

# People & Planet 2021



**NOKIA**

# About this report

The scope of this 2021 sustainability report is 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: Core option. As part of our reporting, we also take into account 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 2022 and it is only available in digital format. The report can be found online at [www.nokia.com/about-us/sustainability](http://www.nokia.com/about-us/sustainability). We have published annual corporate responsibility reports since 1999 and the reports are available in digital format from as far back as 2003 in our report archive.

Sustainability and corporate responsibility topics are also discussed in our corporate annual reports, including the Annual report on Form 20-F that is filed with the US Securities and Exchange Commission. The Board Review of Nokia's 2021 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 [www.nokia.com/about-us/investors](http://www.nokia.com/about-us/investors).



## Our approach

Our approach to sustainability centers around our company purpose, creating technology that helps the world act together. We aim to maximize our positive impact while ensuring we work to minimize negative impact. This approach is built on a foundation of responsible, ethical business practices.

[Read more](#)

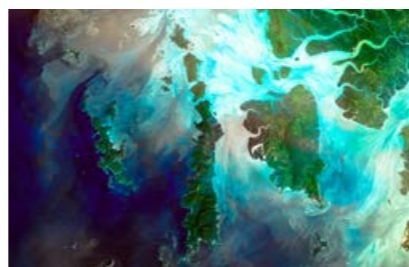


## Improving lives

Connectivity and digitalization enable us to collaborate and innovate, engage with our communities and families, and make our industries more productive and efficient. [Read more](#)

## Combatting climate change

Climate change is one of the most urgent issues facing humanity, affecting environmental, social and economic life. Connectivity and digitalization provide tools to contribute to resolving these challenges for industry, society and individuals. We believe there is no green without digital. [Read more](#)

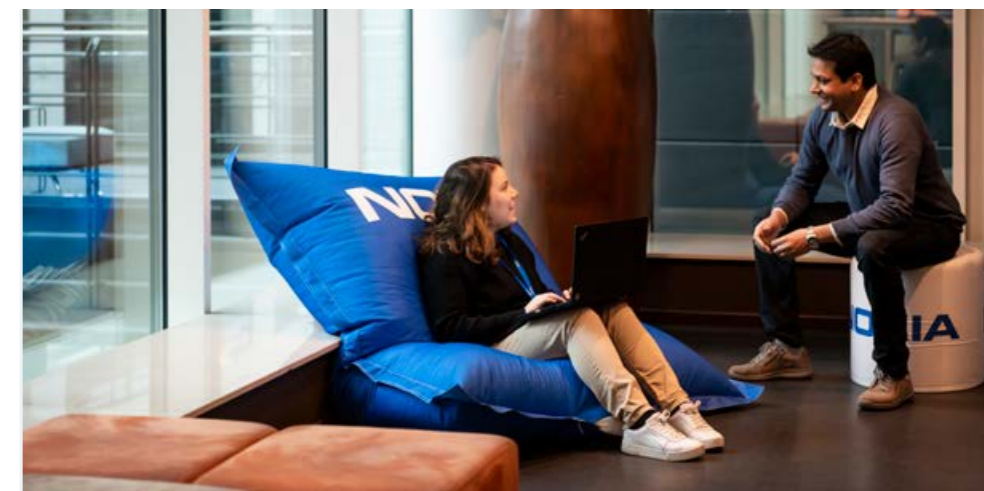


## Conducting our business with integrity

Trust, accountability, and ethical behavior are the foundations on which we operate. Read more about ethical business, human rights, responsible sourcing, and privacy and data security [here](#).

## Key data and Key ESG Frameworks

The [Key data](#) chapter provides our key sustainability data in an easily accessible format, and the [Key ESG Frameworks](#) chapter maps our reporting to GRI Standards, SASB Standards and the UN Sustainable Development Goals.



## 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. [Read more](#)

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# Letter from the President and CEO

Doing the right thing matters.

The return of war to Europe in early 2022, while the world is still grappling with the COVID-19 pandemic, is a stark reminder that we need global collaboration to protect people and our planet. Our purpose is to create technology that helps the world act together. And we believe the technology we create is a force for good, helping to build a more sustainable world, increase access to opportunities and close the digital divide.

This opportunity comes with a great responsibility. We are committed to continue working with our partners and stakeholders to build the necessary frameworks and drive multi-lateral action to ensure technology cannot be misused.

## Purpose counts

Studies show purpose-driven companies with strong environmental, social and governance (ESG) practices have a more satisfied workforce who stay longer with them. Research shows that such companies report 30% higher levels of innovation and 40% higher levels of workforce retention than their competitors.

People value purpose. It increasingly influences which companies and organizations they decide to work

for, which brands and products they opt to buy and where they choose to invest their money.

Changing attitudes are leading to concrete actions by employees, customers, investors and stakeholders which are already impacting the bottom line of companies.

A World Economic Forum survey found that 6 in 10 people switching jobs during the “Great Resignation” of 2021 said they were leaving to work for an employer who better matches their values, with this trend most pronounced among 18–34-year-olds (67%).<sup>ii</sup> A First Insight survey of US consumers found that more than half of Generation Z and Millennial shoppers were willing to pay more for sustainable goods compared to 34% for Generation X and 23% for Baby Boomers.<sup>iii</sup> And an Allianz study found that nearly two-thirds (64%) of Millennials said ESG factors influenced their investing decisions compared with 42% of Baby Boomers.<sup>iv</sup>

At Nokia, our aim is for sustainable profitable growth. We believe the best way to achieve that goal is to be a more strongly purpose-driven organization with transparency and accountability over our ESG progress.



## Sustainability at the heart of our purpose

Our approach has been to put sustainability at the heart of our relaunched purpose and strategy. We believe digitalization and connectivity solutions are critical to resolving the biggest global problems facing society today, whether they are environmental, social or economic.

In fact, we believe our industry is uniquely placed to enable the fight against climate change because digitalization can help other industries and society to reduce their emissions by up to ten times more than the mobile industry's own emissions.

Our view is that there can be no green without digital. The solutions we create can help the world decarbonize and dematerialize, reduce waste, limit the use of natural resources and increase the reuse of materials, as well as restore failing productivity and bring more inclusive access to healthcare, education and digitally delivered services to ensure no one is left behind.

But to address global challenges, we need to work together: businesses, organizations, governments, policymakers and financial markets collaborating to accelerate digitalization, enhance connectivity and develop sustainable ecosystems.

We see our role as an enabler through the technology we provide to others. This is the idea encapsulated in the new company purpose we launched in 2021: At Nokia, we create technology that helps the world act together.

## Maximizing handprint and minimizing footprint

We are playing our part with a two-pronged approach. We are focusing on maximizing our handprint (positive impact) while simultaneously minimizing our footprint (negative impact). This is underpinned by robust policies, procedures and management systems built on a foundation of excellent ethical and responsible business practices.

## Sustainability achievements

Over the past year, I am proud that we have continued to invest in innovation to drive down the energy consumption of our products. Our product portfolio innovations included our next-generation AirScale 5G portfolio, with new ReefShark-powered plug-in cards, and FP5, our fifth generation of high-performance IP routing silicon. The customer base station sites we modernized used on average 46% less energy than those where our customers did not modernize.

We continued to take action to minimize our carbon footprint by joining the RE100 initiative and accelerated our climate ambition by setting a new 100% renewable electricity target across Nokia facilities, including offices, R&D labs and factories. We also became a co-founding member of the World Economic Forum's First Movers Coalition, which was launched at COP26. We were pleased to receive the COP26 Compass Award for capacity-building in our supply chain. And Nokia was named in the Carbon Clean 200 for global companies leading the way with solutions for a clean energy future, as well

as recognized as one of the World's Most Ethical Companies for the sixth year in a row.

We also continued working with our partners to increase digital inclusion globally. We connected 90 schools to the internet in Kenya together with UNICEF and Safaricom. Our long-term cooperation with UNICEF Finland saw the completion of a four-year program in Indonesia and the launch of a new program in Morocco to empower young people through technology.

Nokia also took significant steps to improve inclusion and diversity within our organization. We launched a new people strategy and moved to hybrid working so we could invest in our people's skills and career development and empower them with more choice and flexibility over how and where they work.

## Learning and improving

We are proud of all these achievements over the past year. But we also know we must continue learning and improving so we can keep on fulfilling our company purpose and delivering 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.

We believe that technology is central to the solution. Through technology leadership and trusted partnerships, we deliver critical networks to help address global issues. We have the power to bring together the world's people, machines and devices, sensing and acting in real time at massive scale. Our critical networks go beyond connectivity to enable self-optimizing, intelligent systems both locally and globally.

With our customers we deliver solutions that respond to climate change through 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 globally to work, healthcare and education. We create meaningful interactions to help drive human progress.

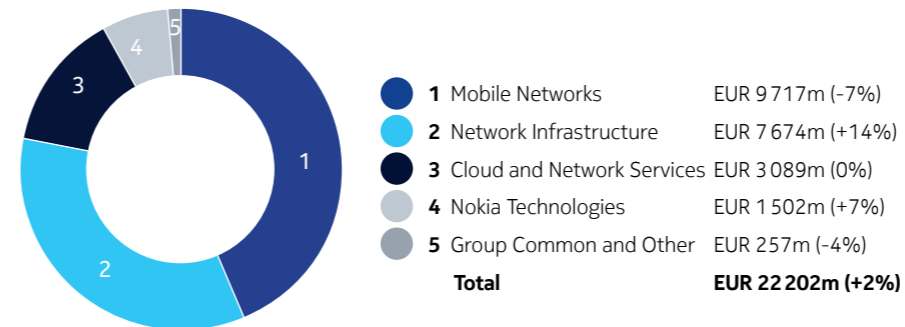
In 2021, we delivered net sales of EUR 22 202 million and invested EUR 4 214 million in research and development. From the beginning of 2021, we moved into a new operating model with four

core business groups: Mobile Networks, Network Infrastructure, Cloud and Network Services, and Nokia Technologies. For more information see our financial reporting at [www.nokia.com/investors](http://www.nokia.com/investors).

We have customers in most countries of the world. Our technologies transform the way people communicate and connect with each other and things. At the end of 2021, we employed 86 370 people. 3% of employees were based at our headquarters in Espoo, Finland, and more than 40% of our employees worked within our research and development in Europe, North America, and Asia.

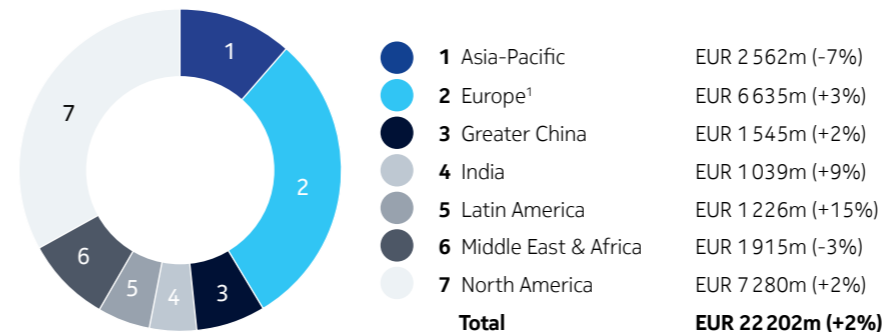
We outsource certain non-core activities and use subcontractors to meet customer needs or volume demands. At the end of 2021, the number of temporary workers (external temporary labor, ETL) used was in the region of 3 100 people. Activities performed by externals, be they ETL or subcontractors, include for example, consultants supporting different tasks in our business groups and support functions, facility service providers, security guards and IT support.

## Net sales by business 2021



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

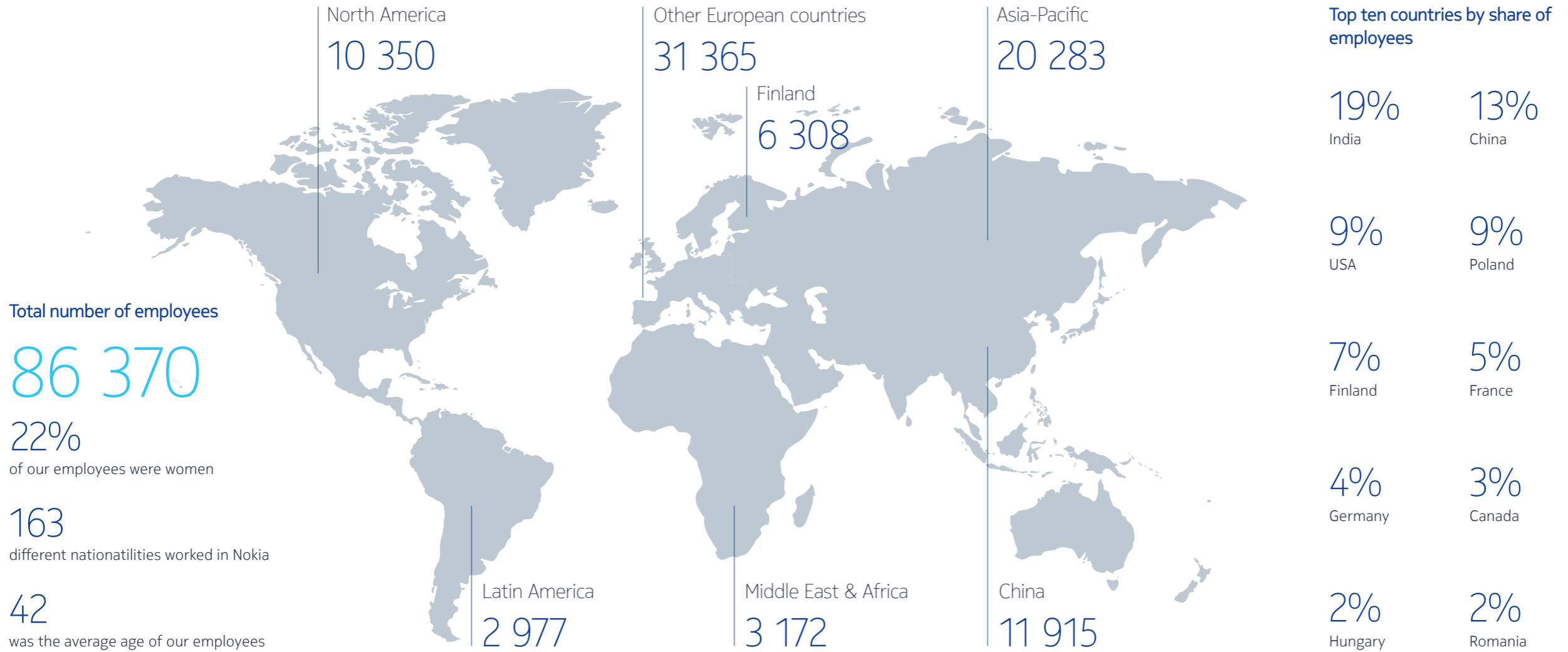
## Net sales by region 2021



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

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

Our employees at the end of 2021



# Our approach

Our approach to sustainability centers around our company's purpose, creating technology that helps the world act together. We aim to maximize our positive impact - our handprint, while we work to minimize any negative impact - our footprint.



## Sustainability highlights and challenges in 2021

### What we did well...

- ✓ By the end of 2021, we had secured 214 commercial 5G deals and launched 74 live 5G networks with our customers.
- ✓ We continued to invest in innovation to drive down energy consumption of our products. Our product portfolio innovations included our next-generation AirScale 5G portfolio with new ReefShark powered plug-in cards and FP5, our fifth generation of high-performance IP routing silicon.
- ✓ The customer base station sites we modernized used on average 46% less energy than those where our customers did not modernize.
- ✓ We joined the RE100 initiative and accelerated our climate ambition by setting a new 100% renewable electricity target across Nokia facilities, including offices, R&D labs and factories.
- ✓ We are a co-founding member of the World Economic Forum's First Movers Coalition which was launched in COP26. The Coalition aims to accelerate the market for zero-emissions goods and services in eight critical industrial sectors.
- ✓ We received the COP26 Compass award for capacity-building in our supply chain.
- ✓ We were again acknowledged as one of the World's Most Ethical companies by the Ethisphere Institute in early 2022.
- ✓ We announced a new flexible work approach giving employees more choice regarding their working hours and location, as part of our future at work development.
- ✓ We connected 90 schools to the internet in Kenya together with UNICEF and Safaricom. Our long-term cooperation with UNICEF Finland was further strengthened as we finalized our four-year program in Indonesia and launched a new program in Morocco to empower youth with digital, entrepreneurial and environmental skills.

### What we need to do better...

- ✓ We deeply regret the four fatal incidents involving people working on our behalf. Of these incidents, none involved our own employees and four involved our contractors or subcontractors.
- ✓ Despite our efforts, we missed our target to reach a minimum of 26% female hires in all global external recruits. Instead, the share of women was 25%. Although we did not meet our target, the focused actions by all our business groups resulted in an increased share of women hired in nearly every quarter compared to the previous quarter. In 2022, our business groups will continue with strengthened campus hiring and focused efforts in their key hiring locations, and we aim to increase our outreach and talent attraction activities.



➤ A full listing of recognitions can be found on our [website](#).

## Our sustainability approach – maximizing our handprint and minimizing our footprint

Our approach to sustainability centers on our company purpose. While our lives are getting longer, healthier and richer, the world is facing fundamental challenges. Pressure on the planet is increasing, productivity is stalling and opportunity remains stubbornly unequal.

This is why our purpose at Nokia is to create technology that helps the world act together. Digitalization and connectivity can fundamentally improve people's lives, enable a healthier planet and drive economic empowerment.

We believe technology is central to the solution. We must:

- Respond to climate change through more efficient use and reuse of resources.
- Restore productivity growth by digitalizing physical industries.
- Use technology to provide more inclusive access to work, healthcare, markets and education.

We are a trusted partner for critical networks, and we are committed to innovation and technology leadership across mobile, fixed and cloud networks. Our core business is connectivity, digitalization and related activities. Our technology connects

people and things, provides greater and better access to education, information, healthcare, and opportunity, and brings people, communities and businesses together.

We believe the technology we provide enables both environmental and social benefits to individuals, industries and communities that far outweigh any negative impacts. These benefits represent the handprint of digitalization and connectivity. We work hard to maximize this handprint. At the same time, we continually strive to minimize any potential negative impacts of technology, making our footprint on the world around us as small as possible.

In 2021, we implemented this approach through actions in three focus areas: Climate, Integrity and Culture (described on the right), while ensuring well-managed responsible business processes, procedures and practices.



### Our three strategic sustainability focus areas

1. **Climate** – how do we further develop technology solutions that enable, mitigate, and drive adaptation in the battle against climate change?
2. **Integrity** – how do we ensure that we meet the increased requirements and expectations for ethical behavior, greater security, respect for human rights and privacy?
3. **Culture** – how do we attract and retain the best talent and maintain high-performing, inclusive and diverse teams in the new workplace?

Our responses and actions to these three focus areas (climate, integrity and culture) underpin our purpose to create the technology that helps the world act together. We intend to create value and, where possible, exceed stakeholder requirements and expectations while complying with increased regulatory demands and transparency expectations.

Our sustainability approach is a result of a thorough review of our environmental, social and governance (ESG) activities, requirements and achievements with emphasis on impact, scope, focus areas and targets. Our materiality analysis is based on a number of factors related to our business and its impact on sustainable development, including:

- Global macro trends with an impact on sustainable development.
- Our regular engagement with various stakeholders. [Read more](#) about working with stakeholders.
- Requirements and information requests especially from our customers and investors.
- Our benchmarking of industry peers and leaders in sustainability.
- Our 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. Read more on our [website](#).

### Our strategic approach to sustainability



- International sustainability frameworks such as SASB, TCFD, the GRI Standards and the UN Global Compact (see [Key ESG frameworks](#) starting on page 112).
- Our long history and experience in sustainability. As a result of the analysis described above, we identified 13 material topics under our scope of sustainability (see chart on the next page).

### Fundamental responsible business necessities

- Environmental management
- Circularity
- Portfolio energy efficiency
- Supplier human and labor rights
- Health & safety
- Inclusion & diversity
- Labor practices in own operations
- Ethics & compliance
- Preventing misuse of technology
- Responsible sourcing
- Data privacy & security









Our key sustainability topics











## Our targets and performance

We have set short-, mid- and long-term targets and provide a listing and status as of the end of 2021 on this and the next page. In 2021, we had a total of 14 external targets, of which 12 were either achieved or on track. One target was not achieved and one was not on track. Our targets for 2022 and onward are presented after the table summarizing the 2021 targets.

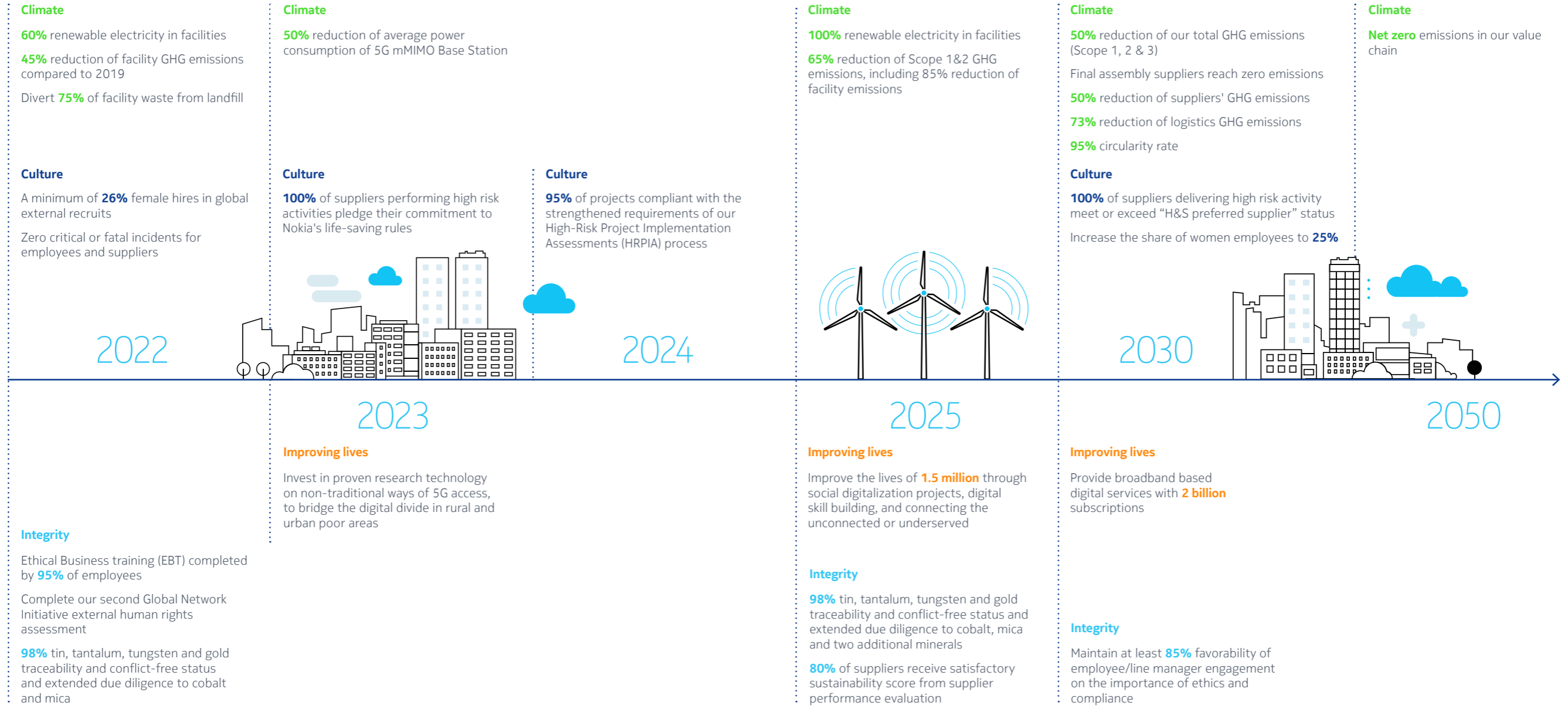
Our 2021 targets and their status

Focus area	Target year	Base year	Target	2021 results	Target status
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 37 598 000 tCO <sub>2</sub> e which, as anticipated, are 8% above our cumulative carbon budget for 2020–2021, if a linear reduction from 2019 is expected annually. However, we do not expect the reduction of emissions in our value chain to be a linear process. We plan to achieve our target of 50% reduction in emissions by 2030 as we 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 suppliers' emissions were 59 000 tCO <sub>2</sub> e which is a 22% decrease from 2019.	 On track
	2030	2019	Our suppliers reduce GHG emissions by 50% by 2030.	Our suppliers' emissions were 1 571 600 tCO <sub>2</sub> e which is a 49% decrease from 2019.	 On track
	2021	2020	Reach 45% coverage of renewable electricity from the total purchased electricity.	53% of our purchased electricity was renewable.	 Achieved
	2021	2019	Reduce GHG emissions from our facilities (Scope 1 and 2) by 20%.	Emissions from our facilities were 243 200 tCO <sub>2</sub> e which is a 30% reduction from 2019.	 Achieved
	2021	2020	Divert 70% of facility waste from landfill.	80% of facility waste was diverted from landfill.	 Achieved

## Our 2021 targets and their status

Focus area	Target year	Base year	Target	2021 results	Target status
Culture	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.	23% of relevant suppliers met H&S preferred supplier status.	 On track
	2021	2020	Keep the unexplained pay gap closed.	The unexplained pay gap was closed for 2021.	 Achieved
	2021	2020	Reach a minimum of 26% female hires in all global external recruits.	25% of external recruits were women. We aim to increase our talent attraction activities to make Nokia’s employer brand stand out for diversity-friendly employment policies.	 Not achieved
	2021	2020	Direct 30% of our corporate CSR spend towards initiatives focused on empowering diversity.	33% of our corporate CSR program spend was focused on empowering diversity.	 Achieved
Integrity	2030	2016	Reach 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.” 91% of the responses were favorable.	 On track
	2025	2020	80% of suppliers receive satisfactory sustainability scores from supplier performance evaluation (includes performance across our sustainability assessment programs such as EcoVadis, CDP, Conflict minerals).	68% of suppliers received satisfactory sustainability scores.	 On track
	2022	2020	Complete our second Global Network Initiative (GNI) assessment and, as a result, Nokia deemed to have shown good faith efforts to implement the GNI principles in freedom of expression and privacy.	Preparation for the assessment was started.	 On track
	2021	2020	95% of our employees complete Ethical Business Training.	97% of employees completed the training.	 Achieved

Our ESG targets in 2022



## The UN Sustainable Development Goals and our business

The United Nations Sustainable Development Goals (SDGs) are a key framework for our sustainability work. For us Goals 8, 9 and 13 are the most material and provide the areas in which we can have the greatest positive impact. We also believe the technology we provide can positively contribute to accelerating and achieving all 17 SDGs.

Beyond these measures, the work we do and the technology we create can positively contribute to achieving all 17 SDGs. More examples of how we contribute to all 17 goals can be found [here](#)



### Helping the world act together

In 2021, the digitalization of industry, enterprises and communities globally has seen a significant increase because of the pandemic and the move to remote work. According to Nokia Bell Labs research, the effects of the pandemic have accelerated digitalization by some six years.

The rollout of 5G continued apace with networks installed on every continent. Responding to the significant increase in demand to keep people who work remotely connected because of lockdowns and school closures, we continued to support critical networks, improved public safety, smart cities, first responder and other critical communications. Read more about our work with industry and enterprise on [pages 23–38](#) and on our [website](#).



### Combatting climate change

We believe there is no green without digital - digitalization and climate action must go hand in hand. In 2021, we targeted reductions in our own footprint across our operations and product portfolio. We launched the new AirScale radio platform that can bring savings in power consumption, material use and logistics. Also, our new chipsets brought improvements in energy efficiency compared to earlier generations.

We help industry sectors such as manufacturing, agriculture, transportation and energy to improve their energy and material efficiency and decrease waste and emissions, while increasing productivity and safety. According to a study by GSMA, the manufacturing industry can reach annual productivity and energy savings gains of 10–20% by 2030 by moving to smart factories, leveraging IoT devices and automation. Our climate targets provide clear direction for our business. Read more on climate activities on [pages 39–54](#) and on our [website](#).



### Conducting our business with integrity and driving a culture of respect

We were again acknowledged as one of the World's Most Ethical companies by the Ethisphere Institute in early 2022. In 2021, we again carried out a region-based internal human rights impact assessment and began preparation for our second Global Network Initiative's independent external human rights assessment of Nokia. We also increased our commitment to responsible supply chain operations by becoming a member of the Responsible Business Alliance. Our supply chain numbered some 11 000 suppliers. See [pages 55–77](#) in this report and our [website](#) for more on these topics.

At the end of 2021, we had 86 370 employees globally. We continued to focus on matters of diversity and inclusion, and took measures to ensure the unexplained pay gap remained closed. See [pages 78–92](#) in this report and our [website](#) to learn more.



# 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 2021.

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 this page and further described in the following paragraphs. 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 as well as their implementation and effectiveness in the Company. In 2021, the Board approved select key ESG targets on climate change and diversity included also in the short-term incentive program and reviewed evolving ESG requirements and expectations, investor feedback and the disclosure approach. The Board also approved our Corporate Community Investment and University donations budget for the year 2022.

**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 sustainability reporting, related risk management, ethics, cybersecurity and 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, and procurement. Convened 7 times in 2021.

**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 2021.

**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 3 times in 2021.

**ESG function and Sustainability Forum**

The corporate ESG function drives the implementation of the sustainability strategy and actions needed to achieve targets at the operational level. A Forum of subject matter experts from business units and functions facilitates information sharing and helps implement processes and activities to achieve targets.

**Ethics and Compliance Office**

Provides training and supports employees in making decisions that are ethical, legal, and consistent with our values. Investigates concerns about potential breaches of our Code of Conduct.



In addition, the Board Committees monitor environmental and social developments and activities in the Company in their respective areas of responsibilities. During 2021, 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 annually sustainability disclosures as well as the 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. Corporate Governance and Nomination Committee assesses and advises the Board in environmental, social and governance (ESG) related activities and practices aiming to enhance 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 2021, the Chief Corporate Affairs Officer had overall responsibility for sustainability in the GLT. In line with our new mode of operation, the GLT approves sustainability-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 of these strategies, targets and frameworks and make recommendations to the GLT. One example of sustainability-related decisions made by the GLT in 2021 include joining the RE100 initiative where our target is to use 100% renewable electricity in our facilities by 2025.

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 Human Rights Due Diligence Governance Council.

### ESG function

At the operational level, sustainability is managed by the ESG (Environment, Social and Governance) function, the Ethics and Compliance Office 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 2021, the council was managed by the Vice President, ESG, who reported to the Chief Corporate Affairs Officer. In 2021, the council convened seven times.

### Risk and opportunity management

Sustainability risks and opportunities are part of our Enterprise Risk Management framework which includes 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, internal control and internal audit functions at Nokia](#)). 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 2021 [here](#). For more information on Nokia Enterprise Risk Management, please go to [our website](#).

## Engaging with our stakeholders

We move faster when we move together. 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 believe that together we can have a much greater impact on the social, environmental, ethical and economic challenges of our time.

### Supporting our customers' sustainability goals

We work with our customers, both communications service providers and enterprises, in many key areas of sustainability, including energy and resource efficiency, materials, critical communications, efficient manufacturing and operations, supply chain transparency, modern slavery and community involvement.

Sustainability is an integral part of most sales requests where we provide data and information on a variety of topics such as climate, ethical business, responsible sourcing, human rights and more. We have successfully collaborated with customers to better understand how to improve energy efficiency, explore

the use of recycled materials, introduce the use of refurbished products, encourage circular practices, and increase transparency and good responsible business practices within our common supply chain.

We share best practises and provide information about our sustainability performance and our operations to our customers on a regular basis. We engage with customers through regular virtual and where possible face to face meetings at different levels of the company where environmental, social and governance (ESG) issues are discussed. Customers may request their allocated share of our Scope 1 and Scope 2 emissions. This data is primarily provided through our CDP climate change questionnaire responses.

