitalization   **Bridging the digital divide**   Responsible business   Our people   Corporate governance   Security and privacy   Key data

51
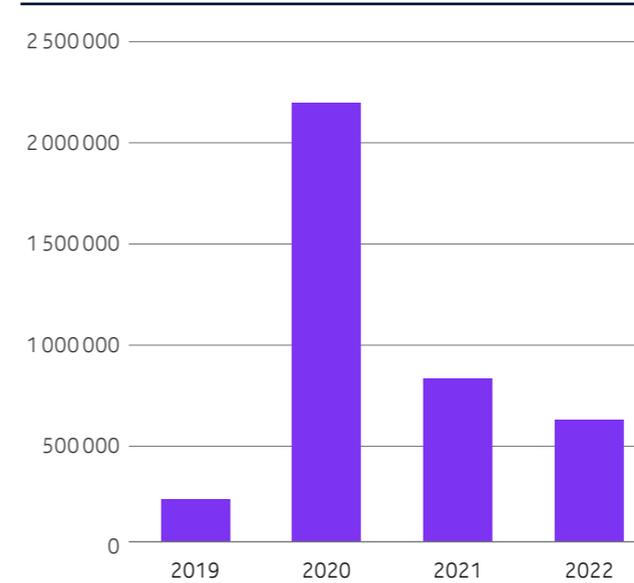
in Morocco, with Udacity and Blacks in Technology Foundation, and the International Federation of Red Cross (IFRC) on mental health.

In the two-year program in Morocco, Nokia was joined by UNICEF, the Moroccan government (the Ministry of Youth and the Ministry of Education), and other key partners. The objective of this social innovation and entrepreneurship program is to empower less advantaged young people (15-24 years), particularly girls, to become resilient and increasingly productive through (self) employment and active engagement with their own communities. The program's training for mentors, environmental skills sessions, and social innovation bootcamps equip young people with life and employment skills as well as providing resources to help them identify problems and design solutions for local society.

During the first year of the program more than 1 600 young people have gained transferable and environmental skills, more than 220 have benefitted from the social innovation curriculum, including initial digital skills, and 15 groups have started work on their projects. As a result of the observed impact which went beyond initial first-year KPIs, we have expanded the reach of the program to cover more young people and individuals with digital skills.

We continue our focus on inclusion and diversity in the technology industry. Making up only 3% of employees in the top 75 Silicon Valley tech companies, Black people are dramatically underrepresented in the tech industry, which comprises some of the highest growth, most in demand careers.

In 2022, we completed our partnership with digital talent transformation platform Udacity and the Blacks in Technology foundation. The partnership is committed to closing the divide between the number of tech jobs available and the number of Black people working in tech. That starts with ensuring a robust pipeline of trained, talented Black tech professionals.

Nokia awarded 302 fully funded nanodegree scholarships to prospective candidates to take part in Udacity's tech skills-focused programs from January 2022 to September 2022. Students were trained on topics such as AI Programming with Python, Java Programming, Data Structures and Algorithms, Intermediate Python, and Cloud DevOps Engineering.

During the program, participants created their own study schedules to learn at their own pace with an open 24-hour classroom. With active student engagement and learners' support, 48% of students gained skills in data structures, algorithms, programming. 37% of graduates were female. Overall, the program offered a fast and effective way to gain job-ready expertise to change career paths and stirring up the way the future workplaces will look.

The IFRC and Red Crescent Societies support national societies to provide mental health and psychosocial support services. Their work includes the development of resources and materials related to basic and focused psychosocial support. In 2022, Nokia's donation supported the development of the "Community Mental Health package" which includes facilitating the provision of community-

level mental healthcare services through a task-shifting approach, to mitigate gaps in access to care by communities, and the production of guiding technical materials, followed by training, technical support and supervision of field implementation.

In 2022, Nokia continued its collaboration with United Nations Women for the Women Empowerment Principles (WEPs) project. The WEPs are a set of Principles offering guidance to business on how to promote gender equality and women's empowerment in the workplace, marketplace and community. Throughout 2022, together with UN Women Nokia executed successful pilots in Nokia's Middle East and Africa region. The same concept is being applied in the Nokia Asia Pacific market where we will implement some of the original pilot initiatives as well as new ones from 2023 onwards.

The programs included:
- **Kenya:** STEM education for girls and families in school and at home and ecosystem development for awareness building towards gender-based violence – new cycle with expansion to more schools in discussion with UNW and the Kenyan Ministry of Education
- **Saudi Arabia:** Increase in the number of women in Nokia Saudi Arabia and study in collaboration with Saudi Arabian universities to better understand the career aspirations of women students in STEM – scaling to other countries with a low number of female employees is planned
- **South Africa:** Support gender-based violence victims through competence development – second cycle successfully executed and a new one is planned.

In addition to these community projects, we concluded the first Nokia female leadership program supported by UN Women, with Deutsche Telekom group and have started new cycles with our customers Saudi Telecom Company (STC) and e& (Etisalat) in UAE. This Converged Female Talent program aims to create future technology solutions by women for women with social impact in a partnership setup.

Selected regional programs

India

In 2022, we continued to expand our long-term initiative called Smartpur as part of our community investment programs in India. Smartpur is a digital village ecosystem project aimed at integrating technology into the daily lives of people living in remote villages. Using digital connectivity technology, the project intends to empower local entrepreneurs and provide them with facilities to make services accessible at the village level through Smartpur centers.

The Smartpur project was designed with sustainability, scalability, replicability and large-scale impact in mind. Last year, Nokia expanded the project to 90 more villages increasing the number of Smartpur centers to 350 villages across India. The initiative connects people with the essential pillars of development like education, health, livelihood, governance and financial inclusion, which support villages to be more sustainable and self-reliant.

Nokia India's flagship social impact program, Smartpur, was recognized for its mass impact. In 2022, Nokia was delighted to receive Bharti Foundation's Silver Award for Social Initiative (India). The Changemaker Awards (CMA) recognize and honor the Bharti Group Companies and Bharti Foundation's partner corporates for their work in the area of Corporate Social Responsibility. Nokia was proud to receive the award from amongst 67 nominees.

The India team also continue to support education for out-of-school children from migrant communities by providing them with remedial classes in conducive environments.

Since 2020, Nokia has also collaborated with the Indian Institute of Science (IISC) in Bangalore to establish the Nokia Center of Excellence for Networks. The aim is that the network robotics laboratory would be used by start-ups, entrepreneurs and other stakeholders to assist them in carrying out meaningful research on the design of next generation networks and application of AI for solving socially relevant problems.

In the first year, the center focused on research and applications related to ground robots – ensuring safety of human operations in industrial environments with network intelligence-enhanced ground robot operations. Further, Nokia's close collaboration with IISC is looking to expand and includes the development of aerial robots (drones), ground robots for societal use cases like (outdoor) disaster response and management, the development of a structured plan for translating research outcomes to concrete demonstrations and utilizing the IISC startup incubation framework (ARTPARK) with support from the Nokia Chennai factory.

China

In China, our employees launched 15 volunteering/charity programs nationwide. In total, about 502 Nokia employee volunteers in China contributed over 15 659 hours of volunteer service, benefiting over 59 650 people. The programs focused on, for example:

Girls in ICT Day
- 10 Nokia volunteers worked with more than 160 students from Nanjing University of Technology and Engineering and Hangzhou Electronic Science and Technology attended our online technical experts program about the Metaverse. They also organized a forum with 15 female college students from Nanjing University of Technology and Engineering on job search intention, resume making and interview skills.

Nokia Tech Kids Summer Camp
- 16 Nokia volunteers organized a Summer Camp for 26 children of Nokia Nanjing employees and helped them experience a very wonderful day, including lab tour, telecommunication course, scratch programming, Lego robot and clay handmade, etc.

Ninglang Partnership Program
- We continued our poverty alleviation programs in Ninglang county, Yunnan province in China, by continuing to help Ninglang Bell School with its Smart Campus program, and further upgraded the control center, and integrated such functions as teaching and learning, student management and campus security, radio broadcasting, video surveillance etc.
- We also helped build Internet-connected English Audio Classrooms for the 16 rural high schools in the county, benefiting over 10 580 students.
- 347 Nokia employees in China continued to support the Partner-up Program by sponsoring 404 students from poorer family backgrounds by giving them a living allowance for the children to continue their education.
- We continued to implement the "Sparks Class" Program - a program supported by NSB's Chinese shareholder China Poly and enrolled 17 teenagers from poorer families in Yunnan Province. They will receive two months of vocational training in a college and be employed by China Poly, with an intention to help their families stay out of poverty.

Our approach   Environment   Industrial digitalization   **Bridging the digital divide**   Responsible business   Our people   Corporate governance   Security and privacy   Key data

53

Engaging with the communities where we operate

Our volunteering guidelines and supplemental standard operating procedure (SOP) provide guidance to our employees on charitable sponsorships and donations as well as volunteering activities. All employees are permitted two days per year from their paid working time to engage in volunteer work. In 2022, we were not able to collect and report the total volunteering hours across Nokia, as the team responsible for tracking the volunteering program was reorganized. We are revisiting the process to enable more systematic and reliable collection of data.

Our employees across our sites are active in organizing activities to support and engage with the communities around them. They carry out projects throughout the year - for example humanitarian and crisis aid, donating medical supplies and used IT equipment, and collecting and donating toys, clothes and essential goods. Below are a few examples.

ChariTrees 2022, Singapore
Nokia was a gold sponsor for ChariTrees Singapore in support of three charities - SOS Samaritans of Singapore, SPD Serving People with Disabilities and #ENGAGE initiative by The Rice Company Ltd (TRLC).

The SOS carries out suicide prevention, intervention and postvention services. The SPD seeks to develop the potential and enable people with disabilities of all ages to be as independent and self-reliant as possible,

TRCL's #ENGAGE initiative provides vulnerable children with digital devices and digital-art programs to equip them with know-how and creative skills.

1st Anniversary of Nokia-IOH-ITS 5G Experience Center, Indonesia
Under collaboration between Nokia Indonesia, Indosat Ooredoo Hutchinson (IOH) and the Institute of Technology Surabaya (ITS) and with the collaboration of Nokia sales team, StrongHer and the ESG team, we successfully conducted:
• Nokia ESG program for ITS students: Educational and research incentive of laptops distribution for the development of youth in 5G Experience Center, alignment of the local content process, Industry 4.0, and to lead ICT development in Indonesia. It included forum discussions as well as a Nokia Technology Day with more than 200 students attending.

Small Action for Planet Forward, Korea
In October 2022, Nokia Korea held an event, where about 40 volunteers planted trees at the DMZ area in Paju. DMZ stands for DeMilitarized Zone, a border between South and North Korea that has seen war and owes its varied biodiversity to its geography, which crosses mountains, prairies, swamps, lakes, and tidal marshes.

During the event, around 200 trees were planted along with donations to the DMZ area. The trees will

be cared for by an organization supported by the Korea Ministry of Environment.

Sponsoring SUKA Society NGO, Malaysia
Nokia sponsors an NGO, SUKA Society to create greater access to education for Orang Asli children by enabling digitalization access and connecting with teachers. Sponsorship will cover two teachers' monthly stipend for one year, expenses to develop and train teachers to use the syllabus (with internet connectivity for 12 months for 2 schools), and funds to purchase IT equipment and school supplies. Teacher training between February and March 2023 with a CMT visit to the training site.

5G Plastic Free festivals with Chunghwa Telecom
In 2022, Nokia volunteers supported Chunghwa Telecom (CHT) and its ESG activity - 5G Plastic Free Festivals. The initiative aims to reduce plastic usage and marine debris and effectively raise the public awareness of environmental sustainability to protect the marine environment. The CHT Foundation arranged a series of activities to promote the concept, including volunteer activities to clean major beaches nationwide, and sponsoring the famous Paper Windmill children troupe performing environmental education shows for kids in Taichung and Kaohsiung. We shared our corporate ESG targets, progress, and commitments and the concept of the circular economy through the Design for

Environment case example. Through the introduction of post-consumer recycled (PCR) plastic, Nokia has successfully used PCR plastics in the production of ONT products.

Solar for Good with Taiwan Mobile
Nokia sponsored Taiwan Mobile (TWM) "Solar for Good" charity program. Nokia was one of the main energy partners for the sixth Solar Power for Good collaboration in 2022.

The 2022 beneficiary was the Kanner Foundation of Taiwan, which aims to develop supporting systems for individuals with Kanner Syndrome since 2004. This charity program will assist them to build up a solar system on the rooftop of the 3rd party's building.

The long-term strategy of the "Solar for Good" charity program is helping disadvantaged organizations obtain stable income from selling the green power generated by the solar panel system back to Taiwan Power Company (Taipower) for at least 20 years. In the past five years, those organizations that have received the charity program's support have generated revenue of around EUR 277 000 by selling green power, and Taiwan Mobile expects the program to help reduce CO_2e by 4 907 tons in the next 20 years.

University collaborations

Nokia Bell Labs fosters intensive collaboration with the best and brightest minds from the world's top universities and academic organizations to drive a vision of future human needs through its Distinguished Academic Partnership program. It has created a global network of world-leading partners to develop disruptive innovation in technologies such as 6G, AI and Industrial IoT. In addition to delivering breakthrough technologies, this network also provides access to cutting-edge expertise to build our talent pipeline. See some 2022 program highlights on the right.

Our University Donations Program aims to sponsor high risk and high impact topics with future relevance to Nokia. The donations strengthen our relationship with top universities in Europe, the USA and Asia, and we get access to top talent. This year

we funded several projects with a sustainability focus. For example, one of the projects will perform a large-scale field study to investigate climate change and the loss of biodiversity; another project aims at low power sensing and 6G communications technologies for precision agriculture. In addition, we fund an industrial PhD program in Quantum Computing at Aalto University in Finland, Quantum computing and Quantum era security research, as well as several 6G research projects including a National Science Foundation (NSF) program leading the 6G research in the USA.

We also support the Forge Academy in South Africa, a fully inclusive AI laboratory which aims to train students from various backgrounds with the skills needed in 4IR and the global digital economy of today. Read more in section inclusion and diversity.

Distinguished Academic Partnership program 2022 highlights

1. A ground-breaking advancement in chip technology for Passive Optical Networks (PON) with IMEC researchers at Ghent University

2. The development of new AI-based technologies that help robots better navigate their environment with the Technical University of Munich (TUM)

3. The successful application of deep learning techniques to enable more efficient and higher quality network slicing with researchers at the Technical University of Dresden (TUD)

4. Strategic research partnerships on 6G technologies with Aalto University, the University of Oulu and New York University

For more examples of recent research outcomes and more information about the program, please visit **Distinguished Academic Partners program webpage.**

Responsible business

We strive to execute all business activities in a trustworthy, ethical, and transparent manner. This includes interactions with our employees, as well as with our business partners, customers, and suppliers. We aim to engage only third parties who share our values and work to ensure compliance with the law as well as reinforcing a commitment to ethical behavior.

For Nokia, responsible business includes our approach, policies, programs and impact in human rights, ethics and compliance, and health and safety, responsible sourcing and the responsible use of technology.

Highlights

Nokia has a strong reputation for and commitment to ESG, built on our policies, practices and management systems, but stakeholders are raising the bar and expectations are increasing. We take a proactive and values-driven role in driving responsible business practices internally and with partners and stakeholders
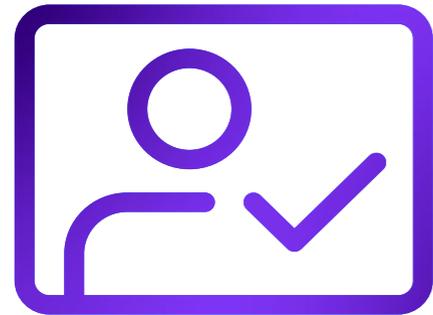
We completed our second external **Human Rights assessment** for the Global Network Initiative in 2022

Our annual **Ethical Business Training** was again mandatory for all employees and was completed by

98%

of employees

27%

We achieved our target for percentage of **women in external hiring** by reaching around 27% of total external hires
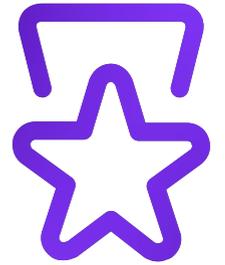
In February 2022, we were again awarded a Platinum medal on the **EcoVadis sustainability scorecard,** with especially **high scores for environment and sustainable procurement**

We achieved our conflict minerals traceability target and extended and conducted due diligence to also cover cobalt and mica

In early 2023, once again we were named as one of the World's Most Ethical Companies® by Ethisphere

Ethics and Compliance

We have a long-standing reputation for high ethical standards, relying on transparent rules, robust controls, and clear direction to drive success and maintain trust with all stakeholders. We regularly evaluate risks and proactively work with our business groups to mitigate those risks. We optimize our resources to ensure we focus on early identification and the proactive mitigation of risks. We maintain our strong culture of integrity, in part, by encouraging our leaders and employees to speak up and report any concerns, without fear of retaliation. We expect our employees to follow the laws, policies and processes that are in place, and hold them accountable if they fail to do so.

Code of Conduct

Our Code of Conduct (Code) provides clear and simple guidance to our employees and defines the principles of ethical and compliant business practices, including how we work with third parties. It is applicable to all our employees and management. We require everyone in the company to review and acknowledge the Code each year as part of our mandatory compliance training. The Code is available online in 23 languages to Nokia employees and external stakeholders. Additionally, a separate Code of Ethics is in place for our President and CEO, Chief Financial Officer, and Corporate Controller to highlight additional responsibilities of those functions.

We also require our third-party business partners to follow requirements similar to those included in our Code, which are documented in our Third-Party Code of Conduct.

Our Code has 14 key compliance policy statements as shown in the chart on the right. Each compliance policy area in our Code is the responsibility of one or more subject matter experts. These experts consider new and emerging trends to ensure that our policies and procedures remain up to date and in accordance with applicable laws and regulations in all countries where we operate. The full set of supporting policies and related procedures for the Code's risk areas are available to our employees on the corporate intranet.

Leadership engagement, accountability and compliance oversight

Our commitment to integrity applies to every part of our business, at every level. Our Chief Compliance Officer (CCO) reports to the Chief Legal Officer (CLO). The CCO presents separately and independently to the full Board of Directors at least once per year, the Audit Committee of the Board at least four times per year, and the Group Leadership Team at least once per year and as needed. The CCO also regularly meets with the Audit Committee in executive sessions without other members of senior management present.

Our Code of Conduct and the 14 main policy areas

We do business the right way

- Conflict of interest
- Dealing with government officials
- Fair competition
- Improper payments (anti-corruption)
- Trade compliance
- Working with third parties

We respect our people and community

- Environment
- Fair employment
- Health, safety & labor conditions
- Human rights
- Privacy

We safeguard our assets

- Controllership
- Intellectual property and confidential information
- Insider trading

Our approach   Environment   Industrial digitalization   Bridging the digital divide   **Responsible business**   Our people   Corporate governance   Security and privacy   Key data

58

We have dedicated compliance leaders for each of the company's markets, business groups, and key central functions, including Nokia Shanghai Bell (NSB). These leaders are focused on designing and implementing the compliance program within their respective areas, proactively identifying risks, and collaborating with the groups they support to implement necessary mitigation actions. This helps to ensure that compliance risks are identified and managed both horizontally and vertically.

## Reporting of critical concerns without fear of retaliation

We emphasize and ensure that all employees are empowered to raise concerns and speak up about potential violations of our Code of Conduct, Nokia policies, laws, and values. Retaliation of any kind is not permitted, and we take all allegations of retaliation seriously and thoroughly investigate such concerns.

How to report a suspected violation of the Nokia Code of Conduct

We offer multiple channels to report critical concerns, including Legal and Compliance, Ombuds leaders, the People organization, a dedicated email address, online portal, and country-specific phone numbers. Our Ethics Helpline allows for anonymous reporting and is open to employees and external stakeholders. We respond to and investigate all concerns promptly and establish remediation plans as needed.

In 2022, the Business Integrity Group (BIG), our investigations team in the compliance organization, received 1 033 concerns, of which 360 were investigated as alleged integrity concerns. In 2022, the BIG team closed 300 investigations into alleged violations of our Code; 131 of the alleged violations were substantiated with cause found after investigation. We implemented corrective actions including 20 dismissals and 23 written warnings following Business Integrity Group investigations. Beyond individual discipline, these investigations resulted in detailed root cause analysis, and remedial measures and improvements were identified, and implementation was monitored. Anonymized examples of our concern investigations are shown in the table on the next page.

Number of critical concerns and investigations

- Total number of concerns reported
- Number of integrity concerns investigated by the Ethics & Compliance Office
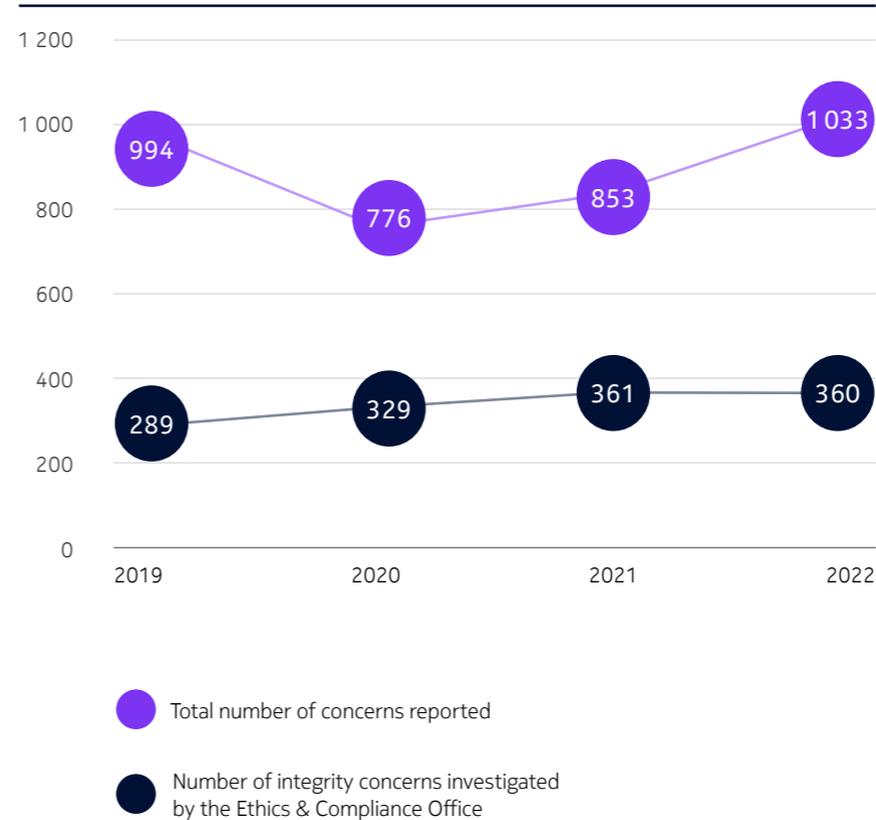
How to report a suspected violation of the Nokia Code of Conduct

All stakeholders play a vital part in helping to keep Nokia safe and compliant. One of the most critical contributions is to report suspected unethical behavior. We recently launched a new Ethics Helpline tool (i-Sight), making it even easier to report suspected compliance breaches. The new tool offers a more agile and user-friendly interface, enhanced reporting and data analytics capabilities for investigators and enhanced case management features, leading to increased efficiency in investigations.

Reporting channels:
Email: **ethics@nokia.com**
Online web form
Country-specific phone numbers

Examples of reported critical concerns and actions taken in 2022

Issue raised	Our guidance	Actions taken
A review of expense claims indicated that an employee had submitted multiple receipts for the same COVID vaccine and home broadband claims. When asked to explain the claims, the employee asserted that it was due to errors in Nokia's expense system and submitted falsified personal bank records to support their story. Ultimately, when confronted with evidence from Nokia's bank accounts, the subject admitted the fraud and agreed to refund the amounts falsely claimed.	Truthfulness and accuracy in expense reporting is always required. Potential expense fraud will be investigated thoroughly, and employees can face serious consequences for dishonesty during compliance investigations.	Disciplinary action was taken against the employee, with the employee's dishonesty during the investigation considered an aggravating factor.
A concern was raised that an employee had set up their own company and was forcing Nokia subcontractors to purchase materials from the employee's company. It was alleged that if the subcontractors refused, they were denied work on the project. Corporate records confirmed the employee had established a company to sell materials, and email evidence proved that the employee was selling to a Nokia subcontractor.	Any potential or actual conflict of interest must be disclosed promptly. Undisclosed conflicts are impermissible and can lead to serious consequences for the responsible employee.	The investigation confirmed a serious undisclosed conflict of interest and abuse of position. The employee no longer works for Nokia.
It was reported that an employee was living and working in a different country than the one they had been assigned – a violation of Nokia's Global Mobility Policy. The employee's Line Manager was aware the employee was not working in their home country but did not report it or advise the employee to return home.	Employees must work from their assigned countries, and line managers must be alert to deviations from policy and speak up when needed.	Both the employee and the Line Manager were disciplined for violating the Global Mobility Policy.

Above are anonymized illustrative examples of investigations carried out in 2022 by our Business Integrity Group.

Critical concerns reported in 2022 by category

Category	Number of concerns
Conflict of interest	59
Controllership	70
Dealing with government officials	3
Fair competition	5
Fair employment (all HR related concerns)	540
Guidance	118
Human rights	1
Improper payments	5
Insider trading	1
Intellectual property and confidential information	48
Privacy	16
Trade compliance	4
Wellbeing, health, safety and environment	19
Working with suppliers	79
Other	65
Total number of concerns reported	**1033**

Compliance as a business enabler

Our approach to compliance emphasizes the strategic governance that allows for the mitigation of legal and compliance risks, with enhanced oversight where required. The Ethics & Compliance team provides guidance and counsel on a range of issues, enabling compliant and sustainable growth and extended global reach by our businesses.