### Our stakeholders

Stakeholder group	Our approach	Key topics raised in 2021
<b>Customers</b>	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.	ESG targets, energy efficiency and climate actions, circular products and services, recycled materials, responsible operations, inclusion and diversity.
<b>Employees</b>	Our people are our greatest asset and we aim to build a culture of trust, respect, diversity and opportunity for all. <a href="#">Read more</a>	Nokia essentials, wellbeing, health and safety, future workplace and ways of working, flexibility, inclusion and diversity, learning and development.
<b>Investors</b>	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, responsible supply chain, labor and human rights, reporting and social achievements.
<b>Suppliers and Partners</b>	We work with suppliers to drive transparency, sustainability and good ethical and business practices in our long and often complex supply chain. <a href="#">Read more</a>	Inclusion and diversity, modern slavery, responsible minerals sourcing, climate change, and health and safety.
<b>Industry groups and standardization forums</b>	We interact broadly and collaborate with many key industry groups and standardization forums that are striving for economic and societal development on the national, regional and global levels. <a href="#">Read more</a>	Standards for energy efficiency in 5G, circularity, responsible use of AI.
<b>Academia</b>	We work with a broad range of academic institutions in areas such as collaborative research, training programs, innovation events and talent development. <a href="#">Read more</a>	6G, quantum computing, industrial automation, ethical use of AI and data.
<b>Civil society</b>	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. <a href="#">Read more</a>	Digital skills building, COVID-19 relief, empowering diverse groups and ensuring equal access to opportunity such as education and entrepreneurship.
<b>Cities</b>	We work with cities and communities to drive digitalization and smart development. <a href="#">Read more</a>	Bridging the digital divide, 5G use cases, public safety and health, digital services, data security and trust, green economy transition.
<b>Governments</b>	We contribute to policy debates fostering a connected society and the adoption of new technologies around the world. <a href="#">Read more</a>	Digital and broadband policies, ESG topics, emerging technologies and business models.

## Supporting informed public policies for digitalization and sustainable development

We believe an inclusive policy environment should enable a healthier planet and fairer society, where connectivity, digitalization and technology underpin the environmental and social needs of people and the planet's ecosystem. The United Nations Sustainable Development Goals establish a clear framework for us all. 5G and other new technologies provide critical tools to enable a sustainable transformation towards a digital economy that can enhance productivity, improve quality of life and reduce inequalities on a global scale.

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 pandemic brought into sharp focus how much we rely on technology for work, education, health and public services. Reliable broadband connectivity is critical to continue to deliver essential public services under exceptional circumstances and build a strong recovery that should lay the foundation for a more connected, productive, and inclusive economy and society.

The Fourth Industrial Revolution will impact all sectors of the global economy. 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

“ We contribute to policy debates fostering a connected society and the adoption of new technologies around the world.

and constructively to advise on spectrum for broadband, security of digital infrastructures, a regulatory regime that facilitates network roll out and other digital policy endeavors.

In 2021, we actively contributed to an honest and fact-based discussion by engaging in forums, working groups and virtual conferences organized by, for instance, the International Telecommunication Union (ITU), European Round Table for Industry (ERT), Global System for Mobile Communications (GSMA), DIGITALEUROPE and national associations such as BITKOM. We collaborated with think tanks such as European Council on Foreign Relations (ECFR) to support independent thinking and promote informed debates on policies beneficial for society. We also supported the National Urban League's Latimer Report laying out a case for closing the digital divide in the US.



## 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, selecting the most impactful international collaboration forums for private sector, governments and civil society to act together at the global, regional and national level.

Nokia is a partner of the World Economic Forum, contributing its expertise to deliver on the WEF's promise to improve the state of the world. In 2021, we were among the founding members of the WEF Edison Alliance, a global movement aiming to prioritize digital inclusion as foundational to the achievement of the Sustainable Development Goals in areas such as health, finance and education.

In November at the COP26 climate conference, Nokia became a founding member of the First Movers Coalition, a public-private partnership between

the U.S. State Department and the World Economic Forum. As a member we committed to sustainable procurement and creating demand for critical emerging solutions that help reduce emissions to net zero.

Although COP is an intra-governmental process, Nokia fully supports this multilateral approach to handling climate issues. Nokia's CEO Pekka Lundmark attended COP26 in Glasgow, reiterating Nokia's commitments to net zero and highlighting concrete actions that we are taking, including through the decarbonization of industry sectors and supply chains and improving the energy efficiency of networks. Read more about our engagements during COP26 [here](#).

As a UN Broadband Commissioner, Pekka Lundmark engages in public-private discourse on digital inclusion. In 2021, Pekka Lundmark became a co-chair of the Working Group on AI Capacity Building, along with partners from UNESCO, with the aim to enable the public sector to prepare for an AI future. Our CEO also contributed to the State of the Broadband Report, supporting inclusive policy solutions

As a founding member of the Digital for Development (D4D) Coalition with other European private sector companies, Nokia contributes to the efforts of the EU D4D Hub, a strategic multi-stakeholder platform that promotes new international partnerships for digital transformation of the European Union and partner countries in

Africa, Asia, Latin America, the Caribbean and the EU Eastern Neighborhood.

See the list of external initiatives we support and our memberships in associations on [pages 114–115 here](#) (GRI 102-12 and GRI 102-13).

## 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. 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, spectrum and other regulatory aspects.

Our work in 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 Radiocommunications Sector (ITU-R) and Telecommunications Sector (ITU-T) to 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.

In 3GPP standardization, Nokia drove the introduction of energy efficiency as a guiding principle when developing new solutions, leading to the development of more sustainable networks.

See a list of forums where we collaborate on [page 115 here](#) (GRI 102-13).

# Improving lives

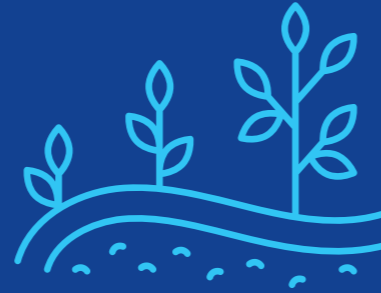
Connectivity and digitalization enable us to collaborate and innovate, engage with our communities and families, and help make our industries more productive and efficient. They allow us to learn and work together.

## Highlights

Together with UNICEF and Safaricom, we connected

# 90

primary schools to the internet in Kenya



Together with AeroFarms, we are helping to increase crop yields and improve efficiency, helping make vertical farming even more productive



# Over 300

scholarships awarded supporting the underrepresented in tech with Blacks In Technology Foundation and Udacity

# 2.5

## million people

directly benefitted from our mHealth program with UNICEF Indonesia during years 2017–2021

In total, our Corporate Social Responsibility programs reached

# 863 000

direct beneficiaries in 2021



We supported university research in areas such as quantum computing, 6G, ethical use of AI and data, and use of wireless technology promoting sustainability



The LuxTurrim5G ecosystem led by Nokia reached a key milestone, as the development phase of the smart pole, data platform and related smart city services was successfully completed and is now ready for global markets

# 5G

## Our economic impact

As a global company we have 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.

The key figures related to our direct economic impact are listed in the table on this 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 2021, we paid a total of EUR 314 million in direct income taxes (EUR 280 million in 2020), of which EUR 28 million was paid in Asia-Pacific and EUR 234 million in Europe, the Middle East and Africa. In the Americas region, we paid EUR 53 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

### Economic impact

Stakeholder group	Impact (EUR million)	2019	2020	2021
<b>Direct economic value generated</b>				
Customers	Net sales	23 315	21 852	22 202
<b>Economic value distributed</b>				
Suppliers	Total purchases of goods and services	15 051	13 659	13 368
Shareholders	Dividends paid	570	148	9
Employees	Wages and benefits	7 360	7 310	7 541
Creditors	Net financial expenses	341	164	241
Public sector	Income taxes paid, net	516	280	314
Communities	Community investments	2	6	7

Numbers include continuing operations. For more information, please see our Annual report, Nokia in 2021.

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\*'s **Mobile Economy 2021 report**, in 2020 mobile technologies and services generated USD 4.4 trillion of economic value added (5.1% of GDP) globally, and the figure is expected to grow by USD 480 billion by 2025 to nearly USD 5 trillion as countries increasingly benefit from the improvements in productivity and efficiency brought about by the increased take up of mobile services.

Our own research has found that 5G-enabled industries have the potential to add USD 8 trillion to global GDP by 2030, as COVID-19 accelerates medium- and long-term digital investment and value creation. [Read the report here.](#)

Connectivity helps to connect the unconnected, providing access to information as well as to financial and commercial services to underserved areas. 5G enables 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 has a major role to play in technology transfer and human capital development globally. The COVID-19 pandemic only emphasized the role connectivity and technology play.

\* The GSMA represents the interests of mobile operators worldwide, uniting more than 750 operators with almost 400 companies in the broader mobile ecosystem.

“ Our research has found that 5G-enabled industries have the potential to add USD 8 trillion to global GDP by 2030.

## Connecting people and things

We believe the positive impact of the technology we create far outweighs any potential negative impacts. Connectivity enables people to interact, communicate, collaborate, share, learn and work. It provides access to services, work, healthcare, education and opportunity. It can make life and work easier, more productive and sustainable.

Access to the benefits of connectivity and digitalization remains unequal across the globe. In late 2021, data from the International Telecommunication Union (ITU), the UN agency for information and communication technologies, suggested that 2.9 billion people remain unconnected despite a connectivity boost from the effects of the pandemic. Furthermore, digitalization of industries remained low. It is estimated that only 30% of the world's economy is digitalized.

With our customers we connect the world's people, machines and devices. We build critical networks, software and services, and we continue to innovate and reimagine technology to help meet society's many challenges and opportunities, make communities smarter and more sustainable,

“ Despite the connectivity effects of the pandemic, 2.9 billion people around the world remain unconnected

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.



### Technology and sustainable development

5G networks can increase total energy consumption of mobile networks as 5G equipment is initially added on top of existing 2G, 3G and 4G sites. However, 5G technology has been designed to be 100 times more energy efficient than previous radio technologies and provides the first generation of radio technology where we are able to decouple

the massive growth in data traffic from energy consumption growth. We work hard to continually improve the energy efficiency of our 5G and full product portfolio. Modernization is a key approach to minimizing the expected rise in energy use, and the networks we modernized in 2021 used on average 46% less energy than those that were not modernized. In 2021, we further underlined our

commitment by announcing that we will halve 5G AirScale base station power consumption by 2023 and by launching our new IP chipset (FP5) that reduces power consumption by up to 75% compared to previous chipset generations in IP networks.

### 5G and digital lives

5G will provide the fabric for a better world. There are many benefits of 5G when combined with other technologies and smarter planning. We expect to see new, even unimagined types of services and greatly improved existing ones to help fight climate change through faster, better and more accurate data. The combination of 5G's low latency, which provides real-time connectivity and massive amounts of data with sensors and analytics, will help to enable all sorts of smart services that can greatly improve environmental health and public safety.

We offer a broad innovative portfolio of solutions to underpin a more digital and sustainable world. By the end of 2021, we had 214 5G commercial deals in key markets and had rolled out 74 live 5G networks across the world. In 2021, we announced several new 5G customers such as TIM Brazil, Safaricom Kenya, CBN China, Tele 2 Croatia, Associated British Ports and Volkswagen Wolfsburg. For more information on where we are rolling out 5G and its benefits, go to [networks.nokia.com/5g](https://networks.nokia.com/5g).

We see 5G transforming our lives in fundamental ways. For example, in healthcare 5G can help save lives as the foundation of modern healthcare service.

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. Read more about [5G and the sustainable future here](#).

### Connecting the unconnected

We have customers in most countries of the world. The rollout of 5G continued around the world in 2021, and we continued to improve connectivity and coverage in many emerging markets and announced new cooperation in countries and territories such as Angola, rural regions of Argentina, Armenia, Bangladesh, Ecuador, Iraq, Kenya, Nepal and Malaysia.

We serve with our partners and customers the needs of 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 use home device can help cities, counties and educational entities enable students' access to online learning from the comfort of their homes. The same solution will enable broadband connectivity and business continuity for city services, such as community centers, hospitals and libraries, and help improve the safety

of public employees as they can work from home when necessary.

The COVID-19 pandemic has shown the importance of connectivity, but also highlighted a growing digital divide. Bridging the 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.

Another great example comes from Kenya where, as a continuation to our Corporate Social Responsibility (CSR) pilot program, we came together with multiple stakeholders, including the local telecom service provider Safaricom, UNICEF and the Kenyan Ministries of Education and ICT, to connect close to 90 schools to the internet in Kenya's challenging rural and informal urban settlements. The initiative aims to connect the unconnected, with the ultimate goal of supporting the Kenyan government's plans to scale broadband connection to all schools by 2030. Read more [here](#).



## The digitalization of industry

The Fourth Industrial Revolution (4IR) will be powered by 5G, enabling a more resource efficient industry with less waste and greater productivity, a significant response to climate challenges and providing alternative consumption options for individuals and communities.

The traditional asset-intensive industries such as manufacturing, energy and utilities, transportation and buildings sectors account for 80% of total global CO<sub>2</sub> emissions, according to GSMA. In 2021, we worked with GSMA Intelligence to look at how mobile and digital technologies will allow businesses to accelerate their progress towards their decarbonization targets. The result of our cooperation was the white paper "Industry pathways to net zero", in which we show that mobile and digital technologies can allow businesses to meet their decarbonization targets quicker. Find some highlights from the white paper on the right.

### Working with Industry verticals

We focus on digitalizing and automating processes in heavy asset industries such as energy, transportation, manufacturing, and mining.

#### Energy

The production and use of renewable energy are only set to grow, and energy companies need to be ready

to better support this development. Gathering data to create intelligent and timely insights leading to faster interventions is key. So, even though communications has managed grid assets for a long time, now it is the conduit for managing more assets, at a larger scale, further into the grid with lower latency, more bandwidth and iron-clad security. For example, in 2021 we announced that we are working with Bahrain's Electricity and Water Authority to digitalize distribution network for improved efficiency and performance.

#### Mining

Connected digital mines will help improve mine safety, sustainability, productivity and resource efficiency. We are working with several mining operators worldwide to deploy private wireless networks based on LTE, with plans to migrate to 5G in the future. For example, in 2021 we announced that we are providing standalone private wireless to support Industry 4.0 adoption at Agnico Eagle Finland mining operations for Kittilä mine, the largest primary gold producer in Europe.

### "Industry pathways to net zero" - highlights from the white paper:

- Manufacturing, energy and utilities, transportation and buildings account for approximately 40 gigatons of CO<sub>2</sub> emissions per year worldwide.
- For the manufacturing industry, connected smart factories are key, reducing its current emissions of roughly 16 gigatons of CO<sub>2</sub> per year. Automating production lines, reducing plastic use in production and developing a viable circular economy are helping decarbonize the industry. By moving to smart factories, leveraging IoT devices and automating labor intensive tasks, the research suggests potential annual productivity and energy savings gains of 10–20%.
- For the energy and utilities sector to reduce its emissions, a holistic approach is needed. A global switch to solar and wind grids could reduce CO<sub>2</sub> emissions by 3 gigatons and 1.1 gigatons respectively by 2030. But equally important are efficient distribution techniques and enabling consumers to make informed energy decisions via smart meters.
- In the transportation industry, mobile connectivity can optimize driver routes and reduce congestion. And we can all help reduce the environmental impact of transportation by increasing the use of public transport and electric vehicles, while governments worldwide also need to encourage uptake. Our research found that the transport industry needs to lower emissions by roughly 4.5 gigatons over the next ten years for net zero by 2050 to be possible.
- Fundamental changes must be made to the way homes are designed, heated and insulated. With greater integration of smart meters and energy management systems into homes, households can also be encouraged to use less energy. The commercial building sector also has a growing responsibility, and more sustainable materials and better energy efficiency are needed for offices and commercial premises.

Download the white paper [here](#).



### Manufacturing

The factory of the future will see people and machines working more safely, increasing productivity, improving efficiency and producing goods in a way that meet carbon neutrality goals. In 2021, we announced a strategic deal for Turkey's first 5G-ready private wireless network for Arçelik Global, the global leading consumer durables and electronics manufacturer. The future-proofed Nokia 5G-ready network will provide the platform for Arçelik to accelerate its digital transformation and implementation of Industry 4.0 use cases. We are also deploying a 5G private wireless network for Volkswagen's pilot project in Germany, leveraging digitalization to help enhance efficiency and productivity, and trialing new smart factory use cases.

### Transportation

Digitalization and connectivity in transportation, such as aviation, road and rail, help enable safer and less congested ways of transport, while optimized routes reduce transport-related emissions. In 2021 for example, we announced an agreement with Tideworks Technology, a wholly owned subsidiary of Carrix Inc., to deploy Nokia Digital Automation Cloud (DAC) at the Port of Seattle. The introduction of our digital automation service platform with high-performance, industrial-grade LTE/5G private wireless networking will help deliver major increases in efficiency, worker safety and terminal handling performance by reducing the complexity of port flow.

In train-to-ground communications solutions, we announced that we have been selected by Austrian rail operator WESTbahn to implement a secure, high-performance and high-bandwidth train-to-ground communications solution across the operator's new expanded fleet of intercity trains.

### 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 ensure that the plethora of existing devices, as well as those that are coming in the future, are integrated and supported on this platform.

For example, our customer Vodafone Australia (TPG Telecom) has rolled out smart water meter applications quickly and effectively for their enterprise customer Watergroup, by implementing Nokia's IMPACT IoT platform. The solution enables active leakage detection and continuous monitoring



of water consumption patterns. [Watch the full video testimonial here.](#)

In 2021, we saw continued momentum for our Nokia Worldwide IoT Network Grid (WING) managed service that provides connectivity across geographical borders and technologies – currently serving more than 20 operators around the world including AT&T, US Cellular, China Mobile IoT, Vodafone Idea, Tele2 IoT, Telecom Argentina, TIM Brazil, Marubeni, Telecom Egypt, Hutchison 3 Indonesia, PLDT Smart or HMD Global. We support our customers in various industries from agriculture to ports or consumer appliances.

### Artificial Intelligence

As networks become increasingly costly and complex to operate, communications service providers (CSPs) around the world are looking for ways to relieve the pressure. A study carried out by Nokia and GSMA Intelligence during 2021 suggests that Artificial intelligence (AI) and automation are key. The study found that the telco industry sees AI as vital to cutting energy demand from rising internet traffic. However, in reality many CSPs are still in the early planning and testing stages of getting their AI efforts off the ground with respect to energy efficiency. Still, nearly 50% of CSP respondents said they expect to achieve energy savings of 10% to 20% over the next two years as AI energy solutions are rolled out and optimized.

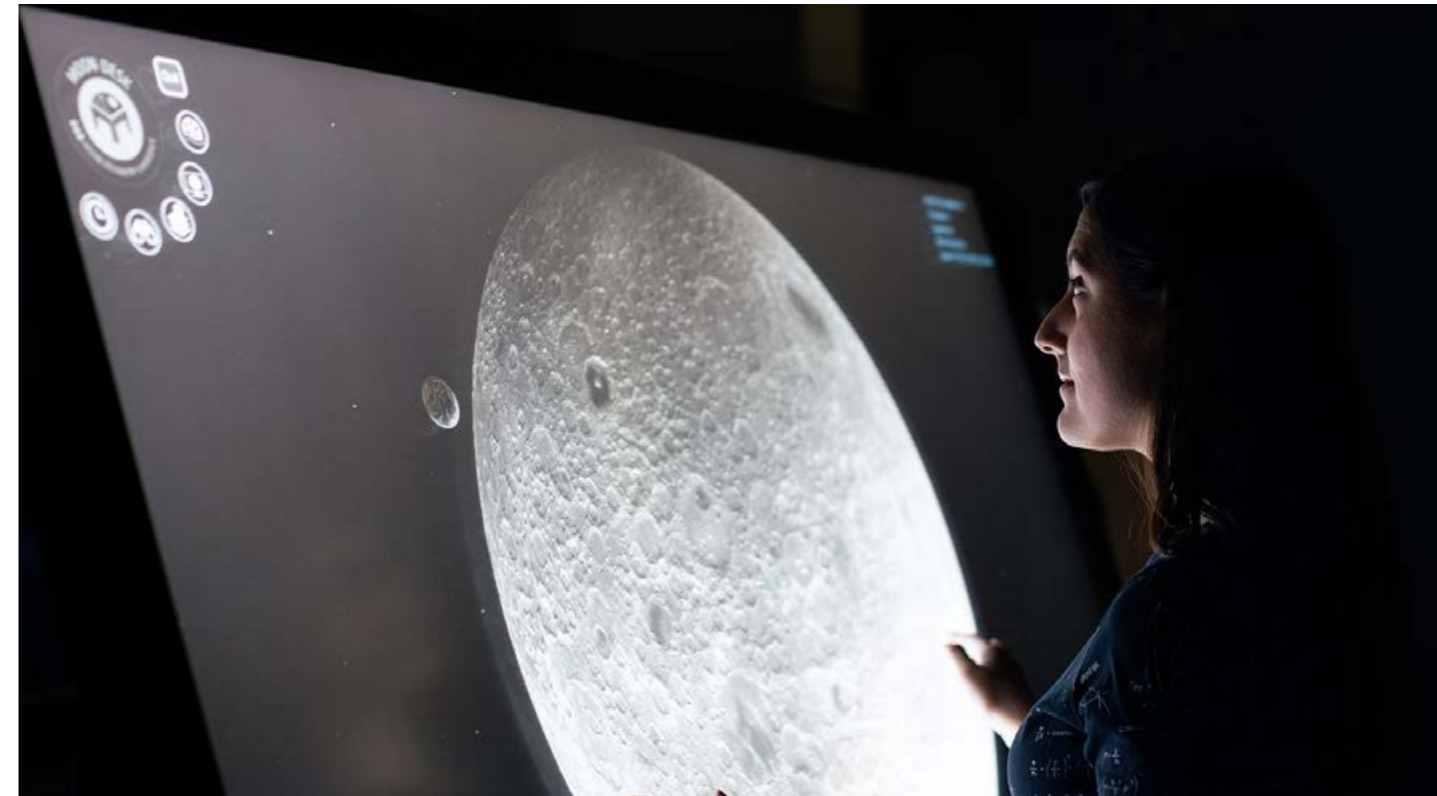
[Download the report here.](#)

With our AVA AI solutions, we are using the cloud to help CSPs inject and scale AI throughout their

mobile networks to automate operations, cut costs, optimize coverage and performance, enhance the subscriber experience and reduce energy usage. In 2021 we launched the world's first AI use case library on public cloud for telecoms providers. The AVA AI use case library can be delivered on any public cloud. It combines telco grade security and instant web scale architecture scalability, allowing communications service providers (CSPs) to securely inject AI into their networks nine times faster than using private cloud and scale fast across their network. The first commercial adopter of Nokia AVA AI on public cloud was Australia's TPG Telecom. TPG can now deploy and scale additional AI use cases fast, and has been able to, for example, decrease CO<sub>2</sub> emissions by eliminating drive-testing.

Another example is China Mobile, who needed an intelligent, automated way to manage energy use across its vast network. With our AVA for Energy Efficiency, they now have fine-grained, automated control over power consumption of both active and passive equipment for optimized usage, lower costs and improved environmental sustainability of their operations.

In another case, our Anomaly Detection Service helps Vodafone resolve network issues up to 30% faster, with Bell Labs machine learning algorithms detecting anomalies and helping automate root cause analysis. The service has already been deployed in Italy and Portugal and will be rolled out across Vodafone networks in nine additional European countries.



There are also ethical questions around the use of AI and Machine Learning in organizations, which have the potential to create trust issues. These issues relate to the potential to discriminate and to misuse, as well as potential negative effects on how people and machines interact. Collective debate is critical in finding a balance that maximizes the benefit of these technologies for society and minimizes or mitigates any risks.

Nokia's internal AI Ethics and Governance Advisory Board, set up in 2019, aims to support innovation and enable the development of responsible and trustworthy AI by developing ethical AI principles and guidelines. It leverages internal expertise through specialized working groups and by offering multidisciplinary oversight and guidance. It serves as a forum for internal debate on the right approach to solving ethical dilemmas.

### Smart cities and public safety

Urban populations are growing and continue to deal with congestion, security, citizen safety, environmental pollution, resource management, infrastructure capacity, and access and supply of services. Cities will need to accelerate digitalization, providing more connectivity, greater ease of access and range of services, and accessibility 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.

The joint development of LuxTurrin5G ecosystem led by Nokia forms the digital backbone for cities to become smart and sustainable. The multi-disciplinary consortium of 26 partners has achieved solid results together, and announced that the solution is now ready for global smart city markets. The modular smart poles are equipped with 5G base stations providing fast, reliable and secure connections, and video cameras, radars, and sensors needed for navigation, weather, temperature, air quality or carbon dioxide measurement can be integrated into the poles.

In 2021, we announced cooperation with cities around the world. In Vermont, we are working to upgrade the Department of Public Safety (DPS) microwave communications network that supports the mission-critical communication needs for several state agencies. This network upgrade enables the

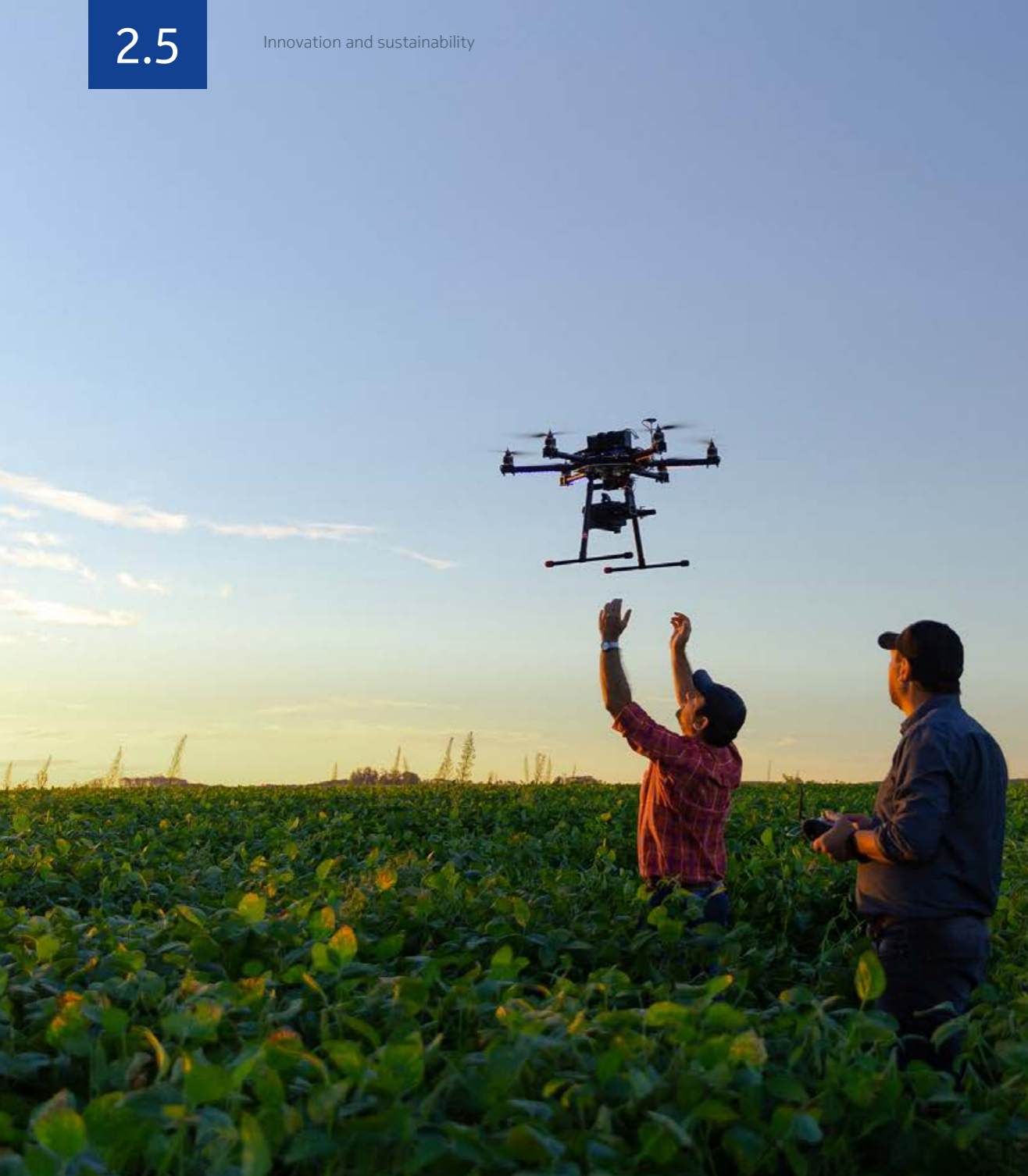
DPS to detect and prevent crime, participate in searches for lost and missing persons and assist in statewide or local disasters or emergencies.

In the city of Genk, Belgium, together with technology partners, we are addressing vehicle-based noise pollution. The trial uses an AI-powered solution to capture and measure excessive noise levels on a commercial street in Genk, allowing authorities to better quantify concerns of residents and visitors and make informed decisions.

In the Municipality of Nicosia in Cyprus, where in partnership with Cyta, the Cyprus Telecommunications Authority, we will deliver our IOC (Integrated Operations Center) city management platform to help Nicosia advance its smart city transformation, assisting in the enhancement of citizen services and improvement of environmental sustainability. Our IOC will also help city authorities deliver a range of new digital services that include urban mobility, smart parking, intelligent street lighting, environmental sensors, sustainable waste management, digital signage and information services.

“ We must act now to bring unconnected communities online. Not just in smart cities, but in smart villages and smart townships

Pekka Lundmark, President and CEO, Nokia




## Innovation and sustainability

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 are building 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 future humans. 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.

2021 saw many sustainability innovation and research highlights from Nokia Bell Labs. A research project that received a lot of positive attention was our technology partnership with AeroFarms, a global leader in indoor vertical farming. The Nokia Bell Labs innovation provides AeroFarms with an important piece of the vertical farming puzzle: a continuous monitoring solution that can track the growth of millions of plants. Drones can peek into the most inaccessible nooks of a vertical farming tower, covering far more ground at a far faster pace than any human. AI trained computer vision can analyze the growth and health of plants down to the

 We create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

individual leaf level. As part of AeroFarms' proprietary growing platform, this technology not only detects areas of poor growth, but will eventually diagnose the causes, whether from malfunctioning irrigation systems or suboptimal lighting. This precision monitoring of the entire farming operation will increase crop yields and improve efficiency, helping make vertical farming even more productive.

The energy efficiency of our network equipment is a focus area across the organization. 5G is already natively greener than 4G. But we have already started to investigate how we can further improve



energy efficiency in 5G-Advanced. A solution that we are exploring is the use of AI/ML in NG-RAN. This will share the traffic between different frequency layers and technologies as well as optimize mobility in the network. But also reducing the energy consumption of the 5G mobile devices is important. Within 3GPP, Nokia has contributed to a comprehensive toolbox of device energy saving features in the 5G New Radio (NR) Releases 15–17 that can increase battery life, thus providing a superior user experience.

Nokia Bell Labs also looked into the global issue of air pollution, both inside and outside. To measure room pleasantness, we developed and deployed ComFeel, an indoor environmental sensing infrastructure, which captures light, temperature and air quality readings through miniaturized and unobtrusive devices we built and named Geckos. And together with our partner, the University of Helsinki, Nokia Bell Labs is developing in the MegaSense project a technology which uses the 5G network to generate precise, smart, real-time data on the environment and air quality.

Another example is related to the circular economy. We have investigated the introduction of post-consumer recycled (PCR) plastic in Nokia products. Furthermore, we have successfully used PCR plastics in the production of Nokia's Optical Network Terminals (ONT) for a tier-1 customer. The ONT is the device at customer premises that communicates with a fiber optic internet network.

We also encourage our communities to take part in innovating with us. In 2021, we held the 8th edition

of the Nokia Bell Labs prize competition to attract the best minds to help solve some of humanity's greatest problems. The winner was Asegun Henry, Associate Professor and Director of the Atomistic Simulation & Energy Research Group at MIT. He is proposing a remarkable new use for carbon, the primary source of global greenhouse gas. Instead of burning carbon in the form of coal and other fossil fuels to produce energy, Henry wants to use carbon as the primary means of storing energy generated from renewable sources like solar. He has invented a thermal battery made of a graphite, which is carbon in its crystallized form. This battery could store enormous amounts of energy in the form of intense heat. Such a technology could go a long way in helping us shed our reliance on fossil fuels and cutting CO<sub>2</sub> emissions

5G World has honored Nokia with the “Most Innovative Artificial Intelligence or Machine Learning Technology for the Network” Award for Anomaly Detection Service, a software product jointly developed with Vodafone, that detects and remediates network anomalies before they impact customers. The Anomaly Detection Service, launched in July 2021, is based on Nokia Bell Labs technology and is being rolled out across Vodafone’s pan-European network. The product quickly detects and troubleshoots irregularities, such as mobile site congestion and interference, and unexpected latency that can impact customer service quality.

For information on how we innovate visit [www.nokia.com/innovation](http://www.nokia.com/innovation) or [www.bell-labs.com](http://www.bell-labs.com)



## University collaboration and social programs

To have the greatest impact, we must go beyond our company and industry and collaborate with a broad range of stakeholders such as academia and non-governmental organizations. Our employees are central to making this happen, by engaging in volunteering activities and actively promoting programs that have a lasting positive impact on local communities.

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 2021 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 to top universities in Europe, the US and Asia, and we get access to top talent. This year we funded an

industrial PhD program in Quantum Computing at Aalto University in Finland, 6G research including a National Science Foundation (NSF) program leading the 6G research in the US, projects on the ethical use of AI and data, use of wireless technology promoting sustainability, as well as projects using 5G for industry verticals. For example, one of the funded projects aims to provide wireless connectivity to Hyperloop trains which is a future, emission-free form of transportation.

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 [5.5 Inclusion and diversity](#).

### Distinguished Academic Partnership program

Some highlights from this program in 2021 include:

- Strategic research partnerships on future wireless technologies with Aalto University, University of Oulu and New York University, which have supported a leadership position in key 6G research
- Exciting advances for future industrial automation with partners at TU Munich and Aalborg University
- New processing architectures for dramatic 5G Systems on a Chip (SoC) energy savings with KU Leuven and IMEC
- Advanced network slicing techniques that utilize deep learning through our collaboration with TU Dresden
- A growing body of knowledge on how people interact with a new generation of wearable devices from the Nokia Bell Labs research center, now on its fifth year at Cambridge University.

For more examples of recent research outcomes and more information about the program, please visit our [Distinguished Academic Partners program webpage](#).

### Our approach to Corporate Social Responsibility

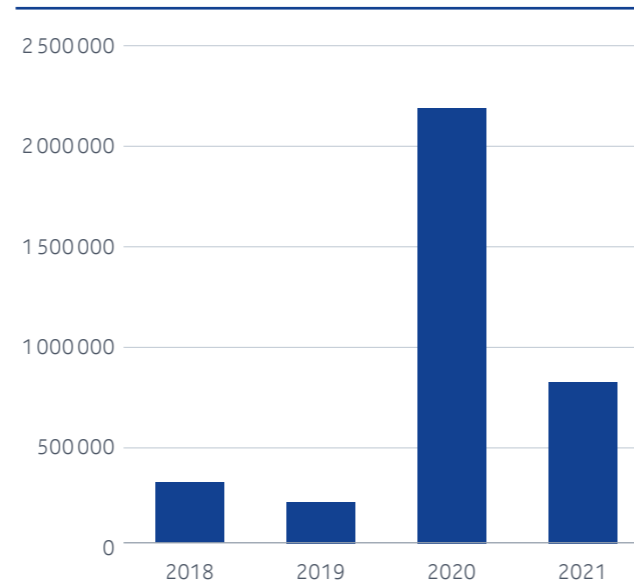
Our Corporate Social Responsibility (CSR) activities are divided into corporate, key regional, and local programs. Our corporate level programs are centrally managed and in 2021, focused on three key themes: Connecting the Unconnected, Empowering Diversity, and Defending our Climate. Key regional programs cover programs in India and China, and local programs are initiated and run by Nokia offices around the world.

In 2021, we invested EUR 7 million in communities around the world (EUR 6.5 million in 2020). 98% of the contributions were provided as cash, 1% as employee time and 1% as in-kind non-cash resources. A large share of total donations, 37% were classified under the theme of Connecting the Unconnected. Other larger themes were COVID-19 relief and university research.

In 2021 our target was to direct 30% of our corporate CSR spend on programs focused on empowering diversity, and we reached this target as 33% of the corporate-funded programs fell under this theme. Our new target is to harness our technology, capabilities and funds to improve the lives of 1 500 000 through social digitalization projects, digital skill building, and connecting the unconnected or underserved by 2025.

In total, our programs reached 862 900 direct beneficiaries in 2021 as shown in the graph on this

Direct beneficiaries reached by our corporate social responsibility programs



page, women, students and minority groups being the largest beneficiary groups.

#### Our corporate CSR programs

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



Students attending an UPSHIFT workshop © Youssef Laafou/UNICEF 2021

the UN Sustainable Development Goals. In 2021, we launched a new program with UNICEF Finland in Morocco, joined hands with Udacity and Blacks In Technology Foundation, supported the mental health work of the International Federation of Red Cross (IFRC) as well as finalized our long-term program with UNICEF in Indonesia.

In our new two-year program in Morocco, we are joined by UNICEF, the Moroccan government (the Ministry of Youth and the Ministry of Education), Orange Morocco and other key partners to work to empower less advantaged young people (15-24 years), particularly girls, to become resilient young people who engage actively with their families

and communities and are increasingly productive through employment or self-employment. Through awareness raising sessions, workshops/bootcamps and coaching, the program equips young people with skills for life and employment, and helps them to identify problems and design social and entrepreneurial solutions in their own communities. The program is also designed to raise the youth's awareness on climate change and environmental issues so that they can become change agents in their communities. The program is based on the **UPSHIFT** social innovation and venture curriculum, which is featured as part of the World Bank's Solutions for Youth Employment portfolio.

In 2021, we also emphasized our key pillar of Empowering diversity, as we want to see the technology industry become more diverse. In this regard, we partnered with digital talent transformation platform Udacity and Blacks In Technology Foundation to award Nanodegree scholarships to 302 members of the underrepresented community. The fully funded scholarships cover a range of core tech competencies, and the successful candidates can choose learning programs on topics such as AI Programming with Python, Java Programming, Data Structures and Algorithms, Intermediate Python, and Cloud DevOps Engineering. We received nearly 26 000 applications, and after pre-selection, we invited prospective candidates to take part in a two-month challenge course which acted as an introductory program. Based on the motivation and learning shown during the challenge course, we finally made

the selection of 302 scholarship winners who started their Nanodegree programs in January 2022 and will complete them by June 2022.

In Indonesia, we have worked together with UNICEF since 2017, providing funding for the development of high-impact mobile health (mHealth) programs and other development interventions that save lives. Our support for UNICEF Indonesia has been seen as instrumental in the expansion of data-driven digital intervention programs across Indonesia to improve results for children. The program helped establish a local data analytics team back in 2019, which has been formalizing data innovations in the office. Once the COVID-19 pandemic hit, UNICEF has been able to support the people and government of Indonesia by using much of the assets and learnings from the program supported by Nokia.

2021 was the final year of the Nokia-UNICEF program and work focused on, for example, the expansion of the nutrition chatbot, which is used to support uninterrupted nutrition counseling services for caregivers with severely malnourished children, COVID-19 prevention monitoring and use of big data. In 2021, the program reached over 656 000 direct beneficiaries through various program activities, and since the start of the program in 2017, we have together reached and improved the lives of at least 2.5 million people.

Additionally, as part of the joint program, UNICEF in collaboration with the Indonesian government



The chatbot, which is used via WhatsApp, provides parents and health workers with an online counselling platform to discuss children's health and nutrition. © UNICEF/UN0459214/Padj

is continuing to develop the United Nations Sustainable Development Goals Dashboard. The dashboard provides an intuitive and innovative data portal to support analysis, informed policy choices and reporting on the UN goals at the central and subnational level in the country. The SDGs Dashboard version 2.0 was launched in November 2021. [View the dashboard here.](#)

While the Nokia funded program in Indonesia has come to its end, the digital interventions developed by UNICEF Indonesia continue to grow and expand. During the last two years, at least seven of them have been adopted by the government: three have been replicated to other districts using local government funding, and other interventions were integrated to the national system.

### Key regional programs

As part of our community investment programs in India, we expanded Smartpur, our project to digitalize villages, to another 160 remote villages now reaching up to 260 villages across nine states in India. The project transcends the idea of a smart village as simply technologically equipped to a model that integrates such technology into the daily lives of all, supporting villagers in accessing essential services such as education, health, livelihood, governance and financial inclusion. We also continue to support education for out-of-school children from migrant communities by providing them with remedial classes in conducive environments.

In addition, during 2021 we have further assisted in building back better and in the fight against COVID-19. Amid the crisis, we have assisted in humanitarian response through the provision of essentials such as hygiene kits and food supplies as well as personal protective equipment (PPE) kits, face masks and sanitation material in our current areas of work. We have further collaborated with various hospitals and supported them in sourcing medical equipment including oxygen plants.

In China, our employees launched over ten volunteering programs nationwide. The programs focused on, for example:

- contributing to set up two internet classrooms in the remote village schools in southwest China's Yunnan Province

- giving lessons to rural children on digitalization either onsite or online depending on COVID-19 restrictions
- inviting girls to join the Girls in ICT Day program to help them build up their dreams for better career development as well as providing help and support to kids in need.

We also continued our poverty alleviation program in Ninglang county, Yunnan province in China, for the 19th year by leveraging our latest technology, helping Ninglang NSB School with its Smart Campus programs as well as smart classrooms for rural schools. We also supported digitalization programs in Ninglang to help improve its information infrastructure. The program aims to bridge the education resources gap between remote areas and developed areas in China, assisting in providing equal education opportunities for local students. In addition, we have 400 employee volunteers to assist 400 children from families with difficulties supporting their education.



Connectivity makes it possible for local entrepreneurs to provide services at the village level through Smartpur centres.

## Engaging with our communities on the ground

Our volunteering guidelines and supplemental standard operating procedure (SOP) provide support 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 volunteering work. In 2021, we were not able to collect and report the total volunteering hours across Nokia, as our Location Development program was discontinued during the year.

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 through - for example humanitarian and crisis aid, donating medical supplies and used IT equipment, and collecting and donating toys, clothes and other essential goods. Below are a few examples.

### Krakow, Poland

The site organized volunteering events with over 100 volunteer hours. The volunteers carried out cleaning and maintenance work at the St. Lazarus hospice in Kraków and the Ludwik and Anna Helclowie nursing home. During several visits to the Przymulisko animal shelter in Harbutowice, the volunteers did repair work, such as renovating dog kennels and house interiors.

“ Our employees across our sites are active in organizing activities to support and engage with the communities around them.

### Timisoara, Romania

The site carried out a number of programs during the year, including donating over one hundred used laptops to schools and taking part in a competition to build boats entirely out of recycled materials and race them on river Bega. Also, 40 Nokia volunteers planted over 900 trees in what they call the "Nokia forest," part of Timisoara's forest protection curtain.



Nokians competing in a boat made out of recycled materials. ©Daniela Stancioiu



Nokia volunteers planting trees in Timisoara, Romania.

# Combatting climate change

Climate change is now front and center as the most urgent issue facing humanity, affecting environmental, social and economic life. How we now respond to the challenge is a shared responsibility. Connectivity and digitalization provide tools to contribute to resolving these fundamental challenges for industry, society and individuals. We believe **there is no green without digital.**

# Highlights

Nokia joined the EU Green Digital Coalition (EGDC) as a founding member. The coalition is a group of 26 CEOs of ICT companies committed to supporting the Green and Digital Transformation of the EU. The main aim of the EGDC is to maximize the sustainability benefits of digitalization. For example, by reducing and avoiding more emissions than the footprint of the ICT sector itself.



5G

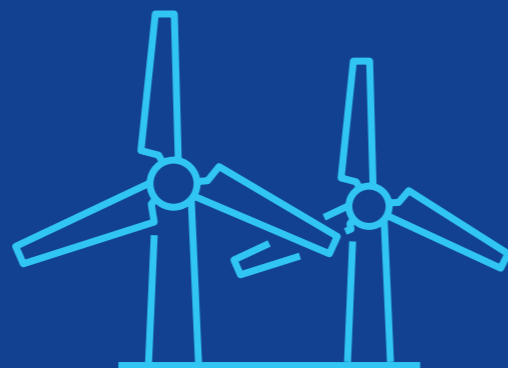
We continued to invest in innovation to drive down energy consumption of our products. Our product portfolio innovations included our next-generation *AirScale 5G* portfolio with new *ReefShark* powered plug-in cards and FP5, our fifth generation of high-performance IP routing silicon.



1.5

Our new recalibrated science-based target aligned with the 1.5°C global warming scenario was accepted by *Science Based Targets* initiative (SBTi), with our logistics, final assembly suppliers and almost 100% of the current product portfolio now covered by the target.

In November 2021, we committed to use 100% renewable electricity in our facilities by 2025, aligning with the requirements of the *RE100* initiative.



46%

less energy was used on average by the customer networks we modernized in 2021 compared to those not modernized.

At the COP26 climate conference in Glasgow, we joined the *World Economic Forum's First Movers Coalition* as a founding member. The Coalition aims to accelerate the market for zero-emissions goods and services in eight critical industrial sectors.

COP26



## Our climate targets, handprint and footprint

Climate change is one of the three key pillars of our company purpose to create technology that helps the world act together. We look at how we drive more efficient, less wasteful use and reuse of natural resources through our technology. The main part of our carbon footprint comes from the electricity when our products are being used by our customers in their networks.

This means we can have our greatest direct impact on our own footprint by continually working to reduce the power consumption of our products. We have set stringent climate targets to cover both our own operations and our value chain from our suppliers to customers, and we engage with our stakeholders and industry to drive improvements in the broader ecosystem.

“ We can have our greatest direct impact on our own footprint by continually working to reduce the power consumption of our products.

Digitalization and climate action must go hand in hand. Connectivity, 5G and other new digital technologies are critical to the success of a sustainable Fourth Industrial Revolution (4IR). The technology solutions we provide can enable emission reductions across industries, economies and cities. 5G provides the fabric that supports the use of other new technologies. This is our handprint, and we must maximize its impact. While we expect digitalization will drive more energy and material

efficient industries and communities, our industry must continue to decarbonize its own operations and products even in the face of increased capacity and data traffic demands. We must continuously minimize our footprint. As resource efficiency, decarbonization and circular practices become mainstream requirements, the world will need to rethink how it produces, lives, consumes and limits



waste, if we are to reach the 2030 United Nations Sustainable Development Goals.

### Our climate targets

Our main climate target is our science-based target (SBT). Our SBT is to reduce greenhouse gas emissions by 50% by 2030 across our value chain (Scope 1, 2 and 3) compared to 2019 emissions.

This recalibrated target was accepted by the Science Based Targets initiative in March 2021 and is aligned with limiting global warming to 1.5°C, replacing our original science-based targets set in 2017. The baseline year for our updated SBT is 2019 and reported emissions in the base year were 34.961 million metric tons CO<sub>2</sub>e.

The target applies to our Scopes 1, 2 and 3 emissions, and covers the following activities:

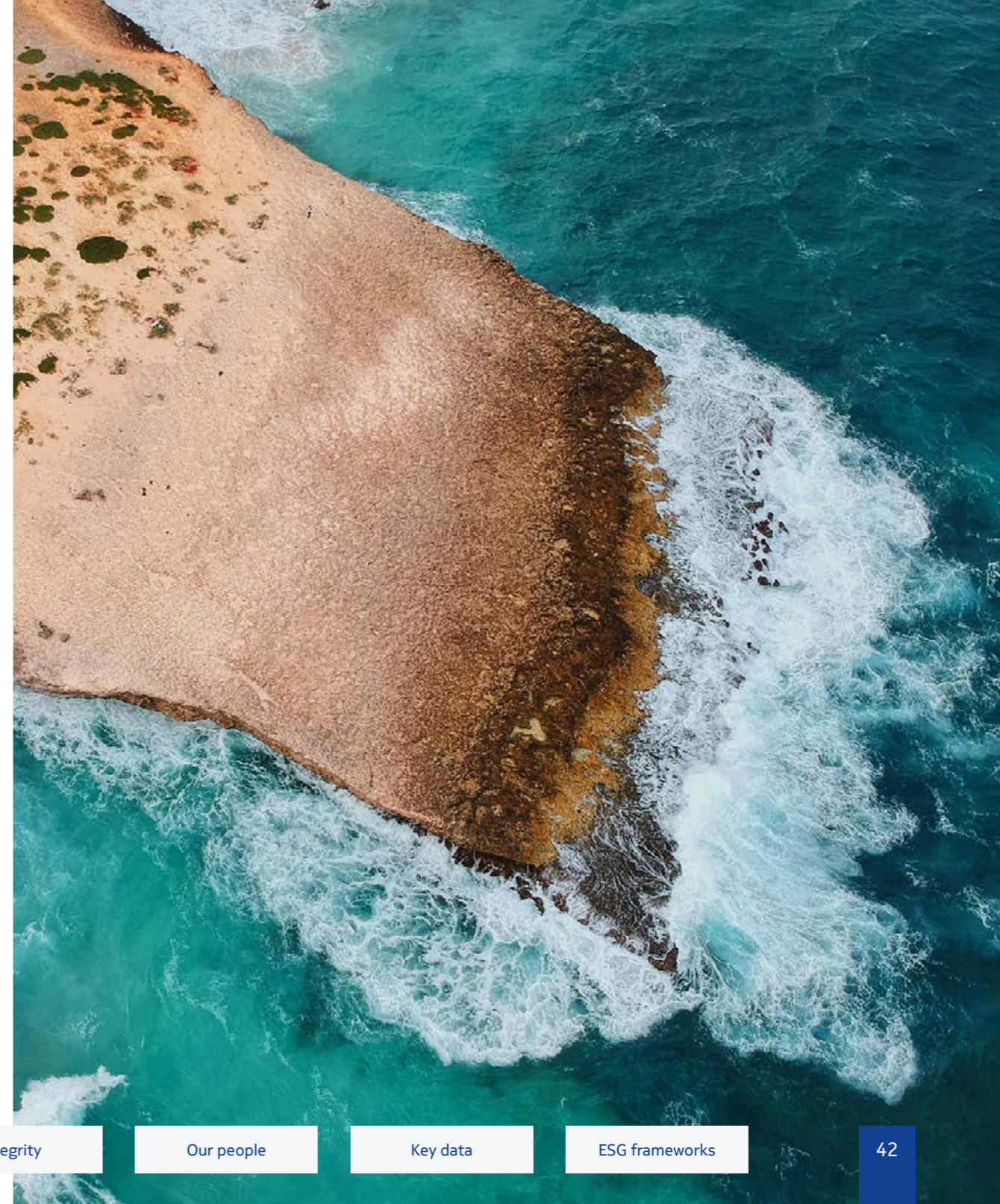
- **Scope 1:** emissions from our facilities, car fleet and marine fleet
- **Scope 2:** emissions from purchased energy
- **Scope 3:** emissions from the customer use of sold products (covering almost 100% of our current portfolio) and emissions from the logistics and the final assembly factories in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

In addition to our SBT, we have set other short-, mid- and long-term targets in specific areas of our operations and value chain to drive concrete actions that support the achievement of the main SBT target. For example, in 2021 we joined the RE100 initiative, a global initiative led by the Climate Group in partnership with CDP, which brings together the world's most influential businesses committed to 100% renewable electricity. Our RE100 target is to achieve 100% purchased electricity from renewable sources by 2025 to power our offices, R&D labs, and factories. While renewable energy is not currently available in all the countries where we operate, we will work with the broader ecosystem to drive greater uptake of sustainable electricity. Our 2022 target roadmap on [page 15](#) provides an overview of all relevant targets and their timeline.

### Understanding and tracking our emissions

The largest share of our total carbon footprint comes from the use of sold products and from our supply chain. As shown in the graph on the next page, our total emissions in 2021 were 40 983 500 metric tons CO<sub>2</sub>e. Of this total amount, Scope 1 emissions were 124 300 metric tons CO<sub>2</sub>e, Scope 2 emissions 224 500 metric tons CO<sub>2</sub>e and Scope 3 emission 40 634 700 metric tons CO<sub>2</sub>e. The scope of our Science Based Target (SBT) covers 37 598 000 metric tons CO<sub>2</sub>e which is 92% of our total 2021 emissions. Read more about the SBT initiative and the criteria for science based targets [here](#).

Despite great progress in reducing our Scope 2 emissions, we were not on track with our SBT at the end of 2021. As anticipated, the emissions covered by our SBT were 8% above our cumulative carbon budget for 2020–2021, if a linear reduction from 2019 is expected annually. However, we do not expect the reduction of emissions in our value chain to be a linear process. We still plan to achieve our target of 50% reduction in emissions by 2030 as we see greater impact as more energy efficient products and features of our portfolio are adopted and decarbonization of the electricity grid continues globally.



### Managing our climate actions

We have a global Environmental Management System (EMS) which provides the tools to analyze our most significant environmental impacts on an annual basis and to systematically track progress on selected focus areas on a quarterly basis. To choose the focus areas, we consider current, upcoming, and potential new regulations and other requirements, stakeholder interests 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 to regulation and Nokia’s own environmental requirements. In 2021 the coverage of employees within the scope of that certification was 88%. 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.

### 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.

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 others increase efficiency, visit [our website](#).

Whereas our own operations are not very sensitive to changes in energy pricing or natural catastrophes, 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 our annual report [Nokia in 2021](#).

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

### Our carbon footprint (Scope 1, 2 and 3)



Emission source	Metric tons CO <sub>2</sub> e	% of total	
Energy use in facilities and by fleet	348 700	1%	Our Scope 1 & 2 emissions
Use of sold products	38 259 000	93%	
Purchased goods and services	1 571 600	4%	Our Scope 3 emissions
Capital goods	455 200	1%	
Upstream transportation and distribution	326 100	0.8%	
Employee commuting	17 200	0.0%	
Business air travel	5 600	0.0%	
<b>Total Scope 1, 2 and 3 emissions</b>	<b>40 983 500</b>	<b>100%</b>	

Percentages calculated out of reported, relevant GHG emissions.

## Decarbonizing our value chain

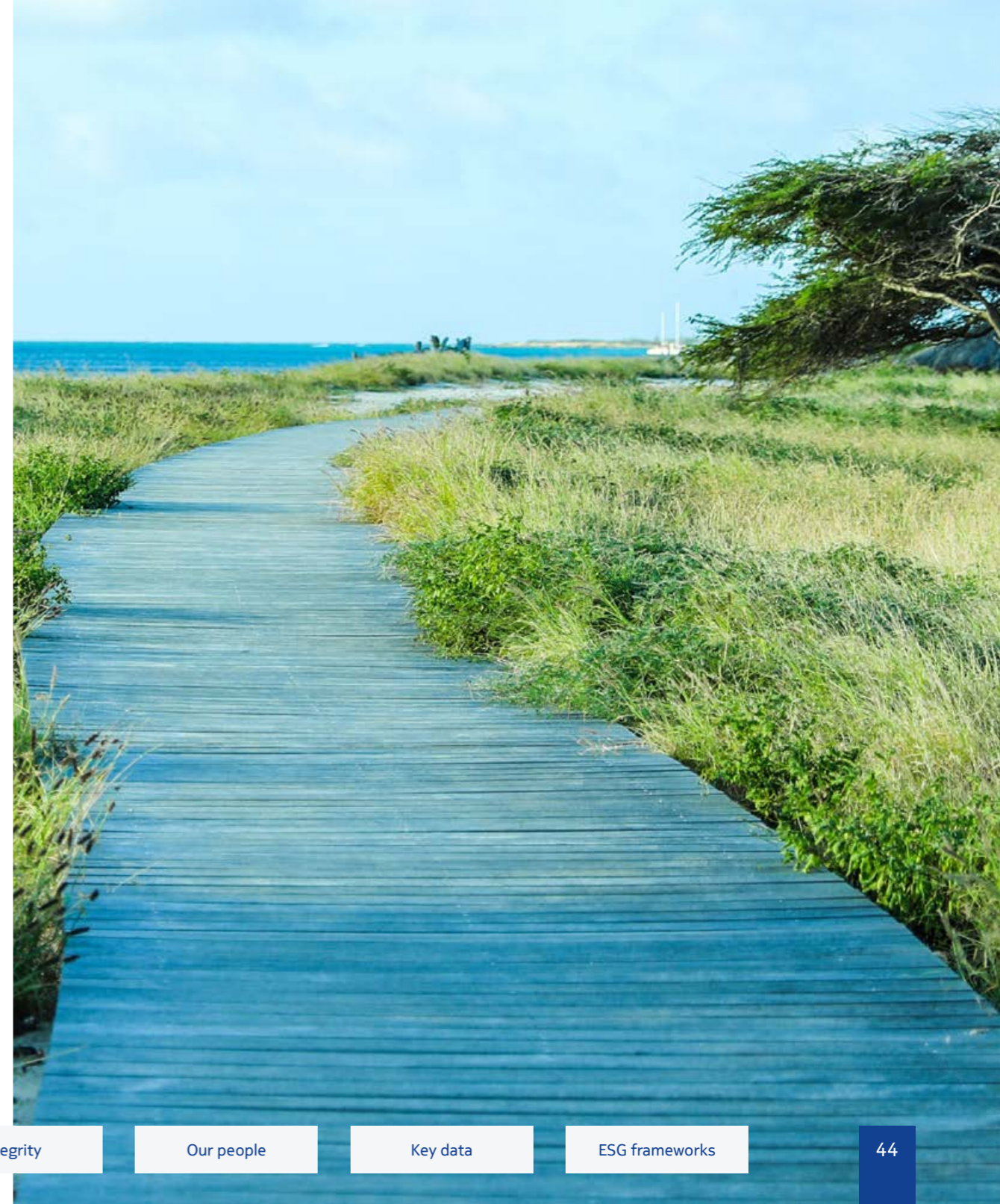
We are developing disruptive innovations for the next phase of human existence. We do this by looking five to ten years ahead and imagining what comes next. We focus on solving difficult problems and big challenges, and then connect the resulting innovations to the current portfolio of products and solutions.

Climate change and its effects are a major example of these big challenges. We believe digitalization and climate action are inseparable and must be driven together. Digitalization can help businesses and individuals minimize their own environmental impact, but we must accelerate digitalization with a two-pronged approach. First, we expect that the enabling impact of our industry and digitalization will only increase with new applications and use cases made possible by 5G and related new technologies. This positive handprint of our industry is unique, but we must also manage our industry's own footprint even as data grows massively. Second, our responsibility is to continually ensure that the network infrastructure we design and deliver to our customers and our operations including our supply chain, are as energy and material efficient as possible. In this way we maximize the positive impacts of our solutions while simultaneously minimizing any potential negative impacts.

“ The dual green and digital transformation are inseparable and interdependent. There is no green without digital.

### Our portfolio

There is no green without digital – that's our belief. But we, and our industry, must work to ensure the digitalization of other industries and society at large is implemented in a sustainable, climate conscious way. According to our life cycle assessment the use phase of our products remains by far the greatest part of our carbon footprint. 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 2021, we delivered strong energy efficiency improvements in our products and solutions, but due to a higher capacity demand from our customers and successful adoption of latest product generations, the GHG emissions from the customer use of sold products increased by 18% compared to 2020. For example, we saw increased demand for fiber connection for home office use and larger shipments of Single RAN (including 5G) high-capacity products. More information about the product energy efficiency improvements in our Mobile Networks and Network Infrastructure businesses is provided in the following paragraphs.

#### 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 impetus to improve the energy efficiency of 4G and 5G networks and thus minimize related CO<sub>2</sub> emissions.

The energy efficiency of mobile networks can be significantly improved by using power-saving features, small cell deployments and new 5G architecture and protocols. 5G has powerful energy-saving features such as advanced sleep modes which help reduce power consumption particularly in low traffic. Our AirScale radio base station products provide even more powerful energy saving software features when network traffic is medium or high. Over 150 customers have installed energy efficiency software features on our products, including more than 30 customers with 5G energy efficiency features. Over 20% of our radio products in the field have one or more energy efficiency software features activated.

In 2021, 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 also improved solutions such as our new SON EdenNet Energy Saving Module, by introducing Artificial Intelligence (AI) to help further reduce energy usage in 4G, 5G and multi-vendor legacy networks.

Modernization is a key approach to minimizing the expected rise in energy use as 5G is deployed and data grows. Early 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 networks we modernized in 2021 used on average 46% less energy than those that were not modernized. Modernizing a typical

legacy base station site to Single RAN can achieve an energy savings of up to 70% and reduce its annual CO<sub>2</sub> emissions from more than 70 tons to just 17 tons. Beyond the key reductions in energy use and related emissions, the typical payback time for base station modernization is two to three years. [Read more about 5G here.](#)



### Network Infrastructure

In 2021, we launched our IP Network FP5 Nokia chip which sets a new benchmark for power efficiency in IP routing with a 75% reduction in power consumption over previous generations. It reduces power consumption even more if only a fraction of the potential capacity is used. An intelligent aggregation mode enables a 33% capacity increase using the same power modules and inputs.

With FP5, power efficiency is always optimized, no matter what 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.

In Optical Networks, the latest generation of our Photonic Service Engine (PSE) chipset, PSE-V, is the industry's 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. [Read more online.](#)

In 2021, Nokia hit a milestone in reaching its 100th customer deploying our Quillion-based chipset in

fixed broadband solutions. Quillion based solutions use 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.