In 2022, we took the following measures to fortify our commitment to ethical business practices:

- Evaluated the current risk assessment processes, implemented improvements, and adjusted existing processes to focus resources on the highest risk areas
- Enhanced our use of data analytics as part of our digitalization journey, to create continuous monitoring processes for certain risk areas
  - Utilized advanced algorithms and predictive analytics to incorporate real-time monitoring of top risks into our compliance processes
- Supported business groups and functions to ensure compliance considerations are included in business models as they adjust to the continually changing business landscape and increasingly diversified customer base
- Initiated a Legal and Compliance data warehouse to leverage data collections and create monitoring processes to assist in real-time identification and mitigation of compliance risks.

Open reporting – Global Ombuds program

Our Ombuds program fosters and strengthens our speak-up culture and reinforces our anti-retaliation policy. Our local Ombuds leaders actively promote the program and serve as confidential and neutral resources for employees with compliance questions, concerns, and requests for guidance. The global Ombuds network is a critical pillar in Nokia's speak-up culture and plays an important role in encouraging our employees to voice their concerns.

Compliance risk assessment and mitigation

We employ a holistic approach to compliance risk assessment, which includes both quantifiable information such as assigned metrics and risk algorithms, as well as non-quantifiable information, such as trending compliance laws, geopolitical issues, and other exposure factors that cannot be assigned a metric but impact risk and require consideration. This information is gathered through automated data feeds as well as through interviews and quarterly meetings of our Compliance Risk Committee.

We also use other mechanisms to analyze and mitigate risks such as Compliance Control Framework (CCF) reviews and Compliance Operating Reviews (CORs). In 2022, the Ethics & Compliance team conducted a total of 14 CCF reviews that were supplemented by four CORs. Additionally, we partnered with Internal Audit, allocating resources

to conduct multiple compliance-related audits and inquiries throughout the year, including anti-corruption audits.

CCF reviews:
- Utilized an internally developed process of evaluating corruption and other risks to enhance compliance at the sites and within the businesses subject to review
- Identified gaps in program effectiveness allowing for implementation of remedial measures
- Expanded regulatory risk controls, including privacy, competition, and trade sanctions
- Conducted as in-person reviews (as feasible after the pandemic).

COR reviews:
- Led by the region/business head and the regional/business compliance leader and, as high-profile exercises, were attended by the Chief Compliance Officer and key stakeholders of the region/business
- Organized deep-dive, leader-led reviews of the compliance program with various parts of the organization focused on the compliance culture, program, and risks within a particular region or business group, providing an opportunity to revise and strengthen compliance processes and control environment in the business/region
- Tracked and monitored action items developed as part of these reviews to ensure continuous focus on compliance.

The Ombuds program plays an important role in encouraging our employees to voice their concerns

In 2022, Ombuds:
1. Assisted employees with roughly 400 questions and concerns
2. Held 130 awareness sessions, with over 25 000 participants total, to reinforce Nokia's speak-up culture and zero tolerance for retaliation
3. Developed soft skills training specifically tailored for Ombuds
   a. After a successful pilot, live soft skills workshops were rolled out to European Ombuds; additional sessions will be scheduled in 2023

Beyond these structured programs, we applied an early warning approach to compliance risks, including:
- Conducting surveys to measure culture, leadership engagement, comfort with speaking up, and more
- Regularly monitoring data relating to investigations, concern reporting, third parties, and corporate hospitality
- Monitoring regulatory and legislative activity and enforcement trends
- Working closely with the businesses and functions to proactively identify strategic initiatives and other changes that may impact the risk profile.

Identifying and assessing risk is only the first step; more important is putting the information and data obtained to good use. In this regard, we work with leaders and employees at all levels to address new, emerging, and longstanding risks. We follow the data, develop targeted training and compliance communications, and strengthen internal controls and oversight with clear policies and procedures.

Gauging effectiveness

We also engaged with employees through an anonymous survey to gauge the effectiveness and understanding of our compliance program. Our 2022 Nokia Annual Employee Survey, "Checking Nokia's Heartbeat", included compliance-related questions and produced overall positive survey results, as the majority of respondents agreed that they understood the Nokia compliance program and its various key elements. For example, 93% said they understood and knew how to follow the Nokia Code of Conduct.

Employee and other stakeholder inputs are actively and routinely sought to further develop our program.

We use multiple feedback channels, discussions, and training to drive and enhance the culture of continuous improvement in our compliance program. Our Internal Audit team collaborates closely with the compliance team in audits and through other inquiries including financial-focused investigations that assess the effectiveness of our compliance processes and controls. The Internal Audit team receives all CCF reports and takes steps to collaboratively mitigate risks identified during compliance reviews and investigations.

Similarly, Internal Audit attends Ethics & Compliance regional reviews when audit issues are presented and discussed. Internal Audit also engages Ethics & Compliance when ethics-related issues are identified during audits and follow up is required and incorporates Ethics & Compliance input when devising its yearly audit plan.

Compliance training program

We employ a long-term, strategic approach to training by maintaining a three-year training roadmap. Our training plans remain flexible to accommodate new requirements or priorities.

Our Ethical Business Training (EBT) module, entitled Workplace Ethics and Inclusion Training (WEIT), was one of three mandatory, web-based training courses deployed in 2022, along with modules devoted to the important topics of information security and environment, social, and governance (ESG). The WEIT included a review and acknowledgment of our Code and the related 14 policy areas; a requirement to declare potential conflicts of interest; and a role-based section for line managers about the important

role they have in promoting a culture of integrity. Focus topics included retaliation, bullying, abusive behaviors, bribery, and working with government officials. In 2022, 98% of our employees completed the WEIT module. When new employees join the company, they are assigned a new hire training curriculum that includes annual mandatory training.

In 2022, we provided training (online and in-person), communications, and enablement to keep the business abreast of emerging risks and highlighted important reminders about roles and responsibilities.

We deployed:
- Two "just in time" training videos to provide information at the time it is most needed
- "What should I do?" video series to depict how to handle compliance dilemmas
- "Leading with Integrity" training for managers to emphasize the key role that managers play in promoting a culture of integrity and provide resources available for support
- Risk-specific training such as privacy, competition law, working with third parties, and Third-Party Code of Conduct.

These courses are supplemented by numerous live and recorded training sessions delivered to smaller target audiences on various compliance topics throughout the year. These included more than 250 sessions with over 16 000 total attendees.

Compliance communications program

Compliance communications help employees understand the laws, regulations and policies that apply to their everyday work. In addition to formal

training, we annually refresh and deploy global and region-specific communications to strengthen understanding and to ensure adherence to our Code, policies, and core values. Introducing new employees to Nokia's culture of integrity begins on day one of joining the company with a personal welcome letter from our Chief Compliance Officer that includes information about our compliance program, resources, and the Code.

In 2022, our Ethics & Compliance communications program included a quarterly newsletter to keep employees informed about compliance activities, policies, resources and training, and trends and risks, including real case updates about actual company investigations and the resulting disciplinary action. We used various forms of media to communicate on trending compliance topics, such as anti-retaliation, bullying, privacy, cyber security, fair competition, and concern reporting. We also increased our emphasis on "tone at the middle" communications by refreshing resources aimed at helping managers facilitate compliance discussions with their team members. Our annual global Integrity Day hybrid event reinforced our high ethical standards and included various engaging activities, including a global panel discussion with senior leaders, interactive discussions with employees at a local level, and engaging local initiatives. The event included the announcement of compliance award winners in two categories: 15 Compliance Heroes and 15 Ombuds Leaders for their stellar work in promoting a compliance culture.

Anti-Corruption Center of Excellence and Third-Party Program

The Anti-Corruption Center of Excellence (CoE) focuses on addressing risks associated with high-risk third parties, transactions, and events that may pose a risk under applicable laws, including anti-corruption and Nokia policies.

The CoE drives awareness through training and communications and utilizes online tools and a data analytics monitoring program to mitigate risks effectively and proactively. The CoE employs a comprehensive, multi-faceted, risk-based approach to manage and monitor high-risk third parties. This includes commercial partners, the review, approval, and monitoring of gifts, hospitality, donations and sponsorships, and the screening of customers and high-risk suppliers.

We have clear anti-corruption policies, supported by standard operating procedures and implementation guidance documents for key corruption risk areas. Risks and mitigation measures are reviewed with the company's senior leadership, Board of Directors, and the Audit Committee.

We work closely with third parties, including commercial third parties, licensees and suppliers, to encourage adherence to the same standards of ethical business across all interactions and to help ensure responsible sourcing and globally acceptable labor practices. For example, commercial third parties, who move our services and products into the marketplace, undergo a thorough risk-

based screening process during which they are required to acknowledge our Third-Party Code of Conduct, which is available in eight languages. In addition, these commercial third parties go through a mandatory training on the Third-Party Code of Conduct as part of their onboarding process, and high-risk third parties are asked to certify their compliance with our Third-Party Code of Conduct on an annual basis. We also follow a strict 'no sales agents' rule that prohibits the use of sales agents in virtually all our third-party dealings, other than where required by law or in exceptional cases. For example, in several countries we are required by law to use an intermediary to make sales to government entities. Our regional and business compliance teams deliver training and communications, as appropriate based on risk, to our commercial third parties regarding our expectations on ethical conduct.

Competition laws

Nokia is committed to complying with competition laws everywhere we do business. This commitment starts with our Code of Conduct that emphasizes Nokia's expectation that we comply with all applicable competition laws and is furthered by our detailed policies, guidelines, training materials and communications. We maintain a centralized online repository for our competition law resources, and we closely monitor legislative, regulatory, and enforcement activity to ensure we remain current with our policies and training.

Responsible advertising

Advertising at our company must be built on a clear and accurate messaging framework, as set out in our visual and verbal guidelines, with pragmatic statements, grounded in fact, with real proof points, and reasons to believe in Nokia. The use of false or deceptive messages, ambiguity, or aggressive sales techniques is strictly forbidden and is against our Code of Conduct and our brand guidance. Our brand guidance is available on brand.nokia.com.

World's Most Ethical Award

We have been honored by Ethisphere once again as one of the World's Most Ethical Companies®. Nokia is one of two companies in the telecommunications sector and the only Finnish company to be recognized in 2023. This award is a testament to our strong ethical business activities in 2022 and our commitment to a culture of integrity, which includes among other things our commitment to human rights, diversity, social and environmental impact, and risk management.
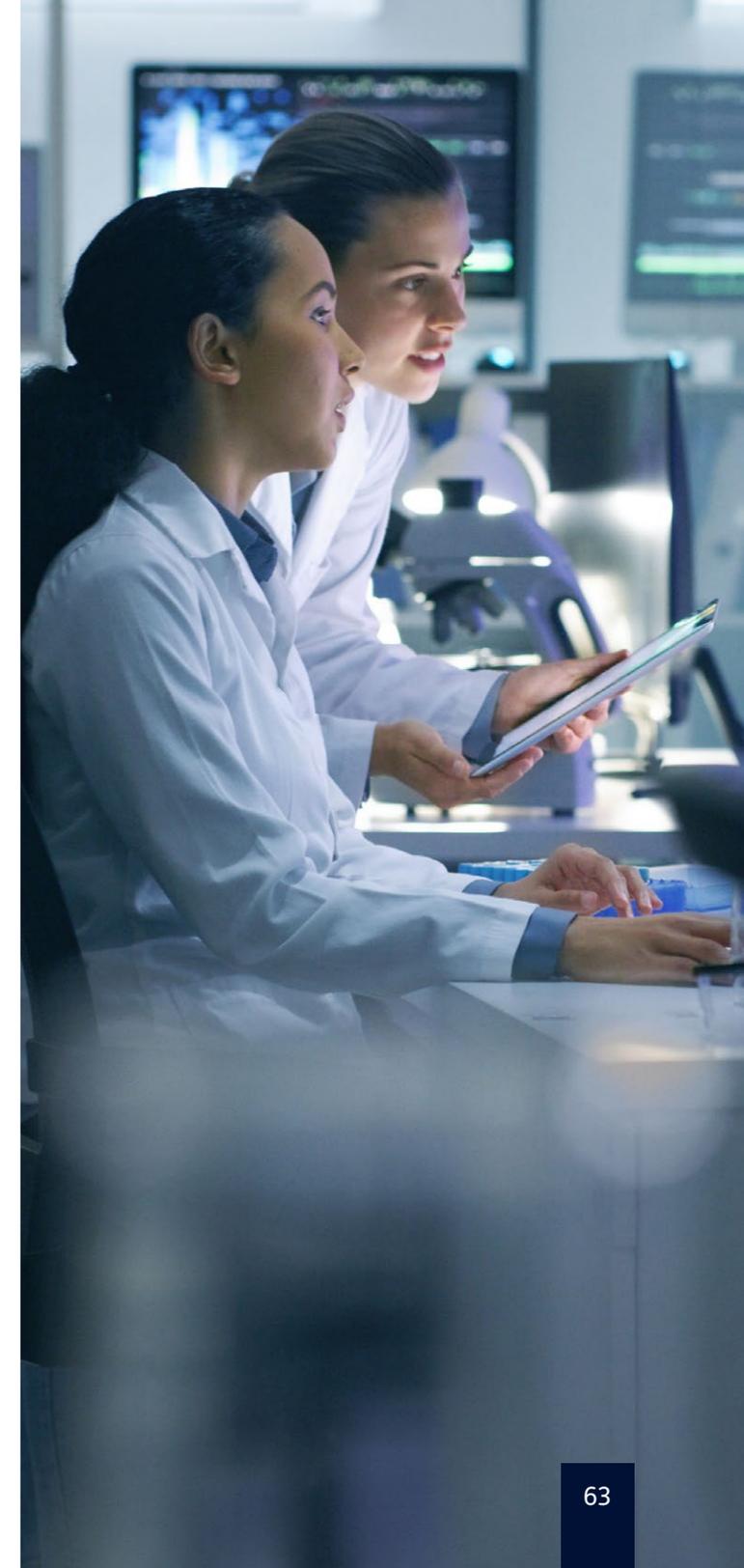
Human Rights

Addressing human rights

We fundamentally believe that connectivity and the technology we provide are a social good that can support human rights and we acknowledge the responsibility that comes with this. Upholding human rights is a complex issue that covers not only the technology we provide, but also our partners, suppliers and our own operations. Therefore, we strive to continuously learn and improve, and we believe that engaging with the broader stakeholder community is the best way forward.

Our Human Rights policy is available online and addresses our most salient risks related to the potential misuse of the technology we provide. Policies related to other areas of human rights, for example rights relating to fair labor practices, modern slavery and human trafficking, and environmental stewardship are covered by other company policies. See the Human Rights Framework table on the next page. The table provides links to information on specifically mentioned human rights topics in relation to the requirements of the French Duty of Vigilance Law. Similar regulatory initiatives are ongoing in other countries.

We are committed to the Human Rights principles and values laid out in the

Cases handled by the Human Rights Due Diligence process and how they were resolved

● Go		55%
● Go with conditions		31%
● No go		11%

In 2022, we had an increase in the number of "No go's" as we saw an increase in cases related to conflict areas.

International Bill of Human Rights (consisting of the Universal Declaration of Human Rights and its related covenants), the International Labor Organization's Declaration on Fundamental Principles and Rights at Work, Organization for the Economic Co-operation and Development

(OECD) guidelines for Multinational Enterprises and the United Nations Guiding Principles on Business and Human Rights.

We have a Human Rights Due Diligence (HRDD) process that targets the potential misuse of the technology we provide. It is a pre-emptive process applied before any sale is made and is used to identify the possible risk level to human rights through potential misuse of our technology. The process examines a country's long-term commitment to upholding Human Rights, the intended use of the technology in question and the customer type, in order to identify potential risks early in the process and trigger the required HRDD investigation and senior-level approval/denial review where needed. For country risk ratings, we use an external assessment provider. The HRDD triggers are a mandatory part of the sales approval process. Training, tracking results, communication of findings, checkpoints and triggers for the process are reviewed and, where needed, improved by the Head of Human Rights on an ongoing basis.

We are a Board member of the Global Network Initiative (GNI) and work with other key industry stakeholders in order to increase transparency and learning. The GNI is a unique multi-stakeholder group involving leading ICT companies, investors, academics and civil society groups. Companies participating in GNI are independently assessed every two to three years on their progress in implementing the GNI Principles.

In 2019, we became the first telecommunications equipment vendor to successfully complete a GNI assessment. We completed our second independent assessment in 2022 with Foley Hoag LLP as the assessor and are proud to report that the GNI board found we have made good faith efforts to implement the GNI Principles on freedom of expression and privacy with improvement over time.

Increasing transparency on the overall narrative

Of the HRDD cases investigated in 2022, 55% were resolved as "Go," 31% as "Go with conditions" and 11% as "No go." We have again included anonymized case examples from our Human Rights Due Diligence work in 2022, to provide insight and examples on the robustness of our HRDD (see the table on the next page). We believe these real case examples support greater transparency and help to drive the dialog and narrative further, rather than simply reporting numbers of cases. They also serve to emphasize the importance of looking at the use case rather than a simple list of products. We also work closely with regulators such as export control to share and discuss our Human Rights Due Diligence for controlled export items.

Our human rights framework

	Nokia employees	Technology misuse	Nokia supply chain
Human rights impact	Labor rights, Health, Safety, Wellbeing, Decent working conditions, Compensation	Freedom of expression and privacy Impact - Materiality - Risk	Labor conditions, freedom of expression, compensation, health and safety, corruption
Potential risk mitigation	Ensuring decent working conditions Health and wellbeing	Code of conduct Human rights due diligence	Code of conduct for suppliers Audits, assessments and training Health & safety maturity assessments
Grievance mechanisms	Ethics Helpline 1 in 90 Dialogs	Ethics Helpline	Ethics Helpline Audits and assessments
Measurement	Our culture Inclusion and diversity Related targets	Reported and investigated concerns Related targets	Strengthening health and safety performance Related targets

Human Rights Due Diligence (HRDD) case examples

	Case 1	Case 2	Case 3	Case 4
Country	Extreme risk country	Extreme risk country	Extreme risk country	High risk country
Requestor	Government	Operator	Government	Operator
Request	Private network communications equipment	IP networking communications equipment	Drones with cameras	Communications equipment with passive standards-compliant lawful interception interfaces
HRDD investigation	The investigation considered the current situation in country and the possible misuse of the communications equipment. The country situation was assessed to be highly unstable, with a poor human rights record. Our conclusion was that misuse risk was extreme and there was no potential for mitigation.	The investigation considered the current situation in country and the possible misuse of the communications equipment. The country situation was assessed to be highly unstable, with a poor human rights record. Our conclusion was that misuse risk was extreme and there was no potential for mitigation.	The proposal was to use drones to survey a remote territory for network optimization purposes. The HRDD investigation focused on the location of the survey and if there was habitation in the area, the government entity overseeing the work, and the data that would be collected or retained. The investigation concluded that the area is a remote heritage site with no habitation and the data collected logically related to mapping purposes used for modelling and for network optimisation and is neither related to personal data nor retained for an unreasonable time.	The investigation considered the technical setup of the request, the country and customer. The investigation concluded that the proposed core network solution utilized only standards based, passive lawful interception interfaces as required by law and without any customizations.
HRDD decision	🔴 **NO GO**	🔴 **NO GO**	✅ **GO (with conditions)**	✅ **GO**
Policy Principal	Nokia will seek to prevent the sale of our products and services in cases where we believe there is a significant potential that those products or services could be used to infringe human rights. To assess such situations, we have a senior-level internal review process that focuses on sales in countries that have been deemed by an independent expert as presenting a high human rights risk. Nokia will, in situations where conflict may exist between local law or its interpretation and the generally accepted international human rights standards, strive to resolve that conflict in a manner that best respects human rights.	Nokia will seek to prevent the sale of our products and services in cases where we believe there is a significant potential that those products or services could be used to infringe human rights. To assess such situations, we have a senior-level internal review process that focuses on sales in countries that have been deemed by an independent expert as presenting a high human rights risk. Nokia will, in situations where conflict may exist between local law or its interpretation and the generally accepted international human rights standards, strive to resolve that conflict in a manner that best respects human rights.	Nokia will provide communication systems, drones, video transmission capabilities, networking capabilities and other technology to governmental and enterprise customers for purposes such as public safety, transport, energy and smart city enablement. We will not, however, pursue direct business with intelligence agencies or similar institutions involving or relating to active surveillance or interception of communications.	Nokia will provide passive lawful interception capabilities to customers who have a legal obligation to provide such capabilities. This means we will provide products that meet agreed standards for lawful intercept capabilities as defined by recognized standards bodies such as the 3rd Generation Partner Project (3GPP) and the European Telecoms Standards Institute (ETSI). We will not, however, engage in any activity relating to active lawful interception technologies, such as storing, post-processing or analyzing of intercepted data gathered by the network operator.

Responsible business innovation

Responsible AI

There is no question that AI has delivered numerous benefits in our everyday lives, but AI also carries risks. For AI to be embraced by our society, we need to make AI ethical. AI systems must be fair, reliable and accountable. They must cause no direct harm. They must be environmentally and socially sustainable. And they must protect our privacy. This is what Nokia Bell Labs calls Responsible AI.

Nokia has defined six principles that should guide all AI research and development in the future. We believe these principles should be applied the moment any new AI solution is conceived and then enforced throughout its development, implementation and operation stages. These principles not only reflect the future of AI standards but also comprehensively account for our industry's renewed focus on environmental sustainability, social responsibility and good governance.

Responsible AI, however, is more than a business imperative. Rather than being perceived as a set of rules and guidelines that limit innovation, these six pillars should be seen as an opportunity for Nokia to become a leader in ethical business practices in our

industry. By embracing responsible AI, we are starting down a path toward building AI systems that offer a true competitive advantage and helping shape the AI conversation for decades to come.

Nokia also participates in international standardization to ensure that these principles are included in the ground rules for using AI and standards which set the basis for responsible use of AI.

We call these principles the 6 pillars of Responsible AI:

1. Fairness
2. Reliability, Safety, and Security
3. Privacy
4. Transparency
5. Sustainability
6. Accountability
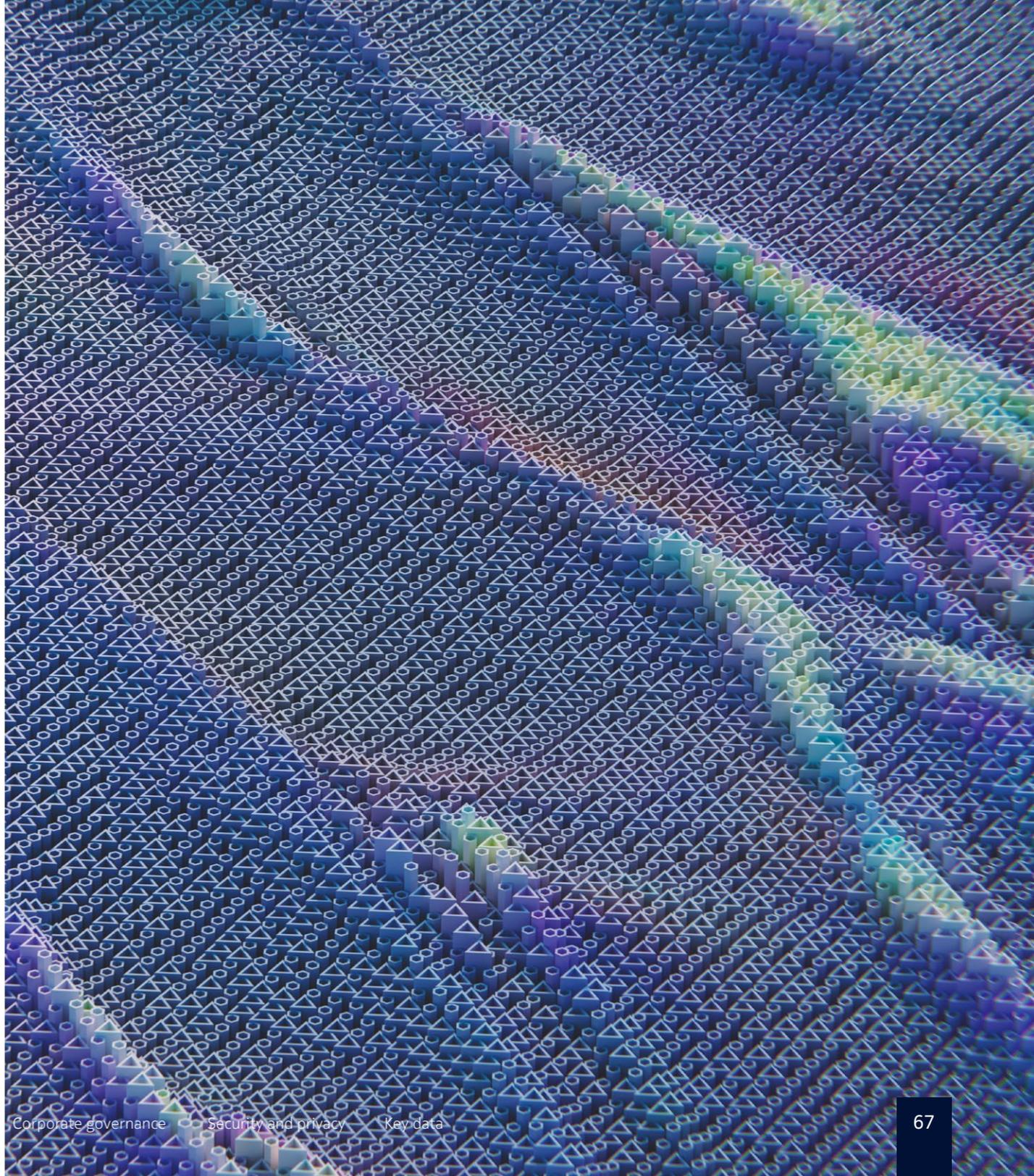
Responsible sourcing

Our supply chain is a critical component of our own reputation and extended impact. We work with both customers and suppliers to drive transparency, sustainability and good ethical business practices in our long and often complex supply chain.

We emphasize active engagement with our value chain, including our suppliers, to raise the standards in our ecosystem in key ESG areas like the environment, labor rights and ethical behavior. We have designed our sustainable sourcing program around six core pillars based on materiality assessment and group sustainability priorities: Supplier Due Diligence, Climate, Circularity, Responsible Minerals Sourcing, Supplier Development and Learning, and Industry Collaboration.

We work with our suppliers to develop, innovate and build capability to enable a more sustainable and transparent ecosystem. We engage with our customers to drive improvements and share knowledge in our common supply chain and collaborate where possible across the ICT industry for greater impact. We continued our collaboration with the Responsible Business Alliance and the Joint Audit Cooperation (JAC) initiative, the association of some of the world's largest telecom operators. We engage in supply chain efficacy including labor rights issues, inclusion and diversity, energy efficiency, circular economy practices and health and safety improvements as well as auditing best practice.

In 2022, we had business with around 11 000 suppliers, and 80% of our total supplier spend was distributed across around 300 suppliers. Our suppliers fall into six broad categories:

- final assembly suppliers
- hardware suppliers for product materials (such as standard components, optical components, semiconductors, electromechanics)
- market services suppliers who support the provision of services to our customers such as in installation and construction
- managed services around the networks we sell
- IT suppliers
- indirect sourcing suppliers for everyday goods and services we need to run our business such as consulting, legal and marketing.

Our manufacturing suppliers are mainly based in Asia and services suppliers are based around the world. Our final assembly during the year included our own factories in Finland, India and Poland as well as Flextronics, Foxconn, Jabil, Sanmina and Karel supplier sites in Canada, China, Hungary, Italy, Malaysia, Mexico, Romania, Thailand, Turkey, Ukraine, the USA and Vietnam. A list of our largest strategic Original Design Manufacturers, Original Equipment Manufacturers and Components suppliers is published on our **website** to further increase stakeholder transparency.

Our supplier sustainability programs

Our key supplier sustainability programs and the share of suppliers covered by those programs are shown in the table on this page. Sustainability is one of the six pillars of our supplier performance evaluation. The supplier's sustainability score is composed of assessment results from our core programs including CDP Climate, EcoVadis, Responsible minerals sourcing and onsite CR audits. We have detailed key performance indicators and public global targets related to sourcing activities, including new supply chain climate targets as part of our 1.5°C climate commitment.

One of our targets is focused specifically on the supplier scores in the EcoVadis assessment, Responsible minerals sourcing, CDP Climate and onsite CR audit programs. We aim that 80% of the suppliers have satisfactory scores by 2025. In 2022, 78% of the suppliers had satisfactory scores across these programs so we are on track with that target and continue our work to grow the percentage. All our supplier-related sustainability targets are listed in sub-chapter Key ESG targets and performance.

In addition to our own programs and assessments, we are part of industry coalitions, and work to improve the corporate responsibility of global supply chains. We are an official member of the Responsible Business Alliance (RBA) and join its key workstreams. RBA is the world's largest industry coalition dedicated to corporate social responsibility in global supply chains. In addition, we are one of the founding members of the First Mover's Coalition. The Coalition is tasked to create the market and spur growth by leveraging collective demand and committing to buying zero-emission goods and services across eight critical industry sectors by 2030. To learn more about our supplier management and related sustainability activities, visit our responsible sourcing page online.

Our supplier requirements

We expect our suppliers to adhere to our Third-Party Code of Conduct and provide them with our Supplier Requirements, including the Responsible Business Alliance (RBA) Code of Conduct and additional, Nokia-specific sustainability requirements. The requirements cover topics such as environment, health, safety and security, privacy, risk management, labor and human rights management, and ethics. They are communicated to our suppliers and integrated into our contractual requirements. An overview of these requirements can be found here.

We encourage our tier one suppliers (including our final assembly, materials and services suppliers) to apply and cascade the same requirements to their own suppliers. We check this through audits and EcoVadis documentation audits. Transparency and compliance requirements are firmly applied to all supplier relationships, and gifts or entertainment are neither given nor received beyond nominal value items. We investigate and qualify all suppliers, requiring them to comply with all applicable laws and regulations, and show they share the values stated in our Code of Conduct. Ethics and anti-corruption related requirements for our suppliers are detailed in our Third-Party Code of Conduct.

Monitoring, assessment and auditing

Our key supplier-related monitoring, assessment and auditing activities include an onsite audit program,

Supplier coverage in Nokia's sustainability programs

Program	Coverage
Request for Information process (anti-corruption, health & safety and overall sustainability)	100% of supplier spend
Health & Safety maturity assessment	100% of relevant supplier base
Responsible minerals program	99% of relevant supplier spend
EcoVadis sustainability assessments	62% of supplier spend
CDP supply chain Climate change	65% of supplier spend
CDP supply chain Water security	53% of supplier spend

We do not measure coverage for onsite audits as they are risk-based.

EcoVadis assessment, our in-house developed Health & Safety maturity assessments, and CDP Climate Change and CDP Water Security assessments. While COVID-19 and related precautions continued to restrict the possibility of conducting onsite audits through the first half of the year, we carried out assessments and monitoring of suppliers with more focus on remote tools and virtual interaction. As the pandemic restrictions started to be lifted, we are proud to have been able to reinstate our face-to-face activities with suppliers in countries such as Turkey, India, Philippines and China.

Onsite audit program

Our onsite audit program is aligned with SA8000 methodology and includes document reviews, interviews with managers and employees, site visits, inspections of facilities, production lines, and warehouses. Our general audit covers the full set of supplier requirements, including corporate responsibility (CR) requirements, and is often used with new high-risk suppliers or suppliers where there has been significant change in business or location. In addition, we conduct specific in-depth CR audits on our existing suppliers. In 2022, we conducted altogether 479 supply chain audits and EcoVadis assessments (see the graph on the next page).

We conducted 67 in-depth CR audits (64 in 2021) at 41 supplier sites (28 in 2021). There were 17 countries covered by these audits such as China, India, Malaysia, Mexico, Morocco, The Philippines, Turkey and Vietnam. The number of findings per category in our CR audits and examples of some findings and corrective actions taken are shown in the tables on the next page. As a result of the audits, 285 (307 in 2021) improvement recommendations were made which are addressed through corrective action plans. All non-conformities identified were analyzed by our sustainable supply chain team and included in our training materials to continually improve them.

We aim to close CR onsite audit findings within six

Our approach   Environment   Industrial digitalization   Bridging the digital divide   **Responsible business**   Our people   Corporate governance   Security and privacy   Key data

69

months of audit. The challenge of audit closure has been exacerbated by the global pandemic and its effects. In 2022, 78% of CR audits were closed within this time (67% in 2021).

External assessment programs
In 2022, we completed 379 (339 in 2021) online assessments on EcoVadis, including labor, safety and environmental elements. In 2022, 76% (75% in 2021) of suppliers had a satisfactory score on EcoVadis. All of the suppliers whose scores were below expectations were addressed with improvement requests. We also continued to engage our suppliers through CDP Climate change and CDP Water security programs. Information on these supplier environmental assessment programs can be found in section Decarbonizing our value chain.

Health and safety maturity assessments
We also emphasize the importance of health and safety (H&S) in our supply chain, as many of our subcontractors work at height, with electricity, and they need to drive long distances as part of their work on our behalf. We have set stringent key performance indicators (KPIs) related to supplier Health and Safety Maturity Assessment (SMA) which is our in-house developed assessment. This assessment helps ensure contractors are capable of delivering work safely on our behalf and projects have risk procedures and controls in place. We also conduct supplier training to provide awareness of potential dangers related to their work and to ensure the correct safety equipment is used as required. In 2022, we introduced a new H&S KPI that tracks the reassessment requirement (every two years for SMA and every year for high-risk projects with implementation assessment (HRPIA) of

Supply chain audits and assessments conducted in 2022

Audits against the full set of Nokia supplier requirements*

Audits focusing on corporate responsibility (in-depth CR audit)*

EcoVadis scorecard assessments
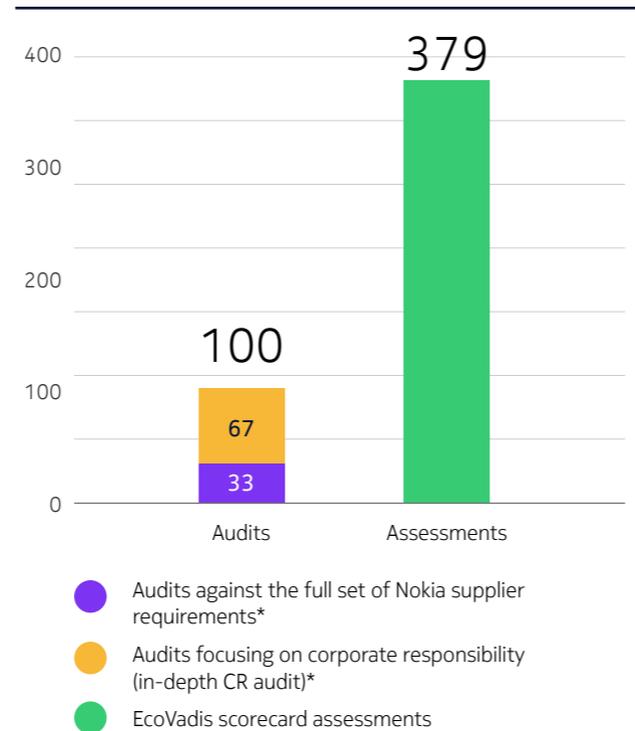
*52 of our supplier audits were conducted through our customers' Joint Audit Cooperation (JAC) framework or through Responsible Business Alliance (RBA) Validated Assessment Program (VAP) audits.

our H&S assessments.

At the end of 2022, 99% (99% in 2021) of high-risk activity services suppliers were covered by our health and safety maturity assessments. 98% of assessed suppliers met H&S compliant supplier status (score

Findings from our in-depth corporate responsibility supplier audits

Category of findings	Instances of non-compliance	Number of potential risk areas identified	Total number of recommendations for improvement
Child and juvenile labor	3	0	3
Forced labor (contract agreement issues/ fine/deduction etc)	11	4	15
Health and safety	91	29	120
Freedom of association and right to collective bargaining	4	2	6
Discrimination	1	1	2
Disciplinary practices	3	0	3
Working hours	36	3	39
Remuneration	17	7	24
Management systems	46	7	53
Environmental management system	15	5	20
Total	**227**	**58**	**285**

The table is based on 67 Corporate responsibility indepth supplier audits conducted in 2022.

3 or more out of 5), and 21% (23% in 2021) of assessed suppliers met H&S preferred supplier status (score 4 or more). Any supplier not meeting our H&S requirements was, in the case of a new supplier, blocked for qualification, in the case of an existing supplier was to be phased out or required thorough improvement where we had no alternative supplier.

Building supplier capabilities through training and workshops
In 2022, we continued delivering supplier workshops online but were also able to conduct face-to-face

workshops after a pause of 2.5 years in our largest supplier markets such as China and India. While in 2021 we focused on inclusion and diversity for suppliers in high-risk countries, in 2022 we looked at labor migration and recruitment risks in Nokia supplier countries. We then developed content on this focus topic. We also introduced circularity and circular practices as a focus topic. In total, we ran 11 supplier training workshops and webinars on subjects such as modern slavery, labor migration and ethical recruitment, inclusion and diversity, responsible minerals sourcing, climate change, circular practices and health and safety.

Examples of identified non-compliance and actions taken

Category	Non-compliance identified	Actions taken by supplier
Child and juvenile labor avoidance	Copies of valid identity or age proof record for a few of the sampled employees were not available.	Supplier reviewed all the files of the active personnel through the prepared checklist of all the documents and certificate required to be maintained. Assigned an HR professional to monitor such documentation.
Forced labor (contract agreement issues/fine/ deduction etc.)	Employment agreements were not renewed for some of the employees after the fixed employment term was over. A few of the agreements did not mention salary and notice period for termination or resignation from either side.	All employee files including employment agreements were reviewed. New format of contract template was developed with all important terms and conditions and completed with signatures. New HR person was assigned and Content Checklist was created for the employee file for required documents.
Health and safety	There was no evidence for the health monitoring of those employees exposed to the chemical agent pollutants of the workplace environment nor for those exposed to the noise.	Supplier had demonstrated that there were health monitoring reports for the employees exposed to the noise and the chemical agent pollutants of the workplace environment. Supplier also updated the schedule of medical exams with exposed persons, acquired quotes and reserved budget.
Working hours	Workers did not receive at least one day off every seven days. The longest consecutive working days were found to be 30 days worked.	During the closure audit it was verified that workers receive at least one day off every working week. The longest consecutive working days are six days worked.
Remuneration and benefits	≥20% of employees did not have the correct required employer and employee contributions paid (i.e medical insurance, basic endowment insurance, employment injury insurance, maternity insurance, unemployment insurance for all employees, provident fund).	The payment base of unemployment insurance and medical insurance had met the requirements of relevant laws and regulations. As a result of improvement the HR department calculates the cost in accordance with legal requirements, reviews the cost together with the local management, and applies to the global top management for approval.
Environmental management systems	The wastewater discharge assessment results showed that the facility exceeds the maximum allowable limits for floating matter parameters (no floating matter is permitted). The analytical assessment of the wastewater discharge reveals that the Biochemical Demand of Oxygen (BDO) and the Total Suspended Solids surpass the maximum levels allowed according to the standard reference.	Adequate and effective procedures were put in place to document, characterize, and monitor water sources, water discharge and control channels of contamination. The facility carried out a wastewater discharge analysis which revealed that the facility meets maximum levels allowed according to the standard reference.
Management systems	Management review and continuous improvement process for Ethics performance and management systems were not established.	Management system, management review and continuous improvement process for Ethics performance and management system was established.

This table is based on corporate responsibility indepth supplier audits from 2021 and 2022 that were closed in 2022.

Managing risk in our supply chain

Our materiality analysis and Enterprise Risk Management help identify potential supply chain risks. We carry out more in-depth analyses to determine all supply chain risks via our dedicated Supplier Sustainability Risk dashboard where we look at various sustainability risks, commodity risks and more on a supplier location level. The outcomes are included in our category strategies. We review category strategies annually with our purchasing category leads. Failing to meet established sustainability requirements will block a supplier from being promoted, for example, from restricted to allowed, or to preferred supplier. We also maintain and regularly update a corporate responsibility risk map of our suppliers. In 2022, we expanded our use of digitalization in our supplier safety management program, carrying out remote safety pre-work checks, and live digital health & safety inspections of customer sites while the suppliers were performing their high-risk activities in the Mobile Networks business group.

Our supplier health, safety consequence management process

In 2022, we had 51 supplier-related fatal, critical or high potential incidents. As part of consequence management related to those incidents, we issued 28 warning notes (yellow card) to our suppliers and terminated business relationships with three suppliers. 39 of the incidents were designated high-potential where no one was critically or fatally injured.

Combating modern slavery, forced labor and labor migration risks

Modern slavery and forced labor of all kinds remain a challenge for all countries and supply chains. It is believed that the pandemic has also worsened the issue as the vulnerable became even more so and unemployment grew. Therefore in 2022, we also conducted an analysis of labor migration and its impacts on our supply chain.

We have robust audit and assessment processes and procedures in place. We continue to raise awareness of modern slavery through workshops and training with suppliers on the topic of good labor practices and inclusion and diversity. Our work includes advocating for greater dialog on non-discrimination of ethnic and other minorities.

Audit outcomes

In 2022, our audits uncovered 15 cases related to non-compliance or potential risk of forced labor.

A few of the cases concerned missing or inadequate documentation, such as a missing contract or appointment letter or missing contents in the contract such as salary, working hours, leave and benefit entitlements. There was also a case where contracts were not renewed after the fixed term contract had ended. Most of these findings were addressed and closed, a few will still be addressed and closed early 2023.

Several cases concerned the recruitment process and the recruitment costs such as the cost of medical examination, COVID-19 test or travel tickets which were initially borne by the migrant laborer in their home countries and compensated only upon arrival to the destination country or the first salary. This delay increases the potential risk of bonding. In one of the cases the company only supported partial return transportation cost back home (flight and not the ground transportation cost from airport to the employee's residence). Such findings were addressed by setting up a process where fees were to be paid directly by the supplier or the labor agency and not by the worker. Nokia also highlighted the learnings from such cases in its ethical recruitment webinar conducted for suppliers.

There was also an instance of involuntary overtime work detected among the onsite security service provider workers who needed to perform involuntary overtime work for 2.5 hours every day for six days consecutively in a week. The supplier addressed this with the security company and obtained a memo from the managing director of the security company stating the working hours, overtime and break time have been issued to and acknowledged with signature by every security guard.

Other cases noted included the auditee practicing an educational training bond (bonded labor) via their overseas training procedure which stated that workers who attend overseas training will be bonded for a period of six months to a maximum of two years depending on the length of the training period. If the workers fail to serve the company after their training for the required bonded period, the worker needs to pay back all the training costs as per the overseas training agreement signed between the employer and employee. The supplier verified that there were no actual cases of training bonds for workers and revised its training procedure.

We also uncovered three (four in 2021) instances of non-conformity related to child labor avoidance in

2022. Cases included a missing child labor policy or missing identity cards that meant the auditor could not immediately verify workers' ages. The suppliers addressed corrective actions by developing the policy and ensuring that worker files include a checklist requiring a copy of the identity card.

In addition to audit findings, we had a reported incident from 2021 from our Ethics reporting channels. In April 2022, Nokia was notified, by a former business partner and employee of a supplier, of an alleged use of child labor and unsafe working practices by a subcontractor supplying services for a project between May and August 2021 in The Philippines. Nokia initiated its investigation process and immediately suspended the supplier from any further projects. Despite our best efforts, the potential victims could not be identified mainly due to the lack of documentation from the supplier. Although the supplier has denied the allegations, based on evidence including professional medical opinion concerning the likely age of some individuals shown in received photo evidence, Nokia believes it is prudent to conclude that there may well have been a breach of Nokia's Code of Conduct and Human Rights policy related to the zero tolerance for child or forced labor of any kind in its own or supplier operations.

Nokia has made the decision to permanently block the supplier in question and any future supplier linked with the owner from all Nokia business. Nokia continues to assess opportunities to improve its processes and supplier engagement efforts such that any potential lessons learned can be fully integrated into our future ways of working. A Remediation

Committee was established for this case. As we could not conduct mitigation directly, we have taken a broader approach to help to address one of the root causes for children and young people reaching the informal labor market. This root cause relates to dropping out of the formal educational system. We have agreed a two-year program in The Philippines with an NGO partner that aims to strengthen alternative learning systems and ensure that young people complete an educational qualification.

Reducing the risk of discrimination

We continue to see concerns related to the potential mistreatment of ethnic and other minorities. We held further supplier training sessions in 2022 to communicate inclusion and diversity practices. We underscored our requirements concerning the treatment of ethnic groups or any other minorities. We also emphasized the appropriate actions to be taken by suppliers, and we monitor inclusion and diversity indicators in our EcoVadis due-diligence assessments with suppliers.

Supplier diversity purchasing program

We have a Supplier Diversity Purchasing Program that is currently concentrated in North America and South Africa. It focuses on the inclusion of suppliers whose ownership or control is 51% or greater by persons of diverse classification – primarily ethnic minorities, women, and military veterans. Currently, we participate in diversity related events and industry networks, and we actively track our diversity spend in those countries. We include validated diverse suppliers in procurement requests and provide them opportunities to participate in our

business. We also conduct training for procurement category managers.

We do not tolerate slavery, servitude, human trafficking nor forced or compulsory labor in our own operations or in our supply chain. In June 2022, we published our annual Modern Slavery statement. The statement can be found here.

Materials traceability and responsible sourcing of minerals

Military conflict, human and labor rights, and environmental impact remain key risks in the mining, extraction and trade of the metals industry that provide essential minerals for electronic components. Tracing the materials used in our products and using our best efforts to ensure they are conflict-free is key.

We aim to contribute to a long-term solution to the issue of minerals sourcing that ensures responsible and conflict-free sourcing via legitimate trade that brings sustainable improvements in those countries where the risks are greatest. We demand that our suppliers commit to sourcing these key materials from environmentally and socially responsible sources. Our responsible minerals sourcing policy can be found here.

In 2022, we continued our work with the Responsible Minerals Initiative to improve the traceability of minerals and ensure responsible sourcing. Our due diligence approach is aligned with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals.

In 2022, 99% (99% in 2021) of our suppliers had achieved full visibility into the 3TG (tungsten, tin, tantalum and gold) smelters in our supply chain, and for 98% (97% in 2021) of our suppliers the entire supply chain consisted of smelters which have been validated as conflict-free, were active in the validation process or defined as low risk.

Out of all the smelters and refiners identified as part of our supply chain, 73% (78% in 2021) have been validated as conflict-free or are active in the validation process under the Responsible Minerals Assurance Process. A further 14% of smelters can be reasonably considered as conflict-free based on our due diligence efforts. Those smelters that were not part of the industry assurance program nor

evaluated as low risk were asked to be phased out by our suppliers, since direct engagement with such smelters over past years has not motivated them to collaborate and therefore, we feel there is a high likelihood that they are engaged in potentially non-compliant practices.

Smelters not meeting our objective or with no corrective action plan were recommended for phasing out from our supplier pool. The graph on the next page shows the conflict-free status of our suppliers for each mineral separately and combined for all 3TG smelters. We also processed stakeholder grievances about the smelter and refinery practices in our supply chain that we received either directly or indirectly through the industry grievance mechanism. In 2022, we received one case directly and 14 cases indirectly via the industry grievance channel.

We also undertook a mapping of cobalt and mica in our components based on extended minerals material declarations for product parts. We addressed 79 relevant suppliers about our requirements regarding cobalt and requested them to exercise due diligence over the cobalt supply chain and 19 suppliers with mica. 68% of suppliers for

Share of suppliers who have completed identification of all smelters and have achieved conflict-free status, %

Suppliers who have completed identification of all smelters

Suppliers who have achieved conflict-free status
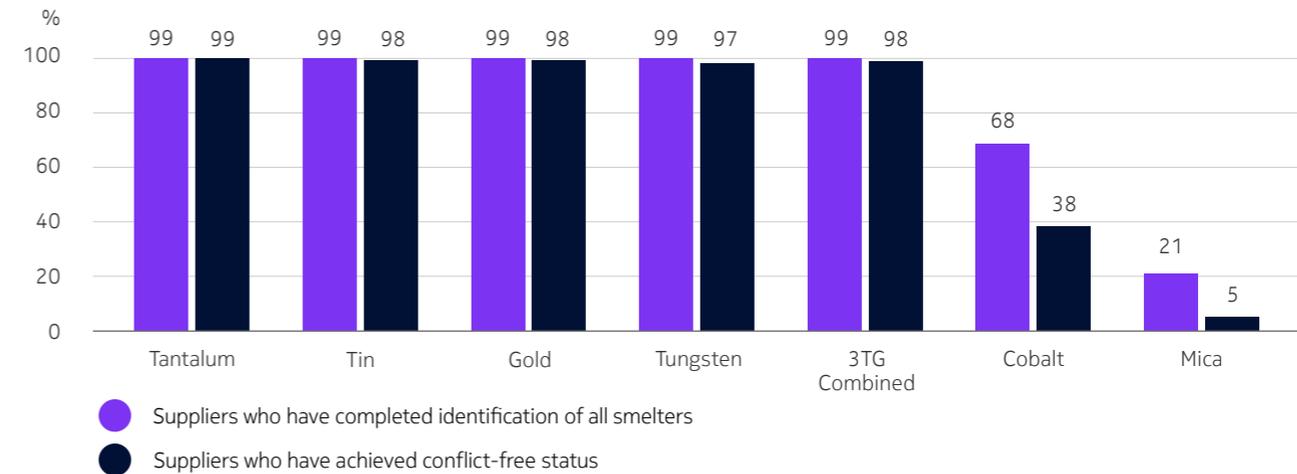
cobalt and 21% for mica have completed mapping their cobalt and mica supply chains and as a result, we have been able to identify 71 cobalt and 17 mica smelters in our cobalt supply chain, out of which 59% (cobalt) and 18% (mica) have gone through the Responsible Minerals Assurance Program and have either Conformant or Active status. In 2022, we undertook an assessment of our entire list of materials against ESG risks and beyond 3TGs, cobalt and mica and started to map the mechanics supply chains related to copper, steel, nickel and aluminum.

For upstream engagement we have continued our work with the Public-Private Alliance, contributing to the development of in-region programs. In 2022, we helped to fund one of the local programs dealing with expanding children's educational access and socio-economic opportunities for their families and vulnerable women (including survivors of sexual violence); and work on women's leadership and reintegration into communities following sexual violence strongly related to the minerals mining and supply chain.

For more information on our responsible minerals due diligence results, please refer to our conflict minerals report available on our website at the end of May each year.

Strengthening our health and safety performance

Health and safety remain a key priority for Nokia. Group leadership representatives set strategic direction and policy. Senior leaders demonstrate strong commitment by participating and leading various risk and opportunity reviews held throughout our global markets.

Nokia has a broad range of programs targeted at continuous improvement to address job-related health and safety risks when installing and maintaining equipment and providing services and solutions to our customers. We deliver training, conduct analysis and assessments, and implement consequence management. Our health, safety and labor conditions policy can be found here.

Health & safety management systems
Our H&S management system is globally certified and based on the internationally recognized ISO45001 standard. Coverage within the scope is comprehensive across the business and includes

networks business groups, network services and installation, customer operations and supporting corporate functions. Our framework was audited in numerous locations and certified by third party Bureau Veritas. Having had H&S global management system, audits, certifications in place and demonstrating continuous improvement year over year, this positions us as an effective leader in global H&S management systems and programs worldwide.