The Quillion Multi-PON solutions can co-exist with previous generation technologies without the need to replace the existing fiber that is already deployed. So, no digging is needed to install new fiber, resulting in the avoidance of potential environmental impact from new fiber being laid. Read more about the Quillion [here.](#)

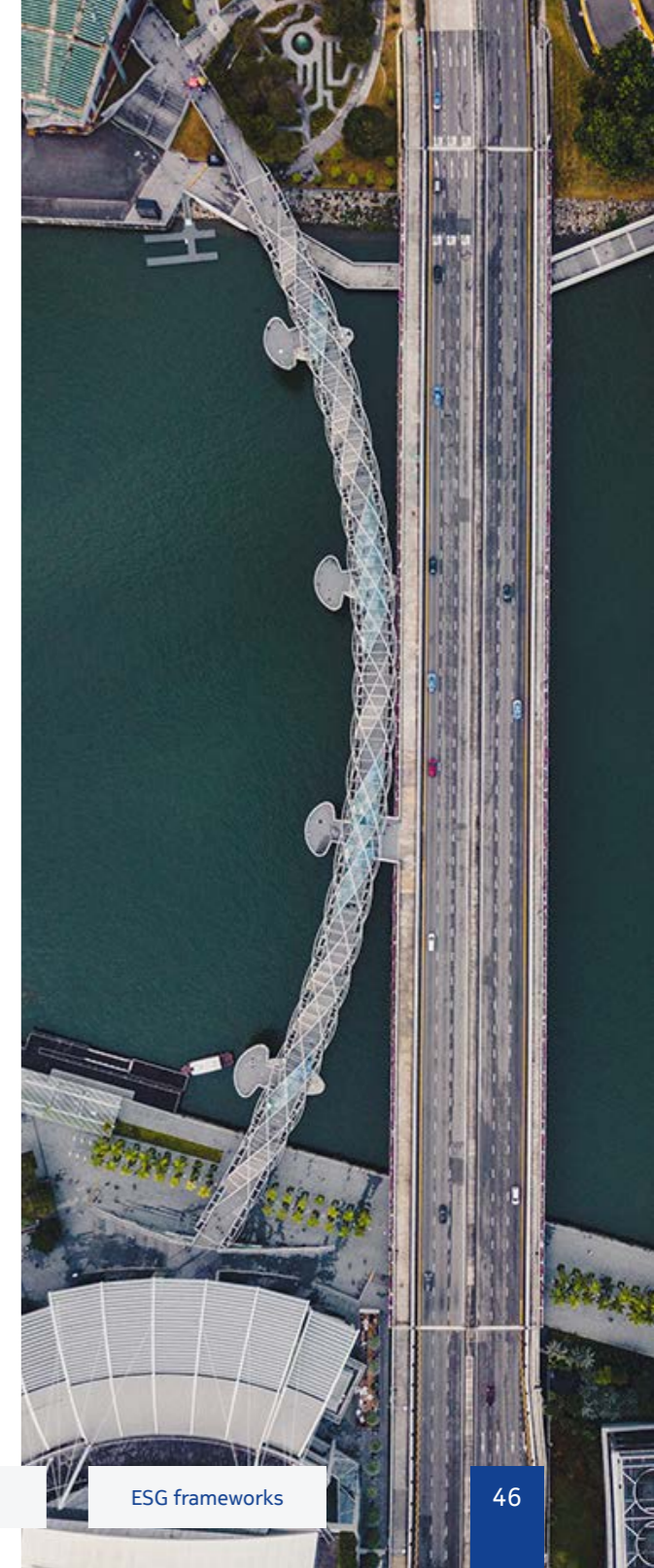
### Our own operations and climate

In 2021, our Real Estate team maintained its focus on developing and delivering energy efficient facilities in-line with our overall company goals and science-based targets (SBTs). While a large share of employees were working remotely in 2021 due to the continued COVID-19 pandemic, energy use associated with building infrastructure requirements and ongoing operation of laboratory equipment still occurred. In 2021, purchased electricity consumption across our facilities didn't change compared to 2020. 53% of total purchased electricity was associated with renewable sources (39% in 2020) and our Scope 2 emissions decreased by 15% from 2020 levels. In late 2021 we confirmed our aim to use 100% renewable electricity by 2025 across our facilities (including offices, laboratories and our own final assembly factories), aligning with the requirements of the RE100 initiative.

Total energy use within our real estate was unchanged compared to 2020. Countries employing renewable electricity in 2021 were Australia, Canada, China, Finland, France, Germany, Greece, India, Poland and the United States. We continue to encourage the consideration of sustainability in the selection, development, management and disposal of our facilities. All markets implemented projects designed to improve facility operational efficiency, including but not limited to the utilization of LED lighting at sites within China, Portugal, Poland and Singapore; the use of partial free cooling in Finland; and optimization of cooling towers and chillers in India. In addition, transferring real estate operations to more energy efficient sites in Germany and the US has brought reductions in energy use compared to the previous sites.

### Employee transportation — our car fleet

In 2021, GHG emissions from our global car fleet increased by 16% compared to 2020 but is still 17% less than in 2019. While the COVID-19 pandemic continued, the restrictions were not as severe as in 2020 and people could travel more, especially by car. The avoidance of public transport increased car usage to some extent as well. We significantly reduced our old service fleet in the United States at the end of 2020 and have been moving towards an electrified fleet. This move is led by Finland where 85% of company cars registered in 2021 were electrified, including both plug-in hybrids and fully electric cars. We have continued developing our mobility offering and selected the platform for first pilots starting in 2022. We aim to



electrify the car fleet and offer mobility services where feasible.

**Marine fleet**

We also have a marine fleet related to our subsea cables business, Alcatel Submarine Networks (ASN, part of Network Infrastructure business group). The fleet represents around 65% of our Scope 1 emissions. In 2021, the GHG emissions for our marine fleet increased by 8% compared to 2020. In line with its marine strategy, ASN has been progressively rejuvenating its fleet over the last three years by selling three older vessels and buying three new vessels with lower tonnage and lower fuel consumption. ASN has also started investigating other solutions to reduce marine fleet emissions such as using shore power facilities when the ships are in ports, optimizing transit routes by using the latest generation of artificial intelligence systems, and preferably mobilizing region-based chartered vessels.

**Engaging our suppliers on climate**

We require all suppliers, except those with very low environmental impact, to have a documented Environmental Management System (EMS) in place. We require and track that key suppliers and those with greater impacts are ISO 14001 certified. We create environmental improvement programs together to drive improvements in our upstream Scope 3 emissions through the CDP Supply Chain Climate Program. We encourage our key suppliers to report their climate impacts and set carbon reduction targets through CDP and work with them to build improvement programs.

In 2021, 441 of our key suppliers representing 65% of our total procurement spend, responded to the 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 addressed with improvement requirements and suggestions on next priorities.

In 2021, our Scope 3 emissions from our supply chain were approximately 1.6 million metric tons of CO<sub>2</sub>e. 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 395 of our suppliers through the CDP Climate change program, and we scaled up the emissions allocated to Nokia to cover 100% of our suppliers.

Our company climate goals include a target focused on our final assembly suppliers. The goal is for our final assembly suppliers to achieve zero emissions by 2030 for the portion of their manufacturing allocated to Nokia. In 2021 we continued working with our final assembly partners on the development of their 2030 roadmaps. All suppliers delivered factory level detailed roadmaps.

Sustainability was one category in our Supplier Diamond Awards in 2021. Supplier Diamond Awards is our awards program rewarding supplier excellence across several categories. Suppliers present their cases in front of expert juries and are recognized at our annual supplier event, with the presence of Nokia top leadership. The winning supplier of the

**Supplier climate disclosure figures**

**542** million tons of tCO<sub>2</sub>e

reductions reported by our suppliers

**1 730** million EUR

saved through emission reduction initiatives

**441**

Suppliers disclosed data, >65% of Nokia spend

**353**

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

**206**

Suppliers purchased renewable energy

**240**

Suppliers engaged their own suppliers on climate disclosure

**296**

Suppliers had active targets for emission reduction, and 154 of them are in line with the Science Based Targets

**80**

Suppliers proposed reduction initiatives and collaboration opportunities with Nokia

The data in this chart is based on suppliers' responses to the CDP Climate change questionnaire. Emission reductions and monetary savings reflect the suppliers' company-level achievements.

2021 award demonstrated excellent energy efficiency improvements in their own operations as well as product innovation contributing to reductions in the CO<sub>2</sub> footprint of printed wiring boards.

In November 2021 at the COP26 climate conference, we were recognized with the COP26 Compass Award for Supply Chain Capacity Building 2021 by

Defra UK and Responsible Business Alliance for our work with suppliers to create an ecosystem with aligned ambition and the ability to replicate world-class best practices. At COP26, we also joined the World Economic Forum's First Movers Coalition as a founding member. The Coalition aims to accelerate the market for zero-emissions goods and services in eight critical industrial sectors which are steel,

cement, aluminum, chemicals, shipping, aviation, trucking and direct air capture.

Read more about our work with suppliers under [Water in our supply chain](#) and in the [Responsible sourcing](#) chapter.

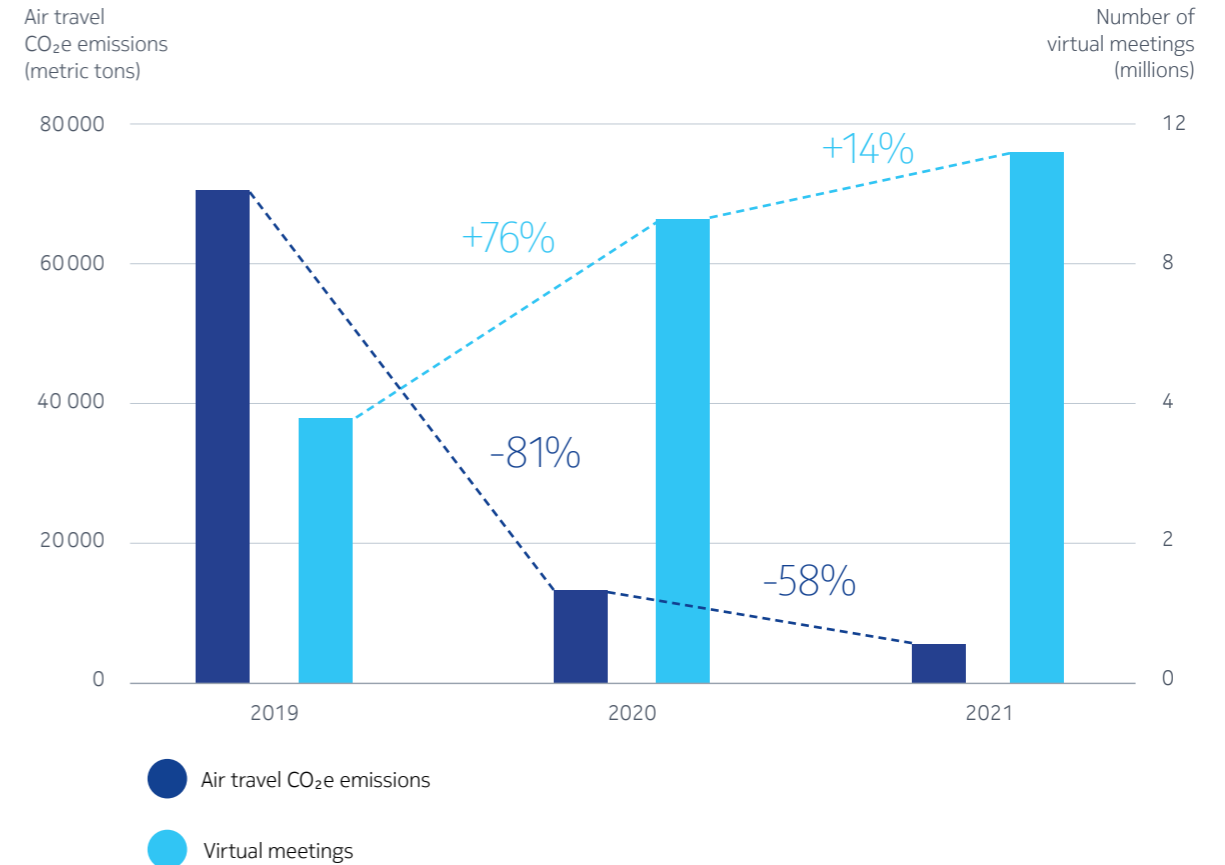
### Reducing our travel footprint

Business travel includes flights, 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<sub>2</sub>e emissions based on the number of miles flown.

In 2021, our CO<sub>2</sub>e emissions related to business travel dropped to approximately 5 600 metric tons (13 300 metric tons in 2020), meaning a 58% decrease compared to 2020. A significant part of the decrease is due to the continued impact of the COVID-19 pandemic resulting in reduced travel. Our experience with virtual meeting technologies was extremely beneficial in helping us focus on using alternative ways to conduct meetings and other business instead of face-to-face meetings. As a result, the number of virtual meetings increased by 14% compared to 2020.

This change in numbers reflects the shift in the way we work because of the pandemic. As the majority of our employees continued working from home offices in 2021 – on average 85% (68% in 2020) of employees during 2021 – our commuting emissions have significantly decreased compared to the time before the pandemic. In 2021, emissions decreased by 56% compared to 2020. Travel and commuting emissions are expected to grow as recovery from the pandemic proceeds.

### Virtual meetings increased, business travel emissions decreased





### Product transportation and distribution

We aim to save space, reduce packaging materials and maximize transport efficiency, thereby reducing inbound and outbound shipments. The reuse of packaging materials also contributes to reductions in CO<sub>2</sub> emissions from deliveries. In 2021, we reduced the use of new packaging materials by 2 600 metric tons (1 600 in 2020) by reusing transportation packaging. Increased reuse of the packaging has been achieved in part due to developed working practices in hubs. A special project in our Chennai factory around the usage of reusable supplier bins will help to eliminate 300 tons of packaging per year and the good practice is being expanded to other final assembly sites, including suppliers.

We look at the most efficient product transportation options and in 2021, our Scope 3 GHG emissions related to upstream transportation and distribution of our products stood at around 326 100 metric tons CO<sub>2</sub>e, an increase of 28% compared to 2020. We are working on specific reduction targets with our business groups. Furthermore, we are working with the business groups on the execution of roadmap to achieve the contribution of product transportation to Nokia's new science-based target.

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. From October 2021, we began partnering with DB

Schenker for carbon neutral air-freight usage on one of our main routes between Shanghai-Frankfurt-Tilburg. We use the DB Schenker Sustainable Aviation Fuel (SAF) carbon in-setting model which aims at a direct carbon mitigation of the transport system. Any new carbon emissions into the atmosphere are avoided. 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. With this model, carbon zero emissions are achieved through 100% in-setting. We aim to expand this solution, considering options in terms of volumes transported.

For 2022, 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.



In 2021 we began partnering with DB Schenker on carbon neutral air freight usage on one of our main routes between Shanghai-Frankfurt-Tilburg.

# Circularity

Around 50% of global 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 creation of new products; and second, how we can ensure maximum circularity of our operational value chain. This means that we embed circularity into everything we do.

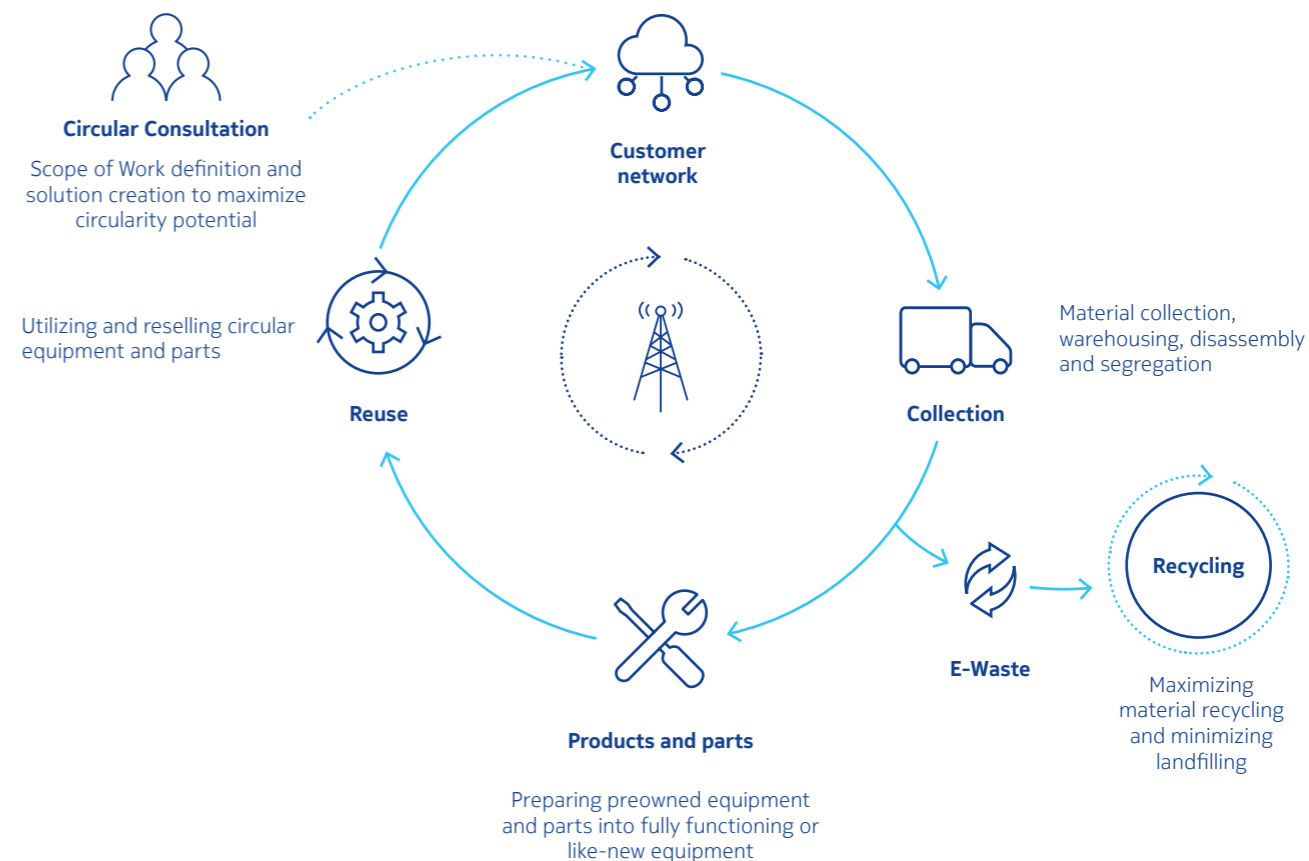
Efficiency, optimized use of resources and digitalization are key contributors to increase circularity. Traditional ownership of goods is changing; to access to services and to the utilization of digital platforms for a sharing economy, all of which can improve circularity. Our strategy to increase operational circularity follows the classic waste hierarchy. The first principle of which 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 are introducing a new circular metric to guide our operational circularity journey and to close the material loop. Our new target is to be 95%

**“ We are introducing a new circular metric to guide our operational circularity journey and to close the material loop. Our new target is to be 95% circular in 2030.**

circular in 2030. This target includes waste across our value chain: from our own operations, product manufacturing and product takeback. The purpose of the new target is to maximize the reuse of waste so that waste disposal is minimized. To reach our target we aim to improve our waste related data

## Circular practices and products



management and work with stakeholders to help ensure the best possible circular solutions for obsolete materials across geographies.

### 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 25 years, we have had well-established circular practices that utilize the full value of our products. 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. We take back or acquire excess and obsolete products from customers and markets, and then repair or refurbish these units for inclusion in the product supply chain for customer purchase or our own internal use. Customers can contact our services at [asset.recovery@nokia.com](mailto:asset.recovery@nokia.com) or by contacting a Nokia customer representative.

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 that the refurbishment and reuse of the old generation of products no longer brings environmental benefits. In 2021, we processed 3 980 metric tons of obsolete

products and parts (see the graph on this page). Of this material, we reused 55 400 items with a combined weight of 350 metric tons, sent approximately 3 510 metric tons of old telecommunications equipment for energy and materials recovery, and 120 tons to landfill. Therefore, 97% of the material content in our products could be utilized and only around 3% was sent to landfill.

One example of our circular innovations is in IP networks, where our highly adaptable silicon and systems are all designed for long-term re-use and have 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, avoiding up to 40% of the CO<sub>2</sub>e emissions of the manufacturing process.

We track the CO<sub>2</sub>e emissions that are avoided by the reuse/resale of circular products through our CO<sub>2</sub>e Avoidance Dashboard. This CO<sub>2</sub>e 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<sub>2</sub>e emissions avoided through these purchases.

### Recycled material content in products

In 2021, we continued our work to increase the use of recycled material content in our products. First, we have worked 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 72% of the 28 000 tons of cast aluminum parts used in Nokia products in 2021 have recycled content in them. This is up from the 54% reported in 2020. The recycled material is from manufacturing waste, as there are still challenges related to material purity when adding post-consumer material into our components. In 2021, we expanded this work to look at the closed loop development for gold used in our products. We started working with our electronics waste recyclers in determining the destination of gold from our obsolete products and matching those companies with the ones that our suppliers use for gold purchases to close the loop. We plan to expand our program to cover copper in the next phase.

In addition, we have worked to increase the circularity of plastics used in our products. In 2021, we initiated projects to increase the recycling potential of our plastics through the reduced use of non-halogen free materials and in parallel investigations into the possibilities to mix post-consumer recyclates with virgin plastics to produce product housings. Most recently we arrived at encouraging test results with a Fixed Networks ONT design that uses 60% post-consumer plastic in two housing designs using standard process parameters.

### Extended producer responsibility (EPR)

Compliance with relevant environmental regulations is an important part of our environmental policy.

### Circular practices for obsolete products



- 1 Reused 9%
- 2 Recycled 82%
- 3 Energy recovery 6%
- 4 Landfill 3%

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 (EOL) management through product takeback.

As EPR regulations evolve globally, we continued our work on increasing product value recovery at end of life. Based on the [Recycling and Reuse Metric](#)

that we pioneered with the iNEMI (International Electronics Manufacturers Initiative) organization, 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 and enables compliance with both regulatory and our own requirements. We provide an environmental product declaration (EPD) to our customers for most of our products. In the EPD we detail environmental data for our products, including material composition, carbon footprint, power consumption and recycling instructions.

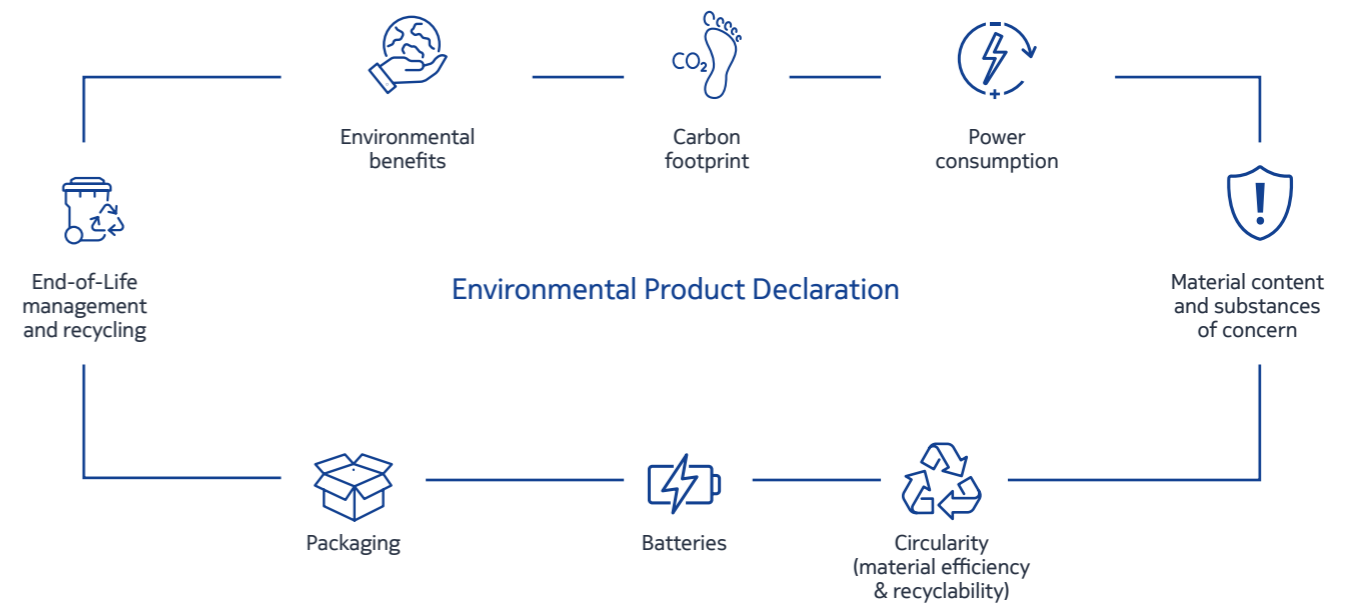
When looking at our total carbon footprint from our operations through to the complete life cycle of our products – that is, their design, manufacture, distribution, use and treatment at end of life – we find that our products' energy consumption during use is a priority, as about 93% of our total carbon footprint comes from this part of our business. The life cycle assessments (LCAs) performed on our products follow the ITU-T L.1410 standard, which is based on ISO 14040 /14044 standards and aligned with the Greenhouse Gas Protocol ICT Sector Guidance.

Our DfE program helps product development teams by setting targets and evaluating energy-saving features with each new product introduction. In 2021, we worked jointly with several industry members via iNEMI 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](#).

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 asking them to 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 2021, we again reviewed and published our latest Substance List with minor changes to the requirements. The current list is found on [Nokia Sustainability Downloads web page](#).

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 Substance List to the extent technically and economically possible. We work 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 into EU legislation. In 2021, we phased out the use of fluorinated greenhouse gases used in our products ahead of targets set in EU Regulation (EU) No 517/2014 on fluorinated greenhouse gases.

In 2021, we continued to require material content data from our suppliers when distributing the updated Nokia Substance List. 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 product designs as well as providing the data required to fulfill our obligations to provide information in the SCIP database\*.

**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 past generations of cellular radio technology, for example, 2G/3G/4G, the radio functions were carried out in several separate hardware units, all located at the base of the cell tower. Heavy lengthy radio frequency cables then ran from the base of the tower to the antennas at the

top. Extensive power losses were attributed to these lengthy cables, such that a significant portion of the radio unit’s output power was lost in the cables. Today, the combined unit at the top of the tower has both a greater material and energy efficiency, so much so that when comparing Nokia’s Flexi Radio with Passive Antenna to its latest generation AirScale Compact Active Antenna, the latter provides a total materials reduction of around 70% over the Flexi Radio per deployed unit.

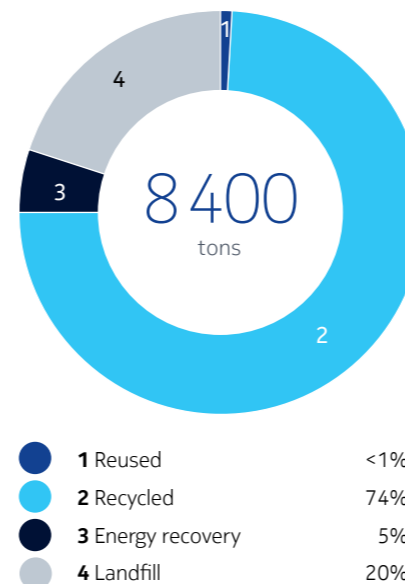
**Product materials breakdown**

Our products are comprised predominantly of metals which constitute more than 75% of the total weight in most products. Aluminum is the most significant metal, which 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 in December 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 usage 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 as long as 30 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%

**Total waste in our own operations in 2021 by treatment method**



post-consumer recycled content. Our packaging plastics are limited to just a specialized bag that eliminates any static electricity from damaging the product, while providing an inert environment to protect the product during storage and shipment.

**Waste in our operations**

We have implemented waste reduction, reuse, and recycling programs across our operations. Through continual and detailed review of waste during 2021 we have identified areas for further improvement in 2022 including, where possible, changes to the

**Design for environment and material aspects of a Nokia 5G radio**

Today’s telecommunications equipment provides ever increasing levels of performance and functionality that can benefit society. To accomplish this takes myriad materials and processes to make them, including metals – some precious and rare earths, and some critical to the socio-economic prosperity of a region. Each material is used for a purpose. However, this complexity of materials and their associated processes consuming energy and further processing materials produce environmental impacts that must be accounted for and minimized for telecommunications equipment to 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 environmental impact. More information on the study is found on our [sustainability webpage](#).

\* SCIP is the database for information on Substances of Concern in articles as such or in complex objects (Products) established under the Waste Framework Directive (WFD). Companies supplying articles containing substances of very high concern (SVHCs) on the Candidate List in a concentration above 0.1% weight by weight (w/w) on the EU market have to submit information on these articles to ECHA, as from 5 January 2021. SCIP - ECHA (europa.eu)

waste management arrangements to increase the percentage of waste that is recycled and aligned with the new circularity target. In 2021, the total operational waste increased by 7% compared to 2020, as more locations reopened following the COVID-19 pandemic. We recycled, reused or recovered energy from 80% percent of all waste (81% percent in 2020). Key components of operational waste from our facilities include cardboard (15%), metal (21%) and wood (17%).

#### Ensuring appropriate recycling of e-waste

All electronic waste generated in our facilities or operations, including Asset Recovery, can only be shipped to processing facilities that have gone through our health, safety & 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 2021, we completed 15 HSE liability assessments of e-waste recycling facilities located in Italy, India, Saudi Arabia, the US, Mexico, Slovakia, Hungary, Egypt and UAE. These assessments were conducted as desktop studies as site visits were not possible due to pandemic restrictions.

#### Water in our own operations and supply chain

Life cycle assessment (LCA) shows that the predominant amount of 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 (10 to 15 years for many of them), our biggest influence on water withdrawal is to reduce power consumption over the product's use time, which is part of our science-based targets.

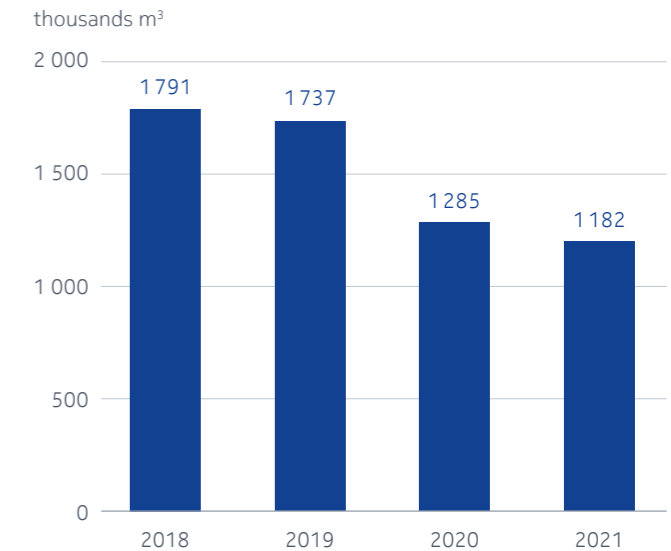
Water utilization within our facilities is typically associated with sanitary use, cleaning and landscaping activities. In 2021, we used 1 200 000 m<sup>3</sup> (1 299 000 m<sup>3</sup> in 2020) of water in our facilities, a reduction of 8% compared to 2020. Total water withdrawal was 1 182 000 m<sup>3</sup> which is less than the total water consumption as 1.5% of the withdrawn water was recycled. The reduction of water consumption is mostly explained by the fact that most of our employees were working remotely for the majority of 2021 due to COVID-19. We continuously look to improve our performance in water management and our focus in 2022 will be on facilities in countries identified as being under extremely high and high baseline water stress.

#### Water in our supply chain

We address supplier categories where water may be a material risk through a water assessment program. In 2021, 273 (275 in 2020) of our manufacturing

suppliers completed the CDP Water Security assessment, representing 49% of our total supplier spend (51% in 2020). Out of the participating suppliers, 71% (97% in 2020) had undertaken a water-related risk assessment for their direct operations and identified actual water-related risks in their operations such as flooding or increased water stress or scarcity, potentially resulting in the reduction or disruption in production capacity or increased operating costs. 53% of suppliers had structured targets (57% in 2020) related to water consumption, discharge or withdrawals. Targets were mostly related to internal efficiencies rather than being contextual (for example, basin facing high risk or shared water challenges). Our supplier water risk map relevant to our manufacturing locations is found [online](#).

#### Water withdrawal in our own operations



# Conducting our business with integrity

Trust, accountability, and ethical behavior are the foundations on which we operate. Our Code of Conduct unites all our employees around our values and our unwavering commitment to integrity.

## Highlights

We safeguard our reputation with ethical, compliant actions and robust policies, procedures, and controls. We are committed to acting in a trustworthy, transparent, and mutually respectful manner with our employees, suppliers, partners, customers, other external parties and the communities where we operate, as we strive to meet the growing needs of our customers.



# 97%

of our employees completed Ethical Business Training

We were honored to be recognized by the Ethisphere Institute for the **fifth** consecutive year as one of the World's Most Ethical Companies

We became an official member of the **Responsible Business Alliance** and we are one of the founding members of the **First Mover's Coalition** launched at COP26 in November



In total we implemented

# 439

supply chain audits, including

# 64

in-depth audits on corporate responsibility topics,

# 36

audits against our full supplier requirements and

# 339

supplier assessments conducted using the EcoVadis scorecards



## Ethical business and corporate governance

We conduct our business in a manner that is consistent with our long-standing reputation for high standards and business ethics, relying on our strong culture of integrity that is driven by our leaders and embraced by all our employees.

Every employee, at every level, is held accountable for performing with integrity and maintaining the trust of our customers, employees, and other stakeholders. Our reputation for acting with unyielding integrity defines us as a company.