Key standards and programs
Our key standards Working at Height, Rigging & Lifting, and Driving and Electrical are implemented with non-negotiables for effective controls to

manage risk on a global scale in all markets. Incident management, and reporting and investigation programs encourage all employees and contractors working on our behalf to report all incidents including near misses and high potential incidents.

Our assurance and governance programs have built in checkpoints to measure effectiveness. We have agreed metrics and key performance indicators designed into all levels of our programs and business processes to assure and manage risk in critical areas such as supplier qualification and project management where high-risk activities are delivered. Market operational reviews and internal and external audits provide the visibility and accountability needed to improve performance and reduce risk. In addition, regular reporting, communication of recovery plans and action management are in place to ensure effective program management.

We see the highest risk in the health and safety of our contractors who, for example, work at height, drive, or work with electricity. Therefore, we have set stringent key performance indicators related specifically to supplier Health and Safety Maturity Assessment (SMA) qualification and High-Risk Project Assessment (HRPIA) to ensure contractors are capable of delivering work safely on our behalf and projects have risk procedures and controls in place.

Our health and safety performance
In 2022, there were no (zero in 2021) work-related fatal incidents involving our employees. However, we regret the eight (four in 2021) work-related fatal incidents resulting in the death of nine (five in 2021)

> **We design, deploy and support products that transmit and receive radio frequency (RF) energy. Our Nokia RF exposure statement can be found here.**

contractors or subcontractors. Any such serious incidents while carrying out work on behalf of Nokia are unacceptable and each incident is thoroughly investigated to establish root causes and corrective actions are implemented to reduce the likelihood of future occurrences.

In 2023, Nokia will ensure that 100% of our suppliers formally pledge to follow the Nokia life saving rules and we aim to maintain that 97% of projects that involve high risk activity are compliant with Nokia's HRPIA standards.

By the end of 2022, 99% of suppliers delivering high-risk activity had been assessed using our H&S Maturity Assessment process and 98% of the assessed suppliers met H&S compliant supplier status (score 3 or more out of 5), and 21% of the suppliers met H&S preferred supplier status (score 4 or more out of 5). We also carried out implementation assessments on 99% of all high-risk projects. 97% of those projects were found to meet our minimum non-negotiable requirements. Going forward Nokia will focus on increasing our monitoring of our suppliers' high risk activities and the quality of our suppliers' onsite safety supervision.

Our people

Our people represent the essence of who we are as a company. Nokia people grow continuously and develop in an open, fearless and empowered culture. A culture that is inclusive and diverse, and creates trust and respect, enables our people to deliver company business priorities in a responsible way.

At the beginning of 2022, we launched our new people strategy. It puts our people firmly at the heart of everything we do and guides us in creating an environment in which people not only work but thrive. Its focus on growth, skills and development helps us establish and maintain outstanding technology leadership.

Highlights

In 2022, we introduced our inaugural ESG mandatory training for all employees in 13 languages. It was completed by over

97%

of employees
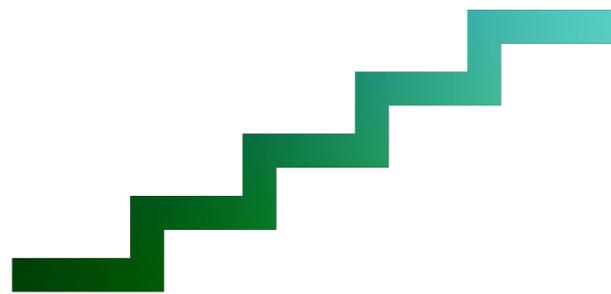
Launched the **Technical Career Path** program that makes technical opportunities more visible and offers a growth path for all who prefer to pursue a career as subject matter experts without necessarily becoming people managers

Nokia's **Global New Child Leave Policy** has been incorporated as a minimum standard into all Nokia countries' leave of absence policies. It provides any Nokia employee who becomes a parent, regardless of gender, with at least three months paid leave and the right to return to work up to one year following the date of birth or adoption

In early 2023, Nokia was recognized for the fifth time on Bloomberg's Gender Equality Index with a score over

83%

Nokia's **Global Life Insurance Policy**, launched in 2022, ensures that the loved ones of any Nokia employee who dies will receive financial support of not less than one year's gross base salary, subject to a financial cap

Our culture

At Nokia, we care about our people. We aim to hire and retain the best talent and provide a work environment where each person can thrive. Our culture is guided by our purpose, strategic commitments and our essentials – fundamental facets of the Nokia culture. It is through our people and culture that we create technology that helps the world act together.

Our culture is key to why our customers and partners choose to work with us. Integrity and trust are fundamental ingredients of how we work and what we provide as trusted partners. We work relentlessly to earn and sustain the long-term relationships we have with our customers and partners.

2022 was outlined in Nokia's strategy renewal as a year of acceleration. As the company redefined its purpose and commitments, we also defined the base components of the Nokia culture known as essentials. Our essentials articulate the expectation that all employees are open, fearless and empowered in everything they do. These behaviors are the bedrock of meeting our commitments to becoming a technology leader and trusted partner for critical networks.

Progress and uptake of our essentials

At the start of 2022, we deployed an employee pulse survey including both common and business group specific questions. The core questions focused on the essentials, asking whether employees felt they could speak openly, challenge the status quo and feel empowered to overcome any challenge. The aim was to determine how well open, fearless and empowered behaviors were present in Nokia. At the end of 2022, 79% of respondents agreed they could speak openly and challenge the status quo and felt empowered to overcome challenges. Other elements of the pulse survey were unique to each business group and function, covering various topics from pride in work to the clarity of roles, depending on the priorities of the business group or function. Results were tracked, included in business reviews, and used at the business group and function level to design and build action plans and development programs.

Our essentials

OPEN
I am open in mindset: to opportunity, to the future and evolving market needs, to new approaches, and to collaborate.

FEARLESS
I am fearless and bring my authentic self to work, sharing my ideas and opinions and knowing that mistakes are OK as long as we can learn from them.

EMPOWERED
I am empowered and supported to make decisions and own my work because I am trusted and I trust my colleagues, who have my back in success or failure.

People development

It remains critical to identify, develop, and retain skilled employees in our business. We therefore continually develop our culture and refresh our talent management activities, performance support, and career development.

Talent and performance management

Nokia people managers are encouraged to hold quarterly discussions with their employees called 1 in 90 Dialogs which focus on five key areas: goals, feedback, wellbeing, development and coaching. In 2022, as a part of the 1 in 90 Dialog conversations, we guided all employees to discuss and evaluate how they demonstrate the Nokia essentials within their roles. In 2022, employees and people managers were encouraged to focus on feedback (giving and receiving), discussing wellbeing topics (work & life balance, mental health, support available), and resources available to report ethics and compliance concerns (speak-up culture).

Annual development reviews are available to all employees. We encourage managers to recognize performance, celebrate achievement and discuss employees' potential and career aspirations as well as plan for their development in the coming year. Through communication and training, we continue to draw attention to the importance of regular, ongoing and transparent performance feedback.

Future talent growth

We provide growth opportunities which allow targeted development on the company level and business group level focusing on critical skills, stretch assignments and exposure. Business groups and functions have unit/function specific initiatives in place to address their strategic talent needs. On a global level, future talent growth contains two main elements: executive succession planning and contributing to the CEO advisory board.

The Technical Career Path is one of the key programs under the Growing Together strategic pillar. The program makes professional development opportunities visible, especially for subject matter experts and individual contributors to grow their careers. In 2022, the initial focus has been on engineering areas, expanding to non-engineering technical roles as the initiative progresses.

Executive succession

In 2022, we piloted a new succession management approach for our executive level roles. Our main objective was to ensure robust succession management, focused on current and future skills needed to deliver the company strategy. With our redesigned succession approach, we are focusing on the key experiences that successors require to perform at more senior levels and in target roles. Development roadmaps were created and are tracked and updated as needed.

CEO advisory

The CEO advisory board, launched in late 2021, has continued its active engagement. The advisory board consists of up-and-coming leaders, selected to provide candid, real-world advice to the CEO. This program has three main objectives:
- Bring novel ideas to the CEO
- Bring the needs of the company closer to the Group Leadership Team and the CEO
- Provide growth opportunities for the program participants.

Competence development

Our competence development activities focus on leadership, business critical, and technical skills for current and future needs. We offer learning solutions to our customers, partners and employees. In 2022, we recorded a total of 3.1 million learning hours for our employees (consisting of 1.1 million training hours and 2.0 million sharing hours). The average number of all training hours was 29 hours per employee, a decrease of 2% compared to 2021.

Our people development focus includes three main pillars:

1. Talent and performance management which covers regular dialog, guided discussion, recognition and feedback as well as career aspirations, among other activities.

2. Future talent growth which includes business group talent initiatives (covering specific skills development and special assignments), executive succession and CEO advisory.

3. Competence development which includes leadership development and assessment, and business critical and technical competence development and related learning offerings.

Our approach   Environment   Industrial digitalization   Bridging the digital divide   Responsible business   **Our people**   Corporate governance   Security and privacy   Key data

80

In 2022, customers and partner training totaled 569 000 training hours, an increase of 8% compared to 2021.

To reinforce a culture of learning, we provide our employees with a tool called the Learning Index. The Learning Index enables employees to monitor their commitment to continuous learning and information sharing. In 2022, the tool was used by 74 780 employees. Overall, our learning solutions received a user satisfaction score of 98% in 2022.

Consistent with our digitalization strategy, approximately 92% of training was technology-enabled. Virtual instructor-led training accounted for 41% of all training, compared to 46% in 2021.

Leadership development
In 2022, we continued to invest in our leaders at all levels through instructor-led programs and online platforms including branded solutions from Harvard ManageMentor and Harvard Spark. In 2022, over 7 600 employees used the Harvard ManageMentor and Harvard Spark leadership solutions. Additionally, our employees completed over 19 500 self-paced leadership online solutions. A major effort was placed on training leaders on accelerated and transformational leadership programs in 2022, especially focusing on supporting middle managers with a specific training, Lead in Focus, where 24 sessions with 532 participants were delivered in just three months. Overall, 2 006 individuals attended our corporate leadership instructor-led development programs in 2022.

We have facilitated numerous workshops on psychological safety, team building, and empowerment to support leaders and their teams to sustain their performance. We have also helped leaders and leadership teams with assessment tools including the Korn Ferry 360° feedback and Insights profiles – a psychometric tool to increase self-awareness, trust and collaboration. In 2022, over 120 personal Korn Ferry 360° feedback assessments and more than 2 000 new Insights profiles were provided to our employees.

We further enhanced the development of coaching skills and redesigned our coaching solutions to enable virtual delivery. We had 103 managers complete our Coaching4Success course in 2022 and certified 39 internal coaches through Coaching4Growth. We have 261 active, internal certified coaches and 462 active mentors who can offer support to all our employees. We have kept our internal coach and mentor community active through regular sessions and have helped make coaches and mentors ready to support with virtual team working, creating a safe environment, and a focus on self-awareness, career growth, wellbeing and mental health.

Business critical and technical competence development
We see the development of business-critical competencies as essential in a fast-changing business environment. For this reason, we provide learning solutions in, for example, data science, communication, project management, interpersonal skills, and working in a flexible environment. Our technical training not only instructs how to operate and maintain our products, but also includes more general technology training on topics such as 5G and digitalization.

Keeping pace with technology
Our customers and employees require new and diverse skills and competencies to thrive in today's environment. To address these needs, we offer a full spectrum of technical training both internally and externally via multiple delivery methods including web-based, instructor-led, virtual instructor-led and blended learning. Our industry-recognized certification programs, including the Nokia Bell Labs 5G Certification, are targeted to build technical expertise and improve professional standing.

5G certification
The Nokia Bell Labs Certification Program offers two levels of certification – Associate and Professional – that deliver essential knowledge covering everything from the basics of 5G networks to professional level planning and design. In 2022, professional certification in Network Slicing was added to the program. To date, more than 31 000 customer and employee registrations have been recorded for the program.

As part of our Environmental, Social and Governance (ESG) strategic goal to be a bridge in the digital divide, we are looking at how to extend these technology programs to support individuals and enterprises in preparing for digitalization. More information can be found under the Bridging the digital divide chapter.

ESG mandatory training
In May 2022, we launched our first ESG mandatory training for all employees. The training provided basic understanding of ESG, its importance to business and the company narrative on ESG. 97% of employees completed the training.

Employee learning hours by type of learning in 2022

● Technical & Product Training	50%
● Non-technical Training	39%
● Leadership Training	7%
● Health, Safety & Security Training	3%
● Sales & Marketing Training	1%
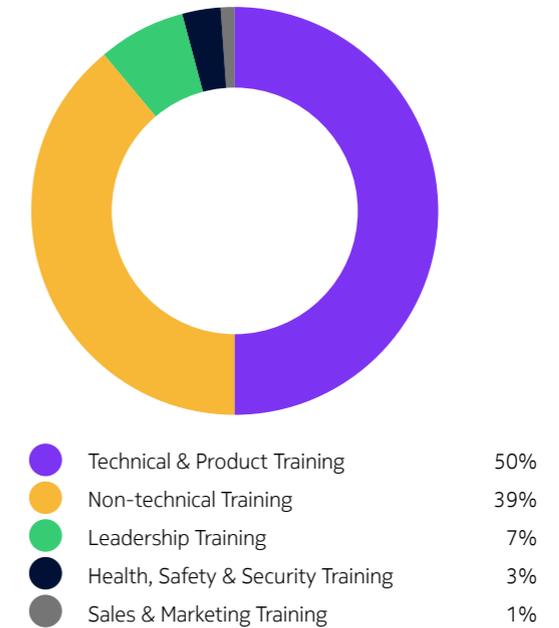
Global Days of Learning
Global Days of Learning (GDOL) 2022 is the company's showcase event in support of its commitment to a culture of learning. In 2022, the event centered around Making Nokia the Company of Choice. Leaders and subject matter experts discussed how Nokia is differentiating itself in the market with customers, partners and employees. The two-day event totaled more than 56 000 webcast participants across all sessions.

Fair workplace and our policies

We uphold high standards of ethics and human rights in our own activities and aim to treat all our employees and other stakeholders in accordance with internationally recognized ethical and responsible business practices and the relevant legislation.

Our Code of Conduct, Global People Framework, Human Rights Policy and local employment laws, policies and practices are the basis for our labor conditions. We are committed to the principles laid out in the United Nations Universal Declaration of Human Rights, the United Nations Global Compact and the International Labor Organization's Declaration of Fundamental Principles and Rights at Work. We follow and, where possible, strive to exceed the standards set out by local labor laws and regulations. We publish information related to our employment policies and guidelines on our intranet.

Our policies, Standard Operating Procedures (SOPs), and Code of Conduct apply to our employees and suppliers. Our policies cover child labor, forced labor,

> "We follow and, where possible, strive to exceed the standards set out by local labor laws and regulations. We publish our employment policies and guidelines on our intranet.

freedom of association and collective bargaining, non-discrimination, humane treatment, working time, disciplinary practices, compensation and occupational health and safety.

Zero tolerance for child and forced labor

We have zero tolerance and strictly forbid any form of child labor and all forms of forced, bonded, or imprisoned labor in both our own operations and our supply chain. The identity and age of candidates are checked at hiring to ensure that the terms and conditions of employment are in accordance with local legislation as well as with internationally accepted labor standards. Proof of identity and age are part of minimum vetting standards.

Freedom of association and collective bargaining

We respect the right to collective bargaining and freedom of association. Collective bargaining agreements are local, and in most countries where we have collective bargaining agreements, employees who have chosen not to be members of a union are also covered by similar terms. Employees can choose freely to join, not join, or leave unions and associations and select their representatives based on local and international practices. We encourage active and open communication with employees and/or their representatives.

In countries and regions where works councils operate, we work with them as needed. We communicate regularly with employees directly as well as with their representatives in meetings such as the European Works Council (EWC).

Employee representatives are entitled to participate in trainings that are a necessity to carry out employee representative duties and to increase their awareness of trade union rights and obligations.

Additionally, employee representatives can use company infrastructure during the workday. See more on our website.

Working time

We do not permit our people to work more than what is legally allowed. We define regular working hours in accordance with local laws. Young workers from 15 to 18 years old (or as specified by local legislation) are not permitted to carry out work that may be hazardous, unsafe, or unhealthy. Such workers are not allowed to work night shifts and have a maximum daily working time of eight hours. We provide guidance through the worktime standard operating procedure and guarantee the minimum one day off in every seven days in our production operations.

Disciplinary practices

Our global Disciplinary standard operating procedure (SOP) helps ensure consistent and fair treatment to all employees. Where local law or collective agreements differ from the SOP, we deviate from the global SOP only as far as necessary to ensure compliance with the same.

Compensation and benefits

Our compensation and benefits programs contribute to our business success by balancing market competitiveness and affordability based on a total compensation approach. These are performance driven (both on an individual and company basis), flexible, and fair. The key elements of our compensation structures are annual base salary, incentive/bonus programs, recognition programs and equity-based long-term incentives.

Our approach   Environment   Industrial digitalization   Bridging the digital divide   Responsible business   **Our people**   Corporate governance   Security and privacy   Key data

82

Pay practices are regularly reviewed to align pay with performance, experience, and skills required for every position. We pay at least the minimum wage, comply with all legal requirements on wages, and at minimum provide any legally or contractually required benefits. Company policy is that part-time or temporary employees have access to employee benefit plans. We have an employee reward and recognition program, Recognize Excellence, which allows employees and managers to recognize individual performance and acknowledge the contribution of colleagues.

Share in Success

We continued our voluntary employee share purchase program called Share in Success in 2022. Participating employees are given one free Nokia share for every two shares they purchase and continue to hold for 12 months. We aim to invite as many employees as possible, subject to local laws and regulations. In 2022, employees in 73 jurisdictions were invited to enroll in the program and the overall participation rate was 38% (37% in 2021).

Recruitment

We treat all candidates fairly and with respect through a consistent recruitment process globally. As part of this approach, we encourage and support personal development for every employee, which is evidenced in the over 6 000 internal people who moved into new roles. This means that out of all our open positions, 40% were filled by internal candidates.

In 2022, we reached a strong rating of 4.2 on Glassdoor (coming from 4.1 in 2021) on a scale

from one to five. This positions us as an employer of choice in the market. Glassdoor is a global website where current and former employees can anonymously review companies. 87% of the reviews indicated that employees would recommend us to their friends. Culture and values, work-life balance, and diversity and inclusion were seen as our three main strengths with scores between 4.2 and 4.3. Learn more at www.glassdoor.com/nokia.

In July 2022, we launched our presence on TikTok and in just six months we reached the impressive number of 38 537 followers. More information on recruitment and careers can be found at www.nokia.com/careers. Or visit us on LinkedIn, Instagram, TikTok, Facebook and Twitter.

Early careers

We support youth employment through our traineeship programs globally and in 2022, we hired over 3 500 trainees. We participate in special programs around the globe with a focus on diversity. Under such programs, Nokia experts and academic scholars work together to prepare students for employment in the industry, improving their technical skills and giving them hands-on learning opportunities. For example, girls for girls is a cyclical project created in Wroclaw for women interested in the IT industry. It encourages women to learn programming, new technologies and telecommunications. In India, we ran skills and career development sessions which included a master class on personal branding and future of work for engineering students from Satyabhama & SSN college. Additionally, retaining our early careers talent is very important to Nokia. For example, the

NAM region launched its first New Professionals Program, which all of our new graduate hires are automatically enrolled in upon hire for the first year of employment. This program acts as community for them to professionally grow together, connect, engage, interact and learn more about Nokia in the hope that they choose to stay with the company long term.

Building a pipeline for diversity

Diversity is an essential part of our culture. In 2022, we completed the collaboration with Udacity and BIT (Blacks In Technology Foundation) to fund nanodegree scholarships for members of an underrepresented community. The results of this social investment program can be seen under the Bridging the digital divide chapter.

In 2022, 27% of our new external hires were women. We prohibit discrimination based on any personal attribute or characteristic.

Providing support during transformation

The business environment in which we operate is highly competitive. To reach our strategic goals and deliver against our commitment means we have needed to reduce the number of Nokia employees. These reductions are never easy. Throughout the process, we have made it a priority to provide support for those impacted employees and treat them with the utmost dignity and respect.

We have put in place extensive measures to limit the impact of transformation plans (including reorganizations leading to headcount reductions), such as:

- we offer impacted employees continued training opportunities to maintain and develop their skills and competencies to meet the anticipated changes in business, markets, and the technology environment in which we operate
- we support and encourage redeployment activities for impacted employees to find new job opportunities in the company, including retraining as necessary and as appropriate
- we offer severance packages to exited employees which are often packages of greater value than what is available under local laws
- we offer career counselling and job search support outside the company.

Inclusion and diversity are a source of value creation and sit at the core of the way we do business. Diversity encompasses the full range of differences and similarities represented by Nokia people. Inclusion unlocks the power of diversity. As a company we take both a structural and a behavioral approach to inclusion and diversity.

Inclusion and diversity

For us inclusion and diversity are a business imperative, and a platform for greater innovation, superior organizational performance and excellent customer service. As a large, multinational company, we naturally have an incredibly diverse workforce. But diversity is of little value if we are not making use of it.

Our inclusion and diversity strategy

All business groups and functions have their own inclusion and diversity (I&D) agendas, ensuring Nokia is advancing I&D both at the corporate as well as the business group level. We have set ourselves ambitions for the next three years focusing on three specific areas:

- Diversifying Nokia's talent pool. We re-established our female hiring target in March 2022 aspiring to a minimum of 26% female hires in global external recruits by the end of 2022 achieving 27% of women in external hiring including the conversion of

female trainees into permanent employees. We were able to reach our goal through several actions such as: forming a team of I&D sourcing professionals across markets where we hire most, targeted social media campaigns, establishing a new Nokia Academy in Bangalore, and increasing the intake of the existing Nokia Poland Academy to attract talent through training offering.

- Creating a culture of high inclusion. Logging year-on-year improvements in employee inclusion experiences in business groups and functions, based on the annual employee survey results.
- Being the preferred choice for customers and investors by role modelling best I&D practices. To score above the industry average in external benchmarks that are visible and accessible for our customers and investors, and continuously improve on feedback from these stakeholders.

In line with our essentials and in the spirit of openness, we now publish and update the new Inclusion and Diversity at Nokia dashboard on a quarterly basis, which provides transparent insights into key demographics such as age groups, years of service, job grade, work location, and gender.

Tracking behaviors and leadership

Our survey results help us to define and adjust the company inclusion and diversity agenda and design a plan to address any challenges. Our annual employee survey "Checking Nokia's heartbeat" shows that the overall inclusion experience in the company is improving year on year. Building on this positive momentum, we will continue efforts to remove barriers that are perceived as major contributors towards feelings of exclusion. The survey results are communicated throughout the organization and used as reference information for action planning both in business groups and regions.

The activities of our business groups' I&D teams have been focused on external female hiring. In 2022, they worked closely with our recruiters on establishing inclusive hiring practices and established female graduate programs. Our leadership teams were trained on recognizing their bias in hiring, micro-behaviors and gender balance. On top of hiring efforts, the business groups have focused on inclusive culture programs and sponsorship of female talent.

The global activities in 2022 focused on the creation of a community of inclusion and diversity ambassadors and volunteers. This community, established in June 2022, is now a vibrant community of 1 000 people who join weekly webinars on topics from I&D strategy to micro-aggressions to insights from Nokia's employee resource groups. An allyship program was established with five training paths: Gender Balance supporter; LGBT+ supporter; People with Disability supporter; Ethnically Diverse Groups of Employees' supporter; and Inclusion Ally. Currently, we have about 300 allies at Nokia.

We continue to annually monitor pay equity and fund special remediation increases as necessary. To ensure that the unexplained pay gap which was first closed in 2019 stays closed, we conduct a yearly review and consistently address decisions, practices, and processes which might cause the unexplained pay gap to reopen. We continue with measures that aim to avoid inheriting the former pay gap of new hires, and we ensure objectivity by using graduate offer matrices globally.

While we do not disclose the global salary ratios, we are committed to equal pay for work that is of equal value (skill, responsibility, etc.). This is applied without regard for an individual's personal characteristics such as gender, race, age, national origin, ethnicity, color, religion, sexual orientation, gender identity, gender characteristics or expression, disability, or entitlement to family leave. We monitor compensation as normal business practice within business units and functions in order to ascertain fair compensation throughout the entire organization.

We monitor the fairness of talent and performance evaluation practices as well as promotions on a monthly basis. We conduct exit surveys to better understand reasons for leaving the company. The feedback collected is used to improve employee experience. Gender data, specifically, is part of the monthly Nokia Business Review discussions between the business leaders and the CEO.

We systematically ensure our technology, customer documentation, and training content uses inclusive language. We have moved to use inclusive pronouns throughout Nokia's internal communications and brand. The 2022 compliance & inclusion mandatory eLearning focused on educating people on identifying bullying and abusive micro-behaviors and how to pause, respond and report on such behavior if encountered. By the end of the year, over 97% of our company employees had completed the training.

Gender and age diversity

In 2022, women accounted for 23% of our workforce, and 17% of our leadership positions were held by women. In our Board of Directors, 40% of the members were women. The diversity of our Board is considered from a number of aspects including, but not limited to, skills and experience, tenure, age, nationality, ethnicity, cultural and educational backgrounds, gender identity, sexual orientation as well as other individual qualities. We aim to have at least 40% of Director positions held by members of the underrepresented genders on each Nokia Board composition. See the age and gender distribution of our workforce in the graphs on the next page.

- Nokia signed the Women's Empowerment Principles (WEPs) in 2021 and started its collaboration with United Nations Women. The WEPs are a set of principles offering guidance to business on how to promote gender equality

Our approach   Environment   Industrial digitalization   Bridging the digital divide   Responsible business   **Our people**   Corporate governance   Security and privacy   Key data

85
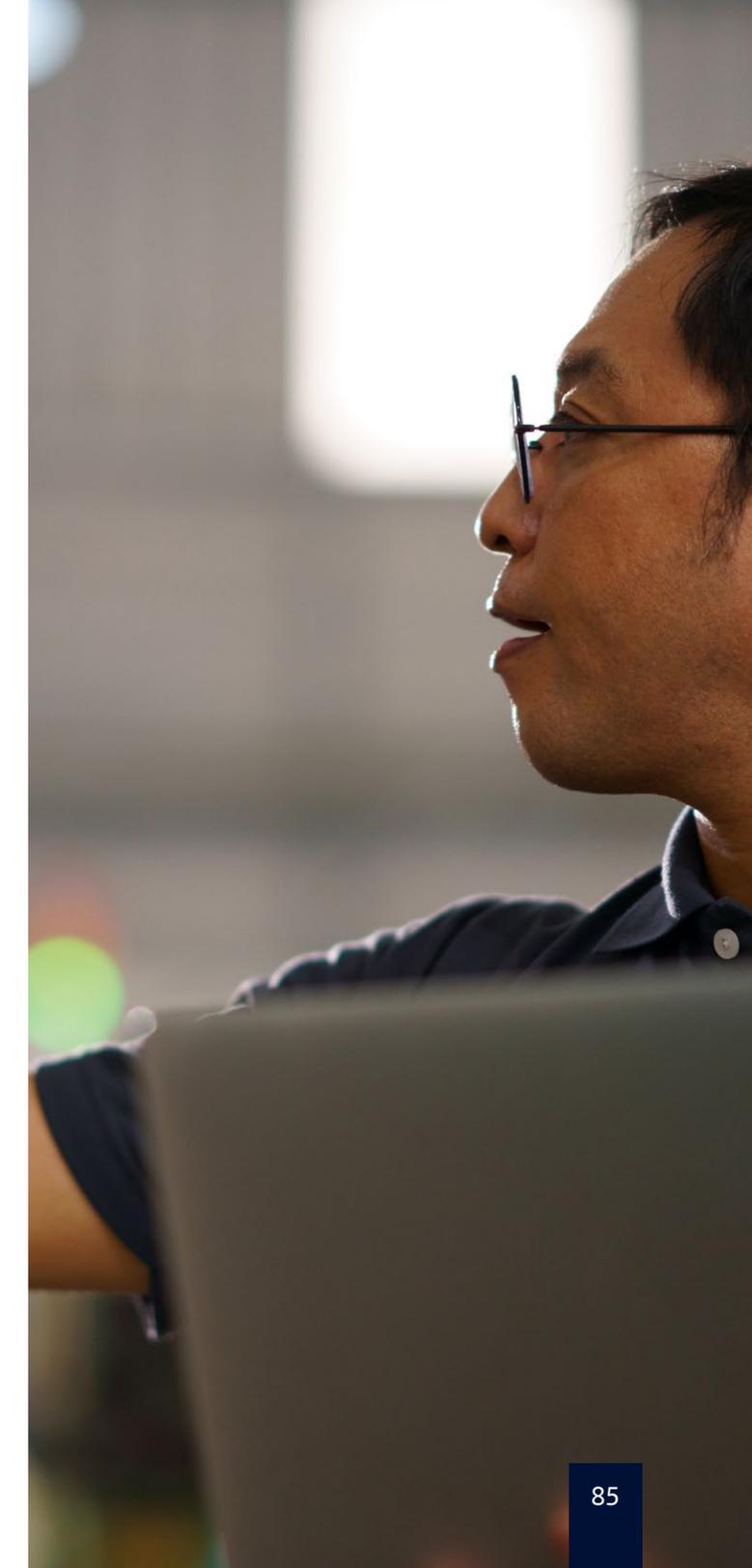
and women's empowerment in the workplace, marketplace and community. Read more on the details of these programs on .

Broad-Based Black Economic Empowerment

In South Africa we are committed to good governance practices, transparency and compliance with all Broad-Based Black Economic Empowerment (BBBEE) codes of good practice. We promote Black Economic Empowerment (BEE) programs and ensure alignment with our group diversity programs. Hence through our BEE plan, we always commit to achieving specific BEE deliverables and actual target percentages for each deliverable.

In South Africa, Nokia collaborates with Forge Academy. Through Forge Academy, students are offered the opportunity to obtain a higher learning digital certificate or degree and are offered mentorship if they wish to start their own company. Forge achieved their milestones signed and agreed to in the agreement between Forge Academy and Nokia for 2022. Nokia was awarded a level 2 Broad-Based Black Economic Empowerment Act contributor status for 2022 and are pleased to extend the contract with Forge Academy for 2023. Forge signed a Memorandum of Understanding (MoU) with significant partners such as Nokia Bell Labs and MICT Seta. Forge is well on its way to becoming a globally recognized Digital Academy with the one of its kind 5G LAB based on Nokia 5G Infrastructure and strategy. Nokia is proud of this collaboration and for what it means for Nokia in South Africa. We are proud to announce that we are closing the circle of transformation together with Forge.

Collaboration through Nokia's employee resource groups

Employee Resource Groups (ERGs) keep us in tune with underrepresented groups of employees. In 2022, we had 12 active ERGs within the company. In 2022, the ShareToCare employee resource group was established. It connects people with common experiences on the topic of mental health and wellbeing. It provides a forum where people feel safe sharing personal experiences and offering emotional support, whether personally, as a caregiver, through a family member or friend, or as an ally. The ERGs contributed to the business and its inclusion and diversity strategy in many ways. Here are some highlights:

ABLE (Advancing Black Leadership and Excellence) group has worked in collaboration with our North America Talent Acquisition team on campaigns towards students attending Historically Black Colleges and Universities, identified as Black/African American and/or members of the National Society of Black Engineers, across universities in the USA. In 2022, ABLE contributed to the Nokia and Udacity funded nanodegree scholarship program development with the BIT Foundation by mentoring the scholarship recipients.

EQUAL! is our LGBT+ resource group which provides education and support for employees who are lesbian, gay, bisexual, transgender (LGBT+) or who have family, friends, or colleagues who are LGBT+. With strong support from the leadership EQUAL! continued to execute the OUT Leader program focusing on Nokia internal LBGT+ talent, also inviting participants from our worldwide partner ecosystem.

Average age range of Nokia employees in 2022

%
- Under 20: 0.07%
- 20–29 years: 14%
- 30–39 years: 30%
- 40–49 years: 32%
- 50–59 years: 20%
- 60 and above: 5%
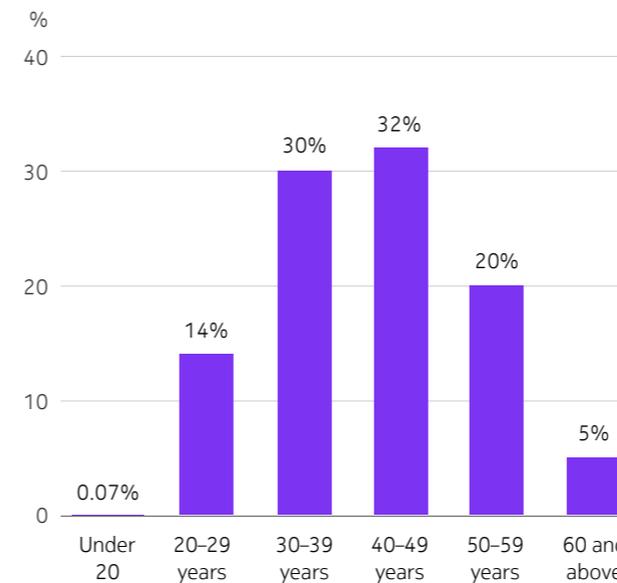
Share of women in our workforce in 2022

%
- Nokia Board of Directors: 40%
- Group Leadership Team: 30%
- All leadership positions: 17%
- Total workforce: 23%
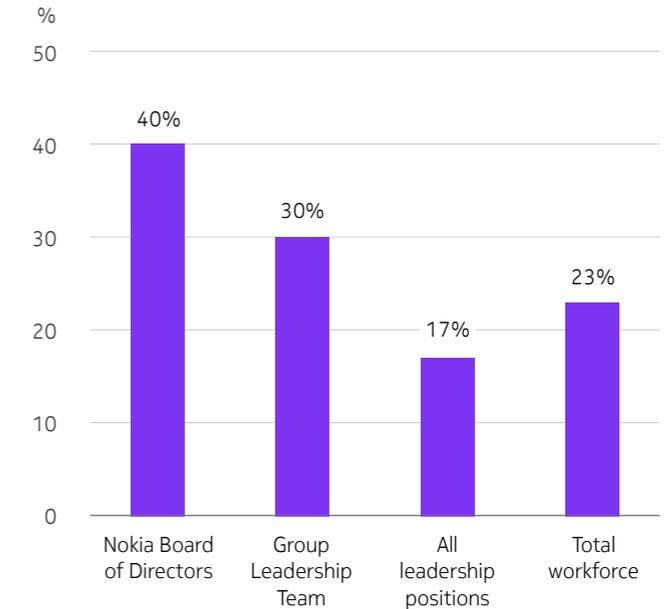
Nokia's Pride Month agenda in 2022 featured members of the Group Leadership Team to raise awareness of issues faced by LGBT+ people and highlighted actions that Nokia can lead to make the workplace more inclusive.

StrongHer is our global network open to all genders and standing up for equal opportunity with a focus on challenges faced by women. StrongHer acts as a consultant for Nokia's Inclusion & Diversity steering committee and as a key stakeholder of the ERG's community. In 2022, StrongHer focused on deploying its emblematic programs such as the Charter for Managers to walk the talk on gender diversity topics. StrongHer also contributed to the deployment of women talent programs. In 2022, StrongHer organized more than 150 local and virtual events around the globe.

Mission Handicap, **@TalentEgal** and **IDEAL** and volunteers from across the organization supported the creation of the Supporter of people with disabilities learning path as part of Nokia's allyship program. The No Limits to Opportunity Ebook is updated and available for People Managers to hire, onboard, and engage team members with disabilities better. This Ebook is also made available to our customers and partners and was included in the Gartner Inc. library of best practices. Our People & Places organization creates inclusive and accessible workplaces. A great example of this work is the Stuttgart office where the office design supports the different working styles and needs for the accessibility and sustainability of our employees.

External recognitions for our inclusion & diversity work

Bloomberg included Nokia for the fifth time in a row in its Gender Equality Index 2023. The GEI framework includes metrics on the female leadership and talent pipeline, equal pay and gender pay parity, inclusive culture, sexual harassment policies, and pro-women brands.

Our score in GEI 2023 index was 83% compared to an average score of 72% for the 47 technology companies included in the index. Compared to last year, our score increased by almost 10 percentage points.

In 2022, for the third consecutive year we were awarded Ambassador status by the Workplace Pride Global Benchmark. Workplace Pride is a non-profit foundation dedicated to improving the lives of LGBT+ people in workplaces worldwide through the provision of feedback and evaluation of companies' LGBT+ policies and practices.

Health and wellbeing

A key aspect of the 'Experience is everything' pillar of our people strategy is Health and wellbeing. At Nokia, we empower employees to manage their personal wellbeing, feel safe talking about their mental health at work, and provide access to the support they need, when they need it most.

Nokia's Personal Support Service continues to provide confidential, professional support and advice on a range of emotional, practical and work-life issues, and is available to all Nokia employees and their family members. This service played a critical role in providing support to those impacted directly, or indirectly by Russia's invasion of Ukraine. In addition to the normal support service for individuals, group sessions supported people managers and teams through guided discussions on the challenges they faced during this difficult time, particularly in relation to managing geopolitical conflict within teams. Group support was also provided to Nokia volunteers who worked tirelessly to support refugees from Ukraine. Pre-recorded webinars in multiple languages supported employees on a variety of topics such as supporting your child at a time of conflict and maintaining team resilience during a crisis.

At Nokia, we want to break the silence around the topic of mental health and for people to feel safe and heard, because we know that when people feel safe to talk it makes a positive difference. Our global mental health and wellbeing training series continued in 2022 with 23 webinars covering a wide range of topics from ergonomics and movement to sleep and burnout. Over 14 000 employees engaged with the content in these sessions, either live or on-demand, and the average feedback score was 4.8 out of 5. The global training series is complemented by regional trainings which are available in local languages and across all time zones.

We also held our annual Nokia Sports Festival emphasizing the importance of movement to enhance physical and mental wellbeing. Over 10 000 employees registered to participate in the nine-week festival.

Corporate governance

Managing sustainability

Sustainability issues are reviewed regularly at all levels of the company. We will continue to strengthen our governance structures and the processes we have established to manage ethical business practices and corporate responsibility, reflecting the significant change in our mode of operation implemented in the company during 2022.

Our Code of Conduct provides our requirements and guidance for all employees. Our suppliers and partners are also expected to adhere to the principles laid down in the Code. The Code is approved by our Board of Directors and supported by policies and management systems related to responsibility issues. Our key corporate responsibility policies are regularly updated and can be found online. Our overall sustainability governance framework and responsibilities are shown in the chart on the next page and further described below. More information about our corporate governance practices is available in our annual reports and on our website.

Board of Directors
The Board of Directors evaluates Nokia's environmental and social activities and governance practices (ESG), related risks and target setting and their implementation and effectiveness in the

Company. In 2022, the Board approved the selected key sustainability targets on climate change and diversity (included in the short-term incentive program), and the social impact budget. They also reviewed the sustainability strategy and targets, evolving ESG (environmental, social and governance) requirements and expectations, investor feedback, disclosure approach and the updated materiality assessment outcome.

In addition, the Board Committees monitor environmental and social developments and activities in the Company in their respective areas of responsibilities. During 2022, the Audit Committee's responsibilities included the implementation planning of new climate and other sustainability reporting requirements, as well as oversight of the ethics and compliance program and cybersecurity risks and maturity. The Audit Committee also reviews sustainability disclosures annually as well

as the information on use of conflict minerals in Nokia's products, presented in the annual reports and related regulatory filings. The Personnel Committee assists the Board in the incorporation of ESG-related metrics in incentive structures and oversees human capital management, including personnel policies and practices related to Nokia culture, employee wellbeing, diversity, recruiting, development and retention. The Corporate Governance and Nomination Committee assesses and advises the Board in ESG related activities and practices, aiming to enhance the governance structure supporting them. The Technology Committee reviews how sustainability is embedded into our technology strategy and roadmaps. Read more in our Corporate governance statement.

Group Leadership Team
The Nokia Group Leadership Team (GLT) is chaired by the President and CEO. In 2022, the Chief Corporate Affairs Officer had overall responsibility for ESG in the GLT. In line with our mode of operation, the GLT approves ESG-related strategy, targets and operational frameworks, within which corporate functions and business groups can operate. This enables the accountability and empowerment of each business group while maintaining appropriate strategic and operative oversight. Independent councils and committees, such as the Sustainability Council, are used to steer, align and ensure the implementation

Risk and opportunity management

Sustainability risks and opportunities are part of our Enterprise Risk Management framework with multi-disciplinary company-wide risk identification, assessment and management processes. We recognize and aim to mitigate the potential risks and negative impacts associated with our business whether related to technology, supply chain, climate or people, while also driving the opportunities within and beyond our business in order to contribute to achieving the UN Sustainable Development Goals. Our Code of Conduct defines our way of working and we have clear policies and processes for each identified material sustainability risk.

The main features of our risk management systems and the roles of the Board of Directors and the Group Leadership Team within those systems are described as part of our corporate governance statement (**see Risk management**). The most important risk factors and the principal factors and trends affecting our operations are discussed in our Form 20-F filing for the year 2022 **here**. For more information on Nokia Enterprise Risk Management, please go to our **website**.

Our approach　　Environment　　Industrial digitalization　　Bridging the digital divide　　Responsible business　　Our people　　**Corporate governance**　　Security and privacy　　Key data

90

of these strategies, targets and frameworks and make recommendations to the GLT. One example of sustainability-related decisions made by the GLT in 2022 is the decision to join the RE100 initiative where our target to use 100% renewable electricity in our facilities by 2025 can be externally verified.

Nokia governance meetings and committees where GLT members participate and where sustainability-related topics are frequently reviewed include, for example, the Compliance meeting, the Security meeting, the Inclusion and Diversity Steering Committee, the Donations and Sponsorships Committee, and the Human Rights Due Diligence Governance Council.

ESG function

At the operational level, sustainability is managed by the ESG function, the Legal & Compliance and subject matter experts in other functions and business units. The alignment of the sustainability strategy, priorities and the implementation of sustainability activities across Nokia is steered by our Sustainability Council. The council consists of senior leaders from units representing product development, sales, real estate, strategy and technology, human resources and procurement. The council also contributes to the sustainability strategy, materiality assessment and reviews of sustainability targets and performance. These responsibilities also include assessment and monitoring of climate-related topics. In 2022, the council was managed by the Vice President, ESG, who reported to the Chief Corporate Affairs Officer. In 2022, the council convened ten times.

Nokia Board of Directors
- Reviews sustainability performance and targets minimum once a year and approves select key sustainability targets and corporate donations budget.
- Specific sustainability topics are reviewed by Board Committees based on their responsibilities, including ESG reporting, materiality assessment, ethics and compliance, cybersecurity, privacy, culture, human capital management and embedding sustainability in our technologies.

Group Leadership Team
- Reviews and approves implementation of and changes to sustainability-related policies, management and operational frameworks, strategy, targets and performance, annual sustainability report, and links to rewarding.
- Conducts sustainability review and provides feedback minimum 2 times per year and as topic-specific areas require.
- CEO, CFO and business group presidents review additional sustainability topics minimum two times per year as part of Nokia business reviews.

Sustainability Council
- Steers the alignment of sustainability strategy, priorities, and the implementation of sustainability activities across Nokia
- Contributes to the sustainability strategy and materiality assessment, and reviews sustainability targets and performance
- Provides additional insight to sustainability-related risks and opportunities

Members
Senior leaders from units representing product development, real estate, strategy and technology, human resources, Legal & Compliance, and procurement.
Convened 10 times in 2022.

Donations and Sponsorships Committee
- Sets principles for allocation of corporate donations and investments for universities and communities
- Approves funds for donation allocation and reviews major sponsorships
- Assesses the impact of all donation programs

Members
Chief Financial Officer, Chief Corporate Affairs Officer, Chief People Officer, Chief Technology Officer, Chief Compliance Officer, Vice President Head of Customer Experience Finance.
Convened 2 times in 2022.

Inclusion and Diversity Steering Committee
- Reviews annual Inclusion and Diversity (I&D) plans
- Sets Nokia-level I&D ambitions and measures impact and targets
- Evaluates business group level I&D actions and provides feedback to business groups

Members
Chief Legal Officer, Head of Inclusion & Diversity, other senior leaders from business groups, Human Resources, ESG and legal, and representatives from employee resource groups.
Convened 2 times in 2022.

Human Rights Due Diligence Council
- Governs high-level alignment on Nokia's Human Rights Policy and implementing procedures
- Steers decisions on Nokia businesses from a human rights point of view
- Ensures alignment between all business groups and functions and appropriate mitigations are put in place

Members
Chief Legal Officer, Chief Corporate Affairs Officer, Chief Compliance Officer, VP ESG, VP Technology Leadership, other senior leaders per need. Head of Human Rights, and Legal Counsel.
Convened 2 times in 2022.

ESG function
The corporate ESG function drives the implementation of the ESG strategy and actions needed to achieve targets at the operational level. Subject matter experts contribute fact-based input to the different functions and business groups. Ensures corporate sustainability reporting is in line with requirements and regulations.

Legal & Compliance function
Supports employees with training and guidance, fostering ethical decision making and choices that are consistent with our values, policies, and laws. Promotes an open reporting culture and oversees robust and impartial concern reporting, investigation, and remediation processes.

As a global company we have a significant direct and indirect economic impact on our stakeholders. The direct economic impact includes our purchasing of goods from suppliers, dividends paid to shareholders, wages and benefits paid to our employees, as well as financial expenses paid to creditors, income taxes paid to the public sector and community investments.

Our economic impact

The key figures related to our direct economic impact are listed in the table on the next page. We also contribute indirectly to the economy in a variety of ways, though our greatest indirect impact comes as a result of the benefits of technology.

Our tax payments

In 2022, we paid a total of EUR 381 million in direct income taxes (EUR 314 million in 2021), of which EUR 72 million was paid in Asia-Pacific and EUR 240 million in Europe, the Middle East and Africa. In the Americas region, we paid EUR 69 million in taxes. Besides paying direct income tax, we contribute to society in the form of pension contributions, social security contributions, payroll taxes, value added taxes, sales taxes, customs duties, excise taxes, environmental taxes, and other similar duties and fees.

Our tax policy

The foundation of our tax policy is to pay the right amount of tax that is legally due in the correct jurisdiction. As a major taxpayer and collector of indirect taxes and payroll-related taxes, we pay and collect these taxes in accordance with the applicable rules and regulations in every country where we operate, and we follow the rules set by the relevant authorities.

We also follow a global transfer pricing policy that is based on the Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations issued by the Organisation for Economic Co-operation and Development (OECD). The guidelines outline the arm's length principle as an internationally accepted valuation standard for intercompany dealings and we comply with that principle in

all our intercompany dealings. We also follow the development of local transfer pricing rules and regulations in all territories and adopt localized transfer pricing policies if necessary.

Large multinationals are obliged to disclose country-specific information to the tax authorities (so-called country-by-country reporting within the framework of OECD BEPS action 13). We are compliant with these reporting requirements.

We may also seek advance pricing agreements. For example, agreements between taxpayers and tax authorities, to the extent feasible in order to gain mutual understanding and acceptance on the tax treatment of intercompany arrangements. The benefit of such agreements is to remove uncertainty regarding tax treatment, especially in complex business arrangements.

Nokia conducts business in many countries, and in every one of these countries our policy is to operate in an open and cooperative relationship with the tax authorities. Our tax planning is aligned with our business models, and taxes are considered in business decision-making but only as one of many elements. Our business and location planning is driven by sound commercial needs. We are subject to income taxes in multiple jurisdictions. Our businesses and investments globally, particularly in emerging markets, are subject to uncertainties, including unfavorable or unpredictable changes in tax laws, taxation treatment and regulatory proceedings, including tax audits. We are compliant with reporting requirements to disclose country-specific

information to tax authorities according to country-by-country reporting requirements. We will also actively monitor and comply with other regulations in this area.

Indirect economic impact

Our company and its activities also indirectly impact economic development in other ways. We generate business opportunities and employment within our supply chain and enable competence development for our employees. Connectivity is beneficial in many ways and has been shown to increase productivity and economic growth.

According to the GSMA, the use of mobile technology can enable a global reduction in carbon emissions that is potentially up to ten times greater than the carbon footprint of the mobile industry itself.

The technology we provide helps to connect the unconnected, allowing access to information and potentially to financial and commercial services to underserved areas. 5G can enable new ways of doing business based on new use cases, some of which are yet to be discovered. Digitalization can transform public service delivery and help bring the benefits of innovation to a much broader audience. The ICT industry can play a major role in technology transfer and human capital development globally. One example is our long-term Smartpur project which digitalizes and connects villages in India to create smart hubs and villages and for which Nokia was recognized with a Bharti Foundation's Silver Award for Social Initiative (India) in 2022.

Economic impact

Stakeholder group	Impact (EUR million)	2020	2021	2022
Direct economic value generated				
Customers	Net sales	21 852	22 202	24 911
Economic value distributed				
Suppliers	Total purchases of goods and services	13 659	13 368	14 689
Shareholders	Dividends paid	148	9	353
Employees	Wages and benefits	7 310	7 541	7 903
Creditors	Net financial expenses	164	241	108
Public sector	Income taxes paid, net	280	314	381
Communities	Community investments	6	7	13

Numbers include continuing operations. For more information, please see our Annual report, Nokia in 2022.

Cooperation in standardization

We participate in the activities of standards developing organizations and industry groups for digitalization and sustainability, both access agnostic and those related to 5G and 6G. We collaborate with other companies and actively participate in many standardization forums to develop standards for topics such as energy efficient telecommunications networks, circular telecommunications products, responsible use of Artificial Intelligence, and in industry groups to develop standards for topics such as responsible supply chain management, science-based emission reduction targets, radio spectrum allocation and other regulatory aspects.

Our work in the International Telecommunications Union (ITU) includes actively contributing to the regional preparatory meetings of the Development Sector (ITU-D) as well as to the standardization work in the Radiocommunications Sector (ITU-R) and the Telecommunications Sector (ITU-T). We provide transparent direction, guidance, and assessment methods for the development and enforcement of the regulation related to topics such as sustainable development, spectrum management and cybersecurity.

Sustainability is the cornerstone for 6G system design. During 2022, we hosted the sustainable 6G system panel discussion in IEEE WCNC, the Virtual Brooklyn 6G Summit on sustainable 6G, and a sustainability presentation and panel at the actual Brooklyn 6G Summit.

See a list of forums where we collaborate in GRI 2-28.

Security and privacy

Security and privacy are a cornerstone of our product proposition. We work to ensure a common security baseline enforced for all products and services. We emphasize sustainable design and underscore the importance of end-to-end product security testing.

Security and privacy are part of everything we do. From design through delivery, we aim to ensure customer networks are seamlessly secure.