### Code of conduct

Our Code of Conduct (Code) provides clear and simple direction to our employees and business partners and defines the principles of ethical and compliant business practices, including how we work with suppliers. It is applicable to all our employees, directors, and management. We require employees to acknowledge the Code as part of our annual mandatory compliance training (Ethical Business Training course). The Code is available online in 23 languages and is accessible from various resources, including a mobile app. We also require our third-party business partners to follow strict requirements based on our Third-Party Code of Conduct. Additionally, a separate Code of Ethics highlighting additional responsibilities is applicable to the President and CEO, Chief Financial Officer, Deputy Chief Financial Officer, and Corporate Controller.

“ We require employees to acknowledge the Code of Conduct as part of the Ethical Business Training course included in our annual mandatory training.

Our Code has 14 key business policy statements as shown in the chart on the next page. Each compliance policy area in our Code is the responsibility of one or more subject matter experts. These experts consider new and emerging issues 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 complete policies and respective Q&As for the 14 main policy areas listed are made 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) 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 CCO reports to the Chief Legal Officer (CLO).

We have dedicated compliance leaders for each of the company's regions, business groups and key central functions, including Nokia Shanghai Bell (NSB). This helps to ensure that compliance risks are identified and managed both horizontally and vertically. Our entire compliance team is responsible for driving compliance in their daily operations and those of their assigned client groups.

### Our Code of Conduct and the 14 main policy areas

#### We do business the right way

- Conflicts of interests
- 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 & Confidential information
- Insider trading



## Compliance as a business enabler

Our approach to compliance emphasizes the early identification and comprehensive, proactive mitigation of legal and compliance risks, with enhanced oversight as circumstances necessitate. In 2021 the Ethics & Compliance team partnered directly with our business groups to provide legal guidance and counsel on a range of issues, enabling compliant growth by our businesses.

In 2021, we took the following measures to fortify our commitment to ethical business practices:

- Created a “Risk and Monitoring” function to lead compliance risk assessment and mitigation measures and to spearhead our journey to real-time monitoring of top risks with the use of advanced and predictive analytics
- Expanded on “Compliance Screening 2.0,” which was implemented in 2020 by our Anti-corruption Center of Excellence, to enhance our risk-based approach to the risks posed by our various third-party relationships
- Shifted our support model to be in line with the company’s operational model and to better support the unique risk profiles of our business
- Created online and live training and communications to keep the business abreast of emerging risks and to highlight the key role of leaders and managers. For example, we deployed

six microlearning training modules to specific target audiences and developed a new “Manager’s Toolkit,” which provides comprehensive and practical information and resources for conducting business with integrity

### Open reporting – Global Ombuds program

Our Ombuds program fosters and strengthens our speak-up culture and reinforces our policies that help to ensure that those who raise concerns are protected from retaliation. 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 element in preventing, detecting, and addressing wrongdoing by providing a neutral, trusted resource for employees and an additional channel through which to raise concerns about business practices.

Given the important role of the Ombuds program in encouraging our employees to voice their concerns, we made the following improvements in 2021:

1. Realigned the Ombuds program, in line with our new mode of operations, to focus on organization/function coverage in addition to site coverage
2. Assisted employees with over 200 questions, concerns, and requests for guidance
3. Launched an animated video to solicit volunteers for the Ombuds program to supplement Ombuds candidate recommendations from leadership teams
4. Continued to emphasize Nokia's anti-retaliation policy by promoting new anti-retaliation awareness materials

### Compliance risk assessment and mitigation

We employ a multi-faceted approach to compliance risk assessment in order to effectively identify and mitigate compliance risks. We utilize Compliance Control Framework (CCF) reviews – an internally-developed process of evaluating corruption and other risks, identifying gaps in program effectiveness, and crafting remedial measures – to enhance compliance at the sites and within the businesses subject to review. A total of 16 CCF reviews were conducted in 2021, all of which were conducted remotely due to COVID-19. Our CCF reviews are supplemented by Compliance Operating Reviews (CORs), which are deep-dive, leader-led sessions focused on the compliance culture, program, and risks within a particular region or business group. Six CORs were conducted in 2021, and all were attended

by senior executives of the company. We also conduct quarterly reviews of compliance risks as part of our Enterprise Risk Management (ERM) program.

Beyond these structured programs, we regularly monitor data relating to investigations, concern reporting, third parties, and corporate hospitality, looking for trends or anomalies that might trigger deeper inquiry. We monitor regulatory and legislative activity and enforcement trends. We conduct and evaluate various internal employee surveys to measure culture, leadership engagement, comfort with speaking up, and more.

Identifying and assessing risk is only the first step; more important is putting the information obtained to good use. In this regard, we follow the data in a practical and sustainable way, enabling Nokia's continued success in the marketplace by developing targeted training and compliance communications, strengthening internal controls, clarifying existing policies and procedures or creating new ones, and working with leaders and employees at all levels to address new, emerging, and longstanding risks.

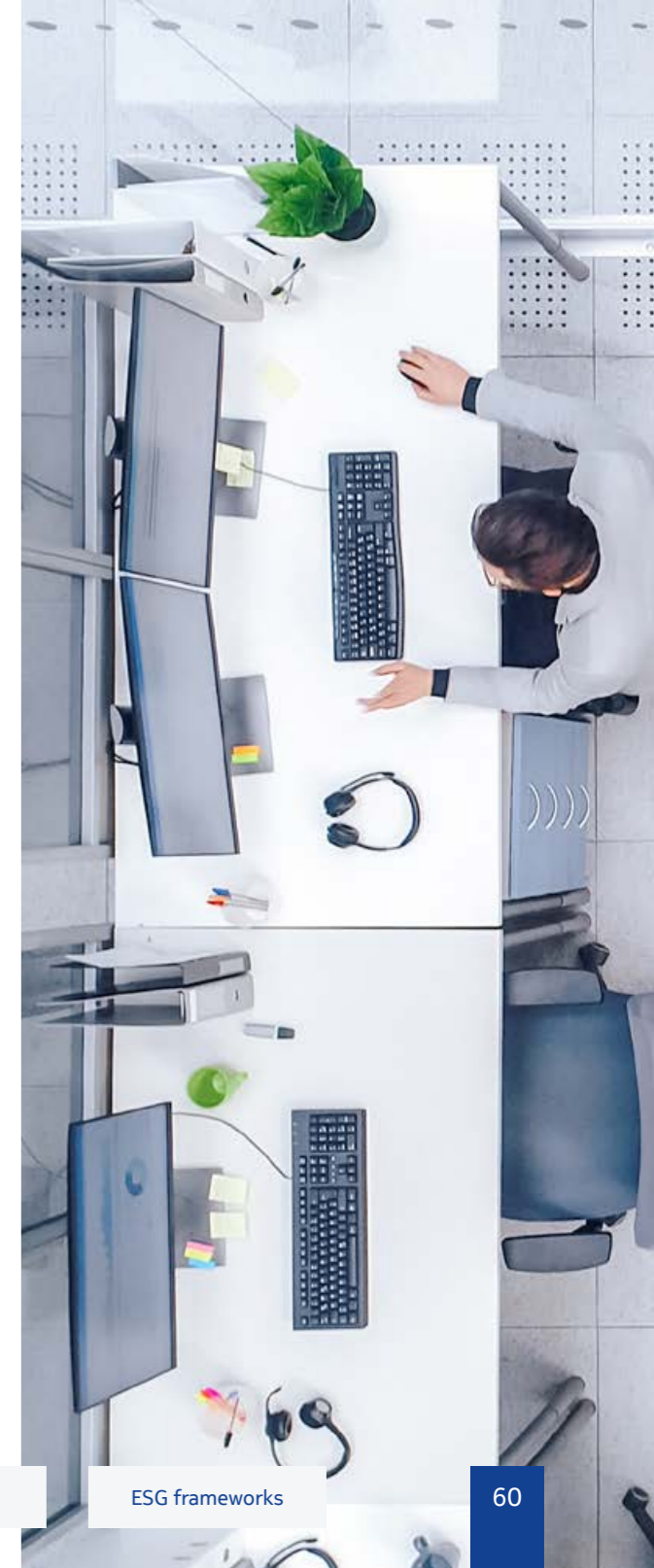
### Gauging effectiveness

In addition to these varied risk assessments and monitoring programs, we engage with employees through anonymous surveys to gauge the effectiveness and understanding of our compliance program. In 2021, we again conducted our online Employee Compliance and Inclusion Survey in which the compliance section addressed tone from the top and middle, compliance program effectiveness,

improper payments, conflicts of interest, data protection, confidential information, privacy, and trade compliance. The overall survey results were positive as the majority of respondents agreed that they understood the Nokia compliance program and its various key elements. For example, 98% said they understood and knew how to follow the Nokia Code of Conduct, and 96% said they are aware of and know where to find Nokia Code policies, processes, and standard operating procedures.

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 with the compliance team in audits and through other inquiries that assess the effectiveness of our compliance processes and controls, including assisting Ethics and Compliance with financial investigations. The Internal Audit team receives all CCF reports and takes steps to collaboratively mitigate all risks identified during compliance reviews and investigations.

Similarly, Internal Audit attends quarterly Ethics and Compliance regional reviews when audit issues are presented and discussed. Internal Audit also engages Ethics and Compliance when ethics-related issues are identified during audits.



### Compliance training program

The Ethical Business Training (EBT) module was one of three mandatory, web-based training courses deployed in 2021, along with modules devoted to the important topics of information security and inclusion and diversity. EBT included a review and acknowledgment of our Code of Conduct (Code) and the related 14 policy areas; a requirement to declare potential conflicts of interest; a review of key information related to our ethical values and ethics in the workplace; and a role-based section for line managers about the important role they have in promoting a culture of integrity. Practical examples and information on policies and laws were included to guide employees through the process of considering potential risks and making ethical decisions. In 2021, 97% of our employees completed the EBT module, and 90% of respondents who participated in our Employee Compliance and Inclusion Survey felt that mandatory compliance training was effective in raising compliance awareness.

We deployed six targeted web-based trainings to spread awareness on topics intended for specific audiences based on risk, function or location and delivered a combination of 280 virtual and/or face-to-face training sessions, training over 14 000 individuals across the globe. Three of the targeted, web-based courses (intellectual property rights, communicating externally, and open source basics) were rolled out to our R&D community given the important role this group plays in protecting confidential information and showcasing Nokia's brand and portfolio externally.

We employ a long-term, strategic approach to training by maintaining a three-year training roadmap that includes frequency, delivery method, and target audience to ensure we have a regular rhythm and varied delivery approach to educating our employees. In addition, annual training plans are developed based on defined compliance topics of importance, new and/or updated policies, identified potential risks and any other key changes to law or regulations that need to be addressed.

### 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 of Conduct (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 2021, our Ethics & Compliance communications program included a new, quarterly newsletter to keep employees informed about internal and external risks, trends, and real cases – actual investigations that we carried out and the resulting disciplinary actions taken. As part of our planned virtual activities, we conducted face-to-face and/or virtual meetings and discussion sessions with employees, which were held by regional and market

compliance representatives. We provided additional various communications, including blogs, posts and videos, on trending compliance topics, such as non-retaliation, accuracy in customer communications, and conflicts of interest.

We again hosted a global Integrity Day event, a hybrid approach of virtual events and face-to-face sessions, which included interactive senior leader panel discussions with employees, reinforcement of our high ethical standards, and fun activities. To recognize and reward exemplary ethical behavior and outstanding contributions to our compliance culture, the Integrity Day event included the announcement of compliance award winners in two categories: 15 Compliance Heroes and 10 Ombuds Leaders.

## Reporting of ethical 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. Retaliation of any kind is not permitted, and we take seriously all allegations regarding any form of reprisal and investigate such concerns thoroughly.

We offer multiple channels to report ethical concerns, including Legal and Compliance, Ombuds Leaders, the People organization, a dedicated email address, online portal, mobile app and country-specific phone numbers. In this year's Employee Compliance and Inclusion Survey, 97% of respondents said they knew of the multiple ways to report a compliance-related concern. Our Ethics Helpline allows for anonymous reporting and is open to both employees and external stakeholders. We respond to and investigate all concerns promptly and establish remediation plans as needed.

In 2021, the Business Integrity Group, our investigations team in the compliance organization, received 853 concerns, of which 361 were investigated by our Business Integrity Group as alleged violations of our Code of Conduct. In 2021, the Business Integrity Group closed 261

investigations into alleged violations of our Code of Conduct, 72 of which were substantiated with cause found after investigation. We implemented corrective actions including 13 dismissals and 15 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 monitored for implementation. Anonymized examples of our concern investigations are shown in the table on the next page.

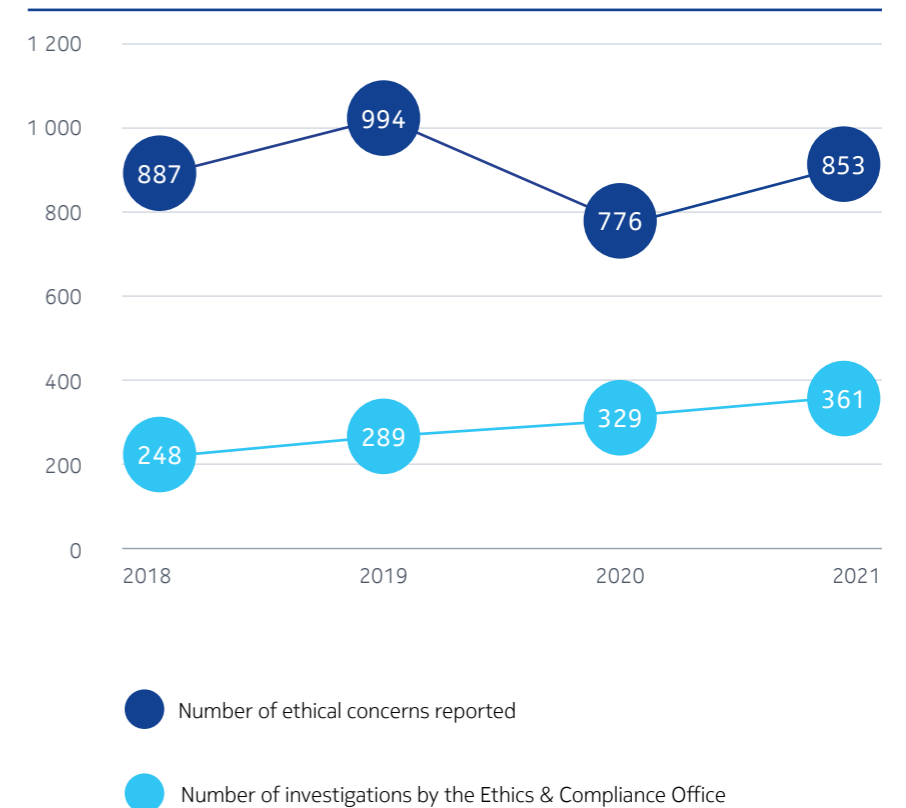
### How to report a suspected violation of the Nokia Code of Conduct

All stakeholders play a vital part in helping to keep Nokia safe every day. One of the most critical contributions is to report knowledge or suspicion of any unethical behavior or violation of law or Nokia policies.

#### Reporting channels:

Email to [ethics@nokia.com](mailto:ethics@nokia.com)  
[www.nokia.ethicspoint.com](http://www.nokia.ethicspoint.com)  
 Country-specific [phone numbers](#)

Number of ethical concerns and investigations



## Examples of reported ethical concerns and actions taken in 2021

Issue raised	Our guidance	Actions taken
An employee forged a colleague's signature on a maintenance contract with a customer in order to help the customer avoid significant disruption to its business. The terms of the agreement were not internally approved. The customer did not know that the agreement had been doctored.	Forgery is against the Code of Conduct (and likely the applicable local law). All customer contracts must go through the necessary approval and signing processes. There should be two Nokia signatories on any binding document (which was not the case here), and signatories must have the right to sign on behalf of the relevant entity.	The employee was separated from the company. A compliant contract had been signed with the customer by the time the matter was reported. The customer recognized that the forged contract was invalid.
A report made through an Ombuds leader resulted in an investigation that found an employee was working a second job during Nokia business hours.	Although the employee informed management about the second job, the full extent of the job and the fact that working at that job would interfere with Nokia business hours was not fully disclosed to the manager. Our guidance here is that any potential conflict of interest must be fully declared.	The employee admitted to misconduct and to taking advantage of the situation. The employee stopped working the second job during Nokia business hours and received a written reprimand.
A subcontractor took photos of confidential Nokia technical information while taking required project training and posted the photos on a social media feed. An external brand protection service identified the issue, and an investigation was opened. When interviewed, the subcontractor employee admitted to the misconduct and deleted the photos from the social media platform and their mobile phone.	This case illustrates the importance of Nokia subcontractors complying with Nokia's Third-Party Code of Conduct. Functions that interface with subcontractors, such as Procurement and project teams, have a key role in ensuring that subcontractors live up to Nokia standards.	The subcontractor was disciplined by management, and the subcontractor company warned its employee against similar violations and stressed the importance of protecting Nokia's confidential information.

Above are anonymized illustrative examples of investigations carried out in 2021 by our Business Integrity Group.

## Ethical concerns reported in 2021 by category

Category	Number of concerns
Conflict of interest	33
Controllership	87
Dealing with government officials	1
Fair competition	6
Fair employment (all HR related concerns)	333
Guidance	123
Human rights	5
Improper payments	16
Insider trading	1
Intellectual property & confidential information	50
Privacy	14
Trade compliance	7
Wellbeing, health, safety and environment	46
Working with suppliers	52
Other	79
<b>Total number of concerns reported</b>	<b>853</b>

## 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 anti-corruption laws, and Nokia policies in furtherance of such laws.

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 efficiently manage and monitor high-risk third-parties, including commercial partners; the review, approval, and monitoring of gifts, entertainment, hospitality, donations and sponsorships; and the screening of customers and high risk suppliers.

We have clear and unequivocal 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. Our regional and business compliance legal counsel deliver training and communications to our

commercial third parties regarding our expectations on ethical conduct, as appropriate based on risk.

### 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 presentations. 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 and up to date in 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 are strictly forbidden and against our Code of Conduct and our brand guidance. Our brand guidance is available on [brand.nokia.com](https://brand.nokia.com).



### World's Most Ethical Award

We were honored for five consecutive years, and six times overall, by the Ethisphere Institute as one of the World's Most Ethical Companies®. Nokia was one of five companies recognized in the telecommunications sector. This award is a testament to our strong ethical business activities and commitment to a culture of integrity, which includes among other things our commitment to human rights, diversity, social and environmental impact, and risk management.

"World's Most Ethical Companies" and "Ethisphere" names and marks are registered trademarks of Ethisphere LLC.



## 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.

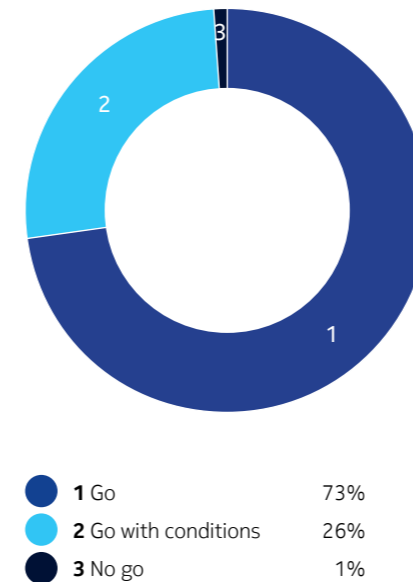
Our Human Rights policy is available online and addresses our most salient risks related to the potential misuse of the technology we provide. Policies related to other areas of human rights, for example rights relating to fair labor practices, modern slavery and human trafficking, and environmental 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 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, Organisation for the Economic Co-operation and Development (OECD) guidelines for Multinational Enterprises and the United Nations Guiding Principles on Business and Human Rights.

In 2021, we continued to carry out human rights impact assessments of geographies relevant to our business as part of an ongoing cycle. We have a Human Rights Due Diligence (HRDD) process that targets our most salient risk regarding 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 potential risk level to human rights through potential misuse of our technology.

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



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. Our first independent GNI assessment was completed in 2019 and it found Nokia showed good faith efforts over time to implement the GNI Principles on freedom of expression and human rights. We began the process of starting our second ever assessment in late 2021.




### Increasing transparency on the overall narrative

Of the HRDD cases investigated in 2021, 73% were resolved as “Go,” 26% as “Go with conditions” and 1% as “No go.” We have again included anonymized case examples from our Human Rights Due Diligence work in 2021, 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
<b>Human rights impact</b>	Labor rights, Health, Safety, Wellbeing, Decent working conditions, Compensation  Impact - Materiality - Risk	Freedom of expression and privacy  Impact - Materiality - Risk	Labor conditions, freedom of expression, compensation, health and safety, corruption  Impact - Materiality - Risk
<b>Potential risk mitigation</b>	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
<b>Grievance mechanisms</b>	Ethics Helpline  1 in 90 discussions	Ethics Helpline	Ethics Helpline  Audits and assessments
<b>Measurement</b>	A great place to work  Inclusion and diversity  Related targets	Reported and investigated concerns  Related targets	Developing health and safety  Related targets

## Human Rights Due Diligence (HRDD) case examples

	Case 1	Case 2	Case 3	Case 4
<b>Country</b>	Extreme risk country	Extreme risk country	Extreme risk country	Extreme risk country
<b>Requestor</b>	State owned operator	Government owned entity	Government	Multinational operator
<b>Request</b>	Communications equipment	IoT platform for smart city enablement	Private network for ministry of defence and their own personnel	Standard passive 3GPP/ETSI compliant lawful intercept capabilities for virtualized evolved packet core in the telco network and integration into current network
<b>HRDD investigation</b>	The investigation looked at the current situation in the country and the possible usage of the communications equipment. Since the situation in the country was unstable, our HRDD decision was that the risk of misuse was too high.	The requested solution was related to building management and access control for multi-use buildings (sustainability and mobility). Our HRDD concentrated on whether there was any surveillance aspect or possibility of surveillance. We determined that this was pure connectivity with no surveillance aspect. Conditions were imposed for any future expansion to mitigate any possible, subsequent addition of surveillance capabilities.	Our HRDD looked at the use case and implementation. The network had no connection to the public network and was purely for internal usage and void of surveillance aspects.	Our HRDD checked the use case and determined that the requirements and technical solution proposal were standard ETSI/3GPP passive and with no extra customization. The capabilities would not, by themselves, be sufficient for the delivery of the full lawful interception process. The Go decision concluded that only passive, 3GPP/ETSI standard defined requests would be supported with no customization and was compliant with the Human Rights Policy.
<b>HRDD decision</b>	 <b>NO GO</b>	 <b>GO (with conditions)</b>	 <b>GO</b>	 <b>GO</b>
<b>Policy Principle</b>	Nokia will seek to prevent the sale of our products and services in cases where we believe there is a significant, potential risk 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 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 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 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 engaged on 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 2021, 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 four broad categories: hardware suppliers for product materials; services suppliers who support the provision of services to our

“ We work with our suppliers to develop, innovate and build capability to enable a more sustainable and transparent ecosystem.

customers such as in installation and construction of the networks we sell; IT suppliers; and indirect 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 includes our own factories in Finland, India and Poland as well as Flextronics, Foxconn, Jabil and Sanmina supplier sites in Brazil, Canada, China, Hungary, Italy, Malaysia, Mexico, Romania, Thailand, Ukraine, the US and



Vietnam. A list of our largest strategic Original Design Manufacturers, Original Equipment Manufacturers and Components suppliers are 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, EcoVadis, Responsible minerals program and onsite 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, Conflict-Free Sourcing and CDP Climate programs: we aim that 80% of the suppliers have satisfactory scores by 2025. In 2021, 68% of the suppliers had satisfactory score 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 [chapter 1.3 Our 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. In 2021, we became an official member of the Responsible Business Alliance (RBA) and joined its key workstreams. RBA is the world's largest industry

### 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	99% of relevant supplier base
Responsible minerals program	99% of relevant supplier spend
EcoVadis sustainability assessments	66% of supplier spend
CDP supply chain Climate change	65% of supplier spend
CDP supply chain Water security	49% of supplier spend

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

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 launched at COP26 in November. 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 and they are communicated to our suppliers and integrated into our contractual requirements. An overview of these requirements can be found [on our website](#).

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 Evaluation 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, 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 have continued to restrict the possibility of conducting onsite audits, we carried out assessments and monitoring of suppliers with more focus on remote tools and virtual interaction.

**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 are 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 2021, we conducted altogether 439 supply chain audits and EcoVadis assessments (see the graph on the right).

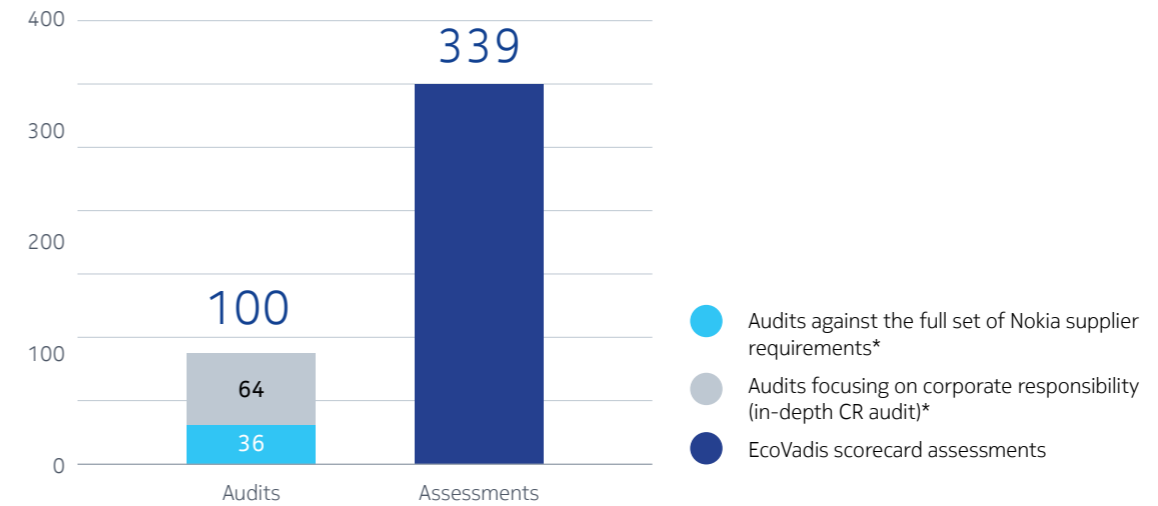
We conducted 64 in-depth CR audits (24 in 2020) at 28 supplier sites (24 in 2020). There were 16 countries covered by these audits such as China, India, Malaysia, Mexico, Morocco, South Korea, Taiwan, and Thailand. The number of findings per category in our CR audits and examples of some findings and corrective actions taken are shown in the tables on the next page. As a result of the audits, 307 improvement recommendations were made which are addressed through corrective action plans. All nonconformities identified were analyzed by our Sustainable supply chain team and included in our training materials in order to continually improve them.

We aim to close CR onsite audit findings within six months of audit. The challenge of audit closure has been exacerbated by the global pandemic and its effects. In 2021, 67% of audits were closed within this time (67% in 2020). We continue to emphasize this challenge.

**External assessment programs**

In 2021, we completed 339 online assessments on EcoVadis, including labor, safety and environmental elements. In 2021, 75% (72% in 2020) 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 [3.3 Decarbonizing our value chain](#) on pages 47–48.

**Supply chain audits and assessments conducted in 2021**



\*Two of our supplier audits were conducted through our customers' Joint Audit Cooperation (JAC) framework and 56 through Responsible Business Alliance (RBA) Validated Assessment Program (VAP) audits

### Health and safety maturity assessments

We also emphasize the importance of health and safety 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 related to supplier Health and Safety Maturity Assessment (SMA) which is our in-house developed assessment to ensure contractors are capable of delivering work safety 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.

At the end of 2021, 99% of high-risk activity suppliers were covered by our onsite health and safety maturity assessments. 98% (99% from 2020) of assessed suppliers met H&S compliant supplier status (score 3 or more out of 5), and 23% of assessed suppliers met H&S preferred supplier status (score 4 or more). Any supplier not meeting our H&S requirements were to be phased out or required thorough improvement where we had no alternative.

### Building supplier capabilities by training and workshops

In 2021, our supplier workshops were also conducted fully online. Following growing concerns around mistreatment of ethnic and other minorities globally, we have conducted refresher training sessions regarding modern slavery, and inclusion and diversity for our suppliers located in high-risk countries, conducted further risk assessments, and carried out a supplier survey around inclusion and diversity. All together we ran 21 supplier training workshops on diversity and Inclusion, modern slavery, responsible minerals sourcing and climate change, and health and safety.

### 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	4	0	4
Forced labor (contract agreement issues/fine/deduction etc)	11	2	13
Health and safety	86	21	107
Freedom of association and right to collective bargaining	5	1	6
Discrimination	4	0	4
Disciplinary practices	4	0	4
Working hours	51	13	64
Remuneration	16	4	20
Management systems	49	14	63
Environmental management system	20	2	22
<b>Total</b>	<b>250</b>	<b>57</b>	<b>307</b>

The table is based on 64 Corporate responsibility in-depth supplier audits conducted in 2021.

## Examples on identified non-compliance and actions taken

Category	Non-compliance identified	Actions taken by supplier
Discrimination	No process was in place to periodically review hiring practices, compensation records, employee evaluation and promotion documents, training records, employee benefits policies and procedures, and termination/disciplinary records to determine that there is no prohibited discrimination.	Process has been established and in place to periodically review the aforementioned records, policies and practices to determine that there is no prohibited discrimination.
Environmental management systems	Identification of environmental aspects had not been conducted and there was no documented environmental improvement program in place. Waste management process was in place but the waste management activity had not been recorded.	The supplier has implemented the identification of environmental aspects, documented the waste management checklist and shared related evidence.
Freedom of association	Workers' union had not been formed.	The workers' union has been established in the supplier factory and the staff of the factory uniformly uses the trade union.
Health and safety	The health & safety assessment method used by the supplier facility was not deemed to effectively identify and assess the potential hazards of demanding physical work. The method did not identify and assess the level of physical labor intensity for each position but only indicated the positions that have no hazardous physical work.	The supplier facility had updated the procedure and adjusted the assessment methods to identify and assess the potential hazardous of physical demanding work.
Working hours	Workers did not receive at least one day off every seven days. The longest consecutive working days were nine days worked in a row.	Excessive working hours have been partially caused by COVID-19. The supplier has documented a plan to recover from the situation and put in place a new on call duty system to bring back weekly rest period, achieving conformance with Responsible Business Alliance's instruction related to working hours limitations during COVID-19 pandemic from March 2020.

This table is based on 64 Corporate responsibility indepth supplier audits conducted in 2021.





## Managing risk in our supply chain

Our materiality analysis and Enterprise Risk Management help identify potential supply chain risks and 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.

## Combating modern slavery and forced labor in the supply chain

Modern slavery and forced labor of all kinds remain a challenge for all countries and supply chains. It is

**We do not tolerate slavery, servitude, human trafficking, and forced or compulsory labor in our own operations or in our supply chain. In June 2021, we published our annual Modern Slavery statement. The statement can be found on our corporate website at [www.nokia.com/about-us/sustainability/downloads](http://www.nokia.com/about-us/sustainability/downloads).**

believed that the pandemic has also worsened the issue as the vulnerable became even more so and unemployment grew.

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 on forced labor and child labor avoidance

In 2021, our audits uncovered 13 cases related to a non-compliance or potential risk of forced labor. The majority of cases concerned employees having to cover the cost of medical examination or transportation fees during the recruitment process. Such costs were generally reimbursed two or more months later as part of the salary. This delay provides for a potential risk of bonding. All such cases were addressed with suppliers through revision of their recruitment procedures and contracts with the manpower agencies or directly with medical institutions ensuring that the fees would not be paid by employees.