Our approach   Environment   Industrial digitalization   Bridging the digital divide   Responsible business   Our people   Corporate governance   Security and privacy   Key data

95

Highlights

Our commitment to **privacy** spans every facet of our decision making and product design

About

98%

of our employees completed the Information **Security Awareness training**

We opened the

ASTaR 5G

end-to-end testing lab,
having a singular focus on **cybersecurity**

Our **'Three lines of defense'**
risk model consists of business groups
and corporate functions forming the first
line of defense, central privacy experts as
the second line, and an independent audit
team as the third

In privacy matters, Nokia uses its
'Three lines of defense' risk model

Security

Product Security

In the 5G era, the nature and scale of information networks are evolving, as are the nature and scale of security threats. 5G will interconnect countless new devices, empower new industries, and enable many new applications and use cases. This means that more avenues of attack are available for cyber criminals to compromise critical infrastructure, including the telecommunications infrastructure. Threats and vulnerabilities do not only show up in the individual network components but can also be exploited in the overall solution.

Nokia has taken a new step in safeguarding 5G against such threats by creating the Advanced Security Testing and Research (ASTaR) lab. The ASTaR Lab is the first end-to-end testing lab in the USA focused solely on cybersecurity. The lab provides a concrete testimony to Nokia's commitment to making security a cornerstone of Nokia's technology strategy and a differentiator in the marketplace.

Nokia continuously develops and improves the processes and tools used in its product development and has made Design for Security (or DFSEC) an integral and fundamental part of it. Throughout 2022, product security and DFSEC requirements have been further enhanced to meet the latest industry standards.

Customer and Service Security

Nokia has elevated its customers' trust through the establishment of a security operations governance for services, and a security controls baseline, leading to ISO27001 certification for selected services demonstrating Nokia's capability to keep up with the ever-increasing legal and regulatory demands of the market.

Information Security

Nokia relies on enforced security policies and standards, security training and programs to ensure the protection of our most precious assets.

Nokia's cyber resilience refers to its ability to identify, respond, and recover swiftly from a security incident, ensuring Nokia and its customers can retain business continuity and recover to normality quickly in case of a security incident. We have a Nokia managed Cyber Defense Center covering the Nokia enterprise workloads in our data centers, public Cloud, R&D labs, as well as the Nokia Computer Emergency Response team to address critical security incidents.

Nokia developed and maintains an effective and actionable Cyber Resilience Plan, built on a solid assessment of the cyber risks the business is most likely to experience, leveraging the effectiveness of Nokia's emergency policies, plans and procedures.

Third-Party Security

Nokia's security ambition is also reflected in its supplier selection processes, contracts and supplier assessments ensuring effective security to be in place in our supply chain and with our third parties.

Governance

As a trusted partner in security for our customers, Nokia aims to meet key regulatory and customer requirements. Nokia's 2022 information security strategy, cyber risks and programs, which are periodically reported to the executive management level and Board of Directors, embed strong governance and compliance requirements.

1. We protect customer information as rigorously as we protect our own
2. We are transparent in our security practices
3. We embed security into all our products and services
4. We will inform customers promptly of any serious product or service issues that affect them
5. We independently validate our security practices

Our commitment to privacy spans every facet of our decision making and product design. We also ensure that privacy is interwoven into the core of our operations and processes, and we do everything to ensure that our customers, vendors, collaborators and employees can exercise their privacy rights.

Data privacy

With the growing complexities posed by today's technology and business environment, enabling strategic and consistent management of privacy helps to ensure we can make the most of the opportunities ahead. With new technologies coming online every day and everyone and everything being increasingly connected, getting privacy right remains a necessity.

Given the rapidly changing privacy regulatory landscape, we apply a comprehensive company-wide privacy program to ensure accountability for privacy at all levels of Nokia. We use a 'three lines of defense' risk model with business groups and corporate functions forming the first line of defense. A multi-skilled central team of privacy experts forms the second line, and the third line is an independent audit team to provide assurance with oversight by the Audit Committee.

We have also created a privacy steering committee with relevant senior executives representing business groups and central functions, who all have privacy responsibilities and accountability as part of their role for the organization they represent.

The privacy program builds privacy into our processes, products, and services. We have established core principles based on relevant laws and best practices to enable us to exercise the

highest standards of integrity in dealing with and protecting personal data. We assess new privacy laws to ensure that we implement the requirements into our program and related processes. In 2022, we enhanced our central solution for documentation and reporting to catalog how we use data and conduct privacy assessments that aim to mitigate privacy risk.

We are transparent about how we use personal data and how individuals can contact us with questions about their data that we hold in our systems or to share any concerns.

We observe the concept of data minimization, meaning we endeavor only to collect personal data that is necessary for the purposes for which it is collected and to retain such data for no longer than is necessary. We implement appropriate controls to ensure that only persons with a clear and justifiable need to know can access personal data. We have formal processes and procedures in place to manage and mitigate any related risk to data subjects in the event of a personal data breach. These processes also include mechanisms to communicate in a timely fashion with supervisory authorities, should that be required.

A continuous program of privacy awareness, training, and enablement ensures we effectively address areas of the highest privacy impact. This includes targeted

role-based training, and we also have a network of certified privacy professionals that regularly provide coaching on privacy topics.

In 2022, there were no substantiated complaints regarding breaches of customer data. For the latest information on our security and privacy visit our website.

Three lines of defence

Third line
Oversight and independent monitoring of first and second lines

Second line
Compliance experts that guide and advise the teams that make part of the first line

First line
Teams that carry out operations that may impact personal data

Board / Audit committee

Group Leadership Team
Chief Legal Officer Risk Owner

Privacy Steering Committee

Global Privacy Office
Chief Privacy Officer Group DPO

Data privacy implementation

Businesses / Functions

Countries / Regions

Key data and reporting principles

Data reporting principles

Scope and boundaries

The sustainability data presented in this report comprises Nokia Group, including Network Infrastructure, Mobile Networks, Cloud and Network Services, Nokia Technologies, and Group Common and Other. The report also contains limited information on our antenna systems business, Radio Frequency Systems (RFS). This report covers the calendar year 2022 and where available, trend data since year 2019. Information dating back to 2003 is available on our website.

Newly acquired companies will be included in the reporting scope when they have been legally consolidated and integrated into Nokia systems. Exceptions to the reporting scope for certain indicators are specified in the notes to the data tables. When adjustments have been made compared to earlier reports, they are also specified in the notes.

Assurance

Our selected indicators have been assured by an independent auditor of Nokia, Deloitte Oy. The indicator selection is done based on our materiality analysis, target setting and specific stakeholder needs. Please see more information on the Independent practitioner's assurance report on pages 115–116.

Environmental data

We have an internal document - the Environmental data handbook - where we record, for example, data boundaries, data collection methodologies, used tools, and emission factors. Below we explain key information from the Handbook. All environmental data is presented in rounded numbers. Year-on-year comparison for all environmental data is calculated with non-rounded values.

Resource utilization

Energy data covers stationary and mobile sources' combustion of fuels and consumption of electricity, heat, and cooling in facility operations, as well as combustion of fuels in the marine fleet. Water data covers withdrawal of water from municipal sources in facility operations and the share of recycled water, which is recycled both for sanitary purposes and for irrigation. Waste generation covers hazardous and non-hazardous waste generated in facility operations. In addition, we separately report packaging waste, which is reused in our distribution hubs operated by service providers, and the amount of equipment collected at end of life.

Energy, water, and waste consumption data is typically collected from facility-level responders, obtained from invoices or metered data. For facilities with no data availability, usage of 2022

data is estimated with data gap corrections or employing annual intensity factors based on kWh/m^2 (electricity and natural gas), m^3/m^2 (water) and kg/m^2 (waste), as calculated from the reporting sites, thereby accounting for 100% of Nokia facilities. In 2022, these estimation procedures accounted for 9% of electricity and 5% natural gas usage, 4% of operational facility waste generation, 15% of water withdrawal, when compared to total withdrawal, respectively. Subleased areas, covering 6% of the total site area in 2022, are not covered in the key data table. Water and waste estimations are done based on facility area (m^2).

Waste generated at our facilities is handled directly by vendors, by landlord vendors and local authorities. The level of accuracy varies, and we aim to report the most accurate data. Where specific weights are not available, to ensure maximum coverage we employ estimation and extrapolation methods. Utilized waste includes waste that has been either reused, recycled, or the energy from it has been utilized. Non-utilized waste has been either sent to a landfill or incinerated without energy recovery. The composting of biowaste is recorded under recycling. The definitions for what are reported under hazardous and non-hazardous waste have been made on a global level to keep corporate reporting simple. For example,

all discarded batteries and electric and electronical waste (WEEE) are reported globally under hazardous waste, although only different sub-categories of WEEE are defined hazardous in different countries. Hazardous waste also contains data from our Nokia product repair operations. The actual waste treatment is always done according to local legal requirements. Reported waste data is rounded to hundreds of metrics tons and for 2022 data tens of metrics tons for values below 100. By 2021 data below 100 is marked with <100 or <50. We ensure the total waste amount rounds correctly.

Our carbon footprint

Our approach to measuring greenhouse gas emissions follows the Greenhouse Gas (GHG) Protocol (www.ghgprotocol.org) developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). We use the following three standards:
- The Greenhouse Gas Protocol, A Corporate accounting and reporting standard
- GHG Protocol, Scope 2 guidance, An Amendment to the GHG Protocol corporate standard
- Corporate value chain (Scope 3), Accounting and reporting standard, Supplement to the GHG Protocol corporate accounting and reporting standard.

The GHG Protocol defines three scopes of CO_2e emissions:
- Scope 1 – direct emissions, from sources owned or controlled by the company
- Scope 2 – indirect emissions, from the consumption of purchased electricity, heat, and/or steam (location-based and market-based)
- Scope 3 – indirect emissions, as a consequence of the activities of the company, but from sources not owned or controlled by the company.

Greenhouse gases
We report the emissions as CO_2 equivalents (CO_2e) as per GHG Protocol's guidance. CO_2e is the universal unit of measurement to indicate the global warming potential (GWP) of the greenhouse gases in the Kyoto protocol, expressed in terms of the GWP of one unit of CO_2e.

Operational boundaries and emission calculation
We use the operational control approach for setting organizational boundaries for our GHG emissions inventory. We use emission factors available in the beginning of the reporting year for Scope 1, 2 and 3 calculations. We follow the GHG Protocol recommendation to use IPCC 5th Assessment Report (AR5) GWP100 values. These values do not include climate-carbon feedbacks. Some emission factor data sources still use GWP100 values from AR4 as a data source of their emission factors. The expectation is that all data sources will start to use AR5 values in the coming years. Where we use emission factors developed by the International Energy Agency, OECD/IEA, the emission calculations have been prepared by Nokia and do not necessarily reflect the views of the International Energy Agency.

Scope 1 emissions
Direct CO_2e emissions from Nokia facilities include GHG emissions resulting from the combustion of oil and gas within Nokia facilities, along with minor direct releases of GHGs associated with refrigerant leakage from facilities' cooling systems and firefighting equipment. Emissions are calculated by using emission factors published by United States Environmental Protection Agency (EPA).

Direct CO_2e emissions from our mobile fleet are tracked by obtaining information from country-specific leasing suppliers, which are consolidated into one system. Emissions calculation is based on actual driven mileage and official CO_2e emission value per km of each car make and model. Applicable emission factors are sourced from car manufacturers. As an exception, in the USA emissions are calculated based on driven mileages and actual fuel consumption. In the case that the distance travelled is not available from the leasing supplier, the budgeted annual mileage in the leasing contract is used for calculation. Direct CO_2e emissions from our marine fleet are calculated based on the fuel type and fuel usage of marine vessels. Our Alcatel Submarine Networks maintains a listing of all owned and leased marine fleet vessels with associated fuel consumption. Marine fleet emissions are calculated with EPA emission factors.

Scope 2 emissions
Indirect CO_2e emissions include emissions from purchased electricity, heating, and cooling. As per GHG Protocol definitions, the location-based accounting method quantifies Scope 2 GHG emissions based on average energy generation emission factors for defined locations, including local, subnational, or national boundaries. In our case, location-based emission factors are obtained from EPA eGrid for the USA and for all the other countries we use IEA Emission factors developed by the International Energy Agency, OECD/IEA.

The market-based accounting method quantifies Scope 2 GHG emissions based on the emissions emitted by the generators from which the reporter contractually purchases electricity bundled with instruments, or unbundled instruments on their own. In our case, applicable market-based residual emission factors are employed for sites located in Europe (obtained from the Association of Issuing Bodies (AIB)), the USA and Canada (obtained from Green-e). Those sites that purchase certified renewable electricity are assigned an emission factor of zero based on the quantity of green energy employed. If supplier-specific emission factors are not available, location-based emission factors are applied.

GHG emissions associated with purchased steam and heat are calculated employing the applicable EPA emission factor, which is based on the assumption that natural gas was used to fuel a boiler exhibiting an efficiency of 80%. GHG emissions associated with purchased chilled water and cooling are calculated employing the same country emissions factors as electricity, based on an assumed efficiency of 100%. Emissions avoided due to the purchase of renewable energy are verified

utilizing Guarantees of Origin (GOs) and Green Tariffs in Europe, as well as International Renewable Energy Certificates (I-REC) in China.

Scope 3 emissions
For relevant Scope 3 categories, the calculation methodology for estimating emissions is described. For non-relevant Scope 3 categories, an explanation is provided.
1. Purchased goods and services: emissions are reported based on data collected with CDP Climate Survey from Nokia's biggest suppliers, and directly from our final assembly suppliers, representing 63% of total purchase spend in 2022 (64% in 2021). We use a hybrid method, using emissions allocated for Nokia by the suppliers and also intensity based (GHG/€) allocation, where allocated emissions were not available, or allocation was not reliable based on different internal quality measures. Collected data is then aggregated to represent 100% of spend. In 2022 calculation we included only suppliers' Scope 1 and 2 emissions, not Scope 3 emissions. To avoid double counting, following data is excluded from this category: Scope 1 (emissions from car fleet and marine fleet) and Scope 3 category 4 and 9 (upstream and downstream transportation and distribution), and category 6 (business air travel). 2022 disclosure is based on the latest CDP data representing suppliers' year 2020 emissions. We recognize that this emission category includes a lot of uncertainty, as suppliers have variable quality in their own reporting and in allocating emissions to Nokia.

2. Capital goods: the relevance of emissions from this category to be included in the Scope 3 inventory is assessed each year, as capital goods purchases vary from year to year. The threshold for inclusion is 0.5% of total Scope 1, 2 and 3 emissions. Emissions from capital goods are based on financial data on property, plant, and equipment additions during the reporting year and estimated by using the GHG Protocol Scope 3 Evaluator tool.

3. Fuel and energy related activities not included in Scope 1 and 2: not presently being reported, because emissions are by calculation less than 0.1% of total Scope 3 emissions.

4. Upstream (category 4) and downstream (category 9) transportation and distribution: Data includes emissions from inbound and outbound logistics. Data is based on the top 19 (16 in 2021) logistics supply partners delivery data (ton-km) and transportation mode. Reporting is done in real weight, by using EPA's CO_2e emission factors or logistics supplier own factors. Upstream emissions include emissions from transportation paid by Nokia.

5. Waste generated in operations: not assessed annually because in our Scope 3 screening , these emissions were calculated to represent less than 0.1% of our total Scope 3 emissions.

6. Business travel: emissions are reported for business air travel, which has the biggest impact out of all business travel modes. Travel information is obtained from our assigned Travel Agencies. Supplied data includes distance traveled, delineated by flight distance ranges and cabin class. Data from travel agencies

is consolidated in a system which is used to calculate emissions from air travel. Emissions factors are obtained from EPA.

7. Employee commuting: We conducted an employee commuting survey in 2018. Survey results are a representative sample from several countries. Those results are extrapolated to represent commuting of all employees for 2018–2022 emissions. For 2020–2022, share of commuting methods was adjusted based on allowed occupancy at Nokia sites during global COVID-19 restrictions and additionally for 2022, flexible working method.

8. Upstream leased assets: not presently being assessed as leased vehicles and facilities are presently assessed in Scope 1 and 2 emissions.

9. Downstream transportation and distribution: See point 4 for category 4 & 9.

10. Processing of sold products: not considered relevant as Nokia does not make intermediate products that are then sold to other customers and processed into other products.

11. Use of sold products: The calculation formula is following: Σ [total lifetime expected uses of products (hours) x number of products sold in reporting period x product power consumption (kW) x emission factor for electricity (kg CO_2e/ kWh)]. Data covers hardware products from Nokia's Network business groups. Product use time varies between 6 and 15 years, depending on the products. Energy use calculations are based on product group specific standards, for example, by ETSI, wherever standards have been published. The objective is to have a product coverage above 80%; in 2022 coverage is 98%.

Calculations are based on assumption that all products are powered by grid electricity. Data is rounded to thousands until 2021 and hundreds from 2022. We use the IEA's latest world average CO_2e emission factor available in the beginning of the reporting year.

12. End-of-life treatment of sold products: not considered relevant. Based on our life cycle analysis, the use-phase accounts for 89–95% of global warming potential, production (supply chain and own operations) for 5–10%, logistics for 1–2% and end-of-life treatment less than 1%. Therefore, this category is not considered relevant for reporting in Scope 3 GHG inventory assessments.

13. Downstream leased assets: not presently being assessed because emissions are by calculation less than 0.1% of total Scope 3 emissions.

14. Franchises: not applicable, as Nokia does not have franchises.

15. Investments: not applicable, as category 15 is designed primarily for financial institutions and other entities with investments not included in Scope 1 and Scope 2. This is not applicable for Nokia in 2022. Environmental reporting follows the financial reporting practices of consolidation.

Reported emission data is rounded to hundred metric tons. We ensure the total Scope 1, 2 and 3 amounts are rounded correctly.

People data
Year-end headcount is as published in financial reporting. Some personal and transactional job related detail data is however not included in Nokia's

central Human Resources databases. In 2022, the number of employees whose individual detail data was not tracked centrally was 4 408 (5 685 in 2021, 5 071 in 2020, 5 375 in 2019, and 5 374 in 2018). We use external temporary labor (ETL) for certain non-core activities and/or subcontractors to meet customer needs or volume demands. Activities performed by ETL or subcontractors include for example consultants supporting different tasks in our business groups and support functions, facility service providers, security guards and IT support. Externals are not covered in any of Nokia employee data; they are included in the Responsible sourcing sub-chapter. At end of 2022, the number of external temporary workers used was in the region of 3 590 people (around 3 100 in 2021).

Hiring and attrition rates are calculated against the average at month-end permanent headcounts. Number of new employee hires includes "Hire, Rehire & Convert from Contractor/External transactions activity" and excludes merger and acquisition activity. Employees with permanent contracts include internal employees not having data indicating employee is on a fixed-term contract or a trainee. The definition of Line Manager is a manager with one or more subordinates. Nokia's executive management board is the Group Leadership team. Senior management is defined to have job grade 13+, and leadership has job grade 12+.

Training and education
Training provided for externals is not included in the employee-related numbers but reported separately. The average number of all training hours per

employee also includes training arranged by business groups or external parties, and training records approved by a Line Manager.

Occupational health and safety

The indicator name defines whether the data covers Nokia employees and or contractors and sub-contractors. The cut-off day of incident reporting is in early January. There can be some cases, especially from contractors, reported after the cut-off day.

Community investments

Community investments include contributions such as cash, value of time and value of in-kind. Cash has represented 92% of the total contributions in 2022 (98% in 2021, 98% in 2020 and 84% in 2019). The number of beneficiaries includes beneficiaries from corporate and key regional programs. We also track a part of local programs in addition to global and regional ones.

Ethics and compliance data

Data on reported concerns and investigations are obtained from the Business Integrity Group as recorded in the Case Management Tools and included to the best of the team's knowledge.

Management systems data

Reported information about our management systems coverage is status as of year-end. From 2021 the scope of the data is Nokia Group, and in 2018–2020 the scope was our Networks segment so 2018–2020 numbers are not entirely comparable to 2022 numbers. Multiple buildings on the same site are counted as one site, whereas buildings

classified as car parks, restaurants and warehouses are excluded from the calculation. In addition to large offices, a portion of our headcount is distributed at multiple locations such as small sales, project, and field offices in customer premises, and in many of these facilities we have very little to no control over the building or space.

Supply chain management data

Data on audits and supplier assessments are maintained by our Sustainable Supply Chain team. The EcoVadis platform is utilized in metrics related to EcoVadis assessments and the CDP platform related to climate change management. Conflict-free smelter information is reported through the Conflict Minerals Reporting Template (CMRT), consolidated to the Master Template and compared against Responsible Mineral Initiative's audit program lists.

Financial data

Financial indicators covered by this report are as published in the Group's Annual accounts for 2022 and included in Nokia's audited financial statements. Please see Auditor's Report from page 216 onwards in our Annual report, Nokia in 2022.
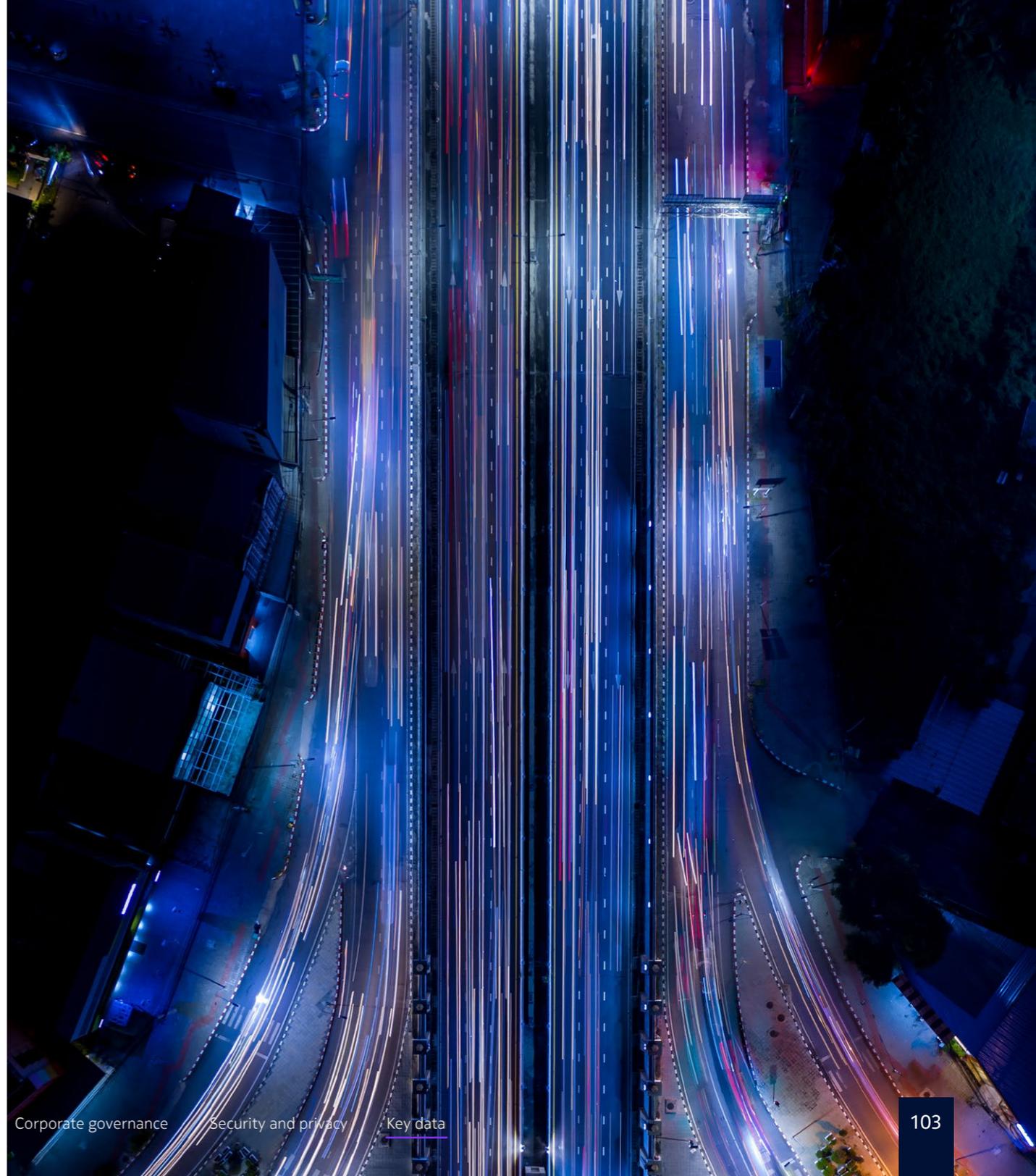
Environmental data

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Greenhouse Gas Emissions (metric tons CO₂e)							1, 2
Total GHG Scope 1 (Direct emissions from facilities and mobile sources)	125 000	116 300	124 300	124 000	0%	●	3
Emissions of GHGs from fuel combustion in facilities (stationary and mobile sources)	20 800	19 500	18 400	23 700	29%	●	
Emissions from Hydro-Fluoro-Carbon (HFC) refrigerants	300	600	400	600	74%	●	
Emissions from fuel combustion in car fleet	29 600	21 000	24 400	22 400	-8%	●	
Emissions from fuel combustion in marine fleet	74 300	75 200	81 100	77 300	-5%	●	
GHG Scope 2 (Indirect emissions from purchased electricity and heat), Market-based	327 200	263 600	224 500	135 300	-40%	●	3
Emissions from purchased electricity	311 300	245 900	207 900	122 100	-41%	●	
Emissions from purchased cooling	8 200	10 900	8 900	8 600	-4%	●	
Emissions from purchased heating	7 700	6 800	7 600	4 700	-39%	●	
GHG Scope 2 (Indirect emissions from purchased electricity and heat), Location-based	421 900	380 200	377 300	354 800	-6%	●	3
Emissions from purchased electricity	406 000	362 500	360 800	339 800	-6%	●	
Emissions from purchased cooling	8 200	10 900	8 900	8 600	-4%	●	
Emissions from purchased heating	7 700	6 800	7 600	6 400	-15%	●	
Total Scope 1 and 2 GHG emissions, Market-based	452 200	379 900	348 700	259 400	-26%	●	3
Total Scope 1 and 2 GHG emissions, Location-based	546 900	496 500	501 600	478 800	-5 %	●	3
GHG Scope 3, Indirect emissions	39 276 200	35 595 100	40 634 700	39 454 200	-3%		
Emissions from purchased goods and services	3 063 000	2 487 400	1 571 600	683 700	-56%	●	4
Emissions from upstream and downstream transportation and distribution	303 600	255 200	326 100	329 800	1%	●	4
Emissions from capital goods	417 000	380 200	455 200	444 800	-2%		
Emissions from business air travel	71 700	13 300	5 600	26 700	372%		
Emissions from employee commuting	110 900	39 000	17 200	50 100	190%		6

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Emissions from use of sold products	35 310 000	32 420 000	38 259 000	37 919 200	-1%	🟢	4
Total Scope 1, 2 and 3 GHG emissions, Market-based	**39 728 400**	**35 975 000**	**40 983 500**	**39 713 600**	**-3%**		3
Total Scope 1, 2 and 3 GHG emissions, Location-based	**39 823 100**	**36 091 600**	**41 136 300**	**39 933 000**	**-3%**		3
GHG intensities and miscellaneous GHG information							
Total Scope 1 and 2 GHG emissions per net sales (metric tons CO₂e/€ million), Market-based	19	17	16	10	-34%		
Car fleet (gCO₂e/vehicle-km)	129	114	92	94	3%		
Emissions avoided due to purchased renewable electricity (metric tons CO₂e)	145 900	169 500	192 100	262 600	37%		7
Biologically sequestered carbon (metric tons CO₂e)	-	-	-	0	0%		5
Other air emissions (metric tons)							
Ozone Depleting Substances (ODS), as ODP	<0.01	<0.01	0.45	0.24	-48%		
Criteria air pollutants	36.1	31.1	31.4	31.0	-2%		
Volatile Organic Compounds (VOC) emissions	1.0	0.9	0.9	0.8	-5%		8
NOx	18.1	15.5	15.8	15.4	-2%		
SOx	0.8	<0.5	<0.5	0.9	119%		
Total Particulate Matter (PM) emissions	1.4	1.2	1.2	1.2	0%		
Other criteria air contaminants	14.8	13.0	13.1	12.6	-4%		
CO₂e portion of the biofuel combustion related to district heating	Not applicable	Not applicable	Not applicable	3 200	N/A		15
Energy consumption							
Energy consumption in Nokia facilities (GWh) (1 GWh = 3 600 GK)							
Electricity, total	961	893	892	897	1%	🟢	16
Heating, total	34	30	34	28	-15%	🟢	
Cooling, total	27	34	34	39	17%	🟢	
Fossil gas, total	111	101	99	127	28%	🟢	

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Fossil oil, total	2	1	1	3	129%	●	
Biofuel, total	0	0	0	0	0%	●	
Facilities' energy, total (GWh)	**1 135**	**1 059**	**1 059**	**1 094**	**3%**	●	
Direct energy	113	102	101	130	29%	●	
Indirect energy	1 021	957	958	964	1%	●	
Renewable energy	302	351	470	581	24%	●	7
Renewable electricity	302	351	470	573	22%	●	7
Renewable electricity share of total electricity (%)	31%	39%	53%	63%	10	●	17
Total energy per net sales (MWh/€ million)	49	48	48	44	-8%		
Energy consumption in Nokia fleet (GWh)							9
Marine fleet (Fossil oil use)	285	289	314	299	-5%		
Energy consumption outside of Nokia (GWh)							
Energy consumption of the sold products	**71 790**	**66 500**	**79 560**	**79 500**	**0%**	●	4
Water consumption							
Total water withdrawal (thousands m³)	**1 737**	**1 285**	**1 020**	**885**	**-13%**	●	10, 14
Total water withdrawal per employee (m³)	18	14	12	10	-14%		11
Water withdrawal by source (%)							
Municipal water supply	100%	100%	100%	100%	0		
Recycled/reused water (thousands m³)	**17**	**14**	**18**	**22**	**23%**		
Recycling/reuse % of total withdrawal	**1.0%**	**1.1%**	**1.8%**	**2.5%**	**73%**		
Total water use (thousands m³)	**1 753**	**1 299**	**1 038**	**907**	**-13%**		14
Circular economy							
Waste within Nokia operations (metric tons)							12
Total waste	**8 000**	**7 900**	**8 400**	**17 200**	**103%**	●	
Reuse	<50	<100	<100	200	172%	●	

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Recycle	3 400	5 300	6 300	12 500	98%	🟢	
Energy recovery	500	1 000	400	1 100	149%	🟢	
Landfill	4 100	1 500	1 700	3 500	109%	🟢	
Incineration without energy recovery	0	0	0	0	0%	🟢	
Total non-hazardous waste	**7 500**	**7 200**	**7 900**	**13 500**	**71%**	🟢	
Reuse	0	0	<50	100	305%	🟢	
Recycle	3 000	4 900	5 800	9 800	68%	🟢	
Energy recovery	500	900	400	800	88%	🟢	
Landfill	4 000	1 400	1 600	2 800	74%	🟢	
Incineration without energy recovery	0	0	0	0	0%	🟢	
Total hazardous waste	**500**	**700**	**600**	**3 700**	**538%**	🟢	
Reuse	<50	<100	<50	40	37%	🟢	
Recycle	400	400	500	2 700	474%	🟢	
Energy recovery	<50	<100	<50	300	958%	🟢	
Landfill	<50	100	100	700	1 084%	🟢	
Incineration without energy recovery	0	0	0	0	0%	🟢	
Hazardous waste by types							
Electronic waste from facilities	400	400	400	3 400	684%	🟢	
Other hazardous waste	<100	200	<50	200	1 100%	🟢	
Utilization rate %	**49%**	**81%**	**80%**	**80%**	**–1**	🟢	
Equipment returned from customers (number, metric tons)							4
Reuse (no. of items)	56 300	79 400	55 400	88 900	60%	🟢	13
Reuse (metric tons)	Not reported	570	350	350	–1%	🟢	13
Recycle (metric tons)	4 000	4 700	3 270	2 900	–11%	🟢	13

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Energy recovery (metric tons)	330	550	240	60	-75%	🟢	13
Landfill (metric tons)	30	50	120	90	-23%	🟢	13
Incineration without energy recovery	Not reported	Not reported	Not reported	0	N/A	🟢	
Product packaging in hubs (metric tons)							
Reuse	3 200	1 600	2 600	2 500	-1%		4

Notes

"-" means there is no data available for that particular year or scope.

1. Year on year change is expressed as percentage change (%) when the indicator value is in general number format. When the indicator value is in percentage format, the change is expressed as percentage points (pp).
2. Includes CO_2e from all GHGs (CO_2, CH_4 and N_2O).
3. Nokia uses internally market-based (not located-based) values for example in target setting and if only one value is given without further definitions, it's the market-based.
4. Data covers Nokia's business groups.
5. Biologically sequestered carbon (i.e. carbon dioxide emission from burning biomass/biofuels) and emissions from fermentation are not relevant for Nokia as we do not burn or fermentate biomass or biofuels on-site.
6. Based on total headcount reported in financial reporting.
7. Renewable electricity calculations that are associated to green attributes, e.g. Guarantees of Origin (GO), Renewable Energy Certificates (REC), power purchase agreements (PPAs)
8. VOC source is from fuel combustion. No significant quantities from solvents and halogenated hydrocarbon, so these emissions are not relevant and not consolidated.
9. Energy consumption is presented only for marine fleet, as energy consumption data from Nokia's vehicle fleet is not available.
10. No significant quantities of heavy metals discharges into water, indicator not relevant and not consolidated.

11. Year 2018: Based on average headcount calculated from monthly site-specific headcount statistics from facilities database. This calculation procedure results in a different total headcount than the total headcount as of December 31 (disclosed in the Social indicators section of the report). Years 2019-2021: based on total headcount reported in financial reporting.
12. Waste within Nokia operations contains waste from Nokia facilities (e.g. offices, laboratories, factories) and Nokia product repair operations.
13. 2022 data is not comparable to previous years as 2019–2021 data contains also packaging materials.
14. Data for 2021 corrected for 2022 report due to calculation error with estimated water use.
15. Calculated based on method as adviced in GHG Protocol Scope 2 Guidance.
16. Year 2022: To avoid double counting of energy consumption within an organisation as outlined in GRI standard 302-1, Total Electricity consumption includes purchased electricity and self generated solar electricity however excludes 17GWh of electricity produced by fuel cells as this is reported under Fossil Gas consumption (32GWh).

17. Year 2022: In accordance with RE100 and CDP Technical criteria, to calculate the Renewable Electricity share of Total Electricity (%), total electricity consumption includes all purchased electricity and self-generated solar electricity (897GWh) and electricity produced by gas fuel cells (17GWh), see also note 17. Using electricity data as shown in the table to calculate this proportion would result in a higher percentage (64%), however Nokia have decided to follow the RE100 methodology.

People data

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Employment							
Number of employees, year-end situation	94 723	89 978	86 370	87 005	+1%		
Share of employees with full-time contract	99%	99%	99%	98%	-1 pp		
Share of employees with permanent contracts	97%	97%	97%	97%	0 pp		
Number of new employee hires	4 493	4 961	6 443	8 856	+37%		
Rate of new employee hires, %	5%	6%	8 %	11%	+3 pp		
Female share of new hires	24%	25%	25 %	27%	+2 pp	🟢	2
Total number of leavers	11 318	9 572	9 008	8 035	-11%		
Total attrition rate	13%	12%	11%	10%	-1 pp		
Attrition rate of voluntary leavers	6%	5 %	7%	6%	-1 pp		
Average length of service (in years)	11	11	12	11	-2%		
Number of long-term expatriates worldwide	180	137	97	89	-8%		
Diversity & Equal Opportunity							
Share of women within workforce	22%	22%	22%	23%	+1 pp		
Share of female line managers	16%	16%	16%	17%	+1 pp		
Share of women within senior management	13%	14%	14%	15%	+1 pp		
Share of women within leadership	15%	15%	16%	17%	+1 pp		
Share of women on the executive management board	22%	24%	27%	30%	+3 pp		
Share of women in the Board of Directors	40% (4 of 10)	44% (4 of 9)	38% (3 of 8)	40% (4 of 10)	-2 pp		
Number of nationalities in the executive management board	10 (of 18)	9 (of 17)	7 (of 11)	6 (of 10)			
Share of non-Finnish in the executive management board	83%	76%	64%	60%	-4 pp		
Average age of employees at year-end	41	41	42	42	0%		
Number of nationalities within workforce	166	164	163	163	0%		1

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Training & Education							
Average number of all training hours per employee	34	33	30	29	-3%		
Number of attendees in corporate leadership programs	3 191	1 129	647	2 006	+210%		
Occupational health & safety							
Near miss incidents reported (including contractors)	362	237	211	255	+21%		
Lost-time incidents of employees	14	11	20	21	+5%		
Work-related fatal incidents involving employees	1	0	0	0	–	🟢	
Work-related fatal incidents involving contractors or subcontractors	6	2	4	8	+100%	🟢	
Community investments							
Total value of contributions (EUR million)	2.26	6.50	6.99	13.44	+92%		
Number of direct beneficiaries	206 900	2 183 300	862 900	614 149	-29%		

Notes

1. Nationalities data cover 89% of the headcount in 2022.
2. Calculation includes trainees that are converted to permanent employees as of 2022.

Information on Nokia employees by gender, 2022

Headcount	Female	Male	*Blank	Total
Number of employees	19 087	63 459	4 459	87 005
Number of permanent employees [1]	18 246	61 752	44	80 042
Number of temporary employees [1]	841	1 707	7	2 555
Number of full-time employees [1]	18 570	62 649	46	81 265
Number of part-time employees [1]	516	809	5	1 330

Information on Nokia employees by region, 2022

Headcount	Asia-Pacific (w/o India)	China	Europe (w/o Finland)	Finland	LAT	MEA	NAM	Grand Total
Number of employees	21 793	11 146	30 683	6 939	2 918	3 167	10 359	87 005
Number of permanent employees [1]	21 157	10 787	25 918	6 670	2 852	3 115	9 543	80 042
Number of temporary employees [1]	579	118	1 384	269	66	46	93	2 555
Number of full-time employees [1]	21 729	10 905	26 364	6 643	2 906	3 161	9 557	81 265
Number of part-time employees [1]	7		936	296	12		79	1 330

[1] Data cover 95% of the headcount in 2022.

Ethics & compliance data

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Total number of critical concerns reported	**994**	**776**	**853**	**1033**	**+21%**	🟢	
Conflict of Interest	69	37	33	59	+79%		
Controllership	88	90	87	70	-20%		
Dealing with Government Officials	1	8	1	3	+200%		
Fair Competition	2	9	6	5	-17%		
Fair Employment (all HR related)	416	290	333	540	+62%		
Guidance	164	113	123	118	-4%		
Human Rights	1	1	5	1	-80%		
Improper Payments	11	9	16	5	-69%		
Insider trading	-	3	1	1	0%		
Intellectual Property & Confidential Information	54	51	50	48	-4%		
Privacy	7	6	14	16	+14%		
Trade Compliance	5	5	7	4	-43%		
Wellbeing, Health, Safety and Environment	27	29	46	19	-59%		
Working with Suppliers	64	67	52	79	+52%		
Other	85	58	79	65	-18%		
Number of investigations closed by the Business Integrity Group	289	329	361	360	0%	🟢	
Number of allegations substantiated with 'cause found' after investigation	106	106	72	131	+82%	🟢	
Number of employees given a written warning on grounds of violation of Code of Conduct	30	20	15	23	+53%		
Number of employees dismissed on grounds of a violation of the Code of Conduct	32	16	13	20	+54%		
Share of employees completing Ethical Business Training	97%	96%	97%	98%	+1 pp	🟢	

Supply chain management data

	2019	2020	2021	2022	Year-on-year change % 2021–2022	2022 data assured	Notes
Supplier audits and assessments							
Number of Corporate responsibility (CR) on-site audits (focused on labor conditions and environment) against Nokia Supplier Requirements and SA8000	45	24	64	67	+5%	●	1
Closure percentage of non-conformities identified at CR-audits, within audit closure target time	52%	67%	67%	78%	+11 pp	●	
Number of on-site system audits against Nokia Supplier Requirements	46	27	36	33	-8%	●	
Number of suppliers assessed on corporate responsibility in EcoVadis Sustainable Supply Management platform	241	340	339	379	12%		
Share of active suppliers rated "satisfactory" or above on their assessment of sustainability by EcoVadis	74%	72%	75%	76%	+1 pp		
Share of relevant suppliers delivering high-risk activity covered by our H&S Maturity Assessment	**97%**	**97%**	**99%**	**99%**	0 pp	●	
Share of suppliers assessed by our H&S Maturity Assessment process meeting 'H&S compliant supplier' status	**99%**	**99%**	**98%**	**98%**	0 pp	●	
Number of suppliers assessed on their climate change impact based on their CDP reporting for Nokia	404	430	441	481	+9%		
Number of suppliers that set GHG emission reduction targets in CDP	234	262	296	278	-6%		
Materials traceability							
Share of suppliers that have achieved full visibility to the smelters in our supply chain	96%	98%	99%	99%	0 pp		
Share of suppliers that have achieved conflict free status, %	89%	95%	97%	98%	+1 pp	●	

Notes

1. 2022 number includes five CR audits that relate to 2021, which have been reported to the company during 2022.

Managements systems data

	2019	2020	2021	2022	Year-on-year change % 2021–2022	Notes
ISO 14001 certified environmental management system, % of sites covered	56%	53%	53%	54%	+1 pp	1
ISO 45001 certified occupational health and safety management system, % of sites covered	54%	52%	52%	53%	+1 pp	1, 2
ISO 9001 certified quality management system, % of sites covered	63%	60%	59%	62%	+3 pp	1
ISO 14001 certified environmental management system, % of employees covered	85%	90%	88%	86%	-2 pp	1
ISO 45001 certified occupational health and safety management system, % of employees covered	79%	85%	84%	84%	0 pp	1, 2
ISO 9001 certified quality management system, % of employees covered	93%	94%	92%	89%	-3 pp	1

Notes

1. In 2019–2020, the scope of the reported information was our Networks segment. From 2021, the scope of information covered is Nokia Group.
2. We transitioned from OHSAS 18001 to ISO 45001 certifications during 2020. The coverage reported for 2019 is our OHSAS 18001 certification coverage.

Financial data

	2019	2020	2021	2022	Year-on-year change % 2021–2022	Notes
Net sales, EUR million	23 315	21 852	22 202	24 911	+12%	1, 2
Operating profit (loss), EUR million	485	885	2 158	2 318	+7%	1, 2
R&D expenses, EUR million	4 532	4 087	4 214	4 550	+8%	1, 2

Notes

1. Numbers include Nokia Group continuing operations.
2. Financial indicators are included in the audited financial statements. Please see Auditor's Report from page 216 onwards in the Annual report, Nokia in 2022.

Our approach   Environment   Industrial digitalization   Bridging the digital divide   Responsible business   Our people   Corporate governance   Security and privacy   **Key data**

114

Independent practitioner's assurance report

To the Management of Nokia Corporation

We have been engaged by the management of Nokia Corporation (business identity code 0112038-9, hereinafter also "the Company" or "Nokia") to provide a limited assurance on the selected sustainability disclosures in the Nokia's People & Planet Report 2022 for the reporting period of January 1, 2022 to December 31, 2022. The assured information is indicated in the Key data and reporting principles section, pages 104-113, of the Nokia People & Planet Report 2022 (hereinafter "Selected sustainability information").

Selected sustainability information

The scope of our work was limited to assurance over the information summarized below. The information covers Nokia Group (continuing operations), as indicated in the People & Planet Report 2022. We have not been engaged to provide assurance on any information relating to prior reporting periods or any other information in the People & Planet Report 2022.

Environmental indicators
1. Progress against Science-based target (SBT)
2. Scope 1 greenhouse gas (GHG) emissions, by sources (metric tons CO_2e)
3. Scope 2 GHG emissions, market based and location based (metric tons CO_2e)
4. Energy consumption within Nokia, by types of energy (GWh) and change to 2021 (%)
5. Renewable electricity amount (GWh) and portion of total electricity consumption (%)

6. Water withdrawal in facilities (m^3) and change to 2021 (%)
7. Scope 3 emissions from purchased goods and services
8. Scope 3 emissions from upstream and downstream transportation and distribution
9. Scope 3 GHG emissions: use of sold products (metric tons CO_2e)
10. Waste amounts by treatment type (metric tons) and utilization rate (%), within Nokia
11. Voluntary product takeback from customers: Weight by treatment type (metric tons) and number of returned equipment reused/refurbished
12. Energy savings achieved in 2022 due to network modernization (%)

Social indicators
1. Share of employees who have completed the annual training on ethical business practices (%)
2. Number of critical concerns reported, number of investigations closed by the Business Integrity Group, and number of allegations substantiated with 'cause found' after investigation
3. Share of all high-risk projects with implementation assessment completed and share of those projects meeting our minimum non-negotiable requirements (%)
4. Number of work-related employee fatalities and critical incidents and number of work-related contractor and subcontractor fatalities and critical incidents

5. Share of cases coming to Human Rights Due Diligence (HRDD) process with "go", "no go" and "go with conditions" (%)
6. Share of women in global external recruits (%)

Supplier indicators
1. Share of suppliers delivering high-risk activity assessed by using H&S Maturity Assessment Process and share of assessed suppliers meeting "H&S compliant supplier" - status (%)
2. Number of system audits against Nokia Supplier Requirements
3. Number of corporate responsibility on-site audits (focused on labor conditions and environment) against Nokia Supplier Requirements and SA8000 and closure percentage of non-conformities (%)
4. Number of forced labor non-compliance instances from supplier audits 2022
5. Share of suppliers that have achieved conflict free status (%)
6. Aggregated weighted share (%) of suppliers that have achieved satisfactory scores in sustainability assessment programs of the supplier performance evaluation

Management's responsibility

The Management of the Company is responsible for the preparation of the Selected sustainability information in accordance with the Reporting criteria as set out in the Company's own documented standards and GHG Protocol

(hereinafter also "the Reporting criteria"). This responsibility includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of the Selected sustainability information that are free from material misstatement, whether due to fraud or error, selecting and applying appropriate criteria and making estimates that are reasonable in the circumstances.

Assurance provider's responsibility

Our responsibility is to express a limited assurance conclusion on the Selected sustainability information based on our engagement. We conducted our assurance engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised).

ISAE 3000 standard requires that we comply with ethical requirements and plan and perform the assurance engagement to obtain limited assurance whether any matters come to our attention that cause us to believe that the Selected sustainability information has not been prepared, in all material respects, in accordance with the Reporting criteria.

We did not perform any assurance procedures on the prospective information, such as targets, expectations and ambitions, disclosed in the Selected sustainability information. Consequently, we draw no conclusion on the prospective information. Our assurance report is made in accordance with

the terms of our engagement with Nokia. We do not accept or assume responsibility to anyone other than Nokia for our work, for this assurance report, or for the conclusions we have reached.

A limited assurance engagement with respect to responsibility related data involves performing procedures to obtain evidence about the Selected sustainability information. The procedures performed depend on the practitioner's judgment, but their nature is different from, and their extent is less than, a reasonable assurance engagement. They do not include detailed testing of source data or the operating effectiveness of processes and internal controls, and consequently they do not enable us to obtain the assurance necessary to become aware of all significant matters that might be identified in a reasonable assurance engagement.

Our procedures on this engagement included:
- Interviewing senior management of the Company;
- Conducting interviews with employees responsible for the collection and reporting of the Selected sustainability information and reviewing of the processes and systems for data gathering, including the aggregation of the data for the Selected sustainability information;
- Reviewing internal and external documentation to verify to what extent these documents and data support the information included in the

Selected sustainability information and evaluating whether the information presented in the Selected sustainability information is in line with our overall knowledge of corporate sustainability at Nokia;
- Performing analytical review procedures and testing data on a sample basis to assess the reasonability of the presented Selected sustainability information;
- Conducting an interview with relevant employees located at Nokia's sites in Finland and US through a video conference;
- Assessing that the Selected sustainability information has been prepared in accordance with the Reporting criteria.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Our independence, quality control, and competences
We have complied with Deloitte's independence policies which address and, in certain cases, exceed the requirements of the Code of Ethics for professional accountants issued by the International Ethics Standards Board for Accountants. We have maintained our independence and objectivity throughout the year, and there were no events or prohibited services provided which could impair our independence and objectivity.

Deloitte Oy applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. This engagement was conducted by a multidisciplinary team including assurance and sustainability expertise with professional qualifications. Our team is experienced in providing sustainability reporting assurance.

Conclusion
Based on the procedures we have performed, nothing has come to our attention that causes us to believe that Nokia's Selected sustainability information for the reporting period ended December 31, 2022 is not properly prepared, in all material respects, in accordance with the Reporting criteria.

Our assurance statement should be read in conjunction with the inherent limitations of accuracy and completeness for sustainability information.

Espoo, 22 March, 2023

Deloitte Oy

Marika Nevalainen
Authorized Public Accountant

Johan Groop
Authorized Public Accountant

# Our Key ESG frameworks – GRI, SASB and UN SDGs

In our reporting, we take into account various sustainability reporting frameworks and are committed to expanding our transparency and our coverage.

We have prepared our 2022 People & Planet report in accordance with the GRI Standards.

Statement of use: Nokia Corporation has reported in accordance with the GRI Standards for the period 1.01.2022–31.12.2022. GRI 1: Foundation 2022 used, while no applicable GRI Sector Standards.

We have also evaluated how our business supports reaching the United Nations Sustainable Development Goals (SDGs) and mapped them with the GRI standards. This relation is shown in the GRI index on the following pages.

We have also utilized SASB Standards to report on industry-specific sustainability topics (see SASB index on page 133). Nokia's primary SASB industry is considered to be Hardware but we have also included selected metrics from the Telecommunication Services standard to better align with our business.

Some discolures are covered only partly as not all information required within GRI and SASB disclosures is either relevant for our business and stakeholders or feasible to collect. For more information on our reporting principles, please see Data reporting principles on pages 100–103.

GRI content index

GRI standard and disclosure		Response	Additional information	Related SDGs
GRI 2: General Disclosures 2022				
The organization and its reporting practices				
2-1	Organizational details	a. Nokia Corporation b. Nokia Corporation, a public limited liability company incorporated and domiciled in Helsinki, Finland, is the parent company (Parent Company or Parent) for all its subsidiaries (Nokia or the Group). The Group is listed on the Nasdaq Helsinki Stock Exchange, the New York Stock Exchange and the Euronext Paris Stock Exchange c. Espoo, Finland d. People & Planet 2022: Nokia today pp. 5–6		5, 8
2-2	Entities included in the organization's sustainability reporting	Nokia in 2022: Notes to the consolidated financial statements: Note 2. Significant accounting policies (Principles of consolidation) p. 139; Note 29. Principal Group companies p. 182		5, 8, 10
2-3	Reporting period, frequency and contact point	a. January 1–December 31, 2022; Annual b. For the fiscal year ended 31 December 2022 c. March 21, 2023 d. sustainability.global@nokia.com		
2-4	Restatements of information	People & Planet 2022: Key data and reporting principles p. 100	In 2022, no significant restatements of information made from previous reporting period.	
2-5	External assurance	People & Planet 2022: Independent practitioner's assurance report p. 115		
Activities and workers				
2-6	Activities, value chain, and other business relationships	a. People & Planet 2022: Nokia today pp. 5–6 b. People & Planet 2022: Responsible sourcing pp. 68–75 c. We create technology that helps the world act together. As a trusted partner for critical networks, we are committed to innovation and technology leadership across mobile, fixed and cloud networks. We create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs. Adhering to the highest standards of integrity and security, we help build the capabilities needed for a more productive, sustainable and inclusive world. For more information, see Nokia in 2022: Business groups pp. 26–37 d. Nokia in 2022: Significant subsequent events p. 125		
2-7	Employees	People & Planet 2022: Nokia today pp. 5–6; People data p. 102	Due to legal restrictions at several locations Nokia does not monitor/ track any other gender besides male and female in Nokia global employee database.	