Other cases noted included a supplier who had implemented financial assistance for employees with a variable repayment rate between 3% to 43% of worker's monthly base salary. The supplier has changed its policy and loans are no longer provided. Other instances related to missing papers in agency

worker employee files, such as evidence of a valid contract agreement. These findings were addressed and most cases were closed at the closure audits. For one case the closure audit is due in 2022.

We also uncovered four instances of nonconformity related to child labor avoidance in 2021. Cases included missing personal files or identity cards that meant the auditor could not immediately verify workers' ages. The suppliers provided evidence that all workers in question were above the minimum age. They also fixed the process and corrected the missing documentation issue.

In another case, there were no procedures in place to assist underage children if found working for the supplier in question who did otherwise have a policy and process established to ensure that workers below the legal minimum working age are not hired either directly or indirectly via labor contractors. As a corrective action, the supplier established a procedure to provide for the welfare of any underage children discovered in their employ.

A third case involved apprentices who were paid below minimum wage for longer than six months. As a corrective action, the supplier established apprentice and intern employment policies and procedures. Moreover, all of the apprentices were also paid at least the legal minimum wage. In all cases designated as child labor avoidance risks, the findings were addressed with corrective action plans and closed within 2021.

## Reducing the risk of discrimination

We continue to see concerns related to the potential mistreatment of ethnic and other minorities. In 2021, we conducted further risk assessment and due diligence and put together training material around inclusion and diversity. Through supplier training sessions, we communicated our inclusion and diversity practices and requirements concerning the treatment of ethnic or any other minorities. We also emphasized the appropriate actions to be taken by suppliers.

Our diversity and inclusion trainings were followed up with a supplier survey where we discovered that not all suppliers have a diversity and inclusion policy and they sometimes lack proper company procedures for ensuring that recruitment practices follow ethical treatment of minorities. Other issues noted in the survey were a lack of effective grievance procedures, including no anonymous feedback channel.

## 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 related diversity 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.

## 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](#).

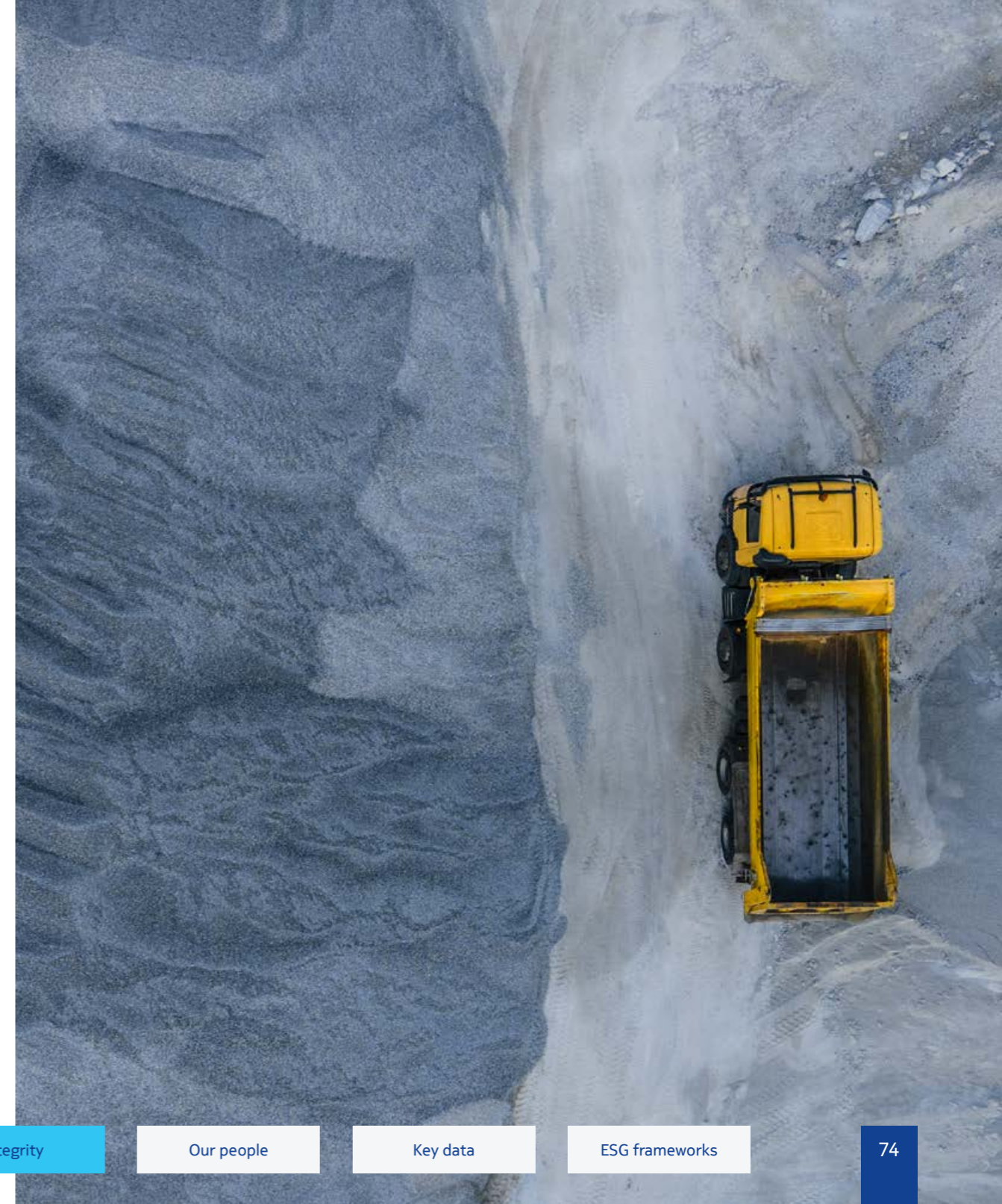
In 2021, we continued our work with the **Responsible Minerals Initiative** to improve the traceability of minerals and ensure responsible sourcing. Our due diligence approach is aligned with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals.

In 2021, 99% of our suppliers had achieved full visibility into the 3TG (tungsten, tin, tantalum and gold) smelters in our supply chain, and for 97% of our suppliers the entire supply chain consisted of

“ We demand that our suppliers commit to sourcing materials from environmentally and socially responsible sources.

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, 78% have been validated as conflict-free or are active in the validation process under the Responsible Minerals Assurance Process. A further 8% 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 the 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 this 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 2021, we received 1 case directly and 17 cases indirectly via the industry grievance channel.

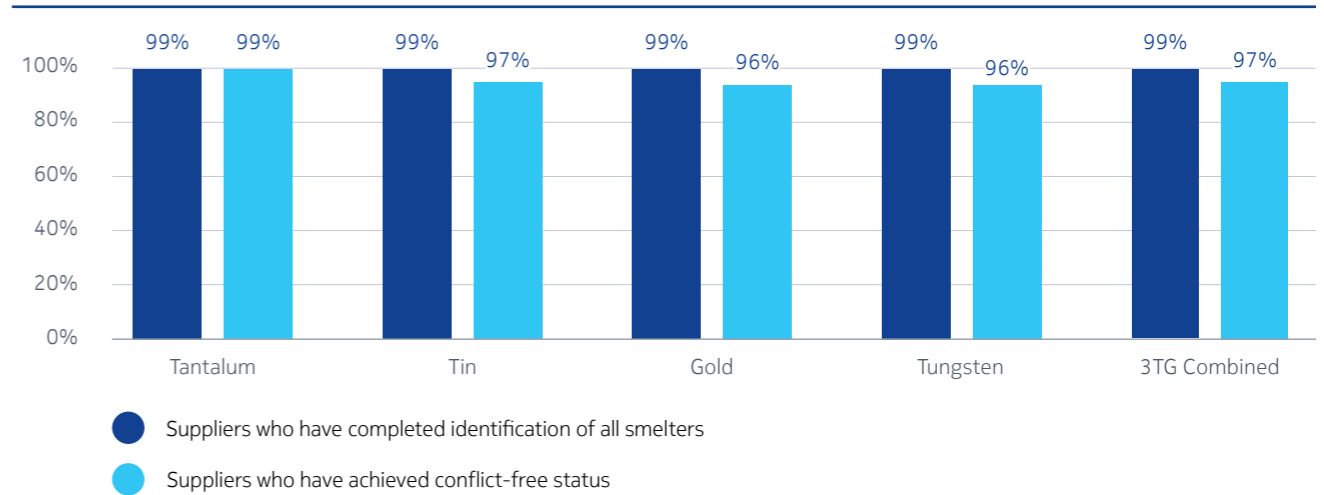
We also undertook a mapping of cobalt and mica in our components based on material declarations for product parts. We addressed 65 relevant suppliers about our requirements regarding cobalt and engaged them to exercising due diligence over the cobalt supply chain and 8 suppliers with mica. As a result we have been able to identify 63 cobalt smelters in our cobalt supply chain, out of which 38 have gone through the Responsible Minerals Assurance Program and have either Conformant or

Active status. In 2021, we undertook an assessment of our entire list of materials against ESG risks and updated our responsible minerals long-term target.

For upstream engagement we have continued our work with the Public-Private Alliance, contributing to the development of in-region programs and we participated in an online delegation to the Democratic Republic of the Congo. We also 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 at the end of May 2022 at [www.nokia.com/about-us/sustainability/downloads](http://www.nokia.com/about-us/sustainability/downloads).

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



## Data privacy and security

Nokia processes personal and customer data responsibly, lawfully, and carefully by building privacy and security into the design of our products and services. We have implemented and continuously improve our information security capabilities across people, technologies, and processes.

### Our Information security framework

We have a company-wide Information Security Framework in place to reduce business risks by protecting and managing information in a consistent way, to protect Nokia's customer data, and to enable transparency and accountability with respect to the handling of all information:

- Our security controls and processes follow the ISO/IEC 27001 standard and NIST Cybersecurity Framework to ensure we identify and detect security threats and risks to our systems:
  - the security review process for projects ensures security by design and compliance with Nokia's security policies.
  - the Cyber Defense Center (Nokia's Internal Security Operations Center responsible for the prevention, detection and response to incidents across all Nokia's environments) detects possible anomalies and contains and remediates possible security incidents. It monitors the execution of access management, anti-

malware operations, certificate management, log provisioning, network security services, server provisioning, software whitelisting and vulnerability remediation.

- Access, platform and project controls around data and applications are implemented. On a yearly basis, these are audited for the critical financial applications for compliance with the mandates of Sarbanes-Oxley (SOX).
- A critical information protection program protects Nokia's and its customers' information. This program applies additional controls to enforce the proper handling, storage, transmission, and destruction of sensitive or confidential information.
- A security awareness program drives cultural knowledge of security best practices and avoids potential threats to Nokia's information. This program includes:
  - an internal accreditation program designed for different roles
  - regular company-wide phishing simulations
  - yearly mandatory security e-learning training for all employees
  - targeted awareness campaigns
- A Third-party Security Risk Management process for Nokia suppliers helps ensure supply-chain security and compliance with legal and regulatory requirements.
- Regular auditing and assessment activities validate the security implementation, such as:
  - external and internal security audits
  - external maturity assessment
  - external and internal simulated attacks (red team and purple team testing)
  - customer feedback
- ISO/IEC 27001 certifications for selected sites assure security compliance is attained. The scope of the certification is continuously expanded.

### Design for Security

Society's increasing dependence on newer and safer technologies is a market concern. We aim to develop products and services that meet or surpass the applicable security standards. Hence, we build privacy and security into the design of our products and services and employ appropriate safeguards to protect data against unauthorized use or disclosure by:

- Developing and implementing processes and tools for use in product development, referred to as Design for Security or DfSec, which underlies all product development. It contains controls and deliverables to support the product lines to create secure products. As part of our product creation process, DfSec aims to proactively make our products secure from the start.
- Performing risk assessments, security threat reviews, privacy impact assessments, security requirements management, security architecture specifications, implement secure coding and secure hardening, and execute systematic security testing and vulnerability scans as part of Design for Security.
- Complying with applicable legal and regulatory requirements, our product security and DfSec requirements have been further enhanced in 2021 to meet the latest industry standards such as 3GPP SECAM/GSMA NESAS and Country Legal and Regulatory Requirements for the Telecommunications sector.
- Offering a comprehensive security products portfolio for telco cyber security and defense. For more information, please visit [networks.nokia.com/solutions/security](https://networks.nokia.com/solutions/security).



### Incident and breach management

Security is an ever-growing concern within the telecommunications industry. We are firmly dedicated to protecting next-generation networks from attacks. Nevertheless, we and our products may be subject to cybersecurity incidents including those resulting from hacking, viruses, malicious software, unauthorized modifications, or other activities that may cause potential security risks and other harm to us, our customers or other end-users of our products and services. Therefore:

- We have a comprehensive incident and breach management framework that spans our products and services, our own information systems as well as support to our Customers in security emergencies. Our incident management teams include CERT/CSIRT/PSIRT teams, and they collaborate with all areas of the company, including People, Legal & Compliance or others deemed necessary in the context of an incident.
- We follow our breach management process in the event of a breach or attack. The plan focuses on six key elements: detection and analysis, containment, eradication, and recovery, and post incident activities.
- We regularly evaluate our incident and breach management capabilities. The testing includes internal tabletop exercises, as well as external outside-in simulated attacks.
- We actively contribute, as member of the Cybersecurity Tech Accord, to the broader security community by organizing and participating in events such as the Security hackAthons.

We have a comprehensive company-wide privacy program based on applicable laws, best practices, and standards. This program is supported by corporate, business-group, and central functions-level policies and processes.

### Getting privacy right

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

We have established a comprehensive company-wide privacy program that builds privacy into our processes, products, and services. We process personal data transparently and fairly, only collecting personal data that is necessary and retaining it no longer than needed. We fulfill the data subject's rights where required and we do not disclose personal data to law enforcement or other governmental agencies unless required by law.

We also ensure that all personal data is only accessed by persons with a clear need to know. Should a personal data breach occur, a process is in place to manage and mitigate any related risk to data subjects, including mechanisms to communicate with supervisory authorities if required. To drive and maintain privacy awareness, we designed and

delivered a program of awareness training, targeting high-risk groups. Employee privacy responsibilities are also covered in our Code of Conduct, and we handle all employee and human resources data strictly in line with global and local privacy requirements.

Our privacy management model, set out in our Privacy Governance Policy, is supported by Nokia Executive Leadership. The model provides clear and internationally acknowledged privacy principles as well as a governance framework to implement sound privacy practices across our businesses. Compliance with the General Data Protection Regulation (GDPR), other privacy laws and commitments to customers, are reflected in our privacy principles. We continue to review and, where required, strengthen our framework to meet changing internal and external needs.

In 2021, there were no substantiated complaints regarding breaches of customer data. For the latest information on our security and privacy visit [our website](#).

# 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 on company business priorities in a responsible way.

## Highlights

We introduced our new  
Nokia Essentials –

# Open, Fearless, and Empowered

– in 2021, which describe the  
foundation of our culture.

Every employee in Nokia  
received a **Recharge  
Day**, an additional day  
of leave to emphasize  
the importance of  
work-life-balance.



More than

# 100

employees from

# 37

countries participated  
in crowdsourcing our  
new Nokia People  
Strategy.

We announced a new  
way of working which  
gives employees greater  
**flexibility** and a one-time  
support to improve the  
ergonomics of working  
from home.

# 74%

We strengthened our position in the  
**Bloomberg Gender Equality Index** rating  
at 4 percentage points above the tech  
industry average of 70%.

# 26 000

customer and employee  
registrations have  
been recorded for the  
Nokia Bell Labs 5G  
Certification Program  
since the launch of the  
course in 2020.

We were awarded Ambassador status  
by the 2021 Workplace Pride Global  
Benchmark and designated 'Best Place  
to Work for LGBTQ+ Equality' by the  
Corporate Equality Index with a score of

# 100%

## A great place to work

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.

2021 was outlined in Nokia's strategy renewal as a year of reset. As the company redefined its purpose and commitments, we also defined the base components of the Nokia culture known as the 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 2021 we deployed an employee pulse survey including both common and business group specific questions. The core questions focused on

“ Our essentials articulate the expectation that all employees are open, fearless and empowered in everything they do.


the essentials, asking whether employees felt they can 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 2021, 82% 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

### 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.

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 business group and function level to design and build action plans and development programs.

In addition to communication on cultural topics and tracking through pulse activities, employees also

participated in online YamJams, hackAthons and informal “coffee & connect” sessions to discuss difficult issues, crowdsource solutions and to start co-creating open, fearless and empowered working practices to embed into our daily work.



## 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 recommended 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 2021, 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.

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 have continued to draw attention to the importance of regular, ongoing and transparent performance feedback. We have encouraged everyone to give and get feedback.

### Future talent growth

We provide growth opportunities which allow targeted development on company level and

**“ We provide growth opportunities which allow targeted development focusing on critical skills, stretch assignments and exposure.**

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 and CEO advisory.

### Executive succession

In 2021, we piloted a new succession management approach with our Group Leadership Team. Our main objective was a robust succession



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 offering.

management, focused on key skills needed to deliver the company strategy. This has influenced the identification of Group Leadership Team successors. By updating our readiness definition to include "development steps" as opposed to "years", we have strengthened the focus on development, thereby ensuring we have the right skill set to enable company success in the future.

### CEO advisory

We have launched a CEO advisory board, consisting of up-and-coming leaders, to provide candid real-world advice to the Chief Executive. This program has three main objectives:

1. Bring novel ideas to our CEO
2. Bring the needs of the company closer to the Group Leadership Team and CEO
3. Provide growth opportunities for the program participants.

### Competence development

The focus areas of our competence development activities include leadership development, and business critical and technical competence development. These focus areas ensure that we have the skills and competencies needed today and in the future. We also offer learning solutions to our customers, partners and employees. In 2021, we recorded a total of 2.8 million learning hours for our employees (consisting of 0.8 million training hours and 2.0 million sharing hours). The average number of all training hours was 30 hours per employee, a decrease of 9% compared to 2020. We also provided training to our customers and partners, which in

2021 totalled 525 000 training hours, an increase of 20% compared to 2020.

To reinforce a culture of learning, we provide our employees with a tool called Learning Index. Learning Index enables employees to monitor their commitment to continuous learning and information sharing. In 2021, the tool was used by 71 600 of our employees. Overall, NokiaEDU learning solutions received a user satisfaction score of 97% percent in 2021.

Consistent with our digitalization strategy and in response to the COVID-19 pandemic, approximately 70% of training was technology-enabled. Virtual instructor-led training accounted for 46% of all training, compared to 43% in 2020.

### Leadership development

In 2021, we continued to invest in our leaders at all levels through our instructor-led programs and online platforms which offer, for example, branded solutions from Harvard ManageMentor and Harvard Spark. In 2021, over 6 100 employees used the Harvard ManageMentor and Harvard Spark leadership solutions. Additionally, over 4 100 employees accessed our self-paced leadership online solutions. Major effort was placed on training leaders on accelerated and transformational leadership programs in 2021. In addition, over 640 individuals attended our corporate leadership instructor led development programs in 2021.

We have facilitated numerous workshops on psychological safety, team building, empowerment

### Employee learning hours by type of learning in 2021



to support leaders and their teams to sustain their performance. We have also helped leaders and leadership teams with our well-known assessment tools including the Korn Ferry 360° feedback and Insights profiles – a psychometric tool to increase self-awareness, trust and collaboration. In 2021, over 200 personal Korn Ferry 360° feedback assessments and more than 800 new Insights profiles were provided to our employees.

We further enhanced the development of coaching skills which we believe are enabling skills for leaders to engage with employees. We redesigned our coaching solutions to enable virtual delivery, and as a result we saw leaders improve their listening and feedback techniques and move to a more supportive and empathetic leadership style. We have had almost 100 people managers complete our virtual coaching courses in 2021.

We have around 280 internal coaches and around 400 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 challenges related to lockdown, virtual team working, creating a safe environment 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 Internet of Things.

#### Keeping pace with technology

With the accelerating pace of change in digitalization, connectivity and how we use and benefit from communications 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 2021, professional certifications in the areas of Distributed Cloud Networks, Industrial Automation Networks and 5G Secured Networks were added to the program. To date, more than 27 000 customer and employee registrations have been recorded for the program.

#### Global Day of Learning

Our Global Day of Learning (GDOL) 2021 is the company showcase event in support of its commitment to a culture of learning. This year's event centered around how our people could bring to life the Nokia purpose, commitments and essentials. Leaders and subject matter experts discussed the main elements of the new Nokia platform. The half-day event reached more than 53 000 webcast participants across all sessions.

## Ensuring fair working conditions and terms of employment

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.

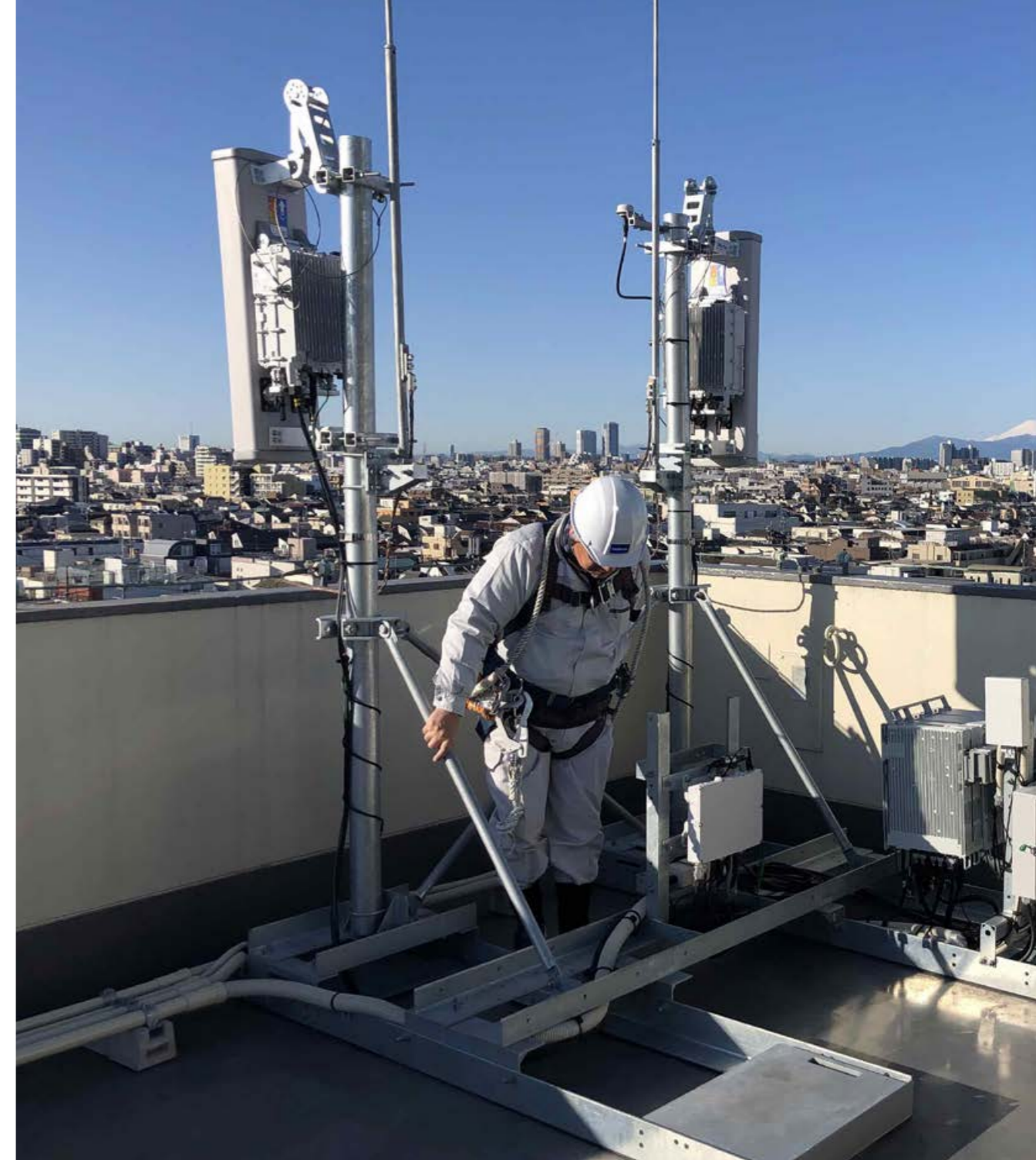
Our **Code of Conduct**, Global People Framework, Human Rights Policy and local employment laws, policies and practices are the basis for our labor conditions. We are committed to the principles laid out in the United Nations Universal Declaration of Human Rights, the United Nations Global Compact and 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, freedom of association and collective bargaining, non-discrimination, humane treatment, working time, disciplinary practices, compensation and occupational health and safety.

“ We follow and, where possible, strive to exceed the standards set out by local labor laws and regulations.”

### 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 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 they 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.

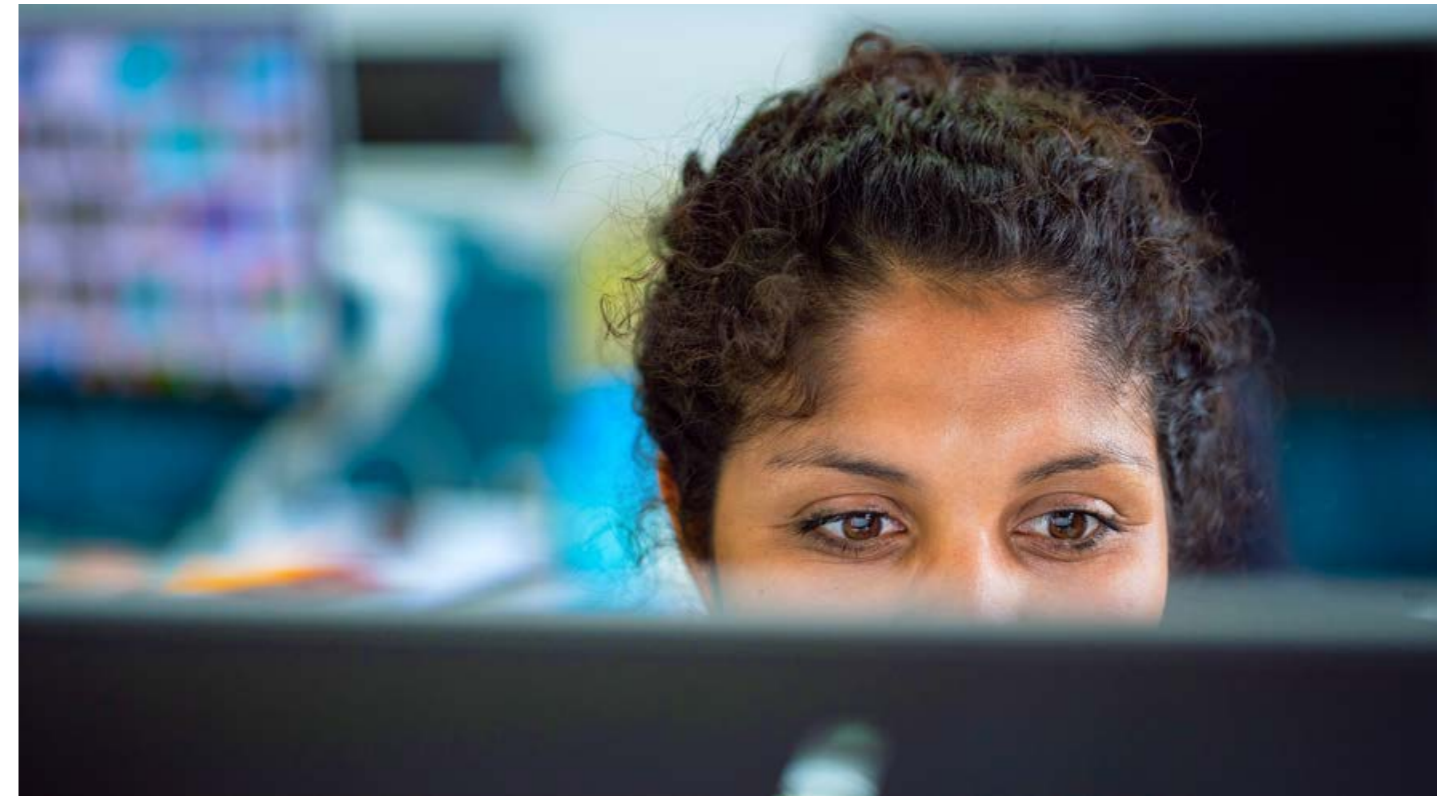
### Disciplinary practices

Our 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 apply local law or applicable collective agreements.

### 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.

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 2021. 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 2021, employees in 74 jurisdictions were invited to enroll in the program and the overall participation rate was 37% (30% in 2020).

### Recruitment

We treat all candidates fairly and with respect through a consistent recruitment process globally. The recruitment of talent is key to implementing our strategy and enhancing our contribution to the communities in which we are present. We believe in building long lasting relationships with our people as part of a sustainable business model – we offer meaningful careers, not just jobs. As part of this approach, we encourage and support personal development for every employee, which is evidenced in the over 6 700 internal people who moved into new roles. This means that out of all our open positions, 63% were filled by internal candidates.

We have permanently reduced the number of local interviews by implementing video interviewing. We avoid over 10 000 trips per year for face-to-face interviews for candidates and employees alike which saves them travel time and reduces the associated emissions.

In 2021, we maintained our strong Glassdoor score of 4.1 on the 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. 84% 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. Learn more at [www.glassdoor.com/nokia](http://www.glassdoor.com/nokia). More information on recruitment and careers can be found at [www.nokia.com/careers](http://www.nokia.com/careers). Or visit us on [LinkedIn](#), [Facebook](#), [Twitter @NokiaCareers](#).

### Young talent

Young talent is important to us. We support youth employment through our traineeship programs globally. In 2021, we offered permanent positions to 25% of trainees at the end of their traineeship. We have also created the Nokia Academy, an initiative which provides a talent pipeline for our technology-based roles by equipping recently graduated students and lateral entrants with competitive skills before offering them employment opportunities at Nokia. In 2021, there were over 1 000 participants in our Academy and 29% of them were women. 267 job offers were accepted, 70 of the positions by women. All in all, campus hires represented 31% of our new external hires.

We participate in special programs in conjunction with elementary schools, high schools and universities in several locations. Under such programs, Nokia

experts and academic scholars work together to prepare students for work in the industry, improving their technical skills and giving them hands-on learning opportunities. Such examples include Kid's University by Budapest Technical University (BME), Summer University programs for high-schoolers with Politechnica University and the West University of Timisoara and University Leagues, as well as uniquely designed programs at the University of Bangalore.

### Building a pipeline for diversity

Diversity is an essential part of our culture. In 2021, we partnered with Udacity and BIT (Blacks In Technology Foundation) to fund Nanodegree scholarships for members of an underrepresented community. In addition to societal benefits expected to result from these Nanodegree scholarships, the goal is to increase representation of this underrepresented group in Nokia by creating a pipeline of technically skilled interns. In 2021, 25% 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, we announced in March our plans to speed up our transformation to improve profitability. Delivering against this commitment meant we 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; and
- we offer career counselling and job search support outside the company.

## Inclusion and diversity

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.

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

In our new mode of operation launched in January 2021, 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 stated in March 2021 that we aspired to a minimum of 26% female hires in global external recruits by the end of 2021. Despite positive momentum from changes to the business groups'

hiring strategies and a review of the recruitment process, we did not reach the 2021 target, as 25% of the external female hires were women. The focused actions by our business did however result in an increased share of women hired in nearly every quarter compared to the previous quarter. In 2022, our business groups will continue with strengthened campus hiring and focused efforts in their key hiring locations, and we aim to increase our talent attraction activities.

- Creating a culture of high inclusion. Logging year-on-year improvements in employee inclusion experiences in business groups and functions, based on the yearly Inclusion 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 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.

Creating a more inclusive workplace is achieved through actions every Nokia employee takes on a daily basis, and how we collectively work to create an environment where people feel they can be open, fearless and empowered. We believe it takes:

- Appreciating and understanding another's point of view.
- Collaborating through conversation and involving people.
- Respecting diversity.

### Tracking behaviors and leadership

Our employee Inclusion survey is used to adjust the company inclusion and diversity agenda and design a plan to address any challenges. Around 32% of our employees responded to our 2021 survey, and the results show that 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 global and business group I&D teams have been focused on external female hiring.

In 2021, we trained Nokia recruiters on inclusive hiring practices and organized a training for all recruiters and hiring managers about bias in hiring. We also conducted a review of the recruitment process steps and implemented inclusive practices throughout each process step.

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. For example, we have put measures in place 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), 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, and 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

### Key data and findings of our 2021 Inclusion survey:

- The average inclusion score was 8.0 compared to 7.6 in 2020 (scale of 1 to 10)
- Compared to 2020, 5% increase in employees who believe that I&D efforts are having a positive impact on company culture
- Employees indicated that the top three reasons for inclusivity were that they feel respected, have access to flexible working and are comfortable in asking support
- 11% of employees indicated that they experience exclusionary behaviors from their colleagues or leaders
- The top two reasons given as creating feelings of exclusion are related to differences in hierarchy levels (seniority levels) and people's legacy organization background



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. In 2021, we created a mandatory eLearning with examples of the exclusionary behaviors our employees encounter based on the Inclusion survey 2020. The training described five typical team interaction scenarios where the learner had to identify if the behavioral actions taken by the team leader and members were inclusive or exclusionary. By the end of the year, over 96% percent of our company employees had completed the training.

### Gender and age diversity

In 2021, women accounted for 22% of our workforce, and 16% of our leadership positions were held by women. In our Board of Directors, 38% of the members were women. The diversity of our Board of Directors consists of a number of individual elements, including gender, generation, nationality, cultural and educational backgrounds, skills and experience. See age and gender distribution of our workforce in the graphs on this page.

In 2021, Nokia signed the Women Empowerment Principles (WEPs) 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 and women's

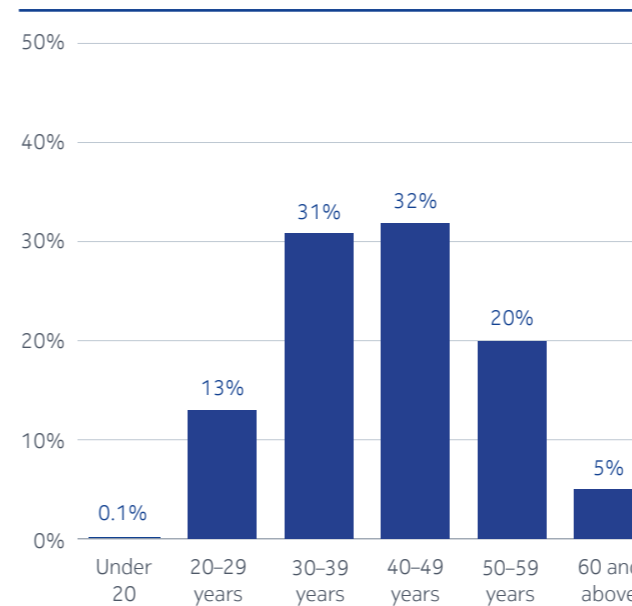
empowerment in the workplace, marketplace and community. By joining the WEPs community, the CEO signals commitment to this agenda at the highest levels of the company and to work collaboratively in multistakeholder networks to foster business practices that empower women.

As part of our commitment, a regional pilot was set up in Middle East and Africa region featuring four community projects. The pilot execution was supported by around 180 Nokia volunteers. We aim to apply the same concept in other Nokia markets from 2022 onwards.

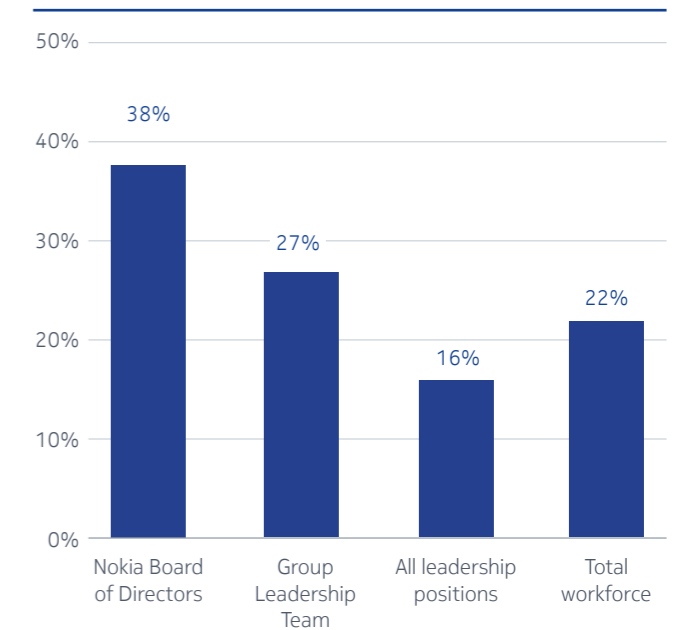
- Pilot Kenya: STEM education for girls and families in school and at home; and ecosystem development for awareness building towards gender-based violence
- Pilot Saudi Arabia: Increase in the number of women at Nokia Saudi Arabia and study in collaboration with Saudi Arabian universities to better understand the career aspirations of women students in science, technology, engineering and mathematics
- Pilot South Africa: Support gender-based violence victims through competence development

In addition to these community projects, we concluded a Nokia female program pilot supported by UN Women. This Converged Female Talent program was run in collaboration with the government of Saudi Arabia and our customer, Zain Saudi. The aim of the program was to create future technology solutions by women for women with social impact in a partnership setup.

Average age range of Nokia employees in 2021



Share of women in our workforce in 2021



### 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 2020, Forge Academy in South Africa launched a fully inclusive artificial intelligence training Academy

which prepares students from all walks of life with theoretical, laboratory and on-the-job training for their participation, and to become entrepreneurs in the Fourth Industrial Revolution and the global digital economy. We have a three-year plan with Forge, which includes a goal to bring into operation a second 5G lab sponsored by Nokia as part of the Skills Development agreed in the 2021-2022 BEE plan. We are committed to guide and advise Forge to help them become a fully-fledged independent digital university by 2024. In 2021, Nokia achieved a Level 2 BBBEE compliancy for the first time and is now well recognized in South Africa as a compliant and committed BBBEE contributor.

## Collaboration through Nokia's employee resource groups

Employee resource groups (ERGs) keep us in tune with the underrepresented groups of employees. In 2021, we had 11 active ERGs within the company. In 2021, 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 intensely worked in collaboration with our North America Talent Acquisition team on campaigns towards students attending Historical Black Colleges Universities, identified as Black/African American and/or members of the National Society of Black Engineers, across universities in the USA. In 2021, ABLE contributed heavily to the Nokia and Udacity funded Nanodegree scholarship program development with the BIT Foundation. In 2022, ABLE plans to set up mentoring for 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 the leadership of its executive sponsor – our Chief Legal Officer Nassib Abou-Khalil – EQUAL! continued to execute the OUT Leader program focusing on LGBT+ talent. It also organized talks with local non-profits such as Háttér Society in Hungary and We Create Space in the UK to raise awareness on issues faced by LGBT+ people and highlighting 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 business groups. In 2021, StrongHer contributed to a proposal to support the business groups' I&D agenda creation and communicated it to leadership across the company. StrongHer has also been involved in the design and implementation of women talent development programs. In 2021, StrongHer organized more than 200 local and virtual events around the globe.

**Mission Handicap**, **@TalentEgal** and **IDEAL** and volunteers from across the organization supported the creation of the No Limits to Opportunity eBook which was launched for internal audiences on the International Day of People with Disability. While its advice and suggestions on disability inclusion are especially targeted to managers who make decisions about people every day, every week, and every month, it is also made available for all at Nokia. The eBook shares Nokia's approach to disability inclusion, and accessibility support for managers and people with disabilities. It also provides resources to learn more about disabilities. To mark the date, Nokia demonstrated its commitment to supporting mental health in society by making a donation to the International Federation of Red Cross to fund mental health and psychosocial support.

### External recognitions for our inclusion & diversity work

Bloomberg included Nokia for the third time in a row in its Gender Equality Index (GEI) in 2021. 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 2021 was 73.67 % compared to an average score of 69.63% for the 44 technology companies included. Compared to 2020, our score increased by almost 9 percentage points.

In 2021, for the second 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 provision of feedback & evaluation of companies' LGBT+ policies and practices.

In addition, Human Rights Campaign (HRC) awarded Nokia a score of 100% on the 2022 Corporate Equality Index and, with this award, HRC designated Nokia as a Best Place to Work for LGBTQ Equality. This index is a US national benchmarking tool on corporate policies and practices supporting equality for lesbian, gay, bisexual, transgender and queer employees.

## Strengthening our health and safety performance

Health and safety remains a key priority for Nokia. Group Leadership representatives set the 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](#).

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

### Health & safety management systems

Our H&S management system is globally certified and based on the internationally recognized ISO 45001 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. Thereby, 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 safety on our behalf and projects have risk procedures and controls in place.

### Our health and safety performance

In 2021, there were no (zero in 2020) work-related fatal incidents involving our employees. However, we regret the four (two in 2020) work-related fatal incidents resulting in the death of five (three in 2020) contractors or subcontractors. 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.

By the end of 2021, 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 23% of the suppliers met H&S preferred supplier status (score 4 or more out of 5). We also carried out implementation assessments on 100% of all high-risk projects. 98% of those projects were found to meet our minimum non-negotiable requirements.

### Wellbeing

As the COVID-19 pandemic continues to pose challenges for many people, one of our key wellbeing aims is to make people feel safe talking about their mental health at work, ensuring that employees access the support they require when they need it most.

To support this aim, we kicked off a mental health training series in March 2021, delivering monthly trainings covering a broad range of topics, from emotional triggers and mindfulness, to preventing digital burnout and building resiliency muscles. The training content has been well received by employees and created a lot of interaction around sensitive topics, with around 10 000 engagements across all the trainings delivered to date.

As employees continued to work from home it was important to create a positive environment which promotes engagement, community, and happiness at work. Under the headline of "Healthier together" we kicked off the Nokia Sports Festival in May 2021 – a nine-week global competition to support wellbeing, with multiple challenges based around any kind of physical activity. This gave people the opportunity to prioritize their wellbeing and to create healthy habits that encouraged them to disconnect from work and to make time to be physically active. It also created a sense of community through the engagement within the group of participants – over 3 000 employees registered to take part, across 106 locations. A virtual awards ceremony in July brought the challenge

### Recharge Day

Even before the pandemic, we believed in, actively supported and invested in work-life balance. We stepped up our efforts when the COVID-19 pandemic started to impact our workforce and we continue to reassess our initiatives to ensure we are doing all we can to help people cope with the disruption. We took another step towards recognizing the challenges our employees have faced by granting all Nokia employees a Recharge Day. This one-off additional day of annual leave serves as a thank you to our employees for their dedication and hard work, offering a chance to switch off and reset. People are encouraged to take this extra day off during the busiest quarters, because this is often when our people are under most pressure and could therefore do with some rest and relaxation.

to a close and recognized the individuals, teams and locations that achieved the highest number of healthy stars during the challenge.

Our Personal Support Service continues to support all Nokia employees and their families, in their native language. The service provides confidential support and guidance across a range of emotional, practical, and work-life issues, as well as mindfulness coaching to help with managing stress, and coaching to help navigate life transitions.



# Key data and reporting principles

## Data reporting principles

### Scope and boundaries

The sustainability data presented in this report covers Nokia Group, including Mobile Networks, Network Infrastructure, 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 2021 and where available, trend data since year 2018. 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 108–109. The share of reported environmental data which has been subject to assurance is as follows::

- Greenhouse Gas (GHG) emissions: 99%
- Energy consumption: >99%
- Water consumption: 99%
- Circular economy: 83%

### Environmental data

We have an internal document 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 2021 data is estimated with data gap corrections or employing annual intensity factors based on kWh/m<sup>2</sup> (electricity and natural gas), m<sup>3</sup>/m<sup>2</sup> (water) and kg/m<sup>2</sup> (waste), as calculated from the reporting sites, thereby accounting for 100% of Nokia facilities. In 2021, these estimation procedures accounted for 7% of electricity and 4% natural gas usage, 3% of operational waste generation 25% of water withdrawal, when compared to total withdrawal, respectively. Subleased areas, covering 6% of the total site area in 2021, are not covered in reporting from 2019 onwards. Intensity factors used for estimating missing facility data were changed in 2019. Prior to 2019 water and waste estimations were done based on employee headcount, but from 2019 onwards they have been done based on facility area (m<sup>2</sup>).

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 is 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 electronic waste (WEEE) are reported globally under hazardous waste, although only different sub-categories of WEEE are defined hazardous in different countries. The actual waste treatment is always done according to local legal requirements. Reported waste data is rounded to hundreds of metric tons. We ensure the total waste amount rounds correctly and summed sub-metrics match the total. This might lead to small rounding exceptions with the sub-metrics.

### Our carbon footprint

Our approach to measuring greenhouse gas emissions follows the Greenhouse Gas (GHG) Protocol ([www.ghgprotocol.org](http://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<sub>2</sub>e 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<sub>2</sub> equivalents (CO<sub>2</sub>e) as per GHG Protocol's guidance. CO<sub>2</sub>e 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<sub>2</sub>.

### 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<sub>2</sub>e 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<sub>2</sub>e 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<sub>2</sub> emission value per km of each car make and model. Applicable emission factors are sourced from car manufacturers. As an exception, in the US 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<sub>2</sub>e 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<sub>2</sub>e 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 US 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 US 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 **64%** of total purchase spend in 2021 (46% in 2020). 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 multiplied to cover 100% of spend. In 2021 calculation we included only suppliers' Scope 1 and 2 emissions, not Scope 3 emissions, which were reported only by a small share of respondents. To avoid double counting, emission data from product and employee transportation service suppliers is excluded. Those emissions are reported as part of Scope
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+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 assessed, because emissions are by calculation less than 0.1% of total Scope 3 emissions.
- 4.&9. Upstream and downstream transportation and distribution: Data includes emissions from inbound and outbound logistics. Data is based on the top 16 (18 in 2020) logistics supply partners delivery data (ton-km) and transportation mode. Reporting is done in real weight, by using EPA's CO<sub>2</sub>e emission 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 2018–2021 emissions. For 2020–2021, share of commuting methods was adjusted based on allowed occupancy at Nokia sites during global COVID-19 restrictions.
8. Upstream leased assets: not presently being assessed as leased vehicles and facilities are presently assessed in Scope 1 emissions.
9. Downstream transportation and distribution: See category 4 & 9.
10. Processing of sold products: not considered relevant because processing is not required for sold Nokia products.
11. Use of sold products: The calculation formula is following:  $\Sigma$  [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<sub>2</sub>e/kWh)]. Data covers 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 2021 we are above 90%. Calculations are so far based on assumption that all products are powered by grid electricity. We use the IEA's latest world average CO<sub>2</sub> equivalent 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 approximately 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, Nokia has invested in some companies but has no operational control. In line with our approach with financial accounting these are not consolidated in our environmental reporting either.



Reported emission data is rounded to hundred metric tons. We ensure the total Scope 1, 2 and 3 amounts are rounded correctly. This might lead to small rounding exceptions in the sub-metrics.

### 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 HR databases. In 2021, the number of employees whose individual detail data was not tracked centrally was 5 685 (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. At the end of 2021, the number of external temporary workers used, for example, to cover sickness was in the region of 3 100 people. Externals are not covered in any of Nokia employee data; they are included in the responsible sourcing section.

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 as individuals having job grade 13+, and leadership is defined as individuals having 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. 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 as cash, value of time and value of in-kind. Cash has represented 98% of the total contributions in 2021 (98% in 2020, 84% in 2019 and 90% in 2018). 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 2021 numbers. Multiple buildings on the same site are counted as one site, whereas buildings classified as carparks, 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 the majority 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 2021 and included in Nokia's audited financial statements. Please see Auditor's report from page 212 onwards in our [Annual Report; Nokia in 2021](#).

# Environmental data

	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	Notes
<b>Greenhouse gas (GHG) emissions (metric tons CO<sub>2</sub>e)</b>							
<b>Total GHG Scope 1: Direct emissions from facilities and mobile sources</b>	<b>134 500</b>	<b>125 000</b>	<b>116 300</b>	<b>124 300</b>	<b>+7%</b>	●	3
Emissions of GHGs from fuel combustion in facilities (stationary and mobile sources)	29 000	20 800	19 500	18 400	-5%	●	
Emissions from Hydro-Fluoro-Carbon (HFC) refrigerants	600	300	600	400	-44%	●	
Emissions from fuel combustion in car fleet	32 000	29 600	21 000	24 400	+16%	●	
Emissions from fuel combustion in marine fleet	72 900	74 300	75 200	81 100	+8%	●	
<b>GHG Scope 2: Indirect emissions from purchased electricity and heat, Market-based</b>	<b>364 900</b>	<b>327 200</b>	<b>263 600</b>	<b>224 500</b>	<b>-15%</b>	●	3
Emissions from purchased electricity	347 300	311 300	245 900	207 900	-15%	●	
Emissions from purchased cooling	7 900	8 200	10 900	8 900	-18%	●	
Emissions from purchased heating	9 700	7 700	6 800	7 600	+12%	●	
<b>GHG Scope 2: Indirect emissions from purchased electricity and heat, Location-based</b>	<b>436 900</b>	<b>421 900</b>	<b>380 200</b>	<b>377 300</b>	<b>-1%</b>	●	3
Emissions from purchased electricity	419 400	406 000	362 500	360 800	0%	●	
Emissions from purchased cooling	7 900	8 200	10 900	8 900	-18%	●	
Emissions from purchased heating	9 700	7 700	6 800	7 600	+12%	●	
<b>Total Scope 1 and 2 GHG emissions, Market-based</b>	<b>499 400</b>	<b>452 200</b>	<b>379 900</b>	<b>348 700</b>	<b>-8%</b>	●	3
<b>Total Scope 1 and 2 GHG emissions, Location-based</b>	<b>571 400</b>	<b>546 900</b>	<b>496 500</b>	<b>501 600</b>	<b>+1%</b>	●	3
<b>GHG Scope 3, Indirect emissions</b>	<b>44 673 500</b>	<b>39 276 200</b>	<b>35 595 100</b>	<b>40 634 700</b>	<b>+14%</b>		
Emissions from purchased goods and services	5 284 000	3 063 000	2 487 400	1 571 600	-37%	●	4, 5
Emissions from upstream and downstream transportation and distribution	384 300	303 600	255 200	326 100	+28%	●	4
Emissions from capital goods	398 200	417 000	380 200	455 200	+20%		
Emissions from business air travel	81 500	71 700	13 300	5 600	-58%		

# Environmental data

	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	Notes
Emissions from employee commuting	118 400	110 900	39 000	17 200	-56%		6
Emissions from use of sold products	38 410 000	35 310 000	32 420 000	38 259 000	+18%	●	4, 10
<b>Total Scope 1, 2 and 3 GHG emissions, Market-based</b>	<b>45 172 900</b>	<b>39 728 400</b>	<b>35 975 000</b>	<b>40 983 500</b>	<b>+14%</b>		3
<b>Total Scope 1, 2 and 3 GHG emissions, Location-based</b>	<b>45 244 900</b>	<b>39 823 100</b>	<b>36 091 600</b>	<b>41 136 300</b>	<b>+14%</b>		3
<b>GHG intensities and miscellaneous GHG information</b>							
Total Scope 1 and 2 GHG emissions per net sales (metric tons CO <sub>2</sub> e / € million), Market-based	22	19	17	16	-10%		
Car fleet (gCO <sub>2</sub> e/vehicle-km)	135	129	114	92	-19%		
Emissions avoided due to purchased renewable electricity (metric tons CO <sub>2</sub> e)	129 700	145 900	169 500	192 100	+13%		7
Biologically sequestered carbon (metric tons CO <sub>2</sub> e)	-	-	-	-	-		5
<b>Other air emissions (metric tons)</b>							
Ozone Depleting Substances (ODS), as ODP	0.02	<0.01	<0.01	0.45	+4 497%		
Criteria air pollutants	63.5	36.1	31.1	31.4	+1%		
Volatile Organic Compounds (VOC) emissions	1.6	1.0	0.9	0.9	-2%		8
NO <sub>x</sub>	30.9	18.1	15.5	15.8	+2%		
SO <sub>x</sub>	3.7	0.8	<0.5	<0.5	-8%		
Particulate Matter (PM) emissions	2.6	1.4	1.2	1.2	+2%		
Other criteria air contaminants	24.8	14.8	13.0	13.1	+1%		
<b>Energy consumption</b>							
<b>Energy consumption in Nokia facilities (GWh) (1 GWh = 3 600 GK)</b>							
Electricity, total	1 005	961	893	892	0%	●	
Heating, total	43	34	30	34	+12%	●	
Cooling, total	17	27	34	34	-1%	●	

# Environmental data

	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	Notes
Fossil gas, total	141	111	101	99	-2%	●	
Fossil oil, total	11	2	1	1	0%	●	
Biofuel, total	0	0	0	0	0%	●	
<b>Facilities' energy consumption, total (GWh)</b>	<b>1 217</b>	<b>1 135</b>	<b>1 059</b>	<b>1 059</b>	<b>0%</b>	●	
Direct energy	153	113	102	101	-1%	●	
Indirect energy	1 064	1 021	957	958	0%	●	
Renewable energy	269	302	351	470	+34%	●	7
Renewable electricity	269	302	351	470	+34%	●	7
Renewable electricity share of total electricity (%)	27%	31%	39%	53%	13 pp	●	
Total energy per net sales (MWh/EUR million)	54	49	48	48	-1%		
<b>Energy consumption in Nokia fleet (GWh)</b>							9
Marine fleet (Fossil oil use)	278	285	289	314	+9%		
<b>Energy consumption outside of Nokia (GWh)</b>							
Energy consumption of sold products	78 090	71 790	66 500	79 560	+20%	●	4, 10
<b>Water consumption</b>							
<b>Total water withdrawal (thousands m<sup>3</sup>)</b>	<b>1 791</b>	<b>1 737</b>	<b>1 285</b>	<b>1 182</b>	<b>-8%</b>	●	10
Total water withdrawal per employee (m <sup>3</sup> )	18	18	14	14	-4%		11
<b>Water withdrawal by source (%)</b>							
Municipal water supply	100%	100%	100%	100%	0 pp		
<b>Recycled/reused water (thousands m<sup>3</sup>)</b>	<b>20</b>	<b>17</b>	<b>14</b>	<b>18</b>	<b>+29%</b>		
<b>Recycling/reuse % of total withdrawal</b>	<b>1.1%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.5%</b>	<b>0 pp</b>		
<b>Total water use (thousands m<sup>3</sup>)</b>	<b>1 811</b>	<b>1 753</b>	<b>1 299</b>	<b>1 200</b>	<b>-8%</b>		

# Environmental data

	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	Notes
<b>Circular economy</b>							
<b>Waste within Nokia operations (metric tons)</b>							
<b>Total waste</b>	<b>13 600</b>	<b>8 000</b>	<b>7 900</b>	<b>8 400</b>	<b>7%</b>	●	
Reuse	200	<50	<100	<100	+13%	●	
Recycle	6 000	3 400	5 300	6 300	+17%	●	
Energy recovery	400	500	1 000	400	-55%	●	
Landfill	7 100	4 100	1 500	1 700	+9%	●	
Incineration without energy recovery	0	0	0	0	0%	●	
<b>Total non-hazardous waste</b>	<b>13 000</b>	<b>7 500</b>	<b>7 200</b>	<b>7 900</b>	<b>+8%</b>	●	
Reuse	200	0	0	<50	N/A	●	
Recycle	5 400	3 000	4 900	5 800	+18%	●	
Energy recovery	400	500	900	400	-54%	●	
Landfill	7 000	4 000	1 400	1 600	+13%	●	
Incineration without energy recovery	0	0	0	0	0%	●	
<b>Total hazardous waste</b>	<b>600</b>	<b>500</b>	<b>700</b>	<b>600</b>	<b>-14%</b>	●	
Reuse	<50	<50	<100	<50	-44%	●	
Recycle	600	400	400	500	+9%	●	
Energy recovery	<50	<50	<100	<50	-68%	●	
Landfill	<50	<50	100	<100	-45%	●	
Incineration without energy recovery	0	0	0	0	0%	●	
<b>Hazardous waste by type</b>							
Electronic waste from facilities	600	400	400	400	0%	●	
Other hazardous waste	<100	<100	200	<50	-91%	●	
<b>Utilization rate %</b>	<b>48%</b>	<b>49%</b>	<b>81%</b>	<b>80%</b>	<b>0 pp</b>	●	

## Environmental data

	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	Notes
<b>Equipment returned from customers (number, metric tons)</b>							4
Reuse (no. of items)	56 100	56 300	79 400	55 400	-30%	●	
Reuse (metric tons)	Not reported	Not reported	570	350	-38%	●	
Recycle (metric tons)	4 100	4 000	4 700	3 270	-31%	●	
Energy recovery (metric tons)	160	330	550	240	-56%	●	
Landfill (metric tons)	20	30	50	120	150%	●	
<b>Product packaging in hubs (metric tons)</b>							
Reuse	4 200	3 200	1 600	2 600	58%		4, 12

### Notes


“-” means we do not have data available for that particular year or scope.

- 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 in percentage points (pp).
- Includes CO<sub>2</sub>e from all GHGs (CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O).
- Nokia uses internally market-based (not location-based) values for example in target setting and if only one value is given without further definitions, it is the market-based.
- Data covers Nokia's business groups.
- 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.

- Based on total headcount reported in financial reporting.
- Renewable electricity calculations that are associated to green attributes, for example, Guarantees of Origin (GO), Renewable Energy Certificates (REC), power purchase agreements (PPAs)
- VOC source is from fuel combustion. No significant quantities from solvents and halogenated hydrocarbon, so these emissions are not relevant and not consolidated.
- Energy consumption is presented only for marine fleet, as energy consumption data from Nokia's vehicle fleet is not available.
- No significant quantities of heavy metals discharges into water, indicator not relevant and not consolidated.

- 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 31 December (disclosed in the People data section of the report). Years 2019-2021: based on total headcount reported in financial reporting.
- 2018 data includes part of the hubs. 2019-2021 data includes all hubs for Nokia business groups.

## People data

	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	2021 Notes
<b>Employment</b>							
Number of employees, year-end situation	101 203	94 723	89 978	86 370	-4%		
Share of employees with full-time contracts	99%	99%	99%	99%	0 pp		
Share of employees with permanent contracts	96%	97%	97%	97%	0 pp		
Number of new employee hires	8 849	4 493	4 961	6 443	+30%		
Rate of new employee hires, %	10%	5%	6%	8%	+2 pp		
Female share of new hires	23%	24%	25%	25%	0 pp		2
Total number of leavers	9 998	11 318	9 572	9 008	-6%		
Total attrition rate	11%	13%	12%	11%	0 pp		
Attrition rate of voluntary leavers	5%	6%	5%	7 %	+2 pp		
Average length of service (in years)	11	11	11	12	+3%		
Number of long-term expatriates worldwide	334	180	137	97	-29%		
<b>Diversity &amp; Equal Opportunity</b>							
Share of women within workforce	22%	22%	22%	22%	0 pp		
Share of female line managers	16%	16%	16%	16%	0 pp		
Share of women within senior management	13%	13%	14%	14%	0 pp		
Share of women within leadership	15%	15%	15%	16%	+1 pp		
Share of women on the executive management board	14%	22%	24%	27%	+4 pp		
Share of women in the Board of Directors	40% (4 of 10)	40% (4 of 10)	44% (4 of 9)	38% (3 of 8)	-7 pp		
Number of nationalities in the executive management board	8 (of 14)	10 (of 18)	9 (of 17)	7 (of 11)			
Share of non-Finnish in the executive management board	93 %	83 %	76 %	64%	-12 pp		
Average age of employees at year-end	41	41	41	42	+1%		
Number of nationalities within workforce	166	166	164	163	-1%		1

## People data


	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	2021 Notes
<b>Training &amp; Education</b>							
Average number of all training hours per employee	34	34	33	30	-9%		
Number of attendees in corporate leadership programs	3 862	3 191	1 129	647	-43%		
<b>Occupational health &amp; safety</b>							
Near miss incidents reported (including contractors)	454	362	237	211	-11%		
Lost-time incidents of employees	39	14	11	20	+82%		
Work-related fatal incidents involving employees	0	1	0	0	-	●	
Work-related fatal incidents involving contractors or subcontractors	1	6	2	4	+100%	●	
<b>Community investments</b>							
Total value of contributions (EUR million)	6.53	2.26	6.50	6.99	+8%		
Number of direct beneficiaries	304 200	206 900	2 183 300	862 900	-60%		

## Notes

1. Nationalities data cover 86% of the headcount in 2021.
2. Calculation does not include trainees that are converted to permanent employees.



## Ethics & compliance data

	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	2021 Notes
<b>Total number of ethical concerns reported</b>	<b>887</b>	<b>994</b>	<b>776</b>	<b>853</b>	<b>+10%</b>		
Conflict of Interest	55	69	37	33	-11%		
Controllership	74	88	90	87	-3%		
Dealing with Government Officials	0	1	8	1	-88%		
Fair Competition	9	2	9	6	-33%		
Fair Employment (all HR related)	336	416	290	333	+15%		
Guidance	186	164	113	123	+9%		
Human Rights	2	1	1	5	+400%		
Improper Payments	13	11	9	16	+78%		
Insider trading	-	-	3	1	-67%		
Intellectual Property and Confidential Information	59	54	51	50	-2%		
Privacy	8	7	6	14	+133%		
Trade Compliance	5	5	5	7	+40%		
Wellbeing, Health, Safety and Environment	24	27	29	46	+59%		
Working with Suppliers	58	64	67	52	-22%		
Other	58	85	58	79	+36%		
Number of investigations by the Ethics & Compliance Office	248	289	329	361	+10%		
Number of allegations substantiated with "cause found" after investigation	92	106	106	72	-32%		
Number of employees given a written warning on grounds of violation of Code of Conduct	16	30	20	15	-25%		
Number of employees dismissed on grounds of a violation of the Code of Conduct	24	32	16	13	-19%		
Share of employees completing Ethical Business Training	95%	97%	96%	97%	+1 pp		

## Supply chain management data

	2018	2019	2020	2021	Year-on-year change 2020-2021	2021 data assured	2021 notes
<b>Supplier audits and assessments</b>							
Number of Corporate responsibility (CR) onsite audits (focused on labor conditions and environment) against Nokia Supplier Requirements and SA8000	75	45	24	64	+167%	●	
Closure rate of non-conformities identified at CR-audits, within audit closure target time	52%	52%	67%	67%	0 pp	●	
Number of onsite system audits against Nokia Supplier Requirements	38	46	27	36	+33%	●	
Number of suppliers assessed in EcoVadis	251	241	340	339	0%		
Share of active suppliers rated "satisfactory" or above on their assessment of sustainability by EcoVadis	74%	74%	72%	75%	+3 pp		
Share of relevant suppliers delivering high-risk activity covered by our H&S Maturity Assessment	100%	97%	97%	99%	+2 pp	●	
Share of suppliers assessed by our H&S Maturity Assessment process meeting "H&S compliant supplier" status	89%	99%	99%	98%	-1 pp	●	
Number of suppliers assessed on their climate impact based on their CDP reporting for Nokia	314	404	430	441	+3%		
Number of suppliers that set GHG emission reduction targets in CDP	187	234	262	296	+13%		
<b>Materials traceability</b>							
Share of suppliers that have achieved full visibility into the smelters in our supply chain	97%	96%	98%	99%	+1 pp	●	
Share of smelters that have been validated as conflict-free or are active in the validation process (out of known smelters in Nokia supply chain)	84%	82%	80%	78%	-2 pp		

## Managements systems data

	2018	2019	2020	2021	Year-on-year change 2020-2021	Notes
ISO 14001 certified environmental management system, % of sites covered	57%	56%	53%	53%	0 pp	1
ISO 45001 certified occupational health and safety management system, % of sites covered	56%	54%	52%	52%	0 pp	1, 2
ISO 9001 certified quality management system, % of sites covered	68%	63%	60%	59%	-1 pp	1
ISO 14001 certified environmental management system, % of employees covered	83%	85%	90%	88%	-2 pp	1
ISO 45001 certified occupational health and safety management system, % of employees covered	78%	79%	85%	84%	-1 pp	1, 2
ISO 9001 certified quality management system, % of employees covered	93%	93%	94%	92%	-2 pp	1

### Notes

1. In 2018–2020, 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 2018–2019 is our OHSAS 18001 certification coverage.