GRI standard and disclosure		Response	Additional information	Related SDGs
2-8	Workers who are not employees	People & Planet 2022: Data reporting principles p. 100–103; People data p. 102 "Apprentices & Interns" are in Nokia's HRI (P24) and Nokia internal headcount reporting as employees under "Trainees". Nokia tracks limited information on individual workers engaged as "External Temporary Labor" (ETL's) through procurement process via individual contract.	Other workers that are engaged/procured via "service contract" (generally referred to as sub-contractors or agency workers) are not individually tracked or reported. Nokia contracts for a service regardless of number of individuals provided by the sub-contracted, external supplier company to support the contracted service.	
Governance				
2-9	Governance structure and composition	People & Planet 2022: Managing sustainability pp. 90–91 Nokia in 2022: Corporate governance statement pp. 42–60 nokia.com: Governance and materiality		
2-10	Nomination and selection of the highest governance body	Nokia in 2022: Corporate governance statement pp. 42–60		
2-11	Chair of the highest governance body	Nokia in 2022: Corporate governance statement pp. 42–60		
2-12	Role of the highest governance body in overseeing the management of impacts	People & Planet 2022: Managing sustainability pp. 90–91; Compliance as a business enabler pp.61–62; Engaging with our stakeholders pp. 19–21; Our approach pp. 7–21 Nokia in 2022: Corporate governance statement pp. 42–60 nokia.com: Enagaging with stakeholders; Governance and materiality		
2-13	Delegation of responsibility for managing impacts	People & Planet 2022: Managing sustainability pp. 90–91 Nokia in 2022: Corporate governance statement pp. 42–60 nokia.com: Governance and materiality		
2-14	Role of the highest governance body in sustainability reporting	People & Planet 2022: Managing sustainability pp. 90–91 nokia.com: Governance and materiality		
2-15	Conflicts of interest	People & Planet 2022: Ethics and compliance pp. 58–60	Conflict of interest related to: cross-board membership; cross-shareholding with suppliers and other stakeholders	
2-16	Communication of critical concerns	People & Planet 2022: Managing sustainability pp. 90–91; Reporting of critical concerns without fear of retaliation p. 59 nokia.com: Governance and materiality		

GRI standard and disclosure		Response	Additional information	Related SDGs
2-17	Collective knowledge of the highest governance body	People & Planet 2022: Managing sustainability pp. 90–91 Nokia in 2022: Corporate governance statement pp. 42–60 nokia.com: Governance and materiality		
2-18	Evaluation of the performance of the highest governance body	Nokia in 2022: Corporate governance statement pp. 42–60		
2-19	Remuneration policies	Nokia in 2022: Compensation p. 61		
2-20	Process to determine remuneration	Nokia in 2022: Compensation p. 61		
2-21	Annual total compensation ratio	Nokia in 2022: Compensation p. 61		
Strategy, policies and practices				
2-22	Statement on sustainable development strategy	People & Planet 2022: Letter from the President and CEO p. 3		
2-23	Policy commitments	a. Nokia is committed to the UN Global Compact's ten principles, including principle 7 on supporting a precautionary approach to environmental challenges. Nokia follows the precautionary principle, especially in areas involving environmental risks. b. People & Planet 2022: Ethics and compliance pp. 58–63; Our culture p. 79 nokia.com: Code of Conduct		
2-24	Embedding policy commitments	People & Planet 2022: Code of conduct, p. 58; Anti-Corruption Center of Excellence and Third-Party Program p. 63; Fair workplace and our policies p. 82		
2-25	Processes to remediate negative impacts	People & Planet 2022: Compliance as a business enabler pp. 61–62; Reporting of critical concerns without fear of retaliation p. 59 nokia.com: Code of Conduct		
2-26	Mechanisms for seeking advice and raising concerns	People & Planet 2022: Ethics and compliance pp. 58–63; Reporting of critical concerns without fear of retaliation p. 59 nokia.com: Code of Conduct		
2-27	Compliance with laws and regulations	People & Planet 2022: Reporting of critical concerns without fear of retaliation p. 59	There were no significant instances of non-compliance with laws and regulations or no fines were paid during the reporting period (January 1st–December 31st, 2022).	

GRI standard and disclosure		Response	Additional information	Related SDGs
2-28	Membership associations	Where the name of the association is bolded Nokia has cooperation specifically related to sustainability.		
		Main industry cooperation: The World Economic Forum (WEF), **Groupe Speciale Mobile Association (GSMA)**, Global Mobile Suppliers Association (GSA), DIGITALEUROPE, European Telecommunications Network Operators' Association (ETNO), European Round Table of Industrialists (ERT), Technology Industries of Finland, Cellular Telecom Industry Association (CTIA), Telecommunications Industry Association (TIA), **EU Code of Conduct on Energy Consumption of Broadband Equipment**, French Alliance of Digital Industries (AFNUM), Bitkom, International Institute of Communications (IIC), U.S. Chamber of Commerce, Competitive Carriers Association, Schools Libraries & Broadband Coalition, Australian Mobile Telecommunications Association, **Responsible Business Alliance, International Electronics Manufacturing Initiative (iNEMI), Energy Star**.		
		Main standardization and technology cooperation: **3rd Generation Partnership Project (3GPP), European Telecommunications Standards Institute (ETSI), International Telecommunication Union (ITU)**, Internet Engineering Task Force (IETF), 5G Infrastructure Public Private Partnership (5G PPP), Linux Foundation, 5G Automotive Association (5GAA), 5G Alliance for Connected Industries and Automation (5G-ACIA), Broadband Forum (BBF), NextG Alliance, Communications Alliance, Alliance for Telecommunications Industry Solutions (ATIS), China Communications Standards Association (CCSA), Institute of Electrical and Electronics Engineers (IEEE), Open RAN **Alliance (O-RAN), International Organization for Standardization (ISO), European Committee for Standardization and Electrotechnical Standardization (CEN/CENELEC), Telecommunications Standards Development Society in India (TSDSI)**.		
		Main memberships related specifically to sustainability: United Nations Broadband Commission for Sustainable Development, EQUALS, the United Nations Global Compact, Global Network Initiative, Finnish Business and Society FiBS, UN Global Compact Finland, Public-Private Alliance for Responsible Minerals Trade (PPA), CDP Supply Chain, EcoVadis, @talentEgal (France), Responsible Business Alliance and Responsible Minerals Initiative, European Green Digital Coalition, Digital Declaration of GSMA, and the World Economic Forum: EDISON Alliance, Partnering Against Corruption Initiative (PACI), First Movers Coalition.		

GRI standard and disclosure		Response	Additional information	Related SDGs
Stakeholder engagement				
2-29	Approach to stakeholder engagement	People & Planet 2022: Engaging with our stakeholders pp. 19–21; Responsible sourcing pp. 68–75; Our culture p. 79 nokia.com: Engaging with stakeholders		
2-30	Collective bargaining agreements	People & Planet 2022: Fair work place and our policies p. 82 nokia.com: More on collective bargaining		

GRI standard and disclosure		Response	Additional information	Related SDGs
GRI 3: Material Topics 2022				
3-1	Process to determine material topics	People & Planet 2022: Our approach pp. 7–21; Our materiality assessment p. 10 nokia.com: Governance and materiality		
3-2	List of material topics	In spring 2022, we completed materiality impact assessment resulting with the new materiality matrix (People & Planet 2022: Our materiality assessment p. 10). The materiality matrix was reviewed by the Group Leadership Team and the Board of Directors and consists of 14 grouped topics: Climate impact through products and enabling transformation in other industries Ethical business practices and ethical use of new technologies Privacy and security Responsible sourcing Health and safety of employees Circularity Impact innovation Digital inclusion Human rights Diversity and inclusion Employees' skills Nokia's own environmental impact Community participation Biodiversity In order to provide in-depth disclosure of Nokia's sustainability impact, we set a threshold to prioritise the topics for reporting from the most material topics in the materiality assessment. Our threshold defines 13 topics of the material topics in the matrix for reporting with the highest significance and relevance to our business and to stakeholders, the economy and the environment. Biodiversity appeared for the first time in the matrix and research to determine its business impact is ongoing and it is not reported for 2022. The terminology we use when communicating about material topics is slightly different from the GRI terminology.		

GRI standard and disclosure		Response	Additional information	Related SDGs
3-3	Management of material topics			
	a	People & Planet 2022: Our ESG strategy p. 9; Key data and reporting principles pp. 99–114 nokia.com: Governance and materiality See also GRI 3–2 List of material topics within this index.		
	b	People & Planet 2022: Our ESG strategy p. 9; Key data and reporting principles pp. 99–114 nokia.com: Governance and materiality See also GRI 3–2 List of material topics within this index.		
	c	Not all of our policies are available for the public, but for example following policies and statements can be accessed at nokia.com on our Policies and Sustainability downloads pages: Environmental policy Responsible minerals policy Human rights policy Human resources framework Health, safety and labor conditions policy Quality policy An overview of our supplier requirements on CSR Privacy statement Modern slavery statement	nokia.com: Code of Conduct nokia.com: Policies nokia.com: Sustainability downloads	

GRI standard and disclosure	Response	Additional information	Related SDGs
d	People & Planet 2022: Corporate governance pp. 89–94; Managing sustainability pp. 90–91; Ethics and compliance pp. 58–63 **ECONOMIC** Economic performance; Indirect economic impact: People & Planet 2022: Corporate governance pp. 89–94 Procurement practices: People & Planet 2022: Responsible sourcing pp. 68–75 Anti–corruption; Anti–competitive behavior: People & Planet 2022: Anti-Corruption Center of Excellence and Third-Party Program p. 63 **ENVIRONMENTAL** Materials; Energy; Biodiversity; Emissions; Effluents and waste; Environmental compliance; Supplier environmental assessment: People & Planet 2022: Climate pp. 24–26; Responsible sourcing pp. 68–75 **SOCIAL** Employment; Labor/management relation; Occupational health & safety; Training and education; Inclusion and diversity: People & Planet 2022 Our people pp. 77–88; Responsible sourcing pp. 68–75 Freedom of association and collective bargaining; Child labor; Forced or compulsory labor; Human rights assessment; Supplier social assessment: People & Planet 2022: Responsible business pp. 56–76; Fair work place and our policies p. 82 Customer health and safety; Customer privacy: People & Planet 2022: Strengthening our health and safety performance p. 76; Security and privacy pp. 95–98 Socioeconomic compliance: Ethics and compliance pp. 58–63		
e	See 3-3-c and 3-3-d		
f	People & Planet 2022: Engaging with our stakeholders pp. 19–21; Responsible sourcing pp. 68–75; Our culture p. 79 nokia.com: Engaging with stakeholders		

GRI standard and disclosure		Response	Additional information	Related SDGs
GRI 201: Economic performance 2016				
201-1	Direct economic value generated and distributed	People & Planet 2022: Our economic impact pp. 92–93		2, 5, 7, 8, 9
201-2	Financial implications and other risks and opportunities for the organization's activities due to climate change	People & Planet 2022: Managing sustainability pp. 90–91; Climate-related risk and opportunities p. 26 Nokia in 2022: Sustainability and corporate responsibility pp. 92–115; Risk factors pp. 122–124	See also Nokia's response to the CDP Climate Change survey for more details at nokia.com: Sustainability downloads.	
GRI 203: Indirect economic impacts 2016				
203-1	Infrastructure investments and services supported	People & Planet 2022: Decarbonizing our value chain pp. 27–32		2, 5, 7, 9
203-2	Significant indirect economic impacts	People & Planet 2022: Decarbonizing our value chain pp. 27–32; Our economic impact pp. 92–93		1, 2, 3, 8, 9, 10, 17
Procurement practices				
Own metric	Procurement practices	People & Planet 2022: Responsible sourcing pp. 68–75; Materials traceability and responsible sourcing of minerals p. 74; Broad-Based Black economic empowerment p. 86		1, 8
GRI 205: Anti-corruption 2016				
205-2	Communication and training about anti-corruption policies and procedures	People & Planet 2022: Compliance training program p. 62		
205-3	Confirmed incidents of corruption and actions taken	In general, disclosures about material litigations, enforcement actions, and investigations are made in quarterly and annual public filings of Nokia Corporation. There are no additional matters to be disclosed.		16

GRI standard and disclosure		Response	Additional information	Related SDGs
GRI 206: Anti-competitive behavior 2016				
206-1	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	Legal actions pending or completed in 2022 regarding anticompetitive behavior in which Nokia is identified as participant: 1) In June 2017, the Spanish competition authority (CNMC) found that Nokia had violated competition law by abusing a dominant position in the Spanish railway sector and fined Nokia EUR 1.7 million. The case resulted from a complaint by a competitor concerning a tender for the supply of railway communications equipment. Nokia disagrees with the CNMC's decision and has filed an appeal with the Spanish National Court that is currently pending. 2) In August 2018, the CNMC opened antitrust investigations against several companies and individuals, including Nokia Spain, alleging anticompetitive behaviour and cooperation among competitors between 2003 and 2016 in the Spanish railways sector. The CNMC's investigation is currently pending and no formal charges have been issued to date. 3) In September 2021, the Spanish competition authority, CNMC, charged Nokia with alleged participation in an illegal cartel (2007–2014) on railway signaling tenders and fined Nokia EUR 24 million. CNMC fined Alstom, Bombardier, Caf, Cobra, Nokia, Siemens Rail, Siemens S.A. and Thales, and 10 of their executives (none from Nokia) EUR 127 million for alleged participation from 2002–2017 in a cartel that fraudulently shared at least 82 tenders of the Ministry of Development, the Railway Infrastructure Manager and subsequently Adif for the construction, supply and installation of the Alta Velocidad Espanola high speed rail and conventional rail network. CNMC recommends exclusion from future tenders. Nokia disagrees with the assessment and will appeal.	In 2022, there were no other formal investigations of alleged violations of competition or antitrust laws by Nokia, or any other findings of violations of competition or antitrust laws by Nokia, as far as Nokia is aware.	16

GRI standard and disclosure	Response	Additional information	Related SDGs
GRI 301: Materials 2016			
301-1 Materials used by weight or volume	People & Planet 2022: Circularity pp. 33–37	Nokia recognizes the need to identify and control the materials and substances used in our products and sales packaging. Detailed material requirements specifications for parts and components delivered to Nokia by our suppliers can be found in the Nokia Substance List available at nokia.com: Sustainability downloads. Total volume and weight of materials is considered proprietary information.	8, 12
301-3 Reclaimed products and their packaging materials	People & Planet 2022: Product transportation and distribution p. 32; Circular practices and our products pp. 33–34		8, 12
GRI 302: Energy 2016			
302-1 Energy consumption within the organization	People & Planet 2022: Key data and reporting principles p. 99; Environmental data pp. 104–108		7, 8, 12, 13
302-2 Energy consumption outside of the organization	People & Planet 2022: Key data and reporting principles p. 99; Environmental data pp. 104–108		7, 8, 12, 13
302-3 Energy intensity	People & Planet 2022: Environmental data pp. 104–108		7, 8, 12, 13
302-4 Reduction of energy consumption	People & Planet 2022: Decarbonizing our value chain pp. 27–32; Environmental data pp. 104–108		7, 8, 12, 13
302-5 Reduction of energy requirements of products and services	People & Planet 2022: Decarbonizing our value chain pp. 27–32		7, 8, 12, 13
GRI 305: Emissions 2016			
305-1 Direct (Scope 1) greenhouse gas emissions	People & Planet 2022: Decarbonizing our value chain pp. 27–32; Environmental data pp. 104–108		3, 12, 13, 14, 15
305-2 Energy indirect (Scope 2) greenhouse gas emissions	People & Planet 2022: Environmental data pp. 104–108		3, 12, 13, 14, 15
305-3 Other indirect (Scope 3) greenhouse gas emissions	People & Planet 2022: Environmental data pp. 104–108		3, 12, 13, 14, 15
305-4 Greenhouse gas emissions intensity	People & Planet 2022: Environmental data pp. 104–108		13, 14, 15

GRI standard and disclosure		Response	Additional information	Related SDGs
305-5	Reduction of greenhouse gas emissions	People & Planet 2022: Decarbonizing our value chain pp. 27–32; Environmental data pp. 104–108	The network modernization indicator reflects Nokia customers' average energy savings gained through modernizing older generation radio network products with Nokia AirScale base stations. The number of modernized products is based on the number of radio network products replaced at customer sites for which the data is available in a global product deployment database for the reportable year. The average power consumption of radio network products are based on ETSI standard 202706 defined measurements.	13, 14, 15
305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	People & Planet 2022: Environmental data pp. 104–108		3, 12, 15
GRI 306: Waste 2020				
306-1	Waste generation and significant waste-related impacts	People & Planet 2022: Circularity pp. 33–37		
306-2	Management of significant waste-related impacts	People & Planet 2022: Circularity pp. 33–37		
306-3	Waste generated	People & Planet 2022: Decarbonizing our value chain pp. 27–32; Environmental data pp. 104–108	Nokia reports waste data by treatment method, not by composition.	3, 12
306-4	Waste diverted from disposal	People & Planet 2022: Decarbonizing our value chain pp. 27–32; Environmental data pp. 104–108	Nokia reports waste data by treatment method, not by composition. Waste is sorted onsite and waste treatment conducted offsite.	3, 12
306-5	Waste directed to disposal	People & Planet 2022: Decarbonizing our value chain pp. 27–32; Environmental data pp. 104–108	Nokia reports waste data by treatment method, not by composition.	3, 12
GRI 308: Supplier environmental assessment 2016				
308-1	New suppliers that were screened using environmental criteria	People & Planet 2022: Responsible sourcing pp. 68–75; Materials traceability and responsible sourcing of minerals p. 74	Suppliers that are new to Nokia or have significant changes in their operations are subject to system audits to check compliance with our requirements. Nokia requests information on environmental criteria during supplier selection.	
308-2	Negative environmental impacts in the supply chain and actions taken	People & Planet 2022: Responsible sourcing pp. 68–75; Materials traceability and responsible sourcing of minerals p. 74		

GRI standard and disclosure	Response	Additional information	Related SDGs
GRI 401: Employment 2016			
401-1 New employee hires and employee turnover	People & Planet 2022: Recruitment p. 83, People data p. 102, 109–111 nokia.com: Inclusion & diversity		5, 8, 10
GRI 402: Labor/management relations 2016			
402-1 Minimum notice periods regarding operational changes	People & Planet 2022: Providing support during transformation p. 83		8
GRI 403: Occupational health & safety 2018			
403-1 Occupational health and safety management system	People & Planet 2022: Strengthening our health and safety performance p. 76; Management systems data p. 114		
403-2 Hazard identification, risk assessment, and incident investigation	People & Planet 2022: Strengthening our health and safety performance p. 76 nokia.com: Health & Safety		
403-3 Occupational health services	People & Planet 2022: Strengthening our health and safety performance p. 76; Health & Safety Maturity assessment p. 70		
403-4 Worker participation, consultation, and communication on occupational health and safety	People & Planet 2022: Strengthening our health and safety performance p. 76 nokia.com: Health & Safety		
403-5 Worker training on occupational health and safety	People & Planet 2022: Strengthening our health and safety performance p. 76 nokia.com: Health & Safety		
403-6 Promotion of worker health	People & Planet 2022: Strengthening our health and safety performance p. 76; Health & Safety Maturity assessment p. 70 nokia.com: Health & Safety		
403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	People & Planet 2022: Strengthening our health and safety performance p. 76; Health & Safety Maturity assessment p. 70 nokia.com: Health & Safety		
403-8 Workers covered by an occupational health and safety management system	People & Planet 2022: Strengthening our health and safety performance p. 76; Management systems data p. 114		
403-9 Work-related injuries	People & Planet 2022: Strengthening our health and safety performance p. 76; People data pp. 102, 109–111		3, 8

GRI standard and disclosure		Response	Additional information	Related SDGs
GRI 404: Training and education 2016				
404-1	Average hours of training per year per employee	People & Planet 2022: People development pp. 80–81; People data pp. 102, 109–111		4, 5, 8, 10
404-2	Programs for upgrading employee skills and transition assistance programs	People & Planet 2022: People development pp. 80–81; Providing support during transformation p. 83		8
404-3	Percentage of employees receiving regular performance and career development reviews	People & Planet 2022: Talent and performance management p. 80		8, 10
GRI 405: Diversity and equal opportunity 2016				
405-1	Diversity of governance bodies and employees	People & Planet 2022: Inclusion and diversity pp. 84–87; People data pp. 102, 109–111 Nokia in 2022: Corporate governance statement pp. 42–60	Nokia does not track the employees by minority group memberships globally.	5, 8
405-2	Ratio of basic salary and remuneration of men to women	People & Planet 2022: Inclusion and diversity pp. 84–87		5, 8, 10
GRI 406: Non-discrimination 2016				
406-1	Incidents of discrimination and corrective actions taken	In 2022, we closed 41 allegations related to discrimination or sexual harassment through our Ethics helpline. Each case was investigated by either HR, BIG or other members of our Legal and Compliance team. Where the allegations were substantiated, appropriate disciplinary action was taken up to and including termination of employment.		5, 8, 16
GRI 407: Freedom of association and collective bargaining 2016				
Own metric	Management of Freedom of association and collective bargaining in our supply chain	People & Planet 2022: Responsible sourcing pp. 68–75		8
GRI 408: Child labor 2016				
408-1	Operations and suppliers at significant risk for incidents of child labor	People & Planet 2022: Responsible sourcing pp. 68–75; Fair workplace and our policies pp. 82–83	For more information, see the latest Modern Slavery Statement at nokia.com: Sustainability downloads	8, 16
GRI 409: Forced or compulsory labor 2016				
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	People & Planet 2022: Responsible sourcing pp. 68–75; Fair workplace and our policies pp. 82–83	For more information, see the latest Modern Slavery Statement at nokia.com: Sustainability downloads	8

GRI standard and disclosure	Response	Additional information	Related SDGs
GRI 412: Human rights assessment 2016			
412-1 Operations that have been subject to human rights reviews or impact assessments	People & Planet 2022: Human rights pp. 64–66		
GRI 414: Supplier social assessment 2016			
414-1 New suppliers that were screened using social criteria	People & Planet 2022: Responsible sourcing pp. 68–75 Suppliers that are new to Nokia or have significant changes in their operations are subject to system audits to check compliance with our requirements, including social criteria.		5, 8, 16
414-2 Negative social impacts in the supply chain and actions taken	People & Planet 2022: Responsible sourcing pp. 68–75; Materials traceability and responsible sourcing of minerals p. 74		5, 8, 16
GRI 416: Customer health and safety 2016			
416-1 Assessment of the health and safety impacts of product and service categories	People & Planet 2022 Strengthening our health and safety performance p. 76	Nokia's position statement about exposure to radio waves and health is available at nokia.com: Sustainability downloads	
GRI 418: Customer privacy 2016			
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	People & Planet 2022: Security and privacy pp. 95–98		16

SASB index

Disclosure topic	SASB code	Accounting metric	Response
Product security	TC-HW-230a.1	Description of approach to identifying and addressing data security risks in products	People & Planet 2022: Security and privacy p. 95 nokia.com: Security and privacy
Employee diversity & inclusion	TC-HW-330a.1	Percentage of gender and racial/ethnic group representation for (1) management, (2) technical staff and (3) all other employees	People & Planet 2022: Gender and age diversity p. 85, People data p. 102 We report the percentage of gender representation for the Board, Group Leadership Team (Executive management), all leadership positions and all employees but we do not report employee racial/ethnic group representation or breakdown for technical staff.
Product lifecycle management	TC-HW-410a.4	Weight of end-of-life products and e-waste recovered, percentage recycled	People & Planet 2022: Circular practices and products p. 33
	TC-TL-440a.1	(1) Materials recovered through take back programs, percentage of recovered materials that were (2) reused, (3) recycled and (4) landfilled	People & Planet 2022: Circular practices and products p. 33
Supply chain management	TC-HW-430a.1	Percentage of Tier 1 supplier facilities audited in the RBA Validated Audit Process (VAP) or equivalent, by a) all facilities and b) high-risk facilities	People & Planet 2022: Monitoring, assessment and auditing p. 69, Health and safety maturity assessments p. 70 In 2022, we conducted 33 audits against our full set of supplier requirements and 67 in-depth Corporate Responsibility (CR) audits. 2 of these audits were conducted through our customers' Joint Audit Cooperation (JAC) framework and 50 through RBA Validated Assessment Process (VAP) audits In addition to audits, our H&S maturity assessment process is a crucial part of our supplier assessment program. The H&S maturity assessments covered 99% of relevant suppliers in 2022.
	TC-HW-420a.2	Tier 1 suppliers' 1) non-conformance rate with the RBA Validated Audit Process (VAP) or equivalent, and 2) associated corrective action rate for a) priority non-conformances and b) other non-conformances	People & Planet 2022: Monitoring, assessment and auditing p. 69 In 2022, we conducted 33 audits against our full set of supplier requirements and 67 in-depth Corporate Responsibility (CR) audits. 2 of these audits were conducted through our customers' Joint Audit Cooperation (JAC) framework and 50 through RBA Validated Assessment Process (VAP) audits. In 2022, our CR audits identified 227 instances of non-compliances. The audit findings closure rate within 6 months was 78% for all non-conformances.
Materials sourcing	TC-HW-440a.1	Description of the management of risks associated with the use of critical materials	People & Planet 2022: Materials traceability and responsible sourcing of minerals p. 74

NOKIA