## Financial data

	2018	2019	2020	2021	Year-on-year change 2020-2021	Notes
Net sales, EUR million	22 563	23 315	21 852	22 202	+2%	1, 2
Operating profit (loss), EUR million	(59)	485	885	2 158	+144%	1, 2
R&D expenses, EUR million	4 620	4 532	4 087	4 214	+3%	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 212 onward in our Annual report, Nokia in 2021.

# 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 conclusion on the selected sustainability disclosures in the Nokia's People & Planet Report 2021 for the reporting period of January 1, 2021 to December 31, 2021. The assured information is indicated in the Key data and reporting principles section of the Company's People & Planet Report 2021 (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 2021. 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 2021.

### Environmental indicators

1. Progress against Science-based target (SBT)
2. Scope 1 greenhouse gas (GHG) emissions, by sources (metric tons CO<sub>2</sub>e)
3. Scope 2 GHG emissions, market based and location based (metric tons CO<sub>2</sub>e)
4. Energy consumption within Nokia, by types of energy (GWh) and change to 2020 (%)
5. Renewable electricity amount (GWh) and portion of total electricity consumption (%)

6. Water withdrawal in facilities (m<sup>3</sup>) and change to 2020 (%)
7. Emissions from purchased goods and services (metric tons CO<sub>2</sub>e)
8. Emissions from upstream transportation and distribution (metric tons CO<sub>2</sub>e)
9. Scope 3 GHG emissions: use of sold products (metric tons CO<sub>2</sub>e)
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 2021 due to network modernization (%)

### Social indicators

1. Share of employees who have completed the annual training on ethical business practices (%)
2. Share of all high-risk projects with implementation assessment completed and share of those projects meeting our minimum non-negotiable requirements (%)
3. Number of work-related employee fatalities and number of work-related contractor and subcontractor fatalities
4. Share of cases coming to Human Rights Due Diligence (HRDD) process resolved as "Go", "No go" and "Go with conditions" (%)
5. 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 in-depth on-site audits (focused on labor conditions and environment) against Nokia Supplier Requirements and SA8000, and share of closed non-conformities (%)
4. Number of forced labor non-compliance instances found in supplier audits
5. Share of suppliers that have achieved conflict free status (%)
6. Share of suppliers that have full visibility to smelters in our supply chain (%)

### Management's responsibility

The Management of Nokia 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 Nokia's sites in Finland and India 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, 2021 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, March 26, 2022

### Deloitte Oy

Marika Nevalainen	Authorized Public Accountant
Teemu Jaatinen	Authorized Public Accountant

## Our targets in 2022

Category	Topic	Target year	Base year	Target
Improving lives	Connectivity	2030	2021	Helping our customers to provide broadband based digital services with 2 billion subscriptions through Nokia radio customers' networks by 2030
	Sustainability related products and services	2025	2021	Harness Nokia technology, capabilities and funds to improve the lives of 1 500 000 through social digitalization projects, digital skill building, and connecting the unconnected or underserved.
	Connecting the unconnected	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 focused on access to education and healthcare
Climate	Climate (Main target)	2030	2019	Science based target in line with 1.5°C (Scope 1, 2 and 3): Reduction of our total GHG emissions by 50% between 2019 and 2030
	Climate (Real estate)	2022	N/A	Use 60% renewable electricity in our own operations
	Climate (Real estate)	2025	N/A	Use 100% renewable electricity in our own operations
	Climate (Real estate)	2022	2019	45% reduction of facility GHG emissions compared to 2019
	Climate (Real estate)	2025	2019	GHG emission reduction of 65% from Scope 1 and 2, including 85% reduction from facilities, compared to 2019
	Climate (Responsible sourcing)	2030	2020	Our final assembly suppliers reaching net zero emissions
	Climate (Responsible sourcing)	2030	2019	Our materials suppliers reduce GHG emissions by 50% (compared to 2019 baseline)
	Climate (Responsible sourcing)	2030	2019	GHG emission reduction of 73% from logistics, compared to 2019
	Climate (Products)	2023	2019	50% reduction of average power consumption of 5G mMIMO Base Station by 2023 from 2019 baseline
	Circularity	2022	N/A	Divert 75% of facility waste from landfill
Circularity	2030	N/A	95% circularity rate for waste from our offices, labs, manufacturing, installation and product takeback	

## Our targets in 2022

Category	Topic	Target year	Base year	Target
Integrity	Ethical business practices and corporate governance	2030	2016	Maintain at least 85% favorability of employee/line manager engagement on the importance of ethics and compliance
	Ethical business practices and corporate governance	2022	N/A	Ethical Business Training (EBT) is completed by 95% of employees
	Human rights	2022	N/A	Complete our second Global Network Initiative external human rights assessment and, as a result, Nokia deemed to have shown good faith efforts to implement the GNI principles in freedom of expression and privacy
	Responsible sourcing	2022	N/A	98% tin, tantalum, tungsten and gold traceability and conflict-free status and extended due diligence to cobalt and mica
	Responsible sourcing	2025	N/A	98% tin, tantalum, tungsten and gold traceability and conflict-free status and extended due diligence to cobalt, mica and two additional minerals
	Responsible sourcing	2025	2020	80% of suppliers receive satisfactory sustainability score from supplier performance evaluation (includes performance across our sustainability assessment programs such as EcoVadis, CDP, Conflict minerals)
Culture	Diversity and inclusion	2022	2020	A minimum of 26% female hires in global external recruits
	Diversity and inclusion	2030	2021	Increase the share of women to a minimum of 25% of total employees by end 2030
	Health & safety	2022	N/A	Zero critical or fatal incidents for employees and suppliers working on our customer projects in 2022
	Health & safety	2023	N/A	100% of suppliers performing high risk activities pledge their commitment to Nokia's life-saving rules
	Health & safety	2024	N/A	95% of projects compliant with the strengthened requirements of our High-Risk Project Implementation Assessment (HRPIA) process
	Health & safety	2030	2016	100% of suppliers delivering high risk activity to meet or exceed "H&S preferred supplier" status

# Key ESG frameworks



## 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 2021 People & Planet report in accordance with the GRI Standards: Core-option. 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 127). 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 disclosures 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 [Key data and reporting principles](#) on pages 94–97.



## GRI index

GRI standard and disclosure		Response	Related SDGs
GRI 102: General Disclosures 2016			
<b>Organizational profile</b>			
102-1	Name of the organization	Nokia Corporation	
102-2	Activities, brands, products, and services	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, please see <a href="#">Nokia in 2021: Business groups pp. 26–37</a>	
102-3	Location of the headquarters	Espoo, Finland	
102-4	Location of operations	<a href="#">People &amp; Planet 2021: Nokia today pp. 6–7</a>	
102-5	Report the nature of ownership and legal form	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 shares of Nokia Corporation are listed on the Nasdaq Helsinki Stock Exchange, the New York Stock Exchange and the Euronext Paris Stock Exchange.	
102-6	Markets served	<a href="#">People &amp; Planet 2021: Nokia today pp. 6–7</a>	
102-7	Scale of the organization	<a href="#">People &amp; Planet 2021: Nokia today pp. 6–7</a>	
102-8	Information on employees and workers	<a href="#">People &amp; Planet 2021: Nokia today pp. 6–7</a> ; <a href="#">People data pp. 103–104</a>	8, 10
102-9	Supply chain	<a href="#">People &amp; Planet 2021: Responsible sourcing p. 68</a>	
102-10	Significant changes to the organization and its supply chain	<a href="#">Nokia in 2021: Business overview pp. 26–39</a>	
102-11	Precautionary Principle of approach	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.	
102-12	External initiatives	Global Reporting Initiative (GRI Standards), UN Global Compact, UN Sustainable Development Goals, UN Guiding Principles for Business and Human Rights, UN Standards of Conduct for Business, The Universal Declaration of Human Rights, International Labor Organization (ILO) Declaration on Fundamental Principles and Rights at Work, Global Network Initiative Principles, Science Based Targets initiative, ICC business charter of sustainable development, ISO management system standards, OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High Risk Areas (OECD 2016), Commitment2050 (Sitoumus2050 in Finland), Greenhouse Gas Protocol.	

## GRI index

GRI standard and disclosure		Response	Related SDGs
GRI 102: General Disclosures 2016			
<b>Organizational profile</b>			
102-13	Membership of associations	<p>Where the name of the association is bolded we have cooperation specifically related to sustainability.</p> <p>Main industry cooperation: The World Economic Forum (WEF), <b>Groupe Speciale Mobile Association (GSMA)</b>, Global Mobile Suppliers Association (GSA), <b>DIGITALEUROPE</b>, 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), <b>EU Code of Conduct on Energy Consumption of Broadband Equipment</b>, French Alliance of Digital Industries (AFNUM), Bitkom, International Institute of Communications (IIC), U.S. Chamber of Commerce, <b>Responsible Business Alliance</b>, <b>International Electronics Manufacturing Initiative (iNEMI)</b>, <b>Energy Star</b>.</p> <p>Main standardization and technology cooperation: <b>3rd Generation Partnership Project (3GPP)</b>, <b>European Telecommunications Standards Institute (ETSI)</b>, <b>International Telecommunication Union (ITU)</b>, 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), <b>Alliance for Telecommunications Industry Solutions (ATIS)</b>, <b>China Communications Standards Association (CCSA)</b>, Institute of Electrical and Electronics Engineers (IEEE), Open RAN Alliance (O-RAN), <b>International Organization for Standardization (ISO)</b>, <b>European Committee for Standardization and Electrotechnical Standardization (CEN/CENELEC)</b>, <b>Telecommunications Standards Development Society in India (TSDSI)</b>.</p> <p>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.</p>	
<b>Strategy</b>			
102-14	Statement from senior decision-maker	<a href="#">People &amp; Planet 2021: Letter from the President and CEO pp. 4–5</a>	
102-15	Key impacts, risks and opportunities	<a href="#">People &amp; Planet 2021: Our sustainability approach pp. 10–12</a> ; <a href="#">Risk and opportunity management p. 18</a> <a href="#">Nokia in 2021: Risk factors pp. 118–119</a>	
<b>Ethics and integrity</b>			
102-16	Values, principles, standards and norms of behavior	<a href="#">People &amp; Planet 2021: Ethical business and corporate governance p. 57</a> ; <a href="#">A great place to work p. 80</a> <a href="#">nokia.com: Code of Conduct</a>	16
102-17	Mechanisms for advice and concerns about ethics	<a href="#">People &amp; Planet 2021: Ethical business and corporate governance p. 57</a> ; <a href="#">Reporting of ethical concerns without fear of retaliation p. 62</a> <a href="#">nokia.com: Code of Conduct</a>	16

## GRI index

GRI standard and disclosure		Response	Related SDGs
GRI 102: General Disclosures 2016			
<b>Governance</b>			
102-18	Governance structure	People & Planet 2021: Managing sustainability p. 17–18 Nokia in 2021: Corporate governance statement pp. 44–58	
102-19	Delegating authority	People & Planet 2021: Managing sustainability p. 17–18 Nokia in 2021: Corporate governance statement pp. 44–58	
102-20	Executive-level responsibility for economic, environmental and social topics	People & Planet 2021: Managing sustainability p. 17–18 Nokia in 2021: Corporate governance statement pp. 44–58	
102-21	Consulting stakeholders on economic, environmental and social topics	People & Planet 2021: Engaging with our stakeholders pp. 19–21; Ethical business and corporate governance p. 57 nokia.com: Engaging with stakeholders	16
102-22	Composition of the highest governance body and its committees	Nokia in 2021: Corporate governance statement pp. 44–52	
102-23	Chair of the highest governance body	Nokia in 2021: Corporate governance statement p. 45	16
102-24	Nominating and selecting the highest governance body	Nokia in 2021: Corporate governance statement pp. 44–52	
102-26	Role of highest governance body in setting purpose, values and strategy	People & Planet 2021: Managing sustainability pp. 17–18 Nokia in 2021: Corporate governance statement pp. 44–52	
102-27	Collective knowledge of highest governance body	People & Planet 2021: Managing sustainability p. 17–18 Nokia in 2021: Corporate governance statement p. 46–48	4
102-28	Evaluating the highest governance body's performance	Nokia in 2021: Corporate governance statement pp. 49–50	
102-29	Identifying and managing economic, environmental, and social impacts	People & Planet 2021: Our sustainability approach pp. 10–12	
102-30	Effectiveness of risk management processes	People & Planet 2021: Compliance as a business enabler pp. 59–61 Nokia in 2021: Corporate governance statement pp. 49, 57	
102-31	Review of economic, environmental, and social topics	People & Planet 2021: Our approach pp. 10–12; Managing sustainability pp. 17–18 Nokia in 2021: Corporate governance statement p. 49	

## GRI index

GRI standard and disclosure		Response	Related SDGs
<b>GRI 102: General Disclosures 2016</b>			
<b>Governance</b>			
102-32	Highest governance body's role in sustainability reporting	People & Planet 2021: Managing sustainability pp.17–18	
102-33	Communicating critical concerns	People & Planet 2021: Managing sustainability pp.17–18; Reporting of ethical concerns p. 62 Nokia in 2021: Corporate governance statement pp. 49–52	
102-34	Nature and total number of critical concerns	People & Planet 2021: Reporting of ethical concerns pp. 62–63	
102-35	Remuneration policies	Nokia in 2021: Compensation pp. 59–73	
102-36	Process for determining remuneration	Nokia in 2021: Compensation pp. 59–73	
<b>Stakeholder engagement</b>			
102-40	List of stakeholder groups	People & Planet 2021: Engaging with our stakeholders p. 19	
102-41	Collective bargaining agreements	People & Planet 2021: Ensuring fair working conditions and terms of employment pp. 84–86 nokia.com: Our people	8
102-42	Identifying and selecting stakeholders	People & Planet 2021: Engaging with our stakeholders p. 19–21	
102-43	Approach to stakeholder engagement	People & Planet 2021: Engaging with our stakeholders pp. 19–21; Responsible sourcing pp. 68–73; A great place to work p. 80	
102-44	Key topics and concerns raised	People & Planet 2021: Sustainability highlights and challenges in 2021 p. 9; Engaging with our stakeholders p. 19	
<b>Reporting practice</b>			
102-45	Entities included in the consolidated financial statements	Nokia in 2021: Notes to the consolidated financial statements: Note 2. Significant accounting policies (Principles of consolidation) p. 131; Note 30. Group companies pp. 179–183	
102-46	Defining the report content and the topic boundaries	People & Planet 2021: Our sustainability approach pp. 10–12	
102-47	List of material topics	People & Planet 2021: Our sustainability approach pp. 10–12  See also Management approaches 103–1, 103–2, and 103–3 within this document. The terminology we use when communicating about material topics is slightly different from the GRI terminology.	
102-48	Restatements of information	People & Planet 2021: Data reporting principles pp. 94–97  No significant restatements in 2021.	
102-49	Changes in reporting	People & Planet 2021: Our sustainability approach pp. 10–12	

## GRI index

GRI standard and disclosure		Response	Related SDGs
GRI 102: General Disclosures 2016			
<b>Reporting practice</b>			
102-50	Reporting period	1 January – 31 December, 2021	
102-51	Date of most recent report	The previous report was published in April 2021	
102-52	Reporting cycle	Annual	
102-53	Contact point for questions regarding the report	<a href="mailto:sustainability.global@nokia.com">sustainability.global@nokia.com</a>	
102-54	Claims of reporting in accordance with the GRI Standards	This report has been prepared in accordance with the GRI Standards: Core option	
102-55	The GRI content index	This GRI content index is available at <a href="http://www.nokia.com/en_int/about-us/sustainability/downloads">http://www.nokia.com/en_int/about-us/sustainability/downloads</a>	
102-56	External assurance	<a href="#">People &amp; Planet 2021: Independent practitioner's assurance report pp. 108–109</a>	

## GRI index

GRI standard and disclosure		Response	Omissions/Additional information	Related SDGs
GRI 103: Management Approach 2016				
103-1	Explanation of the material topic and its boundary	People & Planet 2021: Our sustainability approach pp. 10–12; Data and reporting principles pp. 94–97 See also GRI 102–47 List of material topics within this index.		
103-2	The management approach and its components	<p>People &amp; Planet 2021: Managing sustainability pp. 17–18; Ethical business and corporate governance pp. 57–58 nokia.com: Our approach; Code of Conduct</p> <p><b>ECONOMIC</b> Economic performance; Indirect economic performance: People &amp; Planet 2021: Improving lives pp. 24–25 Procurement practices: People &amp; Planet 2021: Responsible sourcing pp. 68–73, Materials traceability and responsible sourcing of minerals pp. 74–75 Anti-corruption; Anti-competitive behavior: People &amp; Planet 2021: Anti-Corruption Center of Excellence and Third-Party Program p. 64</p> <p><b>ENVIRONMENTAL</b> Materials; Energy; Emissions; Waste; Supplier environmental assessment: People &amp; Planet 2021: Combating climate change pp. 39–54; Responsible sourcing pp. 68–73</p> <p><b>SOCIAL</b> Employment; Labor/management relation; Occupational health &amp; safety; Training and education; Diversity and equal opportunity; Non-discrimination: People &amp; Planet 2021: Our people pp. 78–92; Responsible sourcing pp. 68–73 Freedom of association and collective bargaining; Child labor; Forced or compulsory labor; Human rights assessment; Supplier social assessment: People &amp; Planet 2021: Addressing human rights pp. 65–67; Responsible sourcing pp. 68–73; Materials traceability and responsible sourcing of minerals pp. 74–75; Ensuring fair working conditions and terms of employment pp. 84–85 Customer health and safety; Customer privacy: Strengthening our health and safety performance pp. 91–92; Data privacy and security pp. 76–77</p>	<p>Not all of our policies are available to the public, but, for example, the following policies and statements can be accessed on nokia.com on our Policies and Sustainability downloads pages:</p> <p>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 sustainability Privacy statement Modern slavery statement</p>	
103-3	Evaluation of the management approach	See 103-2 The management approach and its components.		

## GRI index

GRI standard and disclosure		Response	Omissions/Additional information	Related SDGs
<b>GRI 201: Economic performance 2016</b>				
201-1	Direct economic value generated and distributed	People & Planet 2021: Our economic impact p. 24		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 2021: Managing sustainability pp. 17–18; Climate-related risk and opportunities p. 43 Nokia in 2021: Sustainability and corporate responsibility p. 95; Risk factors pp. 118–119		
<b>GRI 203: Indirect economic impacts 2016</b>				
203-1	Infrastructure investments and services supported	People & Planet 2021: Improving lives pp. 22–38		2, 5, 7, 9
203-2	Significant indirect economic impacts	People & Planet 2021: Improving lives pp. 22–38		1, 2, 3, 8, 9, 10, 17
<b>Procurement practices</b>				
Own metric	Procurement practices	People & Planet 2021: Responsible sourcing pp. 68–73; Materials traceability and conflict minerals p. 74–75; Inclusion and diversity p. 89		1, 8
<b>GRI 205: Anti-corruption 2016</b>				
205-3	Confirmed incidents of corruption and actions taken	In 2021, the French Supreme Court affirmed a lower court ruling finding a former Alcatel Lucent entity guilty of corruption in relation to conduct from 2000-2004 (prior to acquisition by Nokia) in Costa Rica and elsewhere. This case was based upon the same conduct that formed the basis for Alcatel Lucent's 2010 US FCPA resolution for improper payments made in Costa Rica two decades ago. In May 2020, the French Court of Appeal overturned the trial court's decision in respect of Alcatel Lucent SA and ordered a penalty of EUR 150 000. In June 2021 the French Supreme Court upheld the Court of Appeal's decision, finding Alcatel Lucent guilty. The Supreme Court's decision is final.	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 index

GRI standard and disclosure		Response	Omissions/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	<p>Legal actions pending or completed in 2021 regarding anticompetitive behavior in which Nokia is identified as participant:</p> <p>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.</p> <p>2) In August 2018, the CNMC opened antitrust investigations against several companies and individuals, including Nokia Spain, alleging anticompetitive behavior and cooperation among competitors between 2003 and 2016 in the Spanish railways sector. The CNMC preliminarily found in a Statement of Objection in September 2020 and in a draft decision in March 2021 that Nokia participated in a cartel (illegal consortia) between 2007 and 2014. In September 2021, CNMC fined Nokia EUR 24 million for alleged participation in an illegal cartel from 2007–2014 on railway signaling tenders. CNMC also recommended banning Nokia from future tenders. Nokia has filed an appeal with the Spanish National Court and has also requested to suspend all effects pending appeal.</p> <p>3) Currently litigating a number of cases regarding our standard essential patents and possible misuse of our market dominant position, which we have through the patents. Nokia disagrees and believes we made appropriate license offers.</p>	In 2021, 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 index

GRI standard and disclosure		Response	Omissions/Additional information	Related SDGs
<b>GRI 301: Materials 2016</b>				
301-1	Materials used by weight or volume	People & Planet 2021: Circularity pp. 50–54	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 <a href="https://www.nokia.com/about-us/sustainability/downloads">https://www.nokia.com/about-us/sustainability/downloads</a> . Total volume and weight of materials is considered proprietary information.	8, 12
301-3	Reclaimed products and their packaging materials	People & Planet 2021: Product transportation and distribution p. 49; Circularity p. 51		8, 12
<b>GRI 302: Energy 2016</b>				
302-1	Energy consumption within the organization	People & Planet 2021: Data reporting principles pp. 94–97; Environmental data pp. 99–100		7, 8, 12, 13
302-2	Energy consumption outside of the organization	People & Planet 2021: Data reporting principles pp. 94–97; Environmental data pp. 99–100		7, 8, 12, 13
302-3	Energy intensity	People & Planet 2021: Environmental data p. 100		7, 8, 12, 13
302-4	Reduction of energy consumption	People & Planet 2021: Decarbonizing our value chain pp. 44–49; Environmental data pp. 99–100		7, 8, 12, 13
302-5	Reduction of energy requirements of products and services	People & Planet 2021: Decarbonizing our value chain pp. 44–49		7, 8, 12, 13
<b>GRI 305: Emissions 2016</b>				
305-1	Direct (Scope <sup>1</sup> ) greenhouse gas emissions	People & Planet 2021: Data reporting principles pp. 94–97; Environmental data pp. 98–99		3, 12, 13, 14, 15
305-2	Energy indirect (Scope <sup>2</sup> ) greenhouse gas emissions	People & Planet 2021: Environmental data pp. 98–99		3, 12, 13, 14, 15
305-3	Other indirect (Scope <sup>3</sup> ) greenhouse gas emissions	People & Planet 2021: Environmental data pp. 98–99		3, 12, 13, 14, 15
305-4	Greenhouse gas emissions intensity	People & Planet 2021: Environmental data p. 99		13, 14, 15
305-5	Reduction of greenhouse gas emissions	People & Planet 2021: Decarbonizing our value chain pp. 44–49; Environmental data pp. 98–99		13, 14, 15
305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	People & Planet 2021: Environmental data p. 99		3, 12, 15

## GRI index

GRI standard and disclosure		Response	Omissions/Additional information	Related SDGs
<b>GRI 306: Waste 2020</b>				
306-1	Waste generation and significant waste-related impacts	People & Planet 2021: Circularity pp. 50–54		
306-2	Management of significant waste-related impacts	People & Planet 2021: Circularity pp. 50–54		
306-3	Waste generated	People & Planet 2021: Environmental data pp. 101–102	We report waste data by treatment method, not by composition.	3, 12
306-4	Waste diverted from disposal	People & Planet 2021: Environmental data pp. 101–102	We report 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 2021: Environmental data pp. 101–102	We report waste data by treatment method, not by composition.	3, 12
<b>GRI 308: Supplier environmental assessment 2016</b>				
308-1	New suppliers that were screened using environmental criteria	People & Planet 2021: Responsible sourcing pp. 68–73; Materials traceability and responsible sourcing of minerals pp. 74–75  Suppliers that are new to Nokia or have significant changes in their operations are subject to system audits to check compliance with our requirements. We request information on environmental criteria during supplier selection.		
308-2	Negative environmental impacts in the supply chain and actions taken	People & Planet 2021: Responsible sourcing pp. 68–73; Materials traceability and responsible sourcing of minerals pp. 74–75		
<b>GRI 401: Employment 2016</b>				
401-1	New employee hires and employee turnover	People & Planet 2021: Ensuring fair working conditions and terms of employment p. 86, People data p. 103 nokia.com: Inclusion & diversity		5, 8, 10
<b>GRI 402: Labor/management relations 2016</b>				
402-1	Minimum notice periods regarding operational changes	People & Planet 2021: Ensuring fair working conditions and terms of employment p. 86		8

## GRI index

GRI standard and disclosure		Response	Omissions/Additional information	Related SDGs
<b>GRI 403: Occupational health &amp; safety 2018</b>				
403-1	Occupational health and safety management system	People & Planet 2021: Strengthening our health and safety performance pp. 91–92; Management systems data p. 107		3, 8
403-2	Hazard identification, risk assessment, and incident investigation	People & Planet 2021: Strengthening our health and safety performance pp. 91–92 nokia.com: Health & Safety		3, 8
403-3	Occupational health services	People & Planet 2021: Strengthening our health and safety performance pp. 91–92		3, 8
403-4	Worker participation, consultation, and communication on occupational health and safety	People & Planet 2021: Strengthening our health and safety performance pp. 91–92 nokia.com: Health & Safety		3, 8
403-5	Worker training on occupational health and safety	People & Planet 2021: Strengthening our health and safety performance pp. 91–92 nokia.com: Health & Safety		3, 8
403-6	Promotion of worker health	People & Planet 2021: Strengthening our health and safety performance pp. 91–92; Health and safety maturity assessments p. 71 nokia.com: Health & Safety		3, 8
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	People & Planet 2021: Strengthening our health and safety performance pp. 91–92; Health and safety maturity assessments p. 71 nokia.com: Health & Safety		3, 8
403-8	Workers covered by an occupational health and safety management system	People & Planet 2021: Strengthening our health and safety performance pp. 91–92; Management systems data p. 107		3, 8
403-9	Work-related injuries	People & Planet 2021: Strengthening our health and safety performance pp. 91–92; People data p. 104		3, 8
<b>GRI 404: Training and education 2016</b>				
404-1	Average hours of training per year per employee	People & Planet 2021: People development p. 81–82; People data p. 104		4, 5, 8, 10
404-2	Programs for upgrading employee skills and transition assistance programs	People & Planet 2021: People development p. 81–82; Ensuring fair working conditions and terms of employment p. 86		8
404-3	Percentage of employees receiving regular performance and career development reviews	People & Planet 2021: People development p. 81–82		8, 10

## GRI index

GRI standard and disclosure		Response	Omissions/Additional information	Related SDGs
<b>GRI 405: Diversity and equal opportunity 2016</b>				
405-1	Diversity of governance bodies and employees	People & Planet 2021: Inclusion and diversity p. 89; People data p. 103 Nokia in 2021: Corporate governance statement pp. 45–56	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 2021: Inclusion and diversity p. 88		5, 8, 10
<b>GRI 406: Non-discrimination 2016</b>				
406-1	Incidents of discrimination and corrective actions taken	In 2021, we received 62 allegations related to discrimination or sexual harassment through our Ethics helpline. Each case was investigated by the Business Integrity Group, Human Resources or the Legal team, as applicable. Where the allegations were substantiated, appropriate disciplinary action was taken up to and including termination of employment.		5, 8, 16
<b>GRI 407: Freedom of association and collective bargaining 2016</b>				
Own metric	Management of Freedom of association and collective bargaining in our supply chain	People & Planet 2021: Responsible sourcing pp. 68–73		8
<b>GRI 408: Child labor 2016</b>				
408-1	Operations and suppliers at significant risk for incidents of child labor	People & Planet 2021: Responsible sourcing pp. 68–73; Ensuring fair working conditions and terms of employment p. 84–85	For more information, please see our latest Modern Slavery Statement available at <a href="http://www.nokia.com/about-us/sustainability/downloads/">www.nokia.com/about-us/sustainability/downloads/</a>	8, 16
<b>GRI 409: Forced or compulsory labor 2016</b>				
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	People & Planet 2021: Responsible sourcing pp. 68–73; Ensuring fair working conditions and terms of employment p. 84–85	For more information, please see our latest Modern Slavery Statement available at <a href="http://www.nokia.com/about-us/sustainability/downloads/">www.nokia.com/about-us/sustainability/downloads/</a>	8
<b>GRI 412: Human rights assessment 2016</b>				
412-2	Employee training on human rights policies or procedures	People & Planet 2021: Compliance as a business enabler pp. 59–61		8
<b>GRI 414: Supplier social assessment 2016</b>				
414-1	New suppliers that were screened using social criteria	People & Planet 2021: Responsible sourcing pp. 68–73	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 2021: Responsible sourcing pp. 68–73; Materials traceability and responsible sourcing of minerals pp. 74–75		5, 8, 16

## GRI index

GRI standard and disclosure		Response	Omissions/Additional information	Related SDGs
GRI 416: Customer health and safety 2016				
416-1	Assessment of the health and safety impacts of product and service categories	People & Planet 2021: Strengthening our health and safety performance pp. 91–92	Our position statement about exposure to radio waves and health is available at <a href="https://www.nokia.com/about-us/sustainability/downloads/">https://www.nokia.com/about-us/sustainability/downloads/</a>	
GRI 418: Customer privacy 2016				
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	People & Planet 2021: Data privacy and security p. 77		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	<a href="#">People &amp; Planet 2021: Data privacy and security pp. 76–77</a> <a href="#">nokia.com: Data privacy and security</a>
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	<a href="#">People &amp; Planet 2021: Inclusion and diversity p. 89</a> , <a href="#">People data p. 103</a>  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	<a href="#">People &amp; Planet 2021: Circularity p. 51</a> ; <a href="#">Environmental data p. 102</a>
	TC-TL-440a.1	(1) Materials recovered through take back programs, percentage of recovered materials that were (2) reused, (3) recycled and (4) landfilled	<a href="#">People &amp; Planet 2021: Circularity p. 51</a> ; <a href="#">Environmental data p. 102</a>
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	<a href="#">People &amp; Planet 2021: Responsible sourcing 68–73</a>  In 2021, we conducted 64 in-depth Corporate Responsibility (CR) audits. 2 of these audits were conducted through our customers' Joint Audit Cooperation (JAC) framework and 56 through RBA Validated Assessment Process (VAP) audits.
	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	<a href="#">People &amp; Planet 2021: Responsible sourcing 68–73</a>  In 2021, we conducted 64 in-depth Corporate Responsibility (CR) audits. 2 of these audits were conducted through our customers' Joint Audit Cooperation (JAC) framework and 56 through RBA Validated Assessment Process (VAP) audits. In 2021, our CR audits identified 250 instances of non-compliance and 57 potential risk areas. The audit findings closure rate within 6 months was 67% for all non-conformances in 2020–2021.
Materials sourcing	TC-HW-440a.1	Description of the management of risks associated with the use of critical materials	<a href="#">People &amp; Planet 2021: Materials traceability and responsible sourcing of minerals pp. 74–75</a>

